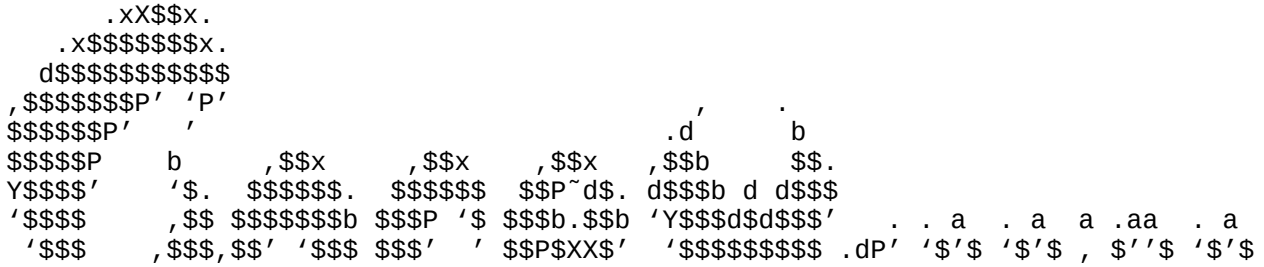
From: Beppe Bezzi <bezzi@iol.it>
Newsgroups: rec.games.corewar
Subject: core warrior
Date: 17 Oct 1995 13:43:31 -0400
Message-ID: <199510161638.RAA28514@iol-mail.iol.it>



N. 1 16/10/95

Hi people,
with this number we begin a new newsletter to cover main arguments of corwar game, following the steps of Paul Kline's '_push off_' and Brant Thomsen's 'The 94 Warrior'.
Hints, suggestions, criticism are welcome; as is welcome anyone wanting to join the staff. This number is care of Beppe Bezzi <bezzi@iol.it> and next one will be made by Myers Bremer <bremermr@ecn.purdue.edu>, we hope to have a couple of others, so as we can post the newsletter weekly, without too much effort, in a rotating schedule.
Come on ad join, the pay isn't good but you can write for something with a worldwide distribution :-)

Most care will be taken of the -94 hill, the one where best battles are, other hills will have only reports of main events, unless some fight will start in them too. This week we cannot cover the beginners hill because the test warrior submitted got meaningless results. Hope the bug in Pizza's hills will soon be fixed.
First contribute to Core Warrior was from Andersen F. Scholl, that sent me the header, thanx.

For everyone interested in Corewar

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth
http://www.ecst.csuchico.edu/~pizza/koth

---
94 Hill - Standings

#	%W/ %L/ %T	Name	Author	Score	Age
1	45/ 41/ 13	Leprechaun on speed	Anders Ivner	150	15
2	37/ 31/ 32	Torch t18	P.Kline	143	219
3	40/ 37/ 23	myVamp v3.7	Paulsson	143	187
4	35/ 28/ 37	Jack in the box	Beppe Bezzi	142	207
5	24/ 6/ 70	Die Hard	P.Kline	142	4
6	40/ 38/ 23	Armory - A5	Wilkinson	141	358
7	37/ 34/ 29	Phq	Maurizio Vittuari	141	321
8	35/ 31/ 34	Father & Son	Maurizio Vittuari	139	77
9	41/ 44/ 14	Frontwards	Steven Morrell	139	154
10	42/ 46/ 12	Anti Die-Hard Bevo (3c)	John Wilkinson	139	24
11	35/ 33/ 32	Brain Vamp	B.Bezzi, M.Paulsson	138	89
12	37/ 37/ 26	Thermite 1.0	Robert Macrae	137	782
13	41/ 46/ 13	Super Bevo 4a	John Wilkinson	137	1
14	40/ 45/ 15	Leprechaun deluxe	Anders Ivner	136	124

15	35/ 35/ 30	Firestorm 08	Beppe Bezzi	134	75
16	41/ 49/ 10	SandBlast 1a	John K. Wilkinson	134	35
17	35/ 39/ 26	Tornado 1.8	Beppe Bezzi	131	73
18	34/ 40/ 26	Cthulhu v7	John K. Wilkinson	129	47
19	24/ 28/ 48	Twimpede	Jay Han	120	6
20	26/ 33/ 42	replicator	M R Bremer	119	2

In this moment we have standard non-p warriors in majority on the hill and keeping strongly the top with the q-scanner Leprechaun on speed followed by the bomber Torch and the vampire myVamp; the first switcher is Jack in the box, followed by Paul's mysterious object Die Hard, that now seems to die a little and score a lot more. Comparing scores with last week's ones, is worth noting the rise of Armory from the bottom to near the top, this veteran seems to have found a new life.

---

94 - What's new

This week many new warriors have appeared in the 94 hill, to disappear short after; the tournament first round imposed maximal secrecy to everyone (but me :-) Worth noting are:

1	35/ 25/ 40	test jtm09	Beppe Bezzi	145	1
1	39/ 34/ 27	aMixture	Paulsson	144	1
2	47/ 40/ 13	Leprechaun on speed	Anders Ivner	153	1
4	30/ 21/ 49	test jtm08	Beppe Bezzi	139	1
5	43/ 45/ 12	Anti Die-Hard Bevo (3c)	John Wilkinson	141	1
5	44/ 47/ 10	TESTP	Maurizio Vittuari	141	1
6	25/ 10/ 65	Die Hard	P.Kline	140	1

Of those new warriors only Leprechaun on speed and Anti Die-Hard Bevo are still on hill, others were but tests for the tournament, maybe we'll see them on hill soon.

---

94 - What's no more

Only one near 100 :-(

21	27/ 24/ 49	Dirty thinking	Beppe Bezzi	130	98

The real scoop was last week

21	38/ 53/ 9	Agony II	Stefan Strack	122	912

Congratulation Stefan, you are number 2 in 94 Hall of Fame

What's old

12	37/ 37/ 26	Thermite 1.0	Robert Macrae	137	782
6	40/ 38/ 23	Armory - A5	Wilkinson	141	358
7	37/ 34/ 29	Phq	Maurizio Vittuari	141	321
2	37/ 31/ 32	Torch t18	P.Kline	143	219
4	35/ 28/ 37	Jack in the box	Beppe Bezzi	142	207
3	40/ 37/ 23	myVamp v3.7	Paulsson	143	187
9	41/ 44/ 14	Frontwards	Steven Morrell	139	154

Thermite is dominating the age scoring; now is in 4th place in the Hall of Fame passing Blue Funk 3

HALL OF FAME

* means the warrior is still running; > score isn't exact

Pos	Name	Author	Age	Strategy
1	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
2	Agony II	Stefan Strack	912	CMP scanner
3	Blue Funk	Steven Morrell	869	Stone/ imp
4	Thermite 1.0	Robert Macrae	782 *	Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766	Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666	Bomber

7	B-Panama X	Steven Morrell	518		Stone/ replicator
8	NC 94	Wayne Sheppard	387		Stone/ imp
9	Cannonade	P.Kline	>378		Stone/ imp
10	Torch t17	P.Kline	378		Bomber
11	Armory - A5	Wilkinson	358	*	P-warrior
12	Lucky 3	Stefan Strack	>350		?
13	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
14	Dragon Spear	c w blue	346		?
15	juliet storm	M R Bremer	333		Stone/ imp
16	TimeScape (1.0)	J. Pohjalainen	322		Replicator
17	Phq	Maurizio Vittuari	321	*	P-warrior
18	Rave 4.1	Stefan Strack	320		CMP scanner
19	Christopher	Steven Morrell	289		Vampire
19	Aeka	T.Hsu	289		Stone/ imp
20	Marcia Trionfale	Beppe Bezzi	246		Replicator

That’s all I was able to do. I have a ’hole’ from last number of -The 94 Warrior- and the beginning of my personal archives in june 95.
I need help from you to fill the Hall of Fame exactly, in particular exact scores of Lucky and Cannonade and missing or wrong strategies. TIA

Nandor’s and Stefan’s Fall Core War Tournament (NSFCWT)
(details at http://www.stormking.com/~koth/nsfcwt.html)

Round one is just finished, the battle was really an hard one and half the contenders are closed in a single point difference. The strategic choices of players have been different, some choose to play best in standard, some in multi, and some made a compromise. Two of the warriors mentioned before in -What’s new- have showed down in the tournament (yes my testjtm09 is Rhino, and it’s not very different from the one I published :-) while some have used their warriors in the 94 hill.
Now the challenge is against the White warrior.

I hope many more will join the tournament, it’s free and sure it’s fun. Even beginners are invited to join; you have nothing to lose, you can improve your redcoding, comparing your warriors with those of more expert players, and, seen that some rounds will have problems never met before (white warrior, team play, normal programs in redcode), may also be that a new player will beat some veteran in those unknown fields of redcoding.
To subscribe, it’s possible even in the middle of tournament, mail Stefan Strack <stst@idnsun.gpct.vanderbilt.edu>

Now, in short, the results:

Name	one-on-one	multi	combined
P.Kline	5	10	7.5
Paulsson	7	8	7.5
Beppe Bezzi	8	6	7
M R Bremer	10	4	7
Maurizio Vittuari	6	7	6.5
Anders Ivner	9	2	5.5
Steven Morrell	1	9	5
John K. Wilkinson	3	5	4
Derek Ross	4	3	3.5
G. Eadon	2	1	1.5

Here the results of the one-on-one challenge:

Rank	Name	Author	%W	%L	%T	Score
1	endpoint .	M R Bremer	40	28	32	1678
2	Leprechaun on speed	Anders Ivner	43	38	18	1631
3	Rhino	Beppe Bezzi	37	31	32	1566
4	aMixture	Paulsson	36	33	31	1520
5	Tom&Jerry	Maurizio Vittuari	31	31	38	1430
6	Die Hard	P.Kline	17	7	76	1410
7	Miss Careless	Derek Ross	32	38	30	1391

```
  8     Cthulhu v8              John K. Wilkinson        21  19  60   1352
  9     Mythicon v1.2           G. Eadon                 29  46  25   1242
 10     Try fitting THIS name i Steven Morrell           25  41  34   1208

The results for 1000 rounds of "all-against-all":
_____________________________________________________
Die Hard by P.Kline scores 14162
  Results: 0 16 26 42 86 168 179 228 137 49 69
Try fitting THIS name into eight characters or less! by Steven Morrell
scores 13308
  Results: 0 2 25 41 89 157 182 227 135 49 93
aMixture by Paulsson scores 12656
  Results: 1 8 6 31 82 157 177 230 134 49 125
Tom&Jerry by Maurizio Vittuari scores 12382
  Results: 0 2 10 24 80 163 179 233 137 49 123
Rhino by Beppe Bezzi scores 10987
  Results: 0 0 5 22 56 144 167 220 137 49 200
Cthulhu v8 by John K. Wilkinson scores 8590
  Results: 1 2 12 18 28 83 120 185 124 49 378
endpoint . by M R Bremer scores 8425
  Results: 0 8 12 17 26 77 119 173 120 49 399
Miss Careless by Derek Ross scores 6494
  Results: 1 0 13 6 23 47 79 149 118 49 515
Leprechaun on speed by Anders Ivner scores 4992
  Results: 4 11 4 2 8 17 47 110 94 49 654
Mythicon v1.2 by G. Eadon scores 4581
  Results: 1 1 1 9 12 25 46 117 97 49 642


Waiting results I submitted second round White warrior to Pizza; he
performed very well, here are results:

Date: Mon, 16 Oct 1995 07:08:22 -0700
From: Internet Pizza Server <pizza@ecst.csuchico.edu>
To: bezzi@iol.it
Subject: 94 : White warrior challenge results

Program "White warrior" (length 17) by "Nandor & Stefan"
(contact address "bezzi@iol.it"):
has challenged the ICWS '94 Draft hill.

White warrior wins: 19
Phq wins: 28
Ties: 203

White warrior wins: 102
Leprechaun on speed wins: 81
Ties: 67

White warrior wins: 4
Jack in the box wins: 2
Ties: 244

White warrior wins: 15
Father & Son wins: 30
Ties: 205

White warrior wins: 51
Brain Vamp wins: 25
Ties: 174

White warrior wins: 91
Thermite 1.0 wins: 61
Ties: 98

White warrior wins: 51
Torch t18 wins: 93
Ties: 106

White warrior wins: 47
```

Frontwards wins: 137
Ties: 66

White warrior wins: 135
SandBlast 1a wins: 45
Ties: 70

White warrior wins: 76
Armory - A5 wins: 93
Ties: 81

White warrior wins: 87
myVamp v3.7 wins: 93
Ties: 70

White warrior wins: 126
Leprechaun deluxe wins: 71
Ties: 53

White warrior wins: 84
Anti Die-Hard Bevo (3c) wins: 102
Ties: 64

White warrior wins: 89
Firestorm 08 wins: 90
Ties: 71

White warrior wins: 105
Cthulhu v7 wins: 42
Ties: 103

White warrior wins: 88
Tornado 1.8 wins: 74
Ties: 88

White warrior wins: 19
Twimpede wins: 2
Ties: 229

White warrior wins: 188
Web wins: 30
Ties: 32

White warrior wins: 0
simple wins: 2
Ties: 248

White warrior wins: 5
Die Hard wins: 8
Ties: 237

Program "White warrior" (length 17) by "Nandor & Stefan"
;strategy White warrior for round 2 of Nandor and Stefan’s fall 1995 tournament
;strategy Out of senseless cruelty, we’ll show the load file format only :-)
;strategy Results will be published in the newsletter -Beppe
White warrior wins: 9
Ties: 233

Your overall score: 131.714286

Die Hard has been pushed off the ICWS ’94 Draft hill.
The current ICWS ’94 Draft hill:

6	26/ 21/ 52	White warrior	Nandor & Stefan	132	1

Not bad for something we have to beat 80% of times.

Nandor, Stefan, you are not more out of warriors in Pizza hill :-)

The hint

Replicators (part 1)

Having to make the hint of the week, I start with the kind of warriors I like more and I can do better, replicators, or paper; the sort of warrior that use the sheer number to overcome the enemy.
Paper warriors, like every other, have evoluted a lot from the beginnings of the game; presently they use almost all the so called 'silk' style, i.e. splitting before copying. This can be done only under 94 rules because requires post increment and a-field addressing. Now let's give a look at a very simple guy.

```
start   spl     1
        mov     -1,     0       ;generate 3 parallel processes

1 silk  spl.a   @0,     100     ;split
2       mov.i   }silk,  >silk   ;copy
3       jmp.a   silk,   {silk   ;repeat the thing resetting pointer
```

First two lines generate 3 processes that execute the same line one after the other, before executing the next. First line creates another process to execute line start+1, then process 1 copy start line over the mov and process two splits, adding another process to execute silk. The simpler way to generate an exact number of parallel processes is converting the number required in binary 3 -> 11, subtract one -> 10, use a spl 1 for every one and a mov -1,0 for every zero. Much simpler to do than to tell. For the warrior to work we need at least as many processes as we have lines to copy.
Let's go back toour warrior; now we have three processes executing line 1 they split, where, at the a-field address i.e. the address pointed by b-field of line 0 locations away, the b-field of the line they are executing, 100 locations away. When all three process executed this line we have three others process ready to execute line silk+100, there is nothing to execute here but we have some time because new generated processes are queued after those executing the split.
First three processes now execute line 2, they move what's pointed by a-field of line 1 to the location pointed by b-field of line 1 then they increment both a and b field of line 1. First process moves line 1 100 cells away from line 1 and leaves line 1 changed such a way:

```
1 silk  spl.a    @1,    101
```

so it copyes line 2 101 cells away from silk, just after the previous line.
Process 3 does same thing copying line3.
Now it's the turn of the new processes, those created by line1, to execute, they are not more sitting on an empty cell but over the copy of line1 created by line2, they execute it and begin creating third generation copy.
First three processes now reach line3, now the warrior has modifyed in such way

```
1 silk  spl.a   @3,     102
2       mov.i   }silk,  >silk
3       jmp.a   silk,   {silk
```

The a-field of line 3 is the address of the jump while b-field decrements a-field of line 1 so that the warrior can go on splitting and copying.

This one is not a real warrior, his offensive potential is too small, it's just to understand how a silk replicator works. Simple improvements are adding an add line so as copies are not packed one near the other, and adding some bombing to make it a bit nastier. The warrior following is Paperone, my first warrior to enter 94 hill, it was on top of beginner hill for some time a few months ago.
It's similar to the example in the FAQ (very similar indeed :-) but to make it run well I had to work on the many constants.

```
;redcode-94
;name Paperone
;author Beppe Bezzi
;strategy Silk replicator
;kill Paperone
;assert CORESIZE == 8000
```

```
start   spl     1,      <300    ;\
        spl     1,      <150    ;  generate 7 consecutive processes
        mov     -1,     0       ;/

silk    spl     3620,   #0      ;split to new copy
        mov.i   >-1,    }-1     ;copy self to new location
```

;this is another way to copy using multiple processes, the other one is a bit better because we can decrement the cell we are splitting to and, if we are lucky, kill an imp.

```
        mov.i   bomb,   >2005   ;linear bombing
        mov.i   bomb,   }2042   ;A-indirect bombing for anti-vamp
```

;The first bomb laid down acts as a pointer for the following stream, laying down a carpet.

```
        add.a   #50,     silk    ;distance new copy
        jmp     silk,   <silk   ;reset source pointer, make new copy
bomb    dat.f   >2667,  >5334   ;anti-imp bomb
```

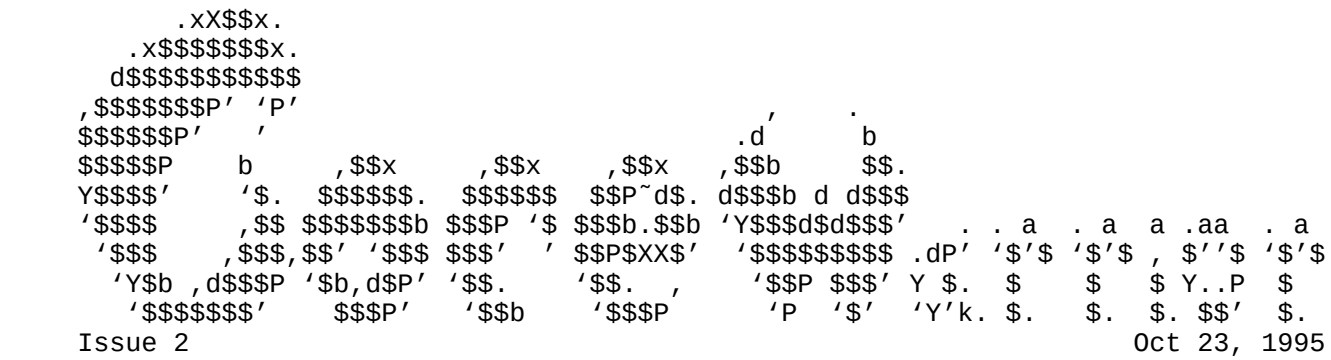
This is very effective against 3 points imp rings. A lucky hit on the executing process can kill many others; other kinds of bombs are used, by me at least, we'll discuss them another time.

Another time we'll discuss more advanced questions: another replicating engine, that is better than this one, and some other paper related topics like spread constants, bombs, strategies...

For questions mail me <bezzi@iol.it> or if you think it's of general interest post to rec.games.corewar

Anyone with hints or warriors to publish is welcome.

From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core_Warrior_
Date: 23 Oct 1995 19:25:41 GMT
Message-ID: <46gq7l$oed@mozo.cc.purdue.edu>



Issue 2 Oct 23, 1995

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth
http://www.ecst.csuchico.edu/~pizza/koth

Greetings.

I can't speak for Beppe Bezzi, but I'm pretty new at this, so bear with our format and content changes until we produce something nice. Complaints and criticism are welcome. Mail them to Beppe <bezzi@iol.it>. Praise and encouragment are also accepted. Just mail those flowery comments to me--Myer R Bremer <bremermr@ecn.purdue.edu>. We would love to have more people join our staff. I promise I'll take all the credit for your hard work, too. How can you resist?

Another note of appreciation to Andersen F. Scholl, for the Core_Warrior_ logo.

Tournament Time

NSFCWT round 2 is over, and it's been a tough challenge (so we were told :). There were lots of interesting and unique solutions to the problem how to kill the white warrior most effectively. The white warrior was an aggressive silk style paper which was launched after a brief bombing phase. Most challengers featured some form of multi-pass core clear (one or more spl runs followed by a dat clear) teamed up with a scanner. A brief description of the strategies is below. The winning challenger and the two runners-up are posted in the next message.

twoOFaKIND
: Is two jmn.F scanners that scan in parallel for the white warrior body, avoiding bombs. The two parts then perform a checksum on the attack body and commit suicide when overrun by white. Multi-pass core clear code is then placed inside the found white warrior body where it is safe from attack. This proved to be the most effective strategy.

v15
: Is an unrolled (sne/sne/seq) scanner that bombs with a SPL carpet and finishes in a multi-pass core clear. For each bombed location, the scanner also checks 1800 addresses away, which is a likely place for white to be.

blackTN
: Tandem sne/seq scanners bombing with spl/spl/spl/jmp and finishing with a multi-pass clear.

safeclear
: has two redundant quickscan parts that checks for the 80 most dangerous white starting positions before a multi-pass core clear is executed.

Umbrella
: A multi-pass core clear protected by a bomber that concentrates on the most dangerous locations.

WhiteSimple
: Multi-pass core clear

Taking Trains (;-)
: sne/seq scanner bombing with spl carpet

Futility
: Two redundant multi-pass core clears

Mr Speculative
: cmp scan/bomber with spl bomb and single dat core clear

PlinyScan
: cmp scanner with spl bomb and multi-pass core clear

so I won’t lose a lotta points
: imp spiral

Welcome to our new player Anders Scholl, it’s good to have you. Now for the scores; Magnus Paulsson won this round with a comfortable lead over Steven Morrell and Paul Kline.

Rank	Name	Author	%W	%L	%T	Score
1	twoOFaKIND	Paulsson	89	5	6	2738
2	v15	Steven Morrell	73	18	8	2283
3	blackTN	P.Kline	64	16	20	2128
4	safeclear	Anders Ivner	61	16	23	2058
5	Umbrella	Beppe Bezzi	56	12	32	1996
6	WhiteSimple	John K. Wilkinson	56	14	30	1986
7	Taking Trains	Maurizio Vittuari	59	32	10	1853
8	Futility	M R Bremer	42	8	50	1768
9	Mr Speculative	Derek Ross	45	39	16	1506
10	PlinyScan	G. Eadon	41	35	24	1479
11	so i won’t lose a lotta	Anders Scholl	0	12	88	892

After the first two rounds, these are the points:

Name	pts for round 1	2
Beppe Bezzi	7	7
M R Bremer	7	4
G. Eadon	1.5	2
Anders Ivner	5.5	8
P.Kline	7.5	9
Steven Morrell	5	10
Paulsson	7.5	11
Derek Ross	3.5	3
Anders Scholl	-	1
Maurizio Vittuari	6.5	5
John K. Wilkinson	4	6

Magnus Paulsson is leading with 18.5 points, followed by Paul Kline with 16.5 and Steven Morrell with 15 points.

Good luck for round 3!
: Nandor & Stefan

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 250
instruction set: ICWS '94 Draft

Last challenge: Mon Oct 23 11:06:37 PDT 1995

#	%W/	%L/	%T	Name	Author	Score	Age
1	48/	40/	12	Frontwards	Steven Morrell	155	201
2	46/	41/	13	Leprechaun on speed	Anders Ivner	150	62
3	35/	28/	37	test r	Beppe Bezzi	142	4
4	37/	32/	31	Torch t18	P.Kline	142	266
5	35/	28/	36	Jack in the box	Beppe Bezzi	142	254
6	39/	36/	24	Armory - A5	Wilkinson	141	405
7	40/	40/	21	myZizzor8	Paulsson	139	1
8	34/	31/	35	Father & Son	Maurizio Vittuari	137	124
9	41/	45/	14	Anti Die-Hard Bevo (3c)	John Wilkinson	137	71
10	38/	39/	22	session Z	M R Bremer	137	20
11	36/	35/	29	Brain Vamp	B.Bezzi, M.Paulsson	136	136
12	38/	41/	21	myVamp v3.7	Paulsson	136	234
13	40/	45/	15	Leprechaun deluxe	Anders Ivner	134	171
14	34/	34/	31	Phq	Maurizio Vittuari	134	368
15	41/	48/	11	Anti-DieHard Bevo (3f)	John Wilkinson	134	29
16	23/	12/	65	Die Hard	P.Kline	133	10
17	28/	24/	48	simple	M R Bremer	132	13
18	38/	46/	16	blackTN	P.Kline	131	27
19	34/	38/	28	Tornado 1.8	Beppe Bezzi	130	120
20	40/	51/	10	SandBlast 1a	John K. Wilkinson	129	30

It's been a difficult time for replicators this week. It seems some authors are testing their tournament entries on the hill. P.Kline's blackTN appeared along with myZizzorX from Magnus Paulsson. Paulsson's earlier test program produced huge losses for papers, but was too specialized to score well on the hill. simple--a non-pspace replicator/bomber once held a lofty position until all those scanners came along. It quickly needed to be recoded to survive. Phq is also suffering a bit from the increased scanner presence.

The many versions of Die Hard have attempted the hill lately. Perhaps Kline will finally settle on a version he's satisfied with. Maybe then he'll tell us what's in that thing! For a interesting clue, read Extra Extra for Paulsson's comments on Die Hard and Kline's response.

---

94 - What's New

3	35/	28/	37	test r	Beppe Bezzi	142	4
7	40/	40/	21	myZizzor8	Paulsson	139	1
10	38/	39/	22	session Z	M R Bremer	137	20
15	41/	48/	11	Anti-DieHard Bevo (3f)	John Wilkinson	134	29
18	38/	46/	16	blackTN	P.Kline	131	27

---

94 - What's No More

21	34/	39/	27	Cthulhu v7	John K. Wilkinson	129	66
21	34/	41/	24	Thermite 1.0	Robert Macrae	128	802

Congratulations to Thermite for its long and successful run. Armory is now the oldest program on the hill at 405.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000

```
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 250
  instruction set: ICWS '94 Draft

Last challenge: Mon Oct 23 08:14:39 PDT 1995
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	57/	7/	36	juliet storm	M R Bremer	208	25
2	56/	31/	13	Heatseek2	Phil Whineray	182	3
3	49/	32/	20	Test-Fc	G. Eadon	165	11
4	49/	38/	13	Web	Gareth Thomas	160	26
5	34/	11/	55	ShadowImp	Robert J. Street	156	99
6	42/	32/	26	Weasel	Kurt Franke	153	17
7	44/	38/	18	Hint Test	M R Bremer	151	5
8	32/	19/	49	Cyclone	Scott Manley	145	13
9	42/	41/	17	Obvious	John K. Lewis	143	10
10	42/	43/	15	Mythicon v1.1a	G. Eadon	142	84
11	42/	45/	13	Eradu	Scott Manley	139	4
12	29/	23/	48	Imp Craze 91.43	Planar	135	1
13	19/	3/	78	Cotton-DH 8a	Wilkinson	135	20
14	41/	47/	12	Skimmer	Gareth Thomas	134	52
15	38/	48/	14	PlinyScan	G. Eadon	128	7
16	33/	42/	25	DeathWalker	Scott Manley	125	36
17	21/	43/	35	Mokkori v0.2	David Boeren	99	47
18	25/	52/	23	Enlightenment II	Scott Manley	98	38
19	29/	60/	12	Apple attack	Gareth Thomas	98	53
20	31/	67/	2	Banzai0.2	Calvin Loh	96	18

John Wilkinson has decided to play on the beginner hill even though his programs on the '94 draft hill are doing well. I suppose I shouldn't talk. juliet storm was just meant to monitor the hill, but has jumped to the number one position. Below is a copy of the code in case it's not in your collection already. Simplicity and compactness are the keys to its success. Is the actual running code (code that is executed many times--like a bomber--as opposed to code that is only executed once--like a quick scan) of your warrior more than 15 lines long? If it is, you're probably trying to do too much. Keep it simple. Focus on one strategy and do it well.

```
;redcode-94
;name juliet storm
;author M R Bremer
;strategy bomber--yippee

ptr     EQU -1333

gate    dat <-445, <-446
s       spl #445, <-445
        spl #0, <-446
        mov {445-1, -445+2
        add -3, -1
        djn.f -2, <-2667-500
        mov 33, <-20
go      dat #0, #ptr
start   mov {-1, <-1            ;boot the bomber into core
        mov {-2, <-2
        mov {-3, <-3
        mov {-4, <-4
        mov {-5, <-5
        mov {-6, <-6
        mov gate, ptr+24
        mov gate, ptr+24
        spl @go, <-4000
        jmp boot, <-4013
for 73
        dat #0, #0
rof
```

```
imp_sz  equ     2667

boot    spl     1      ,#0              ;vector launched imp ala T. Hsu
        spl     1      ,#0
        spl     <0     ,#vector+1
        djn.a   @vector,#0

imp     mov.i   #0,imp_sz

        jmp     imp+imp_sz*7,imp+imp_sz*6
        jmp     imp+imp_sz*5,imp+imp_sz*4
        jmp     imp+imp_sz*3,imp+imp_sz*2
vector  jmp     imp+imp_sz  ,imp

        end     start
```

The hint

Do you often ask yourself: Why do my warriors do well on the beginner's and get thrashed on the '94 draft hill? This hint should help all newcomers in writing more viable code.

I have asked the 15th place author to send me his warrior so we can dissect it as a case study. Thanks to Scott Manley for sharing his code. If you are in 15th place around the end of the week, you could be getting mail from me. Unfortunately, Mutagen has dropped off the hill, but I suspect that Scott will have a brand new version real soon.

```
;redcode-b
;name Mutagen
;author Scott Manley
;strategy Scan -> SPL/JMP bomb -> split to Imp gate / 2 pass  forward
;strategy travelling core clear
;assert CORESIZE==8000

plength EQU     35
inc     EQU     6
carpet  EQU     (CORESIZE-MINDISTANCE)/inc


adds    DAT     #inc , #inc
begin   SPL     clear2
start   SEQ.I   *scan, @scan
        JMP     scan1
cont    ADD.F   adds , scan
        DJN     start , count
        JMP     clear3
scan1   MOV     sbomb , * scan
scan2   MOV     sbomb2 , @ scan
        JMP     cont
scan    DAT     MINDISTANCE-10 , MINDISTANCE-9
target1 DAT     23 , -23
target2 DAT     22 , -22
target3 DAT     -1 , -21
target4 DAT     -2 , -20
        DAT     0 , 0
        DAT     0 , 0
        DAT     0 , 0
        JMP     0 , } cont
clear2  MOV.I   sbomb , } target1
        DJN     clear2 , target1
        JMP     clear4
clear3  MOV.I   target2 , } target2
        DJN     clear3 , target2
clear1  MOV.I   target4 , { target4
        DJN     clear1 , target4
        JMP     0 , > -10
clear4  MOV.I   sbomb , { target3
        DJN     clear4 , target3
```

```
        MOV     0,1
sbomb   SPL     0 , 0
sbomb2  JMP     -1
count   DAT     #carpet-1,#carpet-1
        END     begin
```

The basic concept is to scan and spl coreclear simultaneously. Once the scan is finished (one pass through core), jump to a dat coreclear to follow the spl clear. There are other startegies involved but we'll just focus on the scan engine and multi-pass coreclear.

Mutagen's scan is 11 lines long--13 lines if the stun bomb is included in the count. We can reduce the length a bit without affecting the behavior too much by using the following code:

```
        add.f split, scan
scan    sne.i loc1, loc+1
        djn.f -2, <DJNSTREAM1   ;djn.f will decrement both the a and b field.
        mov.i split, *scan
        mov.i jump, @scan
        djn.f -5, <DJNSTREAM2   ;need to have a trigger so this falls thourgh
        jmp clear               ;after scan is complete.
split   spl #step, #step        ;try to find other uses for these
jump    jmp -1                  ;can be anywhere in code
```

Remember that the bigger your executing code is, the more inviting target you make to the enemy. The split and jump lines can be moved away from the executing code to provide the smallest possible profile. Also: the scanning step is not optimal. If an enemy instruction is at location N, most likely there will be another instruction at N+1. So there is no need to scan there. There are two basic ways to spread the scan out. One is to scan N and N+step then bomb every location in between. Another is to bomb N and then check N+step in a separate step. Check out Agony and Irongate for good examples of these two methods.

Next let's talk multi-pass coreclears. Muatagen's clear is lengthy and easy prey for scanners. In a multi-pass coreclear, only a few things change--the bomb being swept through core and the pointer that does it. We can reuse the movement instructions and just change the bomb and pointer with this code:

```
org a1
ptr1    dat a1, end+100
a4      dat 0,  end+2+1
a3      dat 1,  end+2+2
a2      spl #2, end+2+3         ; spl #X, <-Y acts like a split 0.
a1      spl #3, end+2+4         ; you can use x and Y as step values
        mov *ptr1, >ptr1        ; and use the decrement in the b-field
        mov *ptr1, >ptr1        ; as part of an imp gate.
        mov *ptr1, >ptr1        ; > (post-increment) keeps adding 1 to
end     djn.f -3, <4000         ; the b-field of ptr1 to move the bomb
                                ; through core.
```

The clear starts with a1 being swept forward through core. Notice that the move instructions use a pointer (ptr1) to determine which bomb to sweep with. ptr1's b-field is also used to do the actual clearing. When the clear wraps around the core, it will eventually overwrite ptr1 with a1. Now the move instructions will look where the old ptr1 used to be to find what they should move through core. The new ptr1 (a1) points towards a2, so the move instructions will move a2 through core. The new pointer also has a new b-field. The value of this b-field ensures that the clear skips over the core clear code. Then a2 overwrites the pointer. The pointer is now points to a3. And so on. This code will continue to clear until time run out.

A simple version of these improvements has been submitted to the beginner hill. The code does reasonably well against bombers and replicators, but its large size makes it vulnerable to scanners. A good project would be to pspace it with a small fast bomber.

Extra Extra:

P.Kline usually publishes his warriors fairly quickly. However Die Hard has been a mystery for quite some time. Magnus Paulsson is one of the few authors who has had some success against the many interations of Die Hard. Paulsson has been kind enough to share his thoughts (along with his newest program--theMystery) with us:

How does Die Hard work?
That thought came to mind when some version of myVamp didn't score more than 1% wins! It was double disturbing as myVamp has a coreclear spl/spl/dat and a djn stream at the same time, no normal imp could survive it (nothing else either if lucky).

Why is that?
If you get the other program in such a clear it will fast spl it self to 8000 processes. No you have about 8000 cycles and then the imp spiral will execute. In my coreclear I change a location in core every cycle which means that when the imp-spiral execute it is (should be) overwritten/djned already.

What then?
Now if you place two spirals on top of each other, and plan in which order they and the rest of the code will be in the execution. In the coreclear the spl processes will be like 4000 processes, spiral, 4000 processes, spiral. That means the clear has to kill spiral in 4000 cycles which isn't possible in a clear.

Is that how Die Hard works?
(Actually I don't know :-) But I'll keep on guessing for a while.)
So, because there is a thing called gate which kills spirals. In order to tie you have to have something like 100 processes in a spiral to slow it down as much that it doesn't reach the gate. Now you can't launch such a monster without getting killed before the launch is complete.

How then?
Have a look at theMystery!
It is three papers working together to launch imp-rings in such a way that there will never be more that say 1500 cycles between a ring is executed.

What is the diffrence between Die Hard and theMystery?
Die Hard is a lot better :-(, I don't know how Paul did it but theMystery doesn't kill anything! (I'm totaly wortless on papers, I can't get the constants right and it's to bloody complicated to get a paper effective.)

Actually I don't belive that theMystery could ever beat anything 20%, maybee Paul has taken the idea one step further? (stone?)

(Now I resubmitted theMystery1.5 to the hill and it wins 17% :-)

15	25/ 19/ 57	Die Hard	P.Kline	131	3
..						
20	17/ 7/ 76	theMystery1.5	Paulsson	127	1

/Magnus Paulsson
(More fun to write this than to think about Peierls substitution)
(I should heve mentioned CottonDH (J.Wilkinson) but I wont :-))

Paul responds:

Magnus' approach is intriguing. Lots of ties but not many wins, which is about where Die Hard was until I worked in some bombing. Not much but enough to pump up the score and move him up the Hill. Die Hard doesn't look much like theMystery, but his kernel is based on something I published a looong time ago.

Another tidbit about Die Hard. He starts with a very brief quick-scan and vamp. The pit does a one-pass suicidal clear incorporating a brainwash which, when it works forces programs like Jack in the Box to revert from paper to something which Die Hard can kill. Instead of going 1/0

he now goes about 12/0 against JitB :-)

theMystery sure does a lot better against myZizzor than Die Hard does :-(
(I have a pretty good idea what Magnus' missing line in myZizzor might be!)

Paul

```
;redcode-94
;name theMystery1.5
;author Paulsson
;strategy How does Die Hard work? (this way maybee?)
;strategy Looking goooood, could it be somthing that begins
;strategy with an i and ends with p?
;assert CORESIZE > 1
;kill theMystery

org start

step1   equ             1800
step2   equ             -1922

start   spl 1           ;\
        mov.i -1,0      ;- make 7 processes
        mov.i -1,0      ;/
        mov {ptr2,<ptr2 ; move out second paper
        mov {ptr1,<ptr1 ; move out first paper
        spl 3
        spl 4
        jmp @ptr1       ; jump to 1
        mov {ptr3,<ptr3 ; move out third paper
        jmp     @ptr3   ; jump to 3
        jmp @ptr2       ; jump to 2

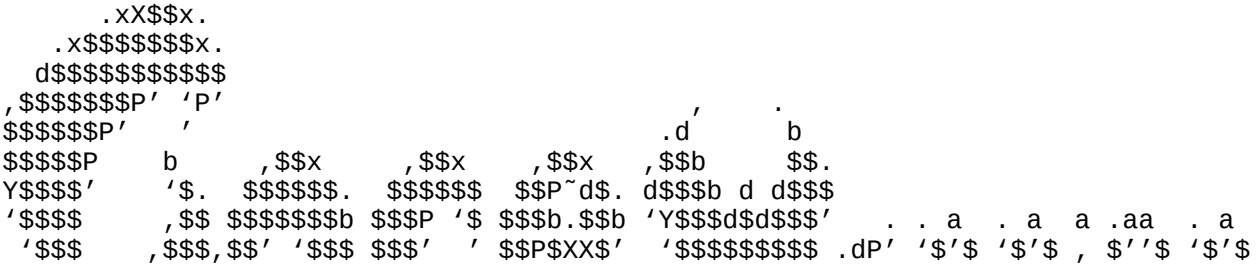
pap     spl step1,0             ;\
        mov.i >-1,}-1           ;\\ Normal paper, with bad constants
        mov.i <-2,<1            ;// (I think I riped it from timescape :-) )
        spl     @0,}step2       ;/
        mov.i #0,2667           ;Impy!

ptr1 dat 5+pap,pap+5+500
ptr2 dat pap+5,pap+5+2667+500
ptr3 dat pap+5,pap+5+2667*2+500
```

```
Most losses:
Program "myZizzor" (length 58) by "Paulsson"
(contact address "mpn@ifm.liu.se"):
;strategy Cissors (or whatever way you spell it)
;strategy Let's se how hard Die Hard is this time :-)
theMystery1.5 wins: 27
myZizzor wins: 55
Ties: 168

Program "Anti Die-Hard Bevo (3c)" (length 76) by "John Wilkinson"
(contact address "jwilkinson@mail.utexas.edu"):
;strategy I didn't have a single program on my HD that could beat
;strategy my Cotton-DH, so I made this.  Let's see how it fares
;strategy against the real Die Hard. :)
theMystery1.5 wins: 60
Anti Die-Hard Bevo (3c) wins: 54
Ties: 136
```

From: Beppe Bezzi <bezzi@iol.it>
Newsgroups: rec.games.corewar
Subject: Core warrior n. 3
Date: 30 Oct 1995 16:58:05 -0500
Message-ID: <199510302126.WAA27563@iol-mail.iol.it>



Issue 3 30/10/95

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth
http://www.ecst.csuchico.edu/~pizza/koth

Hi people,

this week I’m back again to write Core warrior for you. As suggested by Myers, very many wrote complaint letter about his number, asking me to write again :-) and here I’m. Just kidding.
Anyone wanting to join the staff is welcome as anyone with hints suggestions and warriors to publish.

Tournament Time
(details at http://www.stormking.com/~koth/nsfcwt.html)

Results for round 3 of NSFCWT are in. The challenge was to submit a *pair* of warriors that would work together to kill other pairs of warriors. The score formula was modified to reward partnership, i.e. you received more points if you left your team mate alife. Real communication between warriors in a team was apparently difficult to implement effectively, since only two players chose that strategy (Randy Graham’s Aces/Eights and, passively, Anders Scholl’s Claudia/Lestat). Most players in this round submitted partners that were simply unable to kill each other (like papers) achieving some sort of cheap cooperativity. It’s possible that redcode simply can’t support effective cooperativity, or maybe it’s just a matter of tweaking the score formula some more. Anyways, here the scores:

S/P Warrior #1 by G. Eadon scores 3304
Die Hard by P.Kline scores 2916
Marcia Trionfale 1.3 by Beppe Bezzi scores 2608
Tican by John Wilkinson scores 2308
theMystery2.0 1 by Paulsson scores 2175
Not Expecting Too Much 1 by Karl Lewin scores 2161
theMystery2.0 2 by Paulsson scores 2148
Not Expecting Too Much 2 by Karl Lewin scores 2139
Aces by Randy Graham scores 2136
Juliet Storm+Spiral by John Wilkinson scores 2130

test 1 by Steven Morrell scores 2129
test 2 by Steven Morrell scores 2101
Jack in the box by Beppe Bezzi scores 1981
Twins 2 by Maurizio Vittuari scores 1969
Twins 1 by Maurizio Vittuari scores 1969
Eights by Randy Graham scores 1937
kwclear 2 by Anders Ivner scores 1788
kwclear 1 by Anders Ivner scores 1683
lewis 1 by John Lewis scores 1115
blackTN by P.Kline scores 1102
lewis 2 by John Lewis scores 1016
Claudia incarnation0.3 by anders scholl scores 952
2IR 2 by Calvin Loh scores 694
2IR 1 by Calvin Loh scores 684
Lestat Incarnation0.2 by anders scholl scores 579
S/P Warrior #2 by G. Eadon scores 380

Combined scores:

Beppe Bezzi	4589
John Wilkinson	4438
Magnus Paulsson	4323
Karl Lewin	4300
Steven Morrell	4230
Randy Graham	4073
Paul Kline	4018
Maurizio Vittuari	3938
Greg Eadon	3684
Anders Ivner	3471
John Lewis	2131
Anders Scholl	1531
Calvin Loh	1378

Overall scores so far:

Name pts for round	1	2	3	Tot.
Paulsson	7.5	11	11	29.5
Beppe Bezzi	7	7	13	27
Steven Morrell	5	10	9	24
P.Kline	7.5	9	7	23.5
John K. Wilkinson	4	6	12	22
Anders Ivner	5.5	8	4	17.5
Maurizio Vittuari	6.5	5	6	17.5
M R Bremer	7	4	-	11
Karl Lewin	-	-	10	10
G. Eadon	1.5	2	5	8.5
Randy Graham	-	-	8	8
Derek Ross	3.5	3	-	6.5
John Lewis	-	-	3	3
Anders Scholl	-	1	2	3
Calvin Loh	-	-	1	1

Magnus Paulsson still leads with 29.5 points, followed by Beppe Bezzi with 27, and Steven Morrell and Paul Kline with 24 and 23.5 points, respectively.

Thanks for playing,
Nandor & Stefan

Standings are still very open with 5 players in but 7.5 points.
Welcome to Karl Levin, Randy Graham, John Lewis and Calvin Loh, joining the tournament this round.
I should not comment this round but I can see the winner, let’s hear his first impressions: "thank you, thank you, has been very, very hard, but I did it" :-)))

---

94 Hill - Standings

#	%W/	%L/	%T	Name	Author	Score	Age
1	40/	29/	31	Torch t18	P.Kline	150	319

2	44/ 42/ 14	Leprechaun on speed	Anders Ivner	146	115
3	41/ 37/ 22	Porch Swing +	Randy Graham	145	20
4	35/ 27/ 38	Phq	Maurizio Vittuari	143	421
5	35/ 26/ 39	Father & Son	Maurizio Vittuari	143	22
6	38/ 34/ 28	myVamp v3.7	Paulsson	141	287
7	32/ 23/ 45	Jack in the box	Beppe Bezzi	141	307
8	41/ 42/ 17	Frontwards	Steven Morrell	140	254
9	29/ 19/ 52	test r 02	Beppe Bezzi	139	35
10	35/ 31/ 35	Armory - A5	Wilkinson	139	458
11	31/ 25/ 44	.Brain Vamp.	B.Bezzi, M.Paulsson	137	21
12	41/ 46/ 13	Anti Die-Hard Bevo (3c)	John Wilkinson	136	124
13	26/ 16/ 58	Tican	John Wilkinson	136	13
14	40/ 44/ 16	Leprechaun deluxe	Anders Ivner	135	224
15	21/ 7/ 73	Chugging Along	Karl Lewin	135	4
16	34/ 33/ 33	Tornado 1.8	Beppe Bezzi	134	173
17	31/ 37/ 32	myZizzor	Paulsson	125	50
18	17/ 15/ 68	Cotton-DH c	John K. Wilkinson	118	2
19	15/ 15/ 71	Cotton-DH c	John K. Wilkinson	114	1
20	30/ 46/ 24	Lurker 1.1	Kurt Franke	113	3

Also this week we have standard non-p warriors in great majority (15/5) on the hill and keeping the top four positions. Randy Graham showed down with its new Porch Swing+, climbing high; a few paper warriors have entered the lower part of the hill. A few kills of test warriors have increased the top/bottom rate, now at 32.7%
A quiet week, the tournament is keeping busy most redcoders.

---

94 - What’s new

1	44/ 40/ 16	Porch Swing +	Randy Graham	148	1

Welcome back Randy !!

10	32/ 31/ 37	Father & Son	Maurizio Vittuari	134	1
11	28/ 23/ 49	test r 02	Beppe Bezzi	132	1
13	31/ 29/ 40	.Brain Vamp.	B.Bezzi, M.Paulsson	132	1
14	22/ 9/ 69	Chugging Along	Karl Lewin	136	1
19	22/ 18/ 60	Tican	John Wilkinson	127	1
18	17/ 18/ 65	Cotton-DH c	John K. Wilkinson	116	1
18	30/ 50/ 21	Lurker 1.1	Kurt Franke	110	1
19	15/ 15/ 71	Cotton-DH c	John K. Wilkinson	114	1

Worth noting new Porch Swing +, not dominating like this summer, but always a dangerous guy.

---

94 - What’s no more

21	2/ 1/ 2	Brain Vamp	B.Bezzi, M.Paulsson	7	137
21	1/ 2/ 2	Firestorm 08	Beppe Bezzi	6	114
21	36/ 51/ 13	SandBlast 1a	John K. Wilkinson	121	55
21	37/ 47/ 16	blackTN	P.Kline	126	43
21	16/ 11/ 73	Die Hard	P.Kline	121	13

Very little, in my weeks warriors age without risks :-) A couple of warriors have been killed by their author, to be replaced by new versions or others warriors.
Other losses include Sandblast, Black TN and Die Hard.

What’s old

10	35/ 31/ 35	Armory - A5	Wilkinson	139	458
4	35/ 27/ 38	Phq	Maurizio Vittuari	143	421
1	40/ 29/ 31	Torch t18	P.Kline	150	319
7	32/ 23/ 45	Jack in the box	Beppe Bezzi	141	307
6	38/ 34/ 28	myVamp v3.7	Paulsson	141	287
8	41/ 42/ 17	Frontwards	Steven Morrell	140	254
14	40/ 44/ 16	Leprechaun deluxe	Anders Ivner	135	224

Armory is now the leader, with some advantage on Phq and a good one on the trio: Torch, Jack in the Box, both over 300, and myVamp. Two new entries in the more than 200 old, Frontwards and Leprechaun deluxe.
All the group seems to be in good health.

HALL OF FAME
* means the warrior is still running; > score isn't exact

Pos	Name	Author	Age		Strategy
1	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
2	Agony II	Stefan Strack	912		CMP scanner
3	Blue Funk	Steven Morrell	869		Stone/ imp
4	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766		Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666		Bomber
7	B-Panama X	Steven Morrell	518		Stone/ replicator
8	Armory - A5	Wilkinson	458	*	P-warrior
9	Phq	Maurizio Vittuari	421	*	Qscan -> replicator
10	NC 94	Wayne Sheppard	387		Stone/ imp
11	Cannonade	P.Kline	>378		Stone/ imp
12	Torch t17	P.Kline	378		Bomber
13	Lucky 3	Stefan Strack	>350		Stone/ imp
14	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
15	Dragon Spear	c w blue	346		?
16	juliet storm	M R Bremer	333		Stone/ imp
17	TimeScape (1.0)	J. Pohjalainen	322		Replicator
18	Rave 4.1	Stefan Strack	320		CMP scanner
19	Torch t18	P.Kline	319	*	Bomber
20	Jack in the box	Beppe Bezzi	307	*	P-warrior

Phq enters the top 10, Torch t18 and Jack in the box enter in the bottom, Christopher and Aeka leave the top 20

Beginner's Hill standings

#	%W/ %L/ %T	Name	Author	Score	Age
1	53/ 8/ 39	juliet storm	M R Bremer	197	41
2	39/ 9/ 52	paper01o	Beppe Bezzi	169	1
3	37/ 15/ 49	Paper8	G. Eadon	159	3
4	43/ 32/ 25	Lurker 1.1	Kurt Franke	155	2
5	42/ 34/ 24	Test-Fc	G. Eadon	149	27
6	41/ 41/ 18	Hint Test	M R Bremer	142	21
7	43/ 44/ 13	Heatseek2	Phil Whineray	141	19
8	23/ 8/ 69	Impfinity v1	Planar	138	16
9	39/ 40/ 21	Searching	Kurt Franke	137	8
10	40/ 46/ 14	Web	Gareth Thomas	133	42
11	38/ 44/ 18	Mythicon v1.1a	G. Eadon	132	100
12	35/ 40/ 25	1stscanner	Kurt Franke	130	14
13	25/ 23/ 53	Cyclone	Scott Manley	126	29
14	36/ 53/ 10	Skimmer	Gareth Thomas	119	68
15	29/ 39/ 32	Weasel	Kurt Franke	119	33
16	29/ 41/ 30	Banzaiv1.3	Calvin Loh	118	5
17	21/ 29/ 50	P_Banzai	Calvin Loh	113	4
18	20/ 27/ 53	Imp Craze 91.43	Planar	113	17
19	29/ 47/ 24	Banzaiv1.2	Calvin Loh	112	6
20	32/ 54/ 15	PlinyScan	G. Eadon	110	23

Sorry for the submission of paper01o, a warrior that entered the -94 hill too. I did it to get standings and to compare results with 94 hill's.
In -94 hill paper01o scored 126, entering near position 15. Its code is discussed in the hint, with notes on how to make a similar warrior.
If anyone wants results of paper01o againts others beginner's or -94 hill warriors, mail me. Is worth noting paper01o won all single matches on -b hill, (1/0/249 against Paper8 and Impfinity), but the one against PlinyScan (82/113/55 for it)
Against juliet storm, scored but 22/0/228, having very little anti imp.

The hint

Replicators (part 2)

Hi, happy to see you again.

Last time we spoke of basic replicator concepts, now I'll try to speak of some advanced topics.
To begin let's give a look at another replicating engine, the best one in my opinion, first introduced by Jippo Pohjalainen in its warrior Timescape.
We report slightly simplified, the way it has been proposed as White warrior by Nandor and Stefan in the tournament.

```
warrior
        spl     1,              <-200
        mov.i   -1,             0           ;this block generates 6 processes
        spl     1,              <-300


tim2    spl     @tim2, }TSTEP
tim2a   mov.i   }tim2,  >tim2

cel2    spl     @cel2,  }CSTEP  ;these four lines are the main body
cel2a   mov.i   }cel2,  >cel2
                                ;here you can insert some bombing line
ncl2a   mov.i   {cel2,  <ncl2
ncl2    jmp     @ncl2,  >NSTEP
```

All you know, having read part 1, how the first four lines work, they split away and copy the warrior body where the processes are going to execute, is worth noting that the lines cel2, cel2a don't copy the warrior from the beginning but copy two blank lines in the bottom, after ncl2.
Line ncl2a copies again the warrior, fron cel2 to ncl2+2, backward because of the pre decrements and last line jumps to the beginning of this copy resetting the pointer.
The main advantage of this structure is that all the code is executed but once, to be left as a decoy to foul scanners; this is a great advantage compared with the older structure of the first hint. Another advantage is that the warrior will continue to work, slowed, even if wounded by a bomb in its last two lines.
This guy was the harder thing to kill before Paul Kline created Die Hard.
With this structure have been made some others replicators of success, worth mention are Nobody special by Mike Nonemacher and Marcia Trionfale by...me.

Now we have a solid structure to work on, to make it deadlier we can add some other form of attack than overwriting our opponent. The original Timescape has this single bombing line inserted after cel2a:

```
        mov.i   <-FSTEP,{FSTEP
```

how it works, remember we have some processes working in papallel:
every process takes the cell -FSTEP away, decrements its b-field, take the cell pointed by and moves it in the position pointed by the decremented a-field of the cell FSTEP cells away. Simple? NO! :-)
OK. From the beginning:

```
        dat     0,0
-FSTEP  dat     0,0             ;will became dat 0,-1
...
        mov.i   <-FSTEP,{FSTEP  ;here we are
...
begin   mov     bomb,   nearme
...     [enemy code]            ;Our enemy is here, we are lucky :-)

end     jmp     begin
        dat     0,0
FSTEP   dat     0,0             ;will became dat -1,0
```

Now 1st process takes the cell -FSTEP and decrements its b-field, takes the cell pointed by the decremented b-field (in the example the cell before) and moves it; where? It takes the cell FSTEP and decrements its a-field thake the cell pointed by it, here he hits. Missed, don't worry we have process 2 taking cell -FSTEP-2 and moving it at FSTEP-2 and so on till we have processes executing the bombing line. At the end the enemy is no more, in the example at least.

Bombing is useful not only to get rid of our enemy but also to get rid of ourself ... yes, enemy scanners have the bad use to cover our poor replicators with carpets of spl 0 and similar nasty things. Those bombs don't kill, but cause us to generate unuseful processes slowing down our spread. If we bomb with dat our old copies, that have a chance to be infected, we can reduce this effect; should happen we hit a good copy don't worry, we are so many that we can withstand a few losses.

Others warriors use different kind of bombs, more useful to kill our enemies, the drawback is that we have to carry the bomb with us. The bombing line will beacme:

```
        mov     bomb,   <target ;or > or { or }
```

now the first bomb laid down will become the pointer for the following carpet.
Most used bomb is the anti imp bomb

```
        dat     <-2666, <2667
```

this bomb is very good at killing 3 points imp ring, otherwise difficult to kill by replicators.
Another bomb I used with some success, in Jack in the box, is this simple one:

```
        dat     1,      1
```

This bomb is targeted against djn streams and forward clears, two forms of attack often used by paper enemies. The effect on streams is to make the process go ot of the loop, wasting time; the effect on forward clears is deadly, look at a simple forward clear

```
gate    dat     100,    1000    ;the clear is running 1000 cells away
....
clr     mov     bomb,   >gate   ;what's bomb don't matter, sure nothing with
        jmp     clr             ;a b-field of 1
```

If we hit gate with a dat 1,1 the clear will begin running inside itself, till it reaches clr line and self destructs, very effective and very funny :-)

Like the bombing/scanning step for stones and scanners the spread constants can make the difference beetween a good and a bad warrior. You have to choose them so as to assure a good spread of the copies in the core. Corestep.c by Jay Han and Mopt by Stefan Strack, available at the FTP site, can give you a starting point, but for replicators the job is, far more complex because they change their constants in the spread process; let me explain with an example, same structure 4 parallel processes:

```
a       spl     @0,     100
b       mov     }-1,    >-1
c       mov     {d,     <d
d       jmp     @0,     >1000
```

First time lines a-b are executed they splits and copy 100 locations away but, when lines c-d copy them the value of b-field is 104, and so on.
I don't know any mathematical method or optimization program to find best values and I look at what happens using pmarsv. If I notice that modules don't spread well I change something and so on, art more than science.
In the replicator I'm working at now I use a step modulo 200 for first constant (anything beetween 100 and 400 is good) a mod 20/40 for second one and ... my nose :-) for the last one.
Stefan Strack suggested a method using Pmars macros to automatize, in part at least, the search; here is what he says:

```
----------
A better way to optimize constants
is to run your warrior with pmars and use cdb macros that change code
sections and record the result. Suppose we want to optimize a slighly
```

"un-optimized" version of T.Hsu's Ryooki:

```
nxt_paper   equ     100 ;chosen with room for improvement

boot_paper  spl     1 ,>4000
            mov.i   -1,#0
            mov.i   -1,#0

paper       spl     @paper,<nxt_paper   ; A-fld is src, B-fld is dest
copy        mov.i   }paper,>paper
            mov.i   bomb  ,>paper       ; anti-imp
            mov.i   bomb  ,}800         ; anti-vampire
            jmn.f   @copy ,{paper
bomb        dat     <2667 ,<2667*2
```

and we want to find a better offset between copies than the "100" in the nxt_paper EQU. First we need to come up with some good ways to measure an even spread between paper bodies in core. Here's an approximation that cdb can easily provide:

> after a few thousand cycles, a paper with a good offset
> 1) has more processes
> 2) covers more core locations
> than a paper with a bad offset

Now the idea is simply to run multiple rounds, systematically changing the silk offset at the beginning of each round, and having cdb report process number and number of covered core locations after 5000 cycles or so. This can all be automated with macros, so you can have pmars find optimal constants while you get coffee (jolt? :). Once you have a few candidate offsets, you should make sure they're working as you expect by looking at the core display. You can than go on to find optimal bombing constants for your set of optimal offsets in pretty much the same manner. As an example using Ryooki above:

```
pmars -br 1000 -e ryooki.red
00000   SPL.B  $     1, >  4000
(cdb) 0,7
00000   SPL.B  $     1, >  4000
00001   MOV.I  $    -1, #     0
00002   MOV.I  $    -1, #     0
00003   SPL.B  @     0, < 100
00004   MOV.I  }    -1, >    -1
00005   MOV.I  $     3, >    -2
00006   MOV.I  $     2, }   800
00007   JMN.F  @    -3, {    -4
(cdb) calc i=99
99
```

This sets a variable "i" to our starting constant.

```
(cdb)@ed 3~spl @0,<i=i+1~@sk 5000~@pq~ca i,$+1~@pq off~m count~@go~@st
100,987
1830
(cdb)
```

This is a bit complicated. The "@ed 3~spl @0,<i=i+1" sequence edits address 3 and writes to it the instruction "SPL @ 0, < 100", having incremented the "i" variable by 1. "@sk 5000" executes 5000 cycles silently, "@pq" then switches into "process queue" display/edit mode. "calc i,$+1" echoes the current value of the "i" variable, followed by the number of processes ("$" is the number of the last process). The output is seen on the next line: "100,987". "@pq off" then switches back into core display/edit mode. "macro count" executes a macro that is already defined in pmars.mac; the "count" macro simply echoes the number of core locations that have anything other than "dat 0,0" in them (here: 1830). Finally, "@go~@st" advance to the end of this round and to the first cycle of the next round.

When you now press <Enter>, the command sequence is repeated with an offset value of 101:

```
(cdb) <Enter>
101,1058
1971
(cdb)
```

The 101 offset results in a greater number of processes (1058) and more addresses written to (1971). If you want to run the whole thing automated, just inclose the command sequence in a loop (!!~...~!) and send the results to a file like so:

```
(cdb) ca i=99
99
(cdb) write ryooki.opt
Opening logfile
(cdb) !!~&ed 3~spl @0,<i=i+1~&sk 5000~&pq~ca i,$+1~&pq off~m count~&go~&st~!
```

To avoid sending _a_lot_ of garbish output to the log file, we have to use & in stead of @ in this macro and in the macro count in pmars.mac; just edit it.

```
count= &ca z=.~m w?~&ca x=.,c=0~!!~m w?~&ca c=c+1~if .!=x~!~ca c~&l z
w?= &search ,
```

You can easily make this more complicated by only echoing #processes/locations if the values are larger than anything so far (left as an exercise to the reader), but at this point you are probably ready to save yourself some typing by defining your own macros. Remember that you can add macros from within the cdb session using the "@macro ,user" command (a shorthand is "m="). You could even replace the rather simplistic check for #processes/locations with a more elaborate macro that calculates the variance of intervals between papers.

Now we are ready to start making a paper warrior, what we have to do is putting things together and begin working.

First the structure, we'll make a mid-size warrior, 8 lines, so we need 8 processes.

```
start   spl     1,      <300    ;so we make 8 parallel processes
        spl     1,      <400    ;the <### are not needed to make it work
        spl     1,      <500    ;but may damage something and cost nothing

silk    spl     @0,     {dest0
        mov.i   }-1,    >-1
silk1   spl     @0,     <dest1
        mov.i   }-1,    >-1
        mov.i   bomba,  }range
        mov     {silk1, <silk2
silk2   jmp     @0,     >dest2
bomba   dat     <2667,  <1
```

Now the constants: dest0 is the less used, let's take a modulo 200 value, for dest1 we take a mod 20 one. Now we begin optimization using Stefan method. I have a rather slow computer so I choosed to analyze but values ranging from -2000 to -1000. Before doing so I changed the mov bomb line in a nop instruction, optimizing bombing will come later.

Running Stefan's macro I got -1278 as best value.

Then I replaced the nop with a mov and runned again the macro, choosing a range for bombing beetween 500 and 1000. Best value 933

I put values in the warrior and submitted it to 94 hill: score: 125.98
Not bad, a little better than hand made one.

For you to enjoy here is the code to play with.

Boyz on the hill, ready your scanners. They are coming :-)

```
;redcode-94
;name paper01o
```

```
;author Beppe Bezzi
;strategy paper module, partially optimized with pmars

;assert CORESIZE == 8000

dest0   equ     2200
dest1   equ     3740
dest2   equ     -1278   ;pmars optimized
range   equ     933     ;pmars optimized

paper
        spl     1,      <300    ;\
        spl     1,      <400    ;-> generate 8 consecutive processes
        spl     1,      <500    ;/

silk    spl     @0,     {dest0
        mov.i   }-1,    >-1
silk1   spl     @0,     <dest1
        mov.i   }-1,    >-1
        mov.i   bomba,  }range
        mov     {silk1, <silk2
silk2   jmp     @0,     >dest2
bomba   dat     <2667,  <1

end     paper
```

For next hint I would like a little input from you about the argument to be treated; my first choice is p-space followed by bombers, two arguments I know at least a little, having made some successful warriors, but I wish to hear from you.

For questions mail me <bezzi@iol.it> or if you think it’s of general interest post to rec.games.corewar

Anyone with hints or warriors to publish is welcome.

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!pacific.mps.ohio-state.edu!freenet
.columbus.oh.us!magnus.acs.ohio-state.edu!lerc.nasa.gov!purdue!mozo.cc.purdue.edu!cartoon
.ecn.purdue.edu!bremermr Tue Nov 7 11:40:35 1995
Article: 2809 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!pacific.mps.ohio-state.edu!freene
t.columbus.oh.us!magnus.acs.ohio-state.edu!lerc.nasa.gov!purdue!mozo.cc.purdue.edu!cartoo
n.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core_Warrior_ #4
Date: 6 Nov 1995 18:29:21 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 826
Message-ID: <47lk61$aji@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 4 Nov 6, 1995

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth
http://www.ecst.csuchico.edu/~pizza/koth

Greetings.

It's been two weeks since I've last forced you to read my rantings. I suppose it's time to impose my will once again. I'm happy to announce that this week's Extra Extra is written by 'guest columnist' Damien Doligez a.k.a. Planar. Thought you knew a lot about imps? Check out his thoughts on Impfinity--a continously launching imp SPIRAL (no wimpy series of imp rings here). As always, contributions are welcome becuase it means I don't have to write as much. 8-)

Tournament Time
(details at http://www.stormking.com/~koth/nsfcwt.html)

Round 5 is over, and boy was it a pain to score. We had 5 fast sorters (quick-, shell-) and 8 slower bubble/insertion sorters. The fast sorters ended up holding the top 4 positions in the overall rank. The smallest sorter was Magnus Paulsson's myKindOfSort with 33 instructions; the fastest sorter was Robert Macrae's Shell Sort; and the best overall was Steven Morrell's Sort of, which ranked #6 in size and #2 in speed.

Data sets:

Sets ranged from 20 to 854 instructions in length (average: 409); 5 had to be sorted in ascending, 5 in descending order; duplicates had to be deleted in 6 sets. Data set 1,2,8,9 were for/rof generated; set 7 was pseudo-random number generated; the remaining sets were concatenated pre-assembled warrior codes in various pre-sort stages. An interesting set is #6 which is strongly presorted

and highly redundant, taxing the deletion routines. Drop a note if you want a copy of the test sets.

Sorted by length:

	Length index:
Program "myKindOfSort" (length 33) by "Paulsson"	0.53
Program "Mister Understudy" (length 39) by "Derek Ross"	0.626
Program "Points is Points" (length 45) by "Karl Lewin"	0.723
Program "PaulSort" (length 50) by "P.Kline"	0.803
Program "bubble gum" (length 51) by "M R Bremer"	0.819
Program "Sort of" (length 54) by "Steven Morrell"	0.867
Program "Bubble-Sort" (length 54) by "G. Eadon"	0.867
Program "SnafSort v0.5" (length 54) by "anders scholl"	0.867
Program "sort of sorter" (length 56) by "Beppe Bezzi"	0.899
Program "Shell Sort" (length 60) by "Robert Macrae"	0.964
Program "SnailSort" (length 61) by "Maurizio Vittuari"	0.98
Program "Consortium" (length 96) by "Randy Graham"	1.542
Program "Kurt’s Qsort" (length 156) by "Kurt Franke"	2.506

average length: 62.23, index = length/62.23

Cycles required:

set(len)	P.Kline	K.Franke	B.Bezzi	M.Bremer
0 (525)	180,134 0.17	68,362 0.06	2,572,613 2.55	848,917 0.84
1 (300)	41,647 0.18	130,561 0.56	581,159 2.52	325,876 1.41
2 (300)	37,684 0.15	28,330 0.11	442,350 1.78	233,273 0.94
3 (178)	47,857 0.49	15,110 0.15	203,804 2.09	92,156 0.94
4 (854)	475,822 0.20	98,277 0.04	5,347,465 2.31	2,561,037 1.10
5 (268)	77,508 0.33	32,379 0.14	611,536 2.64	238,839 1.03
6 (401)	80,204 0.20	27,064 0.06	1,215,022 3.05	541,308 1.35
7 (499)	233,783 0.29	64,632 0.08	1,759,465 2.25	686,847 0.87
8 (20)	624 0.57	1,118 1.02	754 0.69	211 0.19
9 (750)	200,345 0.11	89,910 0.05	3,535,038 2.05	2,078,960 1.20
Avg. index	0.27357668	0.23163087	2.19801421	0.99347397

	R.Macrae	R.Graham	S.Morrell	M.Paulsson
0 (525)	64,221 0.06	55,898 0.05	39,789 0.03	920,836 0.91
1 (300)	25,475 0.11	36,610 0.15	19,515 0.08	97,355 0.42
2 (300)	20,751 0.08	33,550 0.13	19,082 0.07	295,648 1.19
3 (178)	15,439 0.15	14,308 0.14	12,268 0.12	107,230 1.10
4 (854)	110,751 0.04	96,670 0.04	85,497 0.03	2,691,899 1.16
5 (268)	56,023 0.24	27,615 0.11	20,602 0.08	195,258 0.84
6 (401)	27,837 0.06	154,935 0.38	124,374 0.31	29,740 0.07
7 (499)	61,767 0.07	46,844 0.05	38,149 0.04	811,726 1.03
8 (20)	519 0.47	408 0.37	646 0.59	1,240 1.13
9 (750)	85,285 0.04	73,101 0.04	60,245 0.03	2,092,599 1.21
Avg. index	0.13824197	0.15245615	0.14426386	0.91166251

	G.Eadon	D.Ross	K.Lewin	M.Vittuari
0 (525)	1,711,257 1.70	1,241,525 1.23	1,528,707 1.51	1,648,478 1.63
1 (300)	32,628 0.14	131,559 0.57	416,132 1.80	619,280 2.68
2 (300)	303,303 1.22	316,321 1.27	499,758 2.02	383,131 1.54
3 (178)	104,887 1.07	112,616 1.15	178,306 1.83	175,408 1.80
4 (854)	2,641,569 1.14	2,575,723 1.11	4,045,693 1.75	4,688,083 2.03
5 (268)	178,923 0.77	255,462 1.10	397,633 1.72	471,450 2.04
6 (401)	45,728 0.11	40,272 0.10	698,546 1.75	858,134 2.15
7 (499)	947,669 1.21	1,120,708 1.43	1,377,600 1.76	1,187,956 1.52
8 (20)	629 0.57	1,957 1.79	2,436 2.23	307 0.28
9 (750)	1,882,398 1.09	1,969,529 1.14	3,107,832 1.80	3,694,820 2.15
Avg. index	0.90663812	1.09411928	1.82153461	1.78592881

	A.Scholl
0 (525)	2,204,582 2.19

```
1 (300)   535,834 2.32              Numbers are given as:
2 (300)   601,235 2.43                 Cycles Index
3 (178)   184,700 1.89              where Index is Cycles/AvgCycles
4 (854) 4,589,327 1.98
5 (268)   548,652 2.37
6 (401) 1,335,274 3.35
7 (499) 1,820,651 2.33
8 (20)      3,321 3.04
9 (750) 3,470,048 2.01
----------------------
Avg. index  2.39604507

Sorted by speed:
----------------
Program "Shell Sort" (length 60) by "Robert Macrae"         0.13824197
Program "Sort of" (length 54) by "Steven Morrell"           0.14426386
Program "Consortium" (length 96) by "Randy Graham"          0.15245615
Program "Kurt's Qsort" (length 156) by "Kurt Franke"        0.23163087
Program "PaulSort" (length 50) by "P.Kline"                 0.27357668
Program "Bubble-Sort" (length 54) by "G. Eadon"             0.90663812
Program "myKindOfSort" (length 33) by "Paulsson"            0.91166251
Program "bubble gum" (length 51) by "M R Bremer"            0.99347397
Program "Mister Understudy" (length 39) by "Derek Ross"     1.09411928
Program "SnailSort" (length 61) by "Maurizio Vittuari"      1.78592881
Program "Points is Points" (length 45) by "Karl Lewin"      1.82153461
Program "sort of sorter" (length 56) by "Beppe Bezzi"       2.19801421
Program "SnafSort v0.5" (length 54) by "anders scholl"      2.39604507

Overall rank (length index * speed index):
-------------                                                      pts.
Program "Sort of" (length 54) by "Steven Morrell"           0.12507677   13
Program "Shell Sort" (length 60) by "Robert Macrae"         0.13326526   12
Program "PaulSort" (length 50) by "P.Kline"                 0.21968207   11
Program "Consortium" (length 96) by "Randy Graham"          0.23508738   10
Program "myKindOfSort" (length 33) by "Paulsson"            0.48318113    9
Program "Kurt's Qsort" (length 156) by "Kurt Franke"        0.58046696    8
Program "Mister Understudy" (length 39) by "Derek Ross"     0.68491867    7
Program "Bubble-Sort" (length 54) by "G. Eadon"             0.78605525    6
Program "bubble gum" (length 51) by "M R Bremer"            0.81365518    5
Program "Points is Points" (length 45) by "Karl Lewin"      1.31696952    4
Program "SnailSort" (length 61) by "Maurizio Vittuari"      1.75021023    3
Program "sort of sorter" (length 56) by "Beppe Bezzi"       1.97601477    2
Program "SnafSort v0.5" (length 54) by "anders scholl"      2.07737108    1

Name    pts for round   1    2    3    4    5   6   7   8   | Total so far
_____________________________________________________________________
Beppe Bezzi             7    7   13    2                    | 29
M R Bremer              7    4   3.6   5                    | 19.6
G. Eadon                1.5  2    5    6                    | 14.5
Randy Graham            -    -    8   10                    | 18
Anders Ivner            5.5  8    4    -                    | 17.5
P.Kline                 7.5  9    7   11                    | 34.5
Karl Lewin              -    -   10    4                    | 14
John Lewis              -    -    3    -                    | 3
Calvin Loh              -    -    1    -                    | 1
Steven Morrell          5   10    9   13                    | 37
Paulsson                7.5 11   11    9                    | 38.5
Derek Ross              3.5  3   3.3   7                    | 16.8
Anders Scholl           -    1    2    1                    | 4
Maurizio Vittuari       6.5  5    6    3                    | 20.5
John K. Wilkinson       4    6   12    -                    | 22
Robert Macrae           -    -    -   12                    | 12
Kurt Franke             -    -    -    8                    | 8

Good luck for round 5,
    Nandor & Stefan
_____________________________________________________________________
Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS '94 Draft
```

Last challenge: Mon Nov 6 09:53:41 PST 1995

#	%W/	%L/	%T	Name	Author	Score	Age
1	40/	41/	19	Porch Swing +	Randy Graham	140	38
2	41/	43/	15	Frontwards	Steven Morrell	139	272
3	37/	36/	28	endpoint .	M R Bremer	138	18
4	33/	28/	39	Phq	Maurizio Vittuari	138	439
5	31/	26/	42	Jack in the box	Beppe Bezzi	136	325
6	36/	35/	29	Armory 6.1	Wilkinson	136	6
7	34/	32/	34	Torch t18	P.Kline	136	337
8	40/	45/	15	Leprechaun on speed	Anders Ivner	135	133
9	36/	39/	25	myZizzor	Paulsson	134	68
10	36/	38/	25	myVamp v3.7	Paulsson	134	305
11	26/	19/	55	Impfinity v3e7	Planar	132	2
12	33/	35/	32	Armory - A5	Wilkinson	132	476
13	39/	46/	15	Leprechaun deluxe	Anders Ivner	132	242
14	29/	26/	45	.Brain Vamp.	B.Bezzi, M.Paulsson	131	39
15	24/	19/	57	Tican	John Wilkinson	130	31
16	32/	35/	32	Tornado 1.8	Beppe Bezzi	129	191
17	24/	19/	57	paper01o	Beppe Bezzi	129	15
18	18/	7/	75	Chugging Along	Karl Lewin	128	22
19	37/	47/	16	Anti Die-Hard Bevo (3c)	John Wilkinson	127	142
20	28/	33/	40	test ss04	Beppe Bezzi	123	1

It's been a slooooooooowwwww week for the '94 draft hill. I suspect most authors are polishing up their more benign programming skills by writing sorting algorithms instead of blood thirsty warriors. Beppe Bezzi has been testing away giving all the warriors on the hill some easy 'age'. A new version of Father and Son appeared and that's about it. (The real action is on the beginner's hill this week!)

---

94 - What's New

3	37/	36/	28	endpoint .	M R Bremer	138	18
6	36/	35/	29	Armory 6.1	Wilkinson	136	6
11	26/	19/	55	Impfinity v3e7	Planar	132	2
17	24/	19/	57	paper01o	Beppe Bezzi	129	15
20	28/	33/	40	test ss04	Beppe Bezzi	123	1

Seems John decided to polish up Armory and resubmit it. You ARE going to kill off your old version, right? 8) Congratulations to Planar for getting a warrior on the '94 draft hill.

---

94 - What's No More

21	23/	66/	10	Tornado 1.9a	Beppe Bezzi	80	0

Bezzi pushes off his own warrior with a test. I guess there are worse ways to go. . .

HALL OF FAME
* means the warrior is still running; > score isn't exact

Pos	Name	Author	Age	Strategy
1	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
2	Agony II	Stefan Strack	912	CMP scanner
3	Blue Funk	Steven Morrell	869	Stone/ imp
4	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766	Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666	Bomber
7	B-Panama X	Steven Morrell	518	Stone/ replicator
8	Armory - A5	Wilkinson	476 *	P-warrior

9	Phq	Maurizio Vittuari	439	*	Qscan -> replicator
10	NC 94	Wayne Sheppard	387		Stone/ imp
11	Cannonade	P.Kline	382		Stone/ imp
12	Torch t17	P.Kline	378		Bomber
13	Lucky 3	Stefan Strack	355		Stone/ imp
14	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
15	Dragon Spear	c w blue	346		CMP scanner
16	Torch t18	P.Kline	337	*	Bomber
17	juliet storm	M R Bremer	333		Stone/ imp
18	Jack in the box	Beppe Bezzi	325	*	P-warrior
19	TimeScape (1.0)	J. Pohjalainen	322		Replicator
20	Rave 4.1	Stefan Strack	320		CMP scanner

Torch t18 moves up to number 16 from number 19. Jack in the Box also moves up this week. myVamp is next in line to enter the HALL OF FAME.

Thanks to Steven Morrell for providing missing data.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 250
instruction set: ICWS ’94 Draft

Last challenge: Mon Nov 6 07:08:38 PST 1995

#	%W/ %L/ %T	Name	Author	Score	Age
1	42/ 27/ 31	Lurker 1.1	Kurt Franke	156	28
2	29/ 11/ 60	juliet storm	M R Bremer	148	67
3	39/ 31/ 29	Test-Fc	G. Eadon	147	53
4	28/ 13/ 59	Trapper 1.1	Kurt Franke	143	3
5	38/ 40/ 22	Searching	Kurt Franke	135	34
6	39/ 44/ 17	Heatseek2	Phil Whineray	135	45
7	31/ 32/ 37	Hint Test v4	M R Bremer	131	1
8	20/ 10/ 71	Impfinity v3c11	Planar	130	10
9	17/ 9/ 74	Sheet 1.0	J. Doster	125	8
10	16/ 10/ 74	Paper8	G. Eadon	123	29
11	11/ 5/ 84	Impfinity v1	Planar	117	42
12	13/ 11/ 76	RingWorm_v1.0	Calvin Loh	114	14
13	12/ 10/ 78	RingWorm_v1.4	Calvin Loh	114	12
14	16/ 20/ 63	NewPaper	Kurt Franke	112	15
15	15/ 21/ 64	Paper Dragon	Kurt Franke	110	24
16	20/ 31/ 49	Morgenshtern II+	Don Julian	108	4
17	23/ 37/ 40	Weasel	Kurt Franke	108	59
18	11/ 16/ 73	P_Banzai_v1.2	Calvin Loh	105	16
19	11/ 20/ 69	Cyclone	Scott Manley	103	55
20	20/ 40/ 40	Forked Lite Ning 4.02	Ansel Greenwood Serm	101	19

The beginner hill has been active. Since I’ve last wrote, the hill as aged by approximately 37 warriors. And most of these weren’t repeated tests, either. Kurt Franke decided he didn’t like the rankings on the hill, so he went about changing them. First came the scanners: Weasel, Lurker, Searching. That was all good for juliet’s reign. Unsatisfied, Franke probed juliet’s weaknesses with Paper Dragon and NewPaper. Coupled with papers from G. Eadon (Paper8) and J. Doster (Sheet 1.0), Lurker was able to claim the top slot. Congratulations. Phil Whineray has been quiet ever since the introduction of Heatseek 2. Heatseek has hung around on the top despite the efforts of Franke and others. Hopefully, he’ll have something ready before his warrior dies of old age. Speaking of which, two programs--Mythicon and Shadow Imp--proved to be too tough to kill in 100 challenges. I hope to see new and improved versions soon.

Core_Warrior_ #2 contained some improvements to Scott Manley's Mutagen. We are going to continously improve this warrior until it reaches the top of the beginner hill. Daunting challenge? We'll see. The code that _was_ residing on the beginner hill is included below:

```
;redcode-b
;name Hint Test v2
;author M R Bremer
;strategy Original code based on Scott Manley's Mutagen
;strategy Once through scan --> spl spl dat dat coreclear
;strategy Core_Warrior_ #2:  compressed code
;kill Hint
;assert CORESIZE==8000

step EQU 11

begin   SPL     a1+2
        jmp start
for 20
        dat 0, 0
rof
start   add.f split, scan
scan    sne.i 112, 113
        djn.f -2, <-400         ;djn.f will decrement both the a and b field
        mov.i split, *scan
        mov.i jump, @scan
        jmn.b -5, scan
        jmp a1
split   spl #step, #step        ;try to find other uses for these
jump    jmp -1                  ;can be anywhere in code
        DAT     0 , 0
        DAT     0 , 0
        DAT     0 , 0
ptr1    dat a1, out+200
a4      dat 0,  out+2+1
a3      dat 1,  out+2+2
a2      spl #2, out+2+3
a1      spl #3, out+2+4
        mov *ptr1, >ptr1
        mov *ptr1, >ptr1
        mov *ptr1, >ptr1
out     djn.f -3, <4000
        END     begin
```

Hint Test was introduced onto the hill at #7. All the replicators that have landed on the hill (thanks to Beppe Bezzi's hints I believe) have pushed it even higher. Unless you're in a coma, you may have figured out that papers are going to be a lot tougher in the future due to the optimization procedures Bezzi wrote about. For Mutagen to survive, we are going to have to improve its scanner element. And you other scanner boys have been scoring way too many points against Mutagen. Time for that to end. A pspaced bomber should do the trick. Lucky for you, we'll save that step until Bezzi presents a The Hint on bombers next week.

SCANNERS:
That's a big topic. There are two general types of scans--jmz scanners and cmp scanners. A jmz scanner is very small but only scans core at 1 scan in a two instruction loop or .5c. A simple jmz scanner could look something like this:

```
inc     add.ab #8, scan         ;set up location to scan
scan    jmz.f -1, 100           ;if both value at b-field = 0, goto inc
attack  mov bomb, @-1           ;attack
        jmn.a -3, -2            ;check to see if done
bomb    spl #0, <-10
        mov 1, <attack          ;coreclear
        dat <-11, <-11
```

Core is initially filled with dat 0, 0 (duh). For the most part, the add/jmz.f lines will keep looping because the b-value of scan most likely

points to empty core instructions. Jmz.f will not loop when it points to a core location that has at least one non-zero operand. Hopefully this is the enemy code. It is attacked with whatever you want and then the process is looped back to the add/jmz.f scan. The jmn.a will fall through when you eventually bomb 'scan'. This will start your core clear which ends in a imp gate. While the above warrior works, it suffers from a few major problems. Eight is not a very optimal step size and paper needs more than a single split bomb to stun it sufficiently. Attack with spl 0/jmp -1, spl 0/spl 0/ jmp -2, or spl 0,2/mov -1, >-1 bombs for additional stun power. myZizzor by Paulsson uses a once through jmz scan with variable length spl 0 carpet to great effect. One version is published. Get your copy today.

Cmp scanners are bigger, but faster. They can scan 2 locations in a three instruction loop for a speed of .66c. The basic scan engine looks something like this:

```
inc     add step, scan
scan    cmp 100, 112    ;remember that cmp is the same is seq!
        slt.ab #special_value, scan     ;we'll talk about the value later
        djn.f inc, <STREAM
attack  <different stuff we can do here>
check   <code to determine if done scanning>
clear   <do coreclear>
step    dat X, X
```

Since most of core is filled with dat 0, 0's, the cmp instruction will most likely being comparing these empty core locations. Therefore it will skip the slt instruction. The add/cmp/djn cycle will repeat until either the a or b operand point to different instructions. One of these locations (a or b) may have the enemy code. When the cmp finds something, the slt instruction is executed. This instruction is used to protect the scanning code from bombing itself. When the scan finds itself, the slt checks one of the pointers and makes sure that it is greater than the last instruction in the scanner. If it is, it will skip the djn instruction and do the attack routine. Otherwise the djn will be executed and it will continue to scan. Notice that the first two instructions are not protected. We can use this fact to determine when to start the coreclear. This will become more clear later with some examples I hope.

Although cmp scanners are faster, we have to have some way of checking or attacking _both_ the a and b targets. Afterall, the enemy code can potentially be at a or b (or maybe both). I know of two approaches. Attack the b value and then add a special offset to the scan to make the last scan's a value be the b value. That way, if there is something there, it will get attacked on the second 'special' scan. Iron Gate uses this approach and is included below (I hope the author doesn't mind):

```
;redcode
;name Iron Gate
;author Wayne Sheppard
;strategy CMPscanner

dist equ 98
scan equ dist*2

a add d,@x
c cmp a+dist,a
  slt #20,@x
  djn a,<7000
  mov j,@c
x mov s,<c
  sub n,@x
  jmn c,a
s spl 0,<1-dist
  mov 2,<-3
j jmp -1
n dat <0-dist,<0-dist-1
d dat <scan,<scan
```

'd' is the normal scan step and 'n' is the special one. If the cmp finds

something, the location at the b value is attacked. The special step is subtracted from the scan and the scan is repeated. Now the old a value is the new b value after the subtraction. This ensures that both locations pointed to by the a and b values are checked. When 'a' is bombed by the jmp -1, 0 (remember the instructions above the slt are not protected), the jmn instruction will not jump. Instead the spl instruction 's' will execute and the coreclear will begin.

Another way to attack both pointers is to bomb a, b, and every instruction in between. Let's look at Agony to illustrate this technique.

```
;redcode-94
;name Agony II
;kill Agony
;author Stefan Strack
;strategy Small-interval CMP scanner that bombs with a SPL 0 carpet.
;strategy This is the good old '88 Agony with some '94 enhancements:
;strategy  - boots off decoy to delay (quick)scanners; erases boot pointer
;strategy  - optimized decoy to avoid self-triggering for more than 6000 cycles
;strategy Submitted: Sun Jul 31 14:11:05 CDT 1994
;pushed off at age 912 more than 14 months later
;assert CORESIZE == 8000
;$Id: agony_2.red,v 1.4 1995/07/12 07:03:46 stst Exp stst $

CDIST   equ 12
IVAL    equ 42
FIRST   equ scan+OFFSET+IVAL
OFFSET  equ IVAL
DJNOFF  equ -431
DESTIN  equ 2878

scan    sub incr,comp
comp    cmp a=FIRST-CDIST,b=FIRST
        slt #incr-comp+CDIST+(bptr-comp)+1,comp
        djn.f scan,<c=FIRST+DJNOFF
bptr    mov.b comp,#bptr
        mov #d=CDIST+(bptr-comp)+1,count
split   mov bomb,<bptr
count   djn split,#0
        jmn.a scan,*0
bomb    spl #0,>-IVAL+1
        mov incr,<-2
incr    dat >-IVAL,>-IVAL
```

Agony compares location N and N+12. Its scan phase operates much the same as Iron Gate. However, it has a completely different method of attacking both the a and b pointers. If it finds something, it will bomb locations N, N+1, N+2, . . . N+12, N+13, N+14, and N+15 with spl 0's. Again, the coreclear is started (the jmn drops through) when Agony attack its own code that is not protected.

We are going to utilize Iron Gate's constants and basic structure, but attack the a and b locations specifically.

```
dist equ 98
scan equ dist*2

a add d,c
c cmp a+2*dist,a+dist
  slt.a #dist+m-a, c
  djn.f a,<7000
  mov s, *c
x mov m, @c
  jmn a,a
s spl #-dist+1, <0
  mov 1, <-3
d dat <scan,<scan
m mov.i dist, }dist
```

You should know by now how the add/cmp/slt/djn scan engine works. Let's talk

a little more about the slt instruction. Assume that core is numbered from top to bottom, 0 to 8000. Let the a value of slt be the low pointer and the b value be the high pointer. Therefore the scan looks something like this:

```
0  <-- b value ( high pointer )
1
2
.
.
.
96
97
98 <-- a value ( low pointer )
```

The slt above checks the low pointer against the 'special value'. If the value was the length of my code, say 10, then an attack is made only if 10 is less than the a value. This protects the slt and the instructions below from the a pointer. However, if the b value is pointing to your code, you will get bombed. So, we can add on the distance between the pointers to the special value to ensure that the scanning code is safe from the b pointer as well. Remember that the instructions above the slt are not protected from the low pointer. The scanner above sets up the scan so that the a value points to the add instruction. It's not protected, so it gets bombed. The jmn detects this bomb and instead of looping back up to the scan, it will drop through to the coreclear. Got it? (Sheesh, I probably confused everybody enough that no one will ever want to code a scanner.)

The scanner above bombs with an incindiary bomb. If you don't quite understand how it works, trace the m instruction and watch what happens when the enemy replicator executes it. Self-splitting bombers get severely punished with this bomb.

Okay we're almost there. We can insert this in the scanner part of Mutagen. Increase the 'special value' so that the scanner will not bomb the multipass coreclear. Switch the clear to backwards instead of forwards (so it doesn't stun the scanner). The clear from the scanner interferes with the multipass clear, so I changed it to use the same bomb and pointer. This is not the best solution becuase the scan and clear should operate independent of each other. If a replicator overwrites the clear, then most likely the clear pointer that the scan is using will be scrambled too. Ah well, here it is:

```
;redcode-b
;name Hint Test v4
;author M R Bremer
;strategy Original code based on Scott Manley's Mutagen
;strategy Once through scan --> spl spl dat dat coreclear
;strategy Core_Warrior_ #2:  compressed code
;strategy Core_Warrior_ #4:  improved scanner
;kill Hint
;assert CORESIZE==8000

dist equ 98
scan equ dist*2

begin   SPL     b1+2
        jmp a
for 20
        dat 0, 0
rof
a       add d,c
c       cmp a+2*dist,a+dist
        slt.a #dist+ptr2-a, c
        djn.f a,<7000
        mov s, *c
x       mov m, @c
        jmn a,a
s       spl #-dist+1, <0
        mov *ptr2, <ptr2
d       dat <scan,<scan
m       mov.i dist, }dist
        dat 0, 0
        dat 0, 0
        dat 0, 0
        dat 0, 0
```

```
b5      dat 0, 0
b4      dat b5-ptr2, a-2-8
b3      dat b4-ptr2, a-2-7
b2      spl #b3-ptr2, a-2-6
b1      spl #b2-ptr2, a-2-5
        mov *ptr2, <ptr2
        mov *ptr2, <ptr2
        mov *ptr2, <ptr2
        djn.f -3, <6000
ptr2    dat b1, -100+a
        END     begin
```

Yikes. Hint Test does worse!

```
10  29/ 41/ 30              Hint Test v4           M R Bremer     116       1
```

Instead of having the scanner clear independently, let's jump it to b1 instead. Much better.

```
 7  31/ 32/ 37              Hint Test v4           M R Bremer     131       1
```

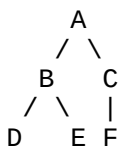
Hint Test still scores about the same unfortunately. Go figure. It does really well against papers, but is trounced by scanners. Bombers are going 50/50 or so. The Hint Test that will be on the hill in the near future (I haven't received the results yet), is attempting to kill imps a little bit more effectively by changing the first dat clear to a dat X, <2667. The next step to improving Mutagen will be to pspace it with a small bomber. Stay tuned.

Too basic? Too complex? I'm a terrible redcoder? I have no clue? Needs to have more explanation? Flame me at will (just leave my mom out of it). <bremermr@ecn.purdue.edu>.

Extra Extra:

This is Impfinity v1. Seeing how Imp Craze did well (but it's falling off the beginner hill even as I'm writing this), I started thinking harder about imp spirals. I was dreaming of an spiral with an ever-growing number of processes. This would be very hard to kill. It turns out this can be done by continuously launching the spiral.

I started with the standard binary launch. In a binary launch, you draw a binary tree of SPLs, and you put jumps to the imp processes at the leaves. For a 3-process spiral, you have this tree:



And here is the corresponding redcode:

```
A       spl     C
B       spl     E
D       jmp     imp
E       jmp     imp+step
C       nop
F       jmp     imp+2*step
imp     mov     0, step
```

Here is what happens when you launch it. I'll represent the run queue as a list of labels. We start with only A in the run queue: [A]. We execute the first instruction in the run queue (instruction at A). This is an spl, so it will push back at the end of the queue, first its following instruction (B), then its target (C): [B C]. We then execute the next instruction: B. It is also an spl, so it pushes back D and E: [C D E]. Then we execute C. It does nothing and pushes the next instruction (F) into the queue: [D E F]. We now execute D, E, and F which jump to the three parts of the ring: [imp imp+step imp+2*step]. Now the imp ring is launched.

So we see that the program will execute the tree in top-to-bottom order:

A then B, C then D, E, F.

Let’s add an instruction at the start:

```
Z       spl     Z
```

This adds a loop at the top of the tree (not easy to draw):

```
             +-+
             | |
             Z-+
             |
             A
         ... etc.
```

This spl-loop will send processes down the tree, one after the other:

```
  [Z]
  [A Z]
  [B C A Z]
  [D E F B C A Z]
  [imp imp+step imp+2*step D E F B C A Z]
etc.
```

I’ll call "rounds" the lines in this sequence: one round is executing all the processes in the process queue. (This is what the cdb command "thread" does: execute one round.)

So we can launch imp ring after imp ring. This is not a true spiral because the process queue after the next round is:

```
  [imp+1 imp+step+1 imp+2*step+1 imp imp+step imp+2*step D E F B C A Z]
```

A true imp spiral would be: (imp+2 is the same as imp+3*step+1)

```
  [imp+1 imp+step+2 imp+2*step+1 imp+2 imp+step+2 imp+2*step+2 ...]
```

So we need to add 2 to each JMP instruction in each round. We can do this with a-field postincrement addressing mode, because we have six nodes in our tree, and each node is executed once in each round.

```
A       spl     C, }D
B       spl     E, }E
D       jmp     imp, }D
E       jmp     imp+step, }E
C       nop     }F
F       jmp     imp+2*step, }F
imp     mov     0, step
```

This is almost working code. We now have to adjust the JMPs to compensate for the incrementations during the first few rounds, and we get the code to launch a continously-growing imp spiral:

```
Z       spl     Z
A       spl     C, }D
B       spl     E, }E
D       jmp     imp-2, }D
E       jmp     imp+step-1, }E
C       nop     }F
F       jmp     imp+2*step-1, }F
imp     mov     0, step
```

And this is all there is to Impfinity. I have used the idle cycle at C to launch a bombing process. This is not nearly enough bombing to do much difference. Impfinity wins mostly by overrunning the opponent with its spiral. It resists anti-imp programs thanks to its unorthodox spiral size.

This is the code:

```
;redcode-b
;name Impfinity v1
```

```
;author Planar
;strategy continuous-launching 13-point imp spiral + a few incendiary bombs
;assert CORESIZE == 8000

step    equ     3077
bstep   equ     -50
binit   equ     -200

        org     a

bomb1   spl     #6, <2667
bomb2   mov.i   -1, {-1

a       spl     #binit, }z0
b       spl     d, }z1
c       spl     f, }z2
e       spl     j, }z4
i       spl     z1, }z8
z0      jmp     imp-5, }z0
z1      jmp     imp+step-4, }z1
j       spl     z3, }z9
z2      jmp     imp+2*step-3, }z2
z3      jmp     imp+3*step-3, }z3
f       spl     l, }z5
k       spl     z5, }z10
z4      jmp     imp+4*step-2, }z4
z5      jmp     imp+5*step-2, }z5
l       spl     z7, }z11
z6      jmp     imp+6*step-2, }z6
z7      jmp     imp+7*step-2, }z7
d       spl     h, }z3
g       spl     n, }z6
m       spl     z9, }z12
z8      jmp     imp+8*step-1, }z8
z9      jmp     imp+9*step-1, }z9
n       mov.i   bomb1, }a
z10     jmp     imp+10*step-1, }z10
h       spl     p, }z7
o       mov.i   bomb2, *a
z11     jmp     imp+11*step-1, }z11
p       add.a   #bstep-1, a
z12     jmp     imp+12*step-1, }z12
imp     mov.i   #1, step

        end
```

I'd like to add a word about the choice of a spiral size. There is one warrior on the beginner hill with a 9-point spiral. I think this is a bad idea. Because 2667 is a multiple of 889, an anti-3-point-imp bomb (dat <2667, <5334) will also cause a 9-point spiral to decrement its own instructions. (The same is true for any multiple of 3.) Against myZizzor, for example, a 9-point version of Impfinity get very bad scores compared to a 7-point version or an 11-point version. So if you choose a big size for your spiral, make it a prime number.

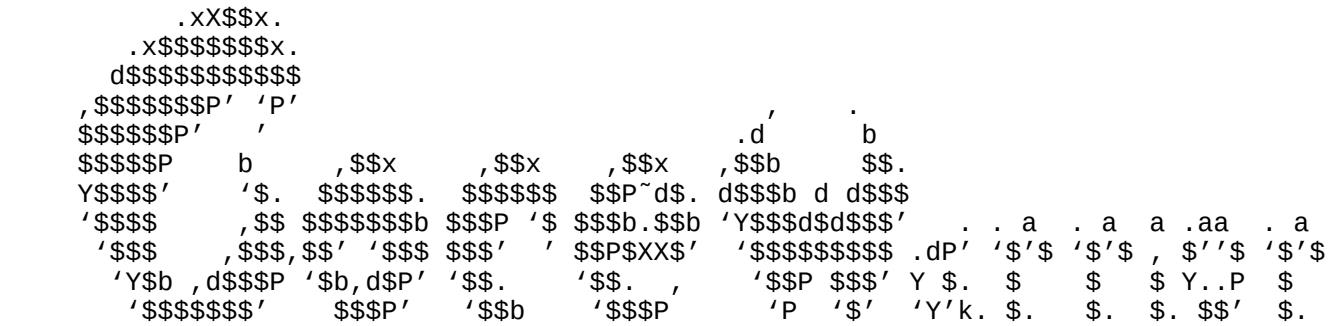
Finally, you may want to know if there's a way of doing an SPL/ADD continuous launch. Yes. That's what Impfinity v3 uses (soon on a hill near you--I hope). A vector launch is also possible, but I haven't written the code yet.

My warriors are not very good, but they are fun to write.
<Damien.Doligez@inria.fr>
http://pauillac.inria.fr/~doligez/corewar/

EDITOR'S NOTE: Damien is much too modest. Imp spirals are one of the most difficult subjects to understand. Impfinity missed the '94 draft hill by only a fraction of a point. I'm sure he'll breach the hill very soon. Spoke too soon. Impfinity has just entered the hill as I am posting.

Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu>

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Issue 5 13/11/95

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth
http://www.ecst.csuchico.edu/~pizza/koth
http://pauillac.inria.fr/~doligez/corewar/

Hi people,

this one is quick scanners week. We have two real scoops for you: Thermite, n. 4 in hall of fame, and never published before, with comments of its author, Robert Mcrae, and Phq by Maurizio Vittuari, second old warrior in 94 hill, also with author’s comments.
Planar, our free lance columnist has a short hint, on equ behaviour, and a call for volunteer.
We also have to report of great battles in 94 hill, after a couple of quiet weeks, a p-space hint, and a lot more for you dear readers.

Tournament Time
(details at http://www.stormking.com/~koth/nsfcwt.html)

NSFCWT round 5 is over. Good news. Michael Constant joined our tournament (better late than never :-)
There were 10 battles of 10-round round robins.

A turbo Pascal program generated the following parameters:

Battle Coresize-Processes
1. 12164-4245
2. 9414-5576
3. 13230-1033
4. 12016-72
5. 6280-1164
6. 13810-6126
7. 14599-9549
8. 2798-5242
9. 6483-1330
10 .8597-2180

The detailed scores are:

Battle 1.

1	Simple Scissors	John K. Wilkinson	58	33	9	275
2	Frontwards	Steven Morrell	49	30	21	253
3	Perspire	Robert Macrae	44	23	33	248
4	WT-Round5	P.Kline	47	35	18	240
5	Mr Dumb	Maurizio Vittuari	38	25	37	226
6	black & white	Anders Ivner	41	33	25	224
7	Rubber wall	Beppe Bezzi	30	17	53	214
8	Rand-Man	Randy Graham	15	12	73	178
9	A Quick Hack	Karl Lewin	16	16	68	174
10	blah blah blah	M R Bremer	15	17	67	170
11	Miss Careworn	Derek Ross	30	47	23	169
12	Theme	Michael Constant	13	15	71	167
13	myImp	Paulsson	8	30	62	129
14	Multi-Stone	G. Eadon	12	84	4	60

Battle 2.

1	Simple Scissors	John K. Wilkinson	57	29	13	278
2	Frontwards	Steven Morrell	55	29	16	270
3	WT-Round5	P.Kline	49	33	17	248
4	Perspire	Robert Macrae	44	26	30	243
5	Mr Dumb	Maurizio Vittuari	40	25	35	232
6	black & white	Anders Ivner	39	29	32	225
7	Rubber wall	Beppe Bezzi	29	17	53	212
8	blah blah blah	M R Bremer	23	13	65	199
9	Theme	Michael Constant	11	10	79	169
10	A Quick Hack	Karl Lewin	13	16	71	164
11	Miss Careworn	Derek Ross	28	49	23	161
12	myImp	Paulsson	9	25	66	138
13	Rand-Man	Randy Graham	6	41	53	106
14	Multi-Stone	G. Eadon	15	75	9	83

Battle 3.

1	Simple Scissors	John K. Wilkinson	53	26	21	269
2	Perspire	Robert Macrae	45	22	33	251
3	Frontwards	Steven Morrell	50	35	15	248
4	black & white	Anders Ivner	41	27	32	234
5	WT-Round5	P.Kline	46	41	13	227
6	Rubber wall	Beppe Bezzi	28	11	61	218
7	Mr Dumb	Maurizio Vittuari	28	20	52	204
8	blah blah blah	M R Bremer	21	10	69	197
9	Theme	Michael Constant	12	7	81	175
10	A Quick Hack	Karl Lewin	11	11	78	168
11	Miss Careworn	Derek Ross	29	51	20	162
12	Rand-Man	Randy Graham	11	23	66	150
13	Multi-Stone	G. Eadon	16	65	19	101
14	myImp	Paulsson	0	45	55	83

Battle 4.

1	Perspire	Robert Macrae	49	21	30	267
2	Rubber wall	Beppe Bezzi	37	5	58	252
3	Mr Dumb	Maurizio Vittuari	43	21	35	248

4	A Quick Hack	Karl Lewin	32	2	66	243
5	blah blah blah	M R Bremer	34	13	53	233
6	black & white	Anders Ivner	37	30	33	215
7	Theme	Michael Constant	27	15	59	208
8	Rand-Man	Randy Graham	19	5	76	198
9	Simple Scissors	John K. Wilkinson	37	52	11	182
10	Frontwards	Steven Morrell	32	51	17	169
11	myImp	Paulsson	13	17	70	165
12	WT-Round5	P.Kline	31	57	12	159
13	Miss Careworn	Derek Ross	17	61	22	111
14	Multi-Stone	G. Eadon	16	75	9	86

Battle 5.

1	Frontwards	Steven Morrell	50	28	22	258
2	Perspire	Robert Macrae	47	24	29	254
3	WT-Round5	P.Kline	47	34	19	241
4	black & white	Anders Ivner	39	28	33	226
5	Simple Scissors	John K. Wilkinson	45	39	16	225
6	blah blah blah	M R Bremer	25	10	65	211
7	Rand-Man	Randy Graham	22	10	68	201
8	Rubber wall	Beppe Bezzi	27	21	52	201
9	Mr Dumb	Maurizio Vittuari	29	25	46	198
10	A Quick Hack	Karl Lewin	15	19	66	165
11	Theme	Michael Constant	9	8	83	164
12	Miss Careworn	Derek Ross	23	55	23	136
13	myImp	Paulsson	9	27	65	136

Battle 6.

14	Multi-Stone	G. Eadon	16	74	10	87
1	Frontwards	Steven Morrell	57	23	21	286
2	WT-Round5	P.Kline	51	27	23	262
3	Simple Scissors	John K. Wilkinson	49	37	13	242
4	black & white	Anders Ivner	45	29	27	241
5	Perspire	Robert Macrae	36	25	39	221
6	Mr Dumb	Maurizio Vittuari	34	26	40	213
7	Rubber wall	Beppe Bezzi	27	30	43	185
8	blah blah blah	M R Bremer	19	17	65	181
9	Theme	Michael Constant	12	9	79	173
10	Rand-Man	Randy Graham	15	17	69	169
11	A Quick Hack	Karl Lewin	11	15	73	161
12	myImp	Paulsson	11	21	68	150
13	Miss Careworn	Derek Ross	23	53	23	140
14	Multi-Stone	G. Eadon	17	77	6	84

Battle 7.

1	Simple Scissors	John K. Wilkinson	63	29	7	296
2	Frontwards	Steven Morrell	55	24	21	278
3	Perspire	Robert Macrae	40	27	33	229
4	WT-Round5	P.Kline	41	33	26	225
5	black & white	Anders Ivner	39	31	29	221
6	Rubber wall	Beppe Bezzi	28	11	61	217
7	blah blah blah	M R Bremer	18	13	69	184
8	Mr Dumb	Maurizio Vittuari	25	30	45	179
9	Theme	Michael Constant	15	15	70	171
10	Miss Careworn	Derek Ross	28	45	27	166
11	A Quick Hack	Karl Lewin	14	20	66	162
12	Rand-Man	Randy Graham	11	17	72	156
13	myImp	Paulsson	5	21	75	133
14	Multi-Stone	G. Eadon	17	80	3	80

Battle 8.

1	Frontwards	Steven Morrell	65	23	13	310
2	black & white	Anders Ivner	46	21	33	256
3	WT-Round5	P.Kline	49	29	22	255
4	Perspire	Robert Macrae	38	29	33	221
5	Simple Scissors	John K. Wilkinson	43	42	15	217

6	Rubber wall	Beppe Bezzi	31	22	47	211
7	blah blah blah	M R Bremer	25	15	59	203
8	A Quick Hack	Karl Lewin	18	11	71	187
9	Miss Careworn	Derek Ross	35	45	21	187
10	Mr Dumb	Maurizio Vittuari	21	27	52	171
11	Theme	Michael Constant	10	23	67	145
12	Rand-Man	Randy Graham	10	26	64	141
13	myImp	Paulsson	7	23	70	138

Battle 9.

14	Multi-Stone	G. Eadon	16	79	5	80
1	Frontwards	Steven Morrell	54	31	15	266
2	WT-Round5	P.Kline	51	32	17	254
3	Mr Dumb	Maurizio Vittuari	34	17	49	227
4	Simple Scissors	John K. Wilkinson	44	42	14	219
5	blah blah blah	M R Bremer	25	9	67	211
6	Perspire	Robert Macrae	36	33	31	209
7	Rubber wall	Beppe Bezzi	25	15	59	203
8	black & white	Anders Ivner	35	35	30	201
9	Theme	Michael Constant	15	5	79	188
10	A Quick Hack	Karl Lewin	15	14	71	175
11	Miss Careworn	Derek Ross	26	49	25	155
12	Rand-Man	Randy Graham	8	21	71	143
13	myImp	Paulsson	9	23	69	142
14	Multi-Stone	G. Eadon	20	72	8	102

Battle 10.

1	Simple Scissors	John K. Wilkinson	57	25	17	284
2	WT-Round5	P.Kline	49	33	18	249
3	black & white	Anders Ivner	45	28	27	242
4	Frontwards	Steven Morrell	47	34	19	239
5	Mr Dumb	Maurizio Vittuari	41	23	35	239
6	Perspire	Robert Macrae	37	28	35	218
7	blah blah blah	M R Bremer	21	9	71	199
8	Rubber wall	Beppe Bezzi	21	18	61	187
9	A Quick Hack	Karl Lewin	15	13	73	175
10	Theme	Michael Constant	13	11	77	172
11	myImp	Paulsson	9	23	68	144
12	Rand-Man	Randy Graham	8	23	69	140
13	Miss Careworn	Derek Ross	20	52	28	132
14	Multi-Stone	G. Eadon	15	79	5	77

Here are the total scores of the 10 battles:

Name	Scores
G. Eadon	840
Paulsson	1358
Derek Ross	1519
Randy Graham	1582
Michael Constant	1732
Karl Lewin	1774
M R Bremer	1988
Beppe Bezzi	2100
Maurizio Vittuari	2137
Anders Ivner	2285
P.Kline	2360
Robert Macrae	2361
John K. Wilkinson	2487
Steven Morrell	2577

The overall rank after round 5:

Name	1	2	3	4	5	total
Steven Morrell	5	10	9	13	14	51

P.Kline	7.5	9	7	11	11	45.5
Paulsson	7.5	11	11	9	2	40.5
Beppe Bezzi	7	7	13	2	8	37
John K. Wilkinson	4	6	12	-	13	35
Maurizio Vittuari	6.5	5	6	3	9	29.5
Anders Ivner	5.5	8	4	-	10	27.5
M R Bremer	7	4	3.6	5	7	26.6
Robert Macrae	-	-	-	12	12	24
Randy Graham	-	-	8	10	4	22
Karl Lewin	-	-	10	4	6	20
Derek Ross	3.5	3	3.3	7	3	19.8
G. Eadon	1.5	2	5	6	1	15.5
Kurt Franke	-	-	-	8	-	8
Michael Constant	-	-	-	-	5	5
Anders Scholl	-	1	2	1	-	4
John Lewis	-	-	3	-	-	3
Calvin Loh	-	-	1	-	-	1

Paulsson, previous leader, had a flop in this round, losing the head. Now Steven Morrell is the new leader with 5.5 points over Paul Kline, that seems the only one able to contend him first place, and more than 10 over other contenders. The fight is open for third position, with three players in near five points.

---

94 Hill - Standings

#	%W/ %L/ %T	Name	Author	Score	Age
1	41/ 23/ 36	La Bomba	Beppe Bezzi	158	8
2	42/ 38/ 20	Derision	M R Bremer	145	9
3	43/ 44/ 13	Leprechaun on speed	Anders Ivner	141	165
4	35/ 32/ 32	Phq	Maurizio Vittuari	138	471
5	35/ 32/ 33	Torch t18	P.Kline	137	369
6	37/ 38/ 25	endpoint .	M R Bremer	137	14
7	40/ 43/ 17	Porch Swing +	Randy Graham	137	70
8	37/ 39/ 24	myVamp v3.7	Paulsson	135	337
9	33/ 32/ 35	Father & Son	Maurizio Vittuari	135	19
10	34/ 35/ 32	Thieves Like Us	M R Bremer	133	27
11	33/ 34/ 33	Son & Father	Maurizio Vittuari	132	20
12	30/ 28/ 41	Jack in the box	Beppe Bezzi	132	357
13	39/ 46/ 15	Leprechaun deluxe	Anders Ivner	132	274
14	26/ 20/ 54	Impfinity v3e7	Planar	132	34
15	39/ 47/ 14	Frontwards	Steven Morrell	131	304
16	18/ 6/ 76	Chugging Along	Karl Lewin	130	54
17	34/ 38/ 28	Armory - A5	Wilkinson	130	508
18	28/ 29/ 43	.Brain Vamp.	B.Bezzi, M.Paulsson	128	71
19	38/ 48/ 15	Anti Die-Hard Bevo (3c)	John Wilkinson	127	174
20	29/ 30/ 42	nobody special	Schitzo	127	1

Revolution may be the theme word this week, the 94 hill has awaken after some sleep. Bezzi’s La Bomba exploded on the hill, taking strongly the head; new Bremer’s warrior in not worth Derision indeed: now and we have new n. 1 and n. 2

---

94 - What’s new

1	40/ 24/ 36	La Bomba	Beppe Bezzi	156	1
2	42/ 38/ 20	Derision	M R Bremer	145	1
5	34/ 28/ 38	Father & Son	Maurizio Vittuari	139	1
7	37/ 38/ 24	endpoint .	M R Bremer	136	1
9	34/ 33/ 33	Thieves Like Us	M R Bremer	135	1
9	33/ 32/ 35	Son & Father	Maurizio Vittuari	133	1
20	29/ 30/ 42	nobody special	Schitzo	127	1

Just a few ;-) a new King, a new n. 2 some new entries in the middle. Welcome back to Mike ’Schitzo’ Nonemacher with his improved version of an old King.

---

94 - What’s no more

21	32/ 36/ 32	Tornado 1.8	Beppe Bezzi	129	203
21	34/ 43/ 23	myZizzor	Paulsson	126	75
21	22/ 18/ 59	paper01o	Beppe Bezzi	126	18

A veteran, Tornado 1.8, leaves us at 203 age :-(a younger but rather famous warrior, myZizzor, the Die Hard killer, is out too.

What's old

17	34/ 38/ 28	Armory - A5	Wilkinson	130	508
4	35/ 32/ 32	Phq	Maurizio Vittuari	138	471
5	35/ 32/ 33	Torch t18	P.Kline	137	369
12	30/ 28/ 41	Jack in the box	Beppe Bezzi	132	357
8	37/ 39/ 24	myVamp v3.7	Paulsson	135	337
15	39/ 47/ 14	Frontwards	Steven Morrell	131	304
13	39/ 46/ 15	Leprechaun deluxe	Anders Ivner	132	274

Armory passed age 500 and Frontwards 300, congratulations.
No new entry in the over 200, the only one went out at 203, see above.
Some veteran begins having problems; Torch and Phq keep positions, Jack in the Box and myVamp lose a few places, Armory and Frontward begin to risks being pushed off.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
2	Agony II	Stefan Strack	912		CMP scanner
3	Blue Funk	Steven Morrell	869		Stone/ imp
4	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766		Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666		Bomber
7	B-Panama X	Steven Morrell	518		Stone/ replicator
8	Armory - A5	Wilkinson	508	*	P-warrior
9	Phq	Maurizio Vittuari	471	*	Qscan -> replicator
10	NC 94	Wayne Sheppard	387		Stone/ imp
11	Cannonade	P.Kline	382		Stone/ imp
12	Torch t17	P.Kline	378		Bomber
13	Torch t18	P.Kline	369	*	Bomber
14	Jack in the box	Beppe Bezzi	357	*	P-warrior
15	Lucky 3	Stefan Strack	355		Stone/ imp
16	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
17	Dragon Spear	c w blue	346		CMP scanner
18	myVamp v3.7	Paulsson	337	*	Vampire
19	juliet storm	M R Bremer	333		Stone/ imp
20	TimeScape (1.0)	J. Pohjalainen	322		Replicator

my Vamp enters the elite, pushing Rave off. Torch and Jack gain a few positions. Armory is now very near B-Panama X.

Beginner's Hill standings

#	%W/ %L/ %T	Name	Author	Score	Age
1	41/ 29/ 30	Lurker 1.1	Kurt Franke	152	36
2	30/ 12/ 58	juliet storm	M R Bremer	147	75
3	37/ 34/ 29	Test-Fc	G. Eadon	140	61
4	25/ 11/ 64	Schizo	J. Doster	139	6
5	27/ 16/ 57	Trapper 1.1	Kurt Franke	139	11
6	39/ 41/ 20	Look	J. Doster	137	3
7	38/ 41/ 21	Searching	Kurt Franke	136	42
8	32/ 33/ 35	Hint Test v4	M R Bremer	132	7
9	21/ 11/ 68	Impfinity v3c11	Planar	131	18
10	16/ 8/ 75	Sheet 1.0	J. Doster	124	16
11	17/ 9/ 74	Paper8	G. Eadon	124	37
12	35/ 47/ 18	Heatseek2	Phil Whineray	123	53

13	16/ 11/ 72	RingWorm_v2.4	Calvin Loh	122	4
14	32/ 45/ 24	Recon V7.0	A. Nevermind	119	1
15	12/ 6/ 81	Impfinity v1	Planar	118	50
16	15/ 15/ 70	P_Banzai_v2.1	Calvin Loh	114	5
17	12/ 13/ 75	RingWorm_v1.0	Calvin Loh	112	22
18	11/ 11/ 78	RingWorm_v1.4	Calvin Loh	111	20
19	14/ 19/ 66	Paper Dragon	Kurt Franke	109	32
20	12/ 16/ 72	P_Banzai_v1.2	Calvin Loh	109	24

Not too much movement here; less than 10 new warriors. I cannot say more because I haven’t got my test warrior’s results.

The hint

P-space

Hi,
this time we’ll speak of p-space, the last tool, implemented by pmars08, that allows our warrior to change strategy according to the history of the match.
P-space is a protected area of memory, i.e. every warrior has its own p-space and cannot read or write opponent’s one. P-space hold but values, not whole instructions, and is accessed by two specific instructions LDP and STP load and store Pspace.
At the beginning of every round p-space cell 0 holds the result of previous round, -1 at the very beginning, others cells hold the value they had at the end of previous round, 0 at the start of the match. The value is 0 if we lose, and the number of alive warriors if we survive; in standard one against one matches those values are 1 for the win and 2 for the tie.

Warriors using p-space are called p-warriors or p-switchers; they store in a location of p-space informations on the strategy they are using, at the end of the round they evaluate the result of prvious round and, according to it and, sometimes, the result of others rounds, continue with current strategy or change to another, in the hope of doing better. In practice, if you are a general, planning long term strategies, the switcher is your colonel, deciding on battlefield what to use against your opponent.
It’s important to say that even the best switching routine is worthless if you don’t have sound combat routines; if all you components lose against your enemy, the mix will lose too, sometimes even worst because you lose some time at the beginning to pplan the round, and to boot components away from the big warrior body.
P-space is a tool for intermediate players, not for beginners; until you don’t have at least two average level different warriors, a stone and a paper for example, you cannot get anyhing good from it.

Now let’s see how to assemble a p-warrior; first we need good components, able to score points against different kind of enemies; we have them:
Paper01, to score against enemy bombers, juliet storm, to kill enemy scanners; against enemy paper we are not defenceless, a paper usually cannot beat another paper, so we should score:
Well against bombers, thanks Paper01
Well against scanners, thanks juliet
Ties against replicators, thanks Paper01.

Once chosen our hands, we have to assemble the brain; unless you want to do something very complex, the switcher is not a difficult thing to do. Let’s give a look at a very simple one, and BTW successful, the switcher of Jack in the Box, for three main reasons: it’s one of my warriors, is doing well, is the only one published :-)
Jack’s has two components, a very heavy replicator, four times Paper01, and a very fast bomber, Tornado.
Its strategy is simple: the replicator scores lots of points against enemy bombers but, because of the size, is rather vulnerable to scanners; well if we are winning or tieing all right, we continue with the same strategy; if a bad scanners happens to kill the paper, BOOH, Tornado pop up and with its high speed and colored bombs kill him.
Here it’s, very simple indeed.

```
        _RES    equ 0           ;here pmars loads results
        _STR    equ 1           ;here I store my strategy

res     ldp.ab  _RES,   #0      ;load result last match
str     ldp.a   _STR,   str1    ;load strategy in use
        sne.ab  #0,     res     ;check result, win or tie OK
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure jump
win     stp.ab  str1,   _STR    ;save strategy
str1    jmp     @0,     juliet
        dat     0,      paper
```

We load in res.b the result of last match, in str1.a the strategy we used, then we compare res to 0, if it’s zero we add one to the strategy, if it’s different, tie or win, we don’t. The mod instruction assure us to have a value of 0 or 1.
At last we save new strategy for the round, and we jump at bomber or paper, according to str1.a
In 7 cycles we have finished, so even a Qscan has hard times to hang on.
Now the code, nothing more than taking the waariors, the switcher an putting all together.

Last note, near to forget it, P-space has a ’dark side’, brainwashing.
You cannot access your opponent p-space, but if you mage to force your opponent, with a vampire attack, to execute these lines of code, or something similar:

```
bwash   spl     0,>1
        stp.ab  #0,#0
        jmp     -2,{-1
```

(usually this code is together with others spl and a core clear)

its p-space will soon fill of garbish and it’s rather difficult that, in the following round, its switcher will found what it needs to make a correct decision. So, when you make your switcher, don’t forget to think at what will happens if something goes wrong in your p-space, and, _most_important_, never forget to mod you STR value before executing the jump.

```
        mod     #2, 1
str     jmp     @0, paper       ;a field holds strategy
        dat     0,  juliet
```

If you forget it, may happens your warrior will have to execute something like

```
str     jmp     @1234,paper
```

and you will score something like 0/249/1 :-(

Here is the code. I submitted the warrior at both -94 and beginners hill, if you have any question, or you are interested in results, mail me <bezzi@iol.it>

```
------------------------------
;redcode-b quiet
;name juliet and paper
;author M R Bremer, B. Bezzi
;strategy p-warrior for C.W. n.5 hint
;strategy switches juliet storm and Paper01
;kill juliet and paper
;assert CORESIZE == 8000

ptr     EQU     -1333
dest0   equ     2200
dest1   equ     3740
dest2   equ     -1278
range   equ     933

        RES     equ 0           ;here pmars loads results
        STR     equ 1           ;here I store my strategy

imp_sz  equ     2667
```

```
org     start

gate    dat <-445, <-446
s       spl #445, <-445
        spl #0, <-446
        mov {445-1, -445+2
        add -3, -1
        djn.f -2, <-2667-500
        mov 32, <-20
go      dat     #0,     #ptr
juliet  mov     {-1,    <-1
        mov     {-2,    <-2
        mov     {-3,    <-3
        mov     {-4,    <-4
        mov     {-5,    <-5
        mov     {-6,    <-6
        mov     gate,   ptr+24
        mov     gate,   ptr+24
        spl     @go,    <4000
        jmp     boot,   <4013
start

res     ldp.ab  RES,    #0      ;load result last match
str     ldp.a   STR,    str1    ;load strategy in use
        sne.ab  #0,     res     ;check result, win or tie OK
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure jump
win     stp.ab  str1,   _STR    ;save strategy
str1    jmp     @0,     juliet
        dat     0,      paper



paper
        spl     1,      <300    ;\
        spl     1,      <400    ;-> generate 8 consecutive processes
        spl     1,      <500

silk    spl     @0,     {dest0
        mov.i   }-1,    >-1
silk1   spl     @0,     <dest1  ;split to new copy
        mov.i   }-1,    >-1     ;copy self to new location
        mov.i   bomba,  }range
        mov     {silk1, <silk2
silk2   jmp     @0,     >dest2
bomba   dat     <2667,  <1

for MAXLENGTH-CURLINE-9
        dat     0,0
rof

boot    spl     1      ,#0
        spl     1      ,#0
        spl     <0     ,#vector+1
        djn.a   @vector,#0

imp     mov.i   #0,imp_sz

        jmp     imp+imp_sz*7,imp+imp_sz*6
        jmp     imp+imp_sz*5,imp+imp_sz*4
        jmp     imp+imp_sz*3,imp+imp_sz*2
vector  jmp     imp+imp_sz  ,imp

        end
```

Planar’s corner:

Next week, you’ll get the sequel to my article about imp spirals.
Today, I have a short hint for beginners and a call for volunteers.

The short hint:

I have written the following program:

```
        ;redcode
        foo     equ     1+2
                nop     foo*2
```

Giving it to pMARS, I get this load file:

```
        START  NOP.F  $     5, $     0
```

Hey ! What's going on here ? If foo is 1+2 and the argument to NOP is foo*2, then it must be 6, right ? Wrong. The argument is 1+2*2 = 5, because EQU does a textual replacement of the label with its argument, not a numerical evaluation of its argument (there is a good reason for this).

The solution is the same as in the C language: use parentheses generously:

```
        foo     equ     (1+2)
```

Now the argument to NOP is (1+2)*2 and I'm happy. Maybe this was the reason why my warrior failed on the hill. But then again, maybe not.

The call for volunteers:

I have started updating the ICWS'94 draft standard. My new version includes the new addressing modes and opcodes we are all using every day. Who will add p-space into it ? We have missed the '94 deadline by a long time now, and I think it's time to turn the draft into a standard (does the ICWS still exist, by the way ?) Or at least the draft should describe the language that we are using.

Before we start discussing read/write limits, Stefan asked that I post a summary of all the good arguments against them, so I have to find the postings of one and a half year ago (does anybody know where to find an archive of recent postings to r.g.cw ?) Please no flame war before I declare the season open.

The new version of the ICWS'94 draft standard is available at http://pauillac.inria.fr/~doligez/corewar/icws94.95

<Damien.Doligez@inria.fr>

Extra Extra:
Thermite

With impeccable timing I re-arrive on the internet just as Thermite is knocked off the hill, appropriately enough by Michael Constant. I don't think I ever published the code, so here it is with explanations as accurate as the mists of time permit. I'm not really sure why it worked for so long, but I guess it was a lack of decisive weaknesses rather than any single strength. Maybe P-space even helped, making targets bigger...

Thermite was standard quickscan, followed by a Torch-like incendiary bomber. The quickscan was originally developed from Michael Constant's Sauron (94 tournament) and ended up almost exactly like his Pyramid. I experimented with various warriors to follow the scanning stage: a vampire, Midge, sadly couldn't bite as fast as Silks could grow, and Queasy (4-word Mod-1 MOV <A,B bomber) was good against scanners but otherwise weak.

Then Paul Kline published Torch which looked too good not to steal: fast incendiary bombing, and multi-process -- so tending to draw if damaged. The only constructive change I made removed the anti-scanner gaps from the code, to make it more resistant to Silk-type strip bombing. I called the result Phosphorus and it was modestly effective (somewhat less so than Torch :) but it proved a great partner to the quickscan.

The Phosphorus code may appear puzzling if you don't know Torch. The key idea, is that the instructions in the loop are executed in _reverse_ order because the SPL #0 instruction keeps feeding new processes into the loop.

:(No-one "hides" near large decoys any more... :(

```
;redcode-94
;name Thermite 1.0
;kill Phosphorus
;author Robert Macrae
;strategy  Quick-scan -> incendiary bomber.
;assert CORESIZE == 8000

; Since I don't launch phosphorus, vulnerable to carpet bombers. May
; pay to put it at start? I should make better use of DJN stream
; (nascent). Either use <, or else start it somewhere which gets bombed
; by mov fairly quickly. What happens if I fall through early, due to
; DAT 1,1s? Should check this doesn't hurt...

SPC     equ 7700            ; (CORESIZE-MAXLENGTH-MINDISTANCE*2)
STP1     equ 81              ; (SPC / (RAM/2) / 2)
Lookat  equ look+237+8*(qscan-1)*STP1

; First scan at 237; last at -67?

traptr  dat     #0,     #trap
bite    jmp     @traptr,    0         ; Vampire bite.

; Lots of pointers to these, so keep them away from trap!

look
qscan   for     6
        sne.i   Lookat+0*STP1, Lookat+2*STP1
        seq.i   Lookat+4*STP1, Lookat+6*STP1
        mov.ab  #Lookat-bite-2*STP1, @bite
        rof

        jmn     test+1, bite   ; Save a few cycles

qscan   for     6
        sne.i   Lookat+48*STP1, Lookat+50*STP1
        seq.i   Lookat+52*STP1, Lookat+54*STP1
        mov.ab  #Lookat-bite+46*STP1, @bite
        rof

        jmn     test+1, bite   ; Save a few cycles

qscan   for     6
        sne.i   Lookat+1*STP1, Lookat+3*STP1
        seq.i   Lookat+5*STP1, Lookat+7*STP1
        mov.ab  #Lookat-bite-STP1, @bite
        rof

        jmn     test+1, bite   ; Save a few cycles

qscan   for     6   ; Should be 7 if I had space...
        sne.i   Lookat+49*STP1, Lookat+51*STP1
        seq.i   Lookat+53*STP1, Lookat+55*STP1
        mov.ab  #Lookat-bite+47*STP1, @bite
        rof

; Intention is to place points evenly through the target area.

test    jmz.b   blind,  bite           ; if no address stored, no hit.
        add     #STP1*2, bite           ; Smaller than pyramid, as fast.
        jmz.f   -1,     @bite          ; find nonzero element.
```

```
        mov     spb,    @bite           ; Quick pre-bomb...

        add     #49,    bite            ; aim 51 past the hit
attack  sub.ba  bite,   bite            ; bite(b) contains target-bite
loop    mov     bite,   @bite           ; (a) contains the bite addr.
        add.f   step,   bite
        djn     loop,   #24             ; 6 spacing => 72 cycles...


; Incendiary bomber based on Phosphorus 1.0 (from Torch).

bstp     equ    155       ; Mod 5, as too big for mod 4 to miss!
gap      equ    15        ; Gap between mov and spl.
offset   equ    130       ; Chosen with step and gap to give long bombing run.
count    equ    1500

blind
spb      spl    #0,         <-gap+1    ; spl half of the incendiary
         add    #bstp,      1
         mov    spb,        @tgt-offset ; Gives longest run, given gap & step.
         mov    mvb,        @-1
tgt      djn.f  -3,         >300       ; gets bombed with spl to start clear
         mov    ccb,        >spb-1     ; Uses copied mvb for CC.
         djn.f  -1,         <spb-18    ; Aids clear.
mvb      mov    gap,        >gap       ; mov half of the incendiary
ccb      dat    0,          10         ; Core Clear.

; Bit worried about having trap so close to my code...

trap    spl     0,      >-200         ; Lackadaisical attempt at gates.
        spl     -1,     >-200+2667    ; Each increments many times between
        jmp     -2,     >-200+2*2667  ; imp steps, but then the whole imp
                                      ; moves! I only blow away rings...

step    dat     #6,     #-6           ; QS step size. Up from 5 for speed.

        end     look
```

(Editor note: I had to change it a little, because Robert used STP as a label, and now it’s not allowed being it an opcode. Just hope I didn’t introduce bugs; I tested it and all seems OK. - B.B.)

Extra Extra Extra:
Phq

Well! I have received lots of requests about Phq so I have decided to publish it... (in other words CoreWarrior’ staff has payed me enough ! ;-)
Phq is one of my first programs written in 94 standard (I have started redcoding with the 86 standard...)
First of all two words about the name...
Phq recalls a formula of quantum mech: the original name had been Emc2 (reference to 2c initial qscan) but Emc2 was also the name of another my QScan-->Stone warrior that never worked very fine...
When I began making Phq, another program behaved very well:
Marcia Trionfale of our friend Beppe Bezzi; so I decided that my warrior should contain a paper module!
At those times most of the programs on the hill reached the limit of 100 istructions, this made me choose for the initial QScan pass.
The initial QScan is also very useful to solve (without any PSpace routines) the problem of papers in gaining points during self fighting:
QScan makes Phq able to kill itself in self fighting about 83% times.
So I took the decision: my program will have to be a Qscan --> Paper !
Well! At this point I had to decide what could I do if QScan found an enemy, or simple a decoy :(!
The first attempt was to bomb the neighborhood of the cell differing from dat.f 0,0 (blank) with simple dat bombs, using a series of "mov bomb,<ptr" istructions.
The problem is finding the size of the neighborhood.

I had obtained just slight better results using incendiary bombing.
I'd have liked to use spl 0 bombs but this wasn't possible for after bombing
I had to start with paper, and a paper isn't the best to kill lots of
processes executing a "spl 0 jmp -1" loop (or similar)!
Maybe I could have tried some vamp bombing, but I didn't do this...
I choosed to copy some suicide 3-instr core-clear routines "around", hoping
that the enemy executes one of them!
This solution was quite good: if even only one enemy task executes this
3-instr code it may kill other eventually (near) enemy tasks; note that its
bombing is harmless against my paper!
An interesting question is: ...and what about against Pspace programs?
I'm mainly a paper and if the enemy switches on a scanner module, it's a
slaughter for me! :(
So I'd liked to have some brainwashing routines: I added to my core-clear a
brainwashing stp line (who fills enemy PSpace with non-sense values).
Well! This program worked quite fine but another little change made it
even better!
After bombing my initial strategy was simple to jump to paper routines...
...and what about using a spl to have in any case a task who executes my
core-clear?
Well! I added this spl line and results were 3 points more then previous
version!
I'm not sure why this works better...
maybe because I bomb more wide around the non-blank cell and sometimes I
reach the enemy before the paper itself kills my own task.
Note that I'm brainwashing myself! (as you can read in the initial strategy
line;-), but this is unrelevant 'cos I don't use PSpace in "active mode",
meaning with "active mode" that I don't use PSpace for switching.
That's all!
What?
The program?
Yeah! Of course! Here you are!
(Hoping that Phq will reach at least Thermite in old scored programs ;-)
Note that it's quite full of bugs ;-)
I leave to find them out, to my "25 readers" as exercise (as my prof. of
geometry always said...)

For any questions, flaming etc. your mail is welcome!
Mail to pan0178.iperbole.bologna.it

```
-----------------------
;redcode-94
;author Maurizio Vittuari
;name Phq
;assert CORESIZE==8000
;strategy New version! This one likes brainwashes...

step1   equ     3743    ; unoptimized replicator costants
step2   equ     1567    ; see CoreWarrior issue 3
step3   equ     1349


;       ****** QSCAN ROUTINES ******

start
s1 for 4
        sne start+400*s1,start+400*s1+100
        seq start+400*s1+200,start+400*s1+300
        mov #start+400*s1-found,found
rof
        jmn which,found
s2 for 4
        sne start+400*(4+s2),start+400*(4+s2)+100
        seq start+400*(4+s2)+200,start+400*(4+s2)+300
        mov #start+400*(4+s2)-found,found
rof
        jmn which,found
s3 for 4
        sne start+400*(s3+8),start+400*(s3+8)+100
        seq start+400*(s3+8)+200,start+400*(s3+8)+300
```

```
        mov #start+400*(s3+8)-found,found
rof
        jmn which,found
s4 for 4
        sne start+400*(s4+12),start+400*(s4+12)+100
        seq start+400*(s4+12)+200,start+400*(s4+12)+300
        mov #start+400*(s4+12)-found,found
rof

; just missed a line... :(

s5 for 3
        sne start+400*(s5+16),start+400*(s5+16)+100
        seq start+400*(s5+16)+200,start+400*(s5+16)+300
        mov #start+400*(s5+16)-found-100,found
rof

found   jmz rabbit,#0
        add #100,-1
which   jmz -1,@found
        add #10,found
for 4                           ; bombing enemy
        mov m3,<found
        mov m2,<found
        mov mp,<found
        mov m1,<found
rof
        spl @found,{100         ; So... why not ?

;       ****** REPLICATOR ******

rabbit  spl     1,      <200    ;create 11 processes
        mov     -1,     0
        spl     1,      <300
        mov     -1,     0
s1      spl     step1,  #0
        mov.i   >-1,    }-1
        mov.i   bomb,   }1942
s2      spl     step2,  #0
        mov.i   >-1,    }-1
        mov.i   bomb,   }1842   ;I've changed > with } so many times
        mov.i   bomb,   >1900   ;that I can't remember if this version
        mov.i   bomb,   }2000   ;is the one actually on the hill...
        mov.i   <s2,    <s3
s3      jmp     @0,     }step3
bomb    dat     <2667,  <5334   ;anti-imp bomb

;       ****** BRAINWASHING CORE-CLEAR ******

m1      mov     m3,     {m3
mp      stp     <0,     #20     ; brainwashing instruction
m2      djn.f   m1,     }m3+1
m3      dat     }bomb,  <2667
end start
```

For questions and congratulations mail me <bezzi@iol.it>, flame Myer <bremermr@ecn.purdue.edu> or if you think it's of general interest post to rec.games.corewar

Anyone with hints or warriors to publish is welcome.

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From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core_Warrior_ #6
Date: 20 Nov 1995 16:29:09 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 723
Message-ID: <48qacl$npd@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 6 November 20, 1995

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth
http://www.ecst.csuchico.edu/~pizza/koth
http://pauillac.inria.fr/~doligez/corewar/

Greetings.

The weeks keep getting shorter, but the tournament entries keep getting more complex. Even so, action on the '94 hill has been furious. And some old faces have returned--J. Pohjalainen, originator of the replication engine about everyone is using now. And Schitzo aka Michael Nonemacher (I think; I haven't been playing all that long . . .) whose quiz briefly ruled the hill this week. Welcome back.

Damien Doligez seems to have a semi-regular column in the Core_Warrior_. This issue he discusses another variation of the continuously launching imp.

Have a good Thanksgiving everyone.

Tournament Time
(details at http://www.stormking.com/~koth/nsfcwt.html)

Round 6 is finally over. There was some controversy over self fights and handshakes. At the end this didn't make much of a difference.
The round was run twice. First without self fights and then with self fights. The results are almost the same except in one case. Karl Lewin sent in two versions of his warrior (The Thinker). One version with handshakes and another without handshakes. I included both of these versions in both runs.
Special thanks for Karl Lewin for Test warrior. It was a valuable tool to find out about buggy submissions.
Test warrior was run also in the tournament, and it gained the first place

as it was supposed to. Notice that in the self fight run Test warrior didn't win 100 % .
Since the only difference in the results of the two runs is the order of Thinker and Winner, we decided to call it a draw between these two submissions.

Here is the result of the no self fights run:

Elapsed time: 833 seconds (00:13:53)

Rank	Name	Author	%W	%L	%T	Score
1	Test for Timeouts	Karl Lewin	100	0	0	75000
2	Blizzard	Anders Ivner	71	18	10	56123
3	Psst	Robert Macrae	67	21	12	53019
4	Round 6 Kline	P.Kline	64	20	16	51936
5	nt entry #6	M R Bremer	64	21	16	51529
6	Winner	Steven Morrell	63	21	16	51183
7	The Thinker (w/Handshak	Karl Lewin	62	23	15	50479
8	The Thinker (w/o handsh	Karl Lewin	62	23	15	50479
9	Machiavelli	Maurizio Vittuari	62	23	15	50356
10	Maverick	Randy Graham	63	25	12	50142
11	Miss Playful	Derek Ross	61	22	16	50109
12	?{whateverCT#$˜S|[]˜+'i	Paulsson	59	27	14	47404
13	PlinySwitch - 2990	G. Eadon	58	27	15	47140
14	Bim bum bam	Beppe Bezzi	57	30	13	46149
15	WhileAway	JKW	54	31	16	44161
16	Paper-Scissors-Stone #4	Nandor Sieben & Stefan	35	58	7	27887
17	Paper-Scissors-Stone #6	Nandor Sieben & Stefan	17	68	15	16168
18	Paper-Scissors-Stone #7	Nandor Sieben & Stefan	19	74	7	16097
19	Paper-Scissors-Stone #3	Nandor Sieben & Stefan	17	74	9	15006
20	Paranoid	Calvin Loh	16	73	10	14829
21	Paper-Scissors-Stone #1	Nandor Sieben & Stefan	17	76	7	14507
22	Paper-Scissors-Stone #8	Nandor Sieben & Stefan	15	74	11	14084
23	Paper-Scissors-Stone #5	Nandor Sieben & Stefan	13	70	18	13834
24	Paper-Scissors-Stone #9	Nandor Sieben & Stefan	15	76	9	13589
25	Paper-Scissors-Stone #2	Nandor Sieben & Stefan	15	76	9	13386
26	Paper-Scissors-Stone #1	Nandor Sieben & Stefan	1	94	4	2096

These is the result of the self fight run:

Elapsed time: 942 seconds (00:15:42)

Rank	Name	Author	%W	%L	%T	Score
1	Test for Timeouts	Karl Lewin	93	0	7	77000
2	Blizzard	Anders Ivner	66	17	17	58123
3	Psst	Robert Macrae	65	23	11	56019
4	Round 6 Kline	P.Kline	59	19	22	53936
5	nt entry #6	M R Bremer	59	19	22	53529
6	The Thinker (w/Handshak	Karl Lewin	61	25	14	53477
7	Winner	Steven Morrell	58	20	22	53183
8	The Thinker (w/o handsh	Karl Lewin	58	21	21	52479
9	Machiavelli	Maurizio Vittuari	57	21	22	52356
10	Maverick	Randy Graham	58	23	19	52142
11	Miss Playful	Derek Ross	57	21	22	52109
12	?{whateverCT#$˜S|[]˜+'i	Paulsson	54	25	20	49404
13	PlinySwitch - 2990	G. Eadon	54	25	21	49140
14	Bim bum bam	Beppe Bezzi	53	27	20	48149
15	WhileAway	JKW	50	28	22	46161
16	Paper-Scissors-Stone #4	Nandor Sieben & Stefan	32	54	14	29887
17	Paper-Scissors-Stone #6	Nandor Sieben & Stefan	15	63	21	18168
18	Paper-Scissors-Stone #7	Nandor Sieben & Stefan	18	68	14	18097
19	Paper-Scissors-Stone #3	Nandor Sieben & Stefan	16	68	16	17006
20	Paranoid	Calvin Loh	15	68	17	16829
21	Paper-Scissors-Stone #1	Nandor Sieben & Stefan	16	70	14	16507
22	Paper-Scissors-Stone #8	Nandor Sieben & Stefan	14	68	18	16084

23	Paper-Scissors-Stone #5	Nandor Sieben & Stefan	12	65	24	15834
24	Paper-Scissors-Stone #9	Nandor Sieben & Stefan	14	70	16	15589
25	Paper-Scissors-Stone #2	Nandor Sieben & Stefan	14	71	16	15386
26	Paper-Scissors-Stone #1	Nandor Sieben & Stefan	1	87	12	4096

This is the rank after round 6:

Name	1	2	3	4	5	6	total
Steven Morrell	5	10	9	13	14	10	61
P.Kline	7.5	9	7	11	11	12	57.5
Paulsson	7.5	11	11	9	2	5	45.5
Anders Ivner	5.5	8	4	0	10	14	41.5
Beppe Bezzi	7	7	13	2	8	3	40
M R Bremer	7	4	3.6	5	7	11	37.6
Maurizio Vittuari	6.5	5	6	3	9	8	37.5
John K. Wilkinson	4	6	12	0	13	2	37
Robert Macrae	0	0	0	12	12	13	37
Karl Lewin	0	0	10	4	6	10	30
Randy Graham	0	0	8	10	4	7	29
Derek Ross	3.5	3	3.3	7	3	6	25.8
G. Eadon	1.5	2	5	6	1	4	19.5
Kurt Franke	0	0	0	8	0	0	8
Michael Constant	0	0	0	0	5	0	5
Anders Scholl	0	1	2	1	0	0	4
John Lewis	0	0	3	0	0	0	3
Calvin Loh	0	0	1	0	0	1	2

Detailed results and the submissions will be sent in a separate file. It wasn't clear for a while if handshake is possible. So looking at the submissions will be very interesting. We let Corewarrior discuss this topic in depth.

It is clear from game theory that assuming an optimal opponent the best strategy is to play randomly. If the opponent does not play using optimal strategy then we can do much better. Of course trying to outguess the opponent makes our strategy different from the optimal strategy.

There was some concern about mts. The Borland C compiled version of mts has difficulty handling big scores. This didn't caused problem in this round since the djgpp compiled version was used which can handle huge scores.

Thanks for playing,

Nandor & Stefan.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS '94 Draft
```

Last challenge: Sun Nov 19 10:25:06 PST 1995

#	%W/ %L/ %T	Name	Author	Score	Age
1	42/ 25/ 33	test L 7e	Beppe Bezzi	159	2
2	41/ 25/ 34	La Bomba	Beppe Bezzi	157	46
3	47/ 39/ 14	quiz	Schitzo	155	51
4	42/ 34/ 24	Derision	M R Bremer	149	70
5	34/ 31/ 35	Torch t18	P.Kline	136	430
6	28/ 20/ 52	Fly Fishing w/Plastic Wor	Karl Lewin	136	28
7	37/ 39/ 24	myVamp v3.7	Paulsson	134	398
8	40/ 46/ 13	Leprechaun on speed	Anders Ivner	134	226

9	35/	37/	28	endpoint .	M R Bremer	134	75
10	34/	35/	31	Phq	Maurizio Vittuari	132	532
11	38/	43/	20	Porch Swing +	Randy Graham	132	131
12	33/	35/	31	Son & Father	Maurizio Vittuari	131	81
13	32/	33/	35	Father & Son	Maurizio Vittuari	131	80
14	35/	40/	25	Armory - A5	Wilkinson	130	569
15	38/	48/	14	Scissors v.a1	John K. Wilkinson	129	22
16	25/	22/	54	juliet and paper	M R Bremer, B. Bezzi	128	47
17	27/	28/	45	Jack in the box	Beppe Bezzi	125	418
18	20/	18/	63	TimeScape (1.7)	J. Pohjalainen	121	3
19	15/	10/	75	Evolve 6.3	John Wilkinson	121	11
20	31/	45/	23	myTry	Paulsson	117	1

Bezzi continues to dominate the hill with La Bomba. His test L 7e is no doubt an improvement that no one wants to see (but him). quiz is the only serious contender for the throne at this point. Forty-seven percent wins is quite impressive. Karl Lewin makes the jump from the b hill with his Fly Fishing w/ Plastic Worms. One of the more original names I've seen. Jack in the box and Armory have been floating in the bottom half lately. It's too soon to tell if their effectiveness is gone.

---

94 - What's New

1	42/	25/	33	test L 7e	Beppe Bezzi	159	2
3	47/	39/	14	quiz	Schitzo	155	51
6	28/	20/	52	Fly Fishing w/Plastic Wor	Karl Lewin	136	28
15	38/	48/	14	Scissors v.a1	John K. Wilkinson	129	22
16	25/	22/	54	juliet and paper	M R Bremer, B. Bezzi	128	47
19	15/	10/	75	Evolve 6.3	John Wilkinson	121	11
20	31/	45/	23	myTry	Paulsson	117	1

---

94 - What's No More

21	38/	48/	14	Anti Die-Hard Bevo (3c)	John Wilkinson	128	176
21	27/	28/	45	.Brain Vamp.	B.Bezzi, M.Paulsson	125	74
21	37/	48/	15	Leprechaun deluxe	Anders Ivner	126	284
21	28/	34/	37	Thieves Like Us	M R Bremer	122	45
21	31/	47/	22	Frontwards	Steven Morrell	116	323
21	15/	7/	78	Chugging Along	Karl Lewin	122	84
21	24/	22/	54	Impfinity v3e7	Planar	125	70

Carnage on the '94 hill! A combined age of 1,056 was kicked off the hill this week. Hopefully the seven new warriors are worthy successors.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 250
  instruction set: ICWS '94 Draft
```

Last challenge: Sun Nov 19 15:33:24 PST 1995

#	%W/	%L/	%T	Name	Author	Score	Age
1	44/	37/	19	Fire Master v1	JS Pulido	150	8
2	37/	26/	37	teamwork?	Kurt Franke	149	4
3	40/	31/	29	Lurker 1.1	Kurt Franke	148	2
4	39/	40/	21	Look	J. Doster	138	31
5	28/	20/	52	Schizo	J. Doster	136	34
6	25/	16/	59	Impfinity v3c11	Planar	133	46
7	24/	21/	55	Paper8-II	G. Eadon	127	18
8	32/	39/	29	Test-Fc	G. Eadon	125	89
9	31/	38/	31	Hint Test v4	M R Bremer	123	35
10	24/	26/	49	Loh_tst_1.3	Calvin Loh	123	7
11	28/	37/	34	0.5 jmz scanner	Kurt Franke	120	3

12	33/ 48/ 19	Recon V7.2	A. Nevermind	118	5
13	17/ 19/ 64	Sheet 1.0	J. Doster	115	44
14	13/ 10/ 77	Impfinity v1	Planar	115	78
15	12/ 10/ 79	RingWorm_v2.5	Calvin Loh	113	17
16	15/ 19/ 66	RingWorm_v2.4	Calvin Loh	112	32
17	28/ 46/ 25	Paper Shredder 2.1	Kurt Franke	110	1
18	10/ 5/ 5	teamwork?	Kurt Franke	33	15
19	9/ 6/ 4	Lurker 1.1	Kurt Franke	30	64
20	8/ 7/ 4	Searching	Kurt Franke	29	70

juliet storm was retired from the hill this week, meaning the hill has aged 100 warriors since the introduction of the Core_Warrior_. Franke managed to kill all his warriors somehow. Some new strategy? Franke, Doster, and Eadon have all been doing well on the hill, but none are savvy enough as Pulido to gain the top spot. I predict Kurt will be the next author to gain entry to the ’94 hill. He better prove me right (or somebody prove me wrong).

The Hint

Hey kids. Look what we have in store for you today: the next installment of the Core_Warrior_ hint exploring standard warrior strategies. Scanners and replicators have been thouroughly (hopefully) discussed. Next in line are the dumb brutes--bombers. Bombers have been well treated in Morrell’s tutorial ’chapter 2’ accessible from the pizza or stormking pages at the berkeley ftp site, so we’ll concentrate on two veterans--Blue Funk 3 and juliet storm along with the comments of their authors. These two warriors are typical of the ’classic’ stone. Another group of bombers such as Torch, HeremScimitar, and Tornado represent another type that will be discussed next week. Stay tuned. (For a detailed explanation on how stones work, see Morrell’s book, chapter 2). Thanks to Morrell for his contribution on Blue Funk.

BLUE FUNK 3 by Steven Morrell

The two things a stone tries hardest to optimize are size and speed. A good metric to start out with is what I call the "stone index:" size/speed. Blue Funk 3 has a stone index of 5 instructions / approximately 33% c = 15. Iron Gate 1.5 has a stone index of 13 instructions/ 2/3 c = 19.5. Hence, if all else is equal, Blue Funk 3 will win more often.

How much more often? If warrior A has a stone index of m and warrior B has a stone index of n, then warrior A will win n/(m+n) of the time. So Blue Funk 3 should win 56.5% of the time. (Iron Gate is very resistant to stones.)

All else, of course, is not equal. The imp-ring slows Blue Funk 3 down dramatically and lends no aid to the warrior on the current hill, with every anti-imp strategy working against Blue Funk 3’s imp. But, color is on the side of Blue Funk 3: While the scanner focuses upon the decoy, the bomber can color even more core with it’s post-inc and DJN-stream. These aren’t the main weapon, but they are free attacks, so quite useful. Against most scanners, a DJN.f stream can be remarkably lethal (as all the Genetic Algorithm folks find out).

This is all academic, as Blue Funk 3 doesn’t stand a chance on the modern hill. Frontwards, for instance, also has a stone index of 15 during the scanning phase, kills this kind of imp-ring, is very durable in the sense that 30% of its instructions are not used after the initial scan, and kills a better grade of paper than Blue Funk 3 could hope to.

Also, there is a "mesh" issue when stones fight stones. Stones have an annoying habit of bombing themselves if things are not calibrated very well, so they don’t generally use a very small mod (say, 1 to 3) for their step size. I was happy to get Blue Funk 3 down to mod 4, but this means that small programs, like P.Kline’s deadly core-clear (3 executing instructions), can slip through the cracks. That’s 25% non-contested wins!

The best programs for both mesh and stone index that I know of are W.Sheppard’s RedRain (mod 2, stone index 8) and No Ties Allowed (mod 2, stone index 9). Unfortunately, neither of them have a core-clear or imp

gate, so they don't do too well on the hills anymore.

Now for the details for Blue Funk 3: Ideally, a stone will bomb everywhere except for the stone itself. That is how P.Kline's Emerald (stone component) is supposed to work, but it has a very subtle bug in it. Blue Funk 3 uses the same general mechanism without the bugs.

After it is booted, the stone looks like this:

```
emerald   SPL #-step,<step
stone     MOV >-step,step+1        ;hit
          ADD emerald,stone
cnt       DJN.f  stone,<emerald-50
          DAT 0,0
cc        DAT #-7                  ;hit
```

The bombing instruction (at "stone") will post-decrement the B-fields of the instructions labeled ;hit. When "stone" gets hit (after a complete mod-4 pass), the destination pointer slips to a new mod-4 pattern. By the time this slips the fourth time, every location in core has been bombed.

The instruction that hits "stone" looks like "MOV >0,n", which doesn't do anything except make the bombing pattern slip. The instruction that hits "cc" looks like "MOV >4,n" when cc contains n-4, so it is equally harmless and self-adjusting. (For instance, the first time cc is used, stone is MOV >4,-3, and cc is DAT #0,#-7. Hence stone-3 is copied neatly to itself, and cc becomes DAT #0,#-6 for the next time around.) The result of all of this foolishness is that the stone doesn't bomb itself until it has bombed all of the rest of core 1.5 times!

```
;redcode-94 verbose
;name  Blue Funk 3
;author Steven Morrell
;strategy  Fixed another in-memory/in-register bug
;macro

org boot

step equ 3044

for 78
dat <imp,<2667
rof

emerald   SPL #-step,<step
stone     MOV >-step,step+1
          ADD emerald,stone
cnt       DJN.f  stone,<emerald-50

cc   dat #-7

boot mov cc,out-200+5
out  spl @0,out-200
     mov emerald,>out
     mov emerald+1,>out
     mov emerald+2,>out
     mov emerald+3,>out
     spl i
     spl i31
i12  spl imp2
imp1 jmp >0,imp
i31  spl imp1
imp3 jmp >0,imp+5334
i    spl i12
     spl imp3
imp2 jmp >0,imp+2667

imp  mov.i #3044,2667
```

JULIET STORM by M R Bremer

I started coding juliet storm when B Panama X and Blue Funk 3 by Steven Morrell were both doing _very_ well on the hill. B Panama was a combination stone/paper and Blue Funk was a bomber/imp. Since B Panama was on top of the hill, I decided to follow the leader. juliet storm was originally intended to be part of my own stone/paper. That's why there are two splits in the stone--to keep up with the replicator. When I challenged the hill with my 'incomplete' warrior, it scored surprisingly well. Amazingly well. So I became obsessed with making it the best bomber on the hill. Out of that effort came juliet.

The bombing step size was chosen to find size 5 and size 10 opponents rapidly and still be small enough for a decent imp gate. I found out that the double split consumed so many processes, that stun attacks on my imps had little effect. This greatly improved my score against Agony II. They also helped juliet to 'jump' into papers when overwritten. The extra 'gate' line was used in case the coreclear move was decremented. juliet continues to bomb as she clears, but I don't really think this matters much. The clear ends in a hyper-perfect gate (I think). The imp was taken from a posting by T. Hsu on vector launced imps. I wasn't quite savvy enough to write my own at the time.

juliet ruled the '94 draft hill for a few weeks. It's a _HUGE_ rush when you finally get your first warrior to be King of the Hill. At least I thought so. The introduction of p-space killed her dead, dead, dead. A stand alone bomber has little chance of success on the current hill.

BTW: the name: 'juliet storm' is a reference to Romeo and Juliet. Theirs was near perfect love. But in all my relationships, I always manage to really anger my girlfriend from time to time--hence the 'storm'.

Nothing matches the fury of a woman.

```
;redcode-94
;name juliet storm
;author M R Bremer
;strategy bomber--yippee

ptr     EQU -1333

gate    dat <-445, <-446
s       spl #445, <-445
        spl #0, <-446
        mov {445-1, -445+2
        add -3, -1
        djn.f -2, <-2667-500
        mov 33, <-20
go      dat #0, #ptr
start   mov {-1, <-1
        mov {-2, <-2
        mov {-3, <-3
        mov {-4, <-4
        mov {-5, <-5
        mov {-6, <-6
        mov gate, ptr+24
        mov gate, ptr+24
        spl @go, <-4000
        jmp boot, <-4013
for 73
        dat #0, #0
rof

imp_sz  equ     2667

boot    spl     1      ,#0
        spl     1      ,#0
        spl     <0     ,#vector+1
        djn.a   @vector,#0

imp     mov.i   #0,imp_sz
```

```
        jmp     imp+imp_sz*7,imp+imp_sz*6
        jmp     imp+imp_sz*5,imp+imp_sz*4
        jmp     imp+imp_sz*3,imp+imp_sz*2
vector  jmp     imp+imp_sz  ,imp

        end     start
```

You may have noticed the new Hint Warrior on the beginner hill. It is doing quite well.

```
 4  38/ 34/ 28              Hint Test v4           M R Bremer     142       1
```

The old Hint Warrior suffered from scanners. By pspacing a bomber element as a backup, Hint Warrior vastly improves its score. Losses to papers have gone up due to the fact that when a replicator beats the scanner part of Mutagen, the bomber is almost sure to tie or lose the next round. By adding an imp, I should be able to reduce the number of losses at least. Another improvement may be to boot of a decoy. Something to think about for later weeks.

```
;redcode-b
;name Hint Test v4
;author M R Bremer
;strategy Original code based on Scott Manley's Mutagen
;strategy Once through scan --> spl spl dat dat coreclear
;strategy Core_Warrior_ #2:  compressed code
;strategy Core_Warrior_ #4:  improved scanner
;strategy Core_Warrior_ #6:  pspaced with small bomber
;kill Hint
;assert CORESIZE==8000
org start

dist equ 98
scan equ dist*2

begin   SPL     b1+2
        jmp a
for 20
        dat 0, 0
rof
a       add d,c
c       cmp a+2*dist,a+dist
        slt.a #dist+ptr2-a, c
        djn.f a,<7000
        mov s, *c
x       mov m, @c
        jmn a,a
s       spl #-dist+1, <0
        jmp b1
d       dat <scan,<scan
m       mov.i dist, }dist
        dat 0, 0
        dat 0, 0
        dat 0, 0
        dat 0, 0
        dat 0, 0
b3      dat <2667, <2667*2      ;a suggestion by Paulsson to kill imps
b2      spl #b3-ptr2, a-2-6
b1      spl #b2-ptr2, a-2-5
        mov *ptr2, <ptr2
        mov *ptr2, <ptr2
        mov *ptr2, <ptr2
        djn.f -3, <6000
ptr2    dat b1, -100+a

for 21
        dat 0, 0
rof
start   ldp #0, #0
```

```
        ldp #1, #0
        cmp.b -2, -1
        jmp bomber, {4000
        stp #1, #1
        jmp begin, {4000
bomber  stp #0, #1
        jmp juliet, {3000
for 19
        dat 0, 0
rof


juliet  spl #445, <-445
        spl #0, <-446
        mov {445-1, -445+2
        add -3, -1
        djn.f -2, <-2667-500
        mov.i 1, <-6
```

Planar's Corner:

Continuous spiral launching (continued)

Erratum

My previous article about imp spirals contains a few small typos and a big one: the line that reads

    [imp+1 imp+step+2 imp+2*step+1 imp+2 imp+step+2 imp+2*step+2 ...]

should be

    [imp+1 imp+step+1 imp+2*step+1 imp+2 imp+step+2 imp+2*step+2 ...]

I hope it didn't confuse anybody. Also, I have renamed the labels between the explanation and the code of Impfinity v1: Z becomes a, A becomes b, etc.

Vector launching

Myer told me he wanted to see a continuous vector-launching imp spiral (quite a cumbersome phrase, isn't it ?). We'll start with a normal vector launch:

```
    A       spl     1
    B       spl     1
    C       jmp     @V, }0
    V       dat     0, imp
    W       dat     0, imp+step
    X       dat     0, imp+2*step
    Y       dat     0, imp+1
    imp     mov     imp, imp+step
```

Now this is what happens when we execute this code. I'm still using my notation for the process queue. To execute one step, I remove the first element of the list, and push back the new PC value(s) at the end of the list. To execute one round, I execute one step repeatedly, or I can equivalently replace each element with the new value(s) it pushes back:

    [A]
    [B B]
    [C C C C]

Now we have four processes ready to execute C. The first one will jump to imp and increment the A-field of C, so C is now:

```
            jmp     @W, }0
```

The next process will jump to imp+step and increment the A-field, and so on. On the next round we have:

    [imp imp+step imp+2*step imp+1]

(recall that imp+1 is the same as imp+3*step).

How do we turn this into a continuous-launch ? The first step is to add an SPL 0 at the top of the program (as instruction Z). The SPL will produce a steady stream of processes to its left (in the process queue):

```
                                                [Z]
                                              [A Z]
                                            [B B A Z]
                                    [C C C C B B A Z]
    [imp imp+step imp+2*step imp+1 C C C C B B A Z]
```

But now, as the processes at C jump to the imp, we have the same problem as last time: the new processes are at the head of the imp spiral (the tail is the process that executes first, it is located at the smallest address, and the head executes last, at the highest address). Since the spiral advances by one core element at each round, we should launch our new processes two elements further than the previous ones, so we should add 2 to each vector element at each round. And our pointer (the A-value of C) now points beyond the vector, so we should reset it to C. Lastly, we have four processes, so we get out of sync: the vector values should change not by 2 but by step+2. This will never work.

The last problem is easy to fix: launch only three processes or get rid of the fourth by making it jump to a DAT statement.

We still have to reset our pointer at each round. We'll do it between Z and A:

```
    Z       spl     0
    R       mov.a   #V-C, C
    A       spl     1
```

V-C is the address of V relative to C. When we put it into C's A-field it becomes the address of V (here, this is 1).

Now we have to add 2 to each vector element at each round. I don't know how to do it. We don't have enough instructions to do it by postincrement. So we'll launch the processes at the tail instead of launching them at the head. This means two things: first, we must find a Z that will add processes to its right (in the process queue) instead of the left. Second, we can launch without any increment because the spiral advances by 1 and we add a ring at the exact place that it left: we can launch processes at the same place while the spiral advances.

This still won't work because I cannot find a Z that adds processes to its right. With an SPL, the next instruction is pushed, then the target, so we would need the SPL to be the next instruction after itself, and the target to be R. Instead, I'll use a two-instruction loop:

```
    P       spl     R
    Q       jmp     P
```

This will launch processes to its right, as follows:

```
    [P]
    [Q R]
    [P A]
    [Q R B B]
    [P A C C C C]
```

But it launches only one process every two rounds. This means that the spiral will advance by two locations while I add one ring, so I will have to increment my vector elements after all. This is how we'll do it: turn C into a direct jump instead of indirect and the vector elements into JMPs instead of DATs. And use their B-fields to increment the A-fields. This is the whole launcher:

```
    P       spl     R
    Q       jmp     P
    R       mov.a   #V-C, C
    A       spl     2
    B       spl     1
    C       jmp     V, }0
    V       jmp     imp, }0
    W       jmp     imp+step, }0
    X       jmp     imp+2*step, }0
    imp     mov     0, step
```

The binary launcher I described last time added one ring every round, this one adds one every two rounds. But we can double the vector and launch two rings at once every two rounds. Then we don't need the increments. Or three rings. Then we need to decrement the JMP values by 1 at each round. The vector launcher is smaller than the binary launcher, but you can't always produce the right number of processes, so you may have to add some DAT statements to the vector to get rid of the extra processes. Finally, tail-launching is more easily upset by the opponent than head-launching because the newly launched process is not refreshed right before its execution: if the tail ever gets clobbered, the launcher will work in vain from then on.

This is quite long already, so I'll leave continuous SPL/ADD launching and Impfinity v3 for next week (hoping it will not get thrown off the hill in the meantime). Maybe I went into too much detail here.

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Article: 3092 of rec.games.corewar
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From: Beppe Bezzi <bezzi@iol.it>
Newsgroups: rec.games.corewar
Subject: Core warrior #7 - 1/2
Date: 27 Nov 1995 13:05:12 -0500
Organization: Storm King Ind. Inc.
Lines: 405
Sender: server@news.stormking.com
Distribution: world
Message-ID: <199511271756.SAA03660@iol-mail.iol.it>
Reply-To: bezzi@iol.it
NNTP-Posting-Host: valhalla.stormking.com
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X-Mailer: Windows Eudora Light Version 1.5.2

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                              ,    .
$$$$$$P'   '                              .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 7 November 27, 1995

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.

This week there is another juicy, at least in my hopes, number of Core warrior. The hint will cover bombers and bombs, including Paul Kline's contribute and Torch 18 code; Robert Mcrae introduces you to quickscannes secrets and Planar finishes the continual launch imps topic, and unveils his new warrior Impfinity 3i.
Many thanks to them and to all contributing to the newsletter.
Last minute new: big (CORESIZE 55440) hill has been reopened at Stormking server, address: <koth@stormking.com> ;redcode-94x
Enjoy it and many thanks Tuc.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

#	%W/ %L/ %T	Name	Author	Score	Age
1	47/ 38/ 14	quiz	Schitzo	156	78
2	43/ 34/ 23	test lp 2	Beppe Bezzi	152	4
3	38/ 25/ 37	La Bomba	Beppe Bezzi	151	73
4	43/ 36/ 22	Derision	M R Bremer	150	97
5	37/ 31/ 32	Torch t18	P.Kline	143	457

6	37/ 39/ 24	myVamp v3.7	Paulsson	135	425
7	36/ 37/ 27	endpoint .	M R Bremer	134	102
8	38/ 43/ 19	Porch Swing +	Randy Graham	134	158
9	26/ 20/ 54	Fly Fishing w/Plastic Wor	Karl Lewin	131	55
10	38/ 45/ 17	Frontwards	Steven Morrell	131	5
11	33/ 35/ 32	Phq	Maurizio Vittuari	131	559
12	40/ 48/ 13	Leprechaun on speed	Anders Ivner	131	253
13	33/ 35/ 32	Son & Father	Maurizio Vittuari	130	108
14	36/ 44/ 20	myZizzor v2.0	Paulsson	128	8
15	27/ 27/ 46	Jack in the box	Beppe Bezzi	128	445
16	20/ 12/ 67	Impfinity v3i	Planar	128	7
17	31/ 34/ 36	Father & Son	Maurizio Vittuari	127	107
18	33/ 41/ 25	Armory - A5	Wilkinson	126	596
19	24/ 22/ 54	juliet and paper	M R Bremer, B. Bezzi	125	74
20	19/ 21/ 60	test4	Kurt Franke	118	1

After last week revolution we had a quiet one. Very little to report: quiz takes the head even if La Bomba is still in top positions, Morrell and Paulsson submitted new version of their warriors pushed off last week. Planar's new Impfinity enters the hill, you can see the code in Planar's corner, Kline attempted a new p-spacer without success. In the bottom Armory is shuffling a bit, but still resists junger warrior challenges. Franke, one of beginners hill top scorers, enters the bottom of 94

---

94 - What's New

11	39/ 43/ 19	myZizzor v2.0	Paulsson	135	1
10	23/ 13/ 64	Impfinity v3i	Planar	133	1
19	37/ 47/ 16	Frontwards	Steven Morrell	128	1
20	19/ 21/ 60	test4	Kurt Franke	118	1

---

94 - What's No More

21	34/ 49/ 17	Scissors v.a1	John K. Wilkinson	119	28
21	31/ 50/ 19	Scissors v.a4	John K. Wilkinson	113	4
21	20/ 17/ 63	TimeScape (1.7)	J. Pohjalainen	122	17
21	14/ 11/ 75	Evolve 6.3	John Wilkinson	118	24

The calm after the tempest, no aged warrior has been pushed off.

What's old

18	33/ 41/ 25	Armory - A5	Wilkinson	126	596
11	33/ 35/ 32	Phq	Maurizio Vittuari	131	559
5	37/ 31/ 32	Torch t18	P.Kline	143	457
15	27/ 27/ 46	Jack in the box	Beppe Bezzi	128	445
6	37/ 39/ 24	myVamp v3.7	Paulsson	135	425
12	40/ 48/ 13	Leprechaun on speed	Anders Ivner	131	253

Veterans surviving last week carnage improve their scores a little. Armory and Jack in the box are having some problems, while Torch and myVamp are still very effective.

Current Status of the Internet Pizza Server Beginner's Hill:

#	%W/ %L/ %T	Name	Author	Score	Age
1	45/ 35/ 20	Clear Sighted v1	JS Pulido	156	3
2	45/ 38/ 18	dualstrat v.0.2	Brian Haskin	152	2
3	36/ 22/ 41	teamwork?	Kurt Franke	150	23
4	44/ 39/ 17	Fire Master v1.5	JS Pulido	148	6
5	36/ 33/ 31	Lurker 1.1	Kurt Franke	139	21
6	33/ 29/ 38	test L 9	Beppe Bezzi	136	4
7	26/ 20/ 54	Schizo	J. Doster	132	53
8	31/ 31/ 38	Hint Test v4	M R Bremer	131	19
9	21/ 12/ 67	Impfinity v3c11	Planar	130	65
10	21/ 21/ 58	Trapper 1.1	Kurt Franke	121	1
11	20/ 19/ 61	Paper8-III	G. Eadon	120	11
12	32/ 45/ 23	Look	J. Doster	120	50

13	19/ 18/ 64	Sheet 1.0	J. Doster	120	63
14	14/ 9/ 77	RingWorm_v2.5	Calvin Loh	118	36
15	17/ 17/ 65	RingWorm_v2.4	Calvin Loh	118	51
16	12/ 7/ 81	Impfinity v1	Planar	116	97
17	28/ 41/ 31	Good old DJN Test	Karl Lewin	115	16
18	20/ 26/ 53	Loh_tst_1.3	Calvin Loh	114	26
19	10/ 9/ 81	NewerPaper	Kurt Franke	111	17
20	27/ 45/ 28	Paper Shredder 2.1	Kurt Franke	108	20

The very active beginners hill shows five new entries in the top ten positions. Pulido, Haskin and Franke seem ready to make the jump to veterans. Bezzi, a new author, at least from when I'm following beginners, enters in 6th position with a warrior that was 3rd in 94 hill :-)
The morale of the story is that:
The beginners hill level has grown in these weeks, perhaps it's higher than ever.
All those who have a warrior doing well in -b hill have to try the -94, at worst you'll score 90 points finding 94 hill hostile to the warrior kind you are submitting, but with a little luck you can enter and begin making experience.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
2	Agony II	Stefan Strack	912		CMP scanner
3	Blue Funk	Steven Morrell	869		Stone/ imp
4	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766		Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666		Bomber
7	Armory - A5	Wilkinson	596	*	P-warrior
8	Phq	Maurizio Vittuari	559	*	Qscan -> replicator
9	B-Panama X	Steven Morrell	518		Stone/ replicator
10	Torch t18	P.Kline	457	*	Bomber
11	Jack in the box	Beppe Bezzi	445	*	P-warrior
12	myVamp v3.7	Paulsson	425	*	Vampire
13	NC 94	Wayne Sheppard	387		Stone/ imp
14	Cannonade	P.Kline	382		Stone/ imp
15	Torch t17	P.Kline	378		Bomber
16	Lucky 3	Stefan Strack	355		Stone/ imp
17	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
18	Dragon Spear	c w blue	346		CMP scanner
19	juliet storm	M R Bremer	333		Stone/ imp
20	Frontwards	Steven Morrell	323		One shot scanner

Armory, very near 600 age now, and Phq consolidate their position in the hall of fame; Torch enters top ten trailing Jack and myVamp, all three well over 400 age.
Frontwards enters bottom place pushing Timescape off.

The Hint

Hello folks, last week Myers introduced the bomber topic with two classic stones, Blue Funk and juliet storm; these guys are four-five lines long, and found their effectiveness on their small size and resilience more than on speed, they are both at 33% c, one bomb every three cycles, and effectiveness of their bombs, simple dat 0,0.
There is another category of more complex bombers that balance the increased size with a greater speed and/or deadlier bombs.

Who better than Paul Kline, Torch's author, can speak of this argument.

Your basic 'stone' bomber is based on this fragment:

```
incr     spl  #step,#-step   <- self-splitter
         add  incr,1         <- step up the pointers
```

```
         mov  <0,0          <- decrement one and bomb the other
         djn  -2,<-10       <- loop and sequential decrement
```

Steven Morrell's discussion last issue showed how to optimize this for maximum bombing duration, but his comment about Emerald is too generous. I never realized or designed Emerald's pattern, it was just the best of a large number of step sizes I tried.

Anyway, the above delivers one decrement and one bomb in three cycles. However it is possible for the opponent to immunify part of his code to decrements, and thereby reduce this bomber to something much less than 66% effective speed. A search through old programs (still a gold mine!) turns up this one by Paul Kilroy:

```
;name Ike v.21
;author Paul S. Kilroy
;strategy A bomber with a cool twist

bomb       spl 0   ,jump
ptr        dat #0  ,#0
inc        add #468,b
start      jmz inc ,@b
b          mov bomb,@464
           mov bomb,@b
jump       jmp inc
           mov 10  ,<-2
           end start
```

Which is your basic spl-bombing b-scanner with, as he says "a cool twist". When he finds a non-zero location he uses it as a pointer and bombs through it, then bombs the found location. In other words, bombing two locations without an intermediate ADD.

I was wanting to make this a pure non-scanning bomber, which is easy enough. But the results were not exceptional. With this code you get a nice 50% hard bomber:

```
bomber   add   #step+step,2
         mov   bomb,@1
         mov   bomb,@0
         jmp   bomber
bomb     dat   #0,step
```

Unfortunately it is a little bigger than the 4-line version and not quite as fast, even though it delivers real bombs instead of decrements. It becomes a little more durable with a leading SPL which keeps single dat-bombs from killing it. And it still loses completely to paper.

Anders Ivner's HeremII uses similar code to drop alternating spl and dat-bombs that are very widely spaced in core. HeremII works somewhat against old style paper, but is helpless against Silk.

To kill paper requires some kind of spl-bomb that slows it down enough to give a sequential clear time to wipe the whole core. A split-carpet like Agony's works very well, but this bombing routine won't accomodate one. A spl-jmp could be delivered by alternating spl's and jmp's, with an eventual wrap-around to match spl's to jmp's. But single spl's and single jmp's are not only useless against today's paper, they are actually dangerous, since they can mutate the opponent into a whole lot of sequential core-clear/bombers.

Enter the mov-spl ('incendiary') bomb, which is a little two-line program that you drop on the opponent causing him to write and execute his own spl-carpet. The important feature of this bomb is that the components can be well separated - hence alternating bombs.

Here is the working part of Torch 18, which bombs extensively with mov-spl bombs, does one core wipe with a spl, then goes into a repeating forward core-clear with dat. It also has a nice feature in that if it is overrun with a djn-stream it immediately starts the forward

dat-clear process, usually killing the nasty opponent.

```
gate     dat   0,0
     for 3
         dat   0,0
     rof
w2       dat   -7,cp-gate+3
         dat   0,0
wipe     dat   -7,cp-gate+3
sp       spl   #-1-step,-step    ; spl half of the incendiary
in       sub   #step+step,@msp
msm      mov   sm,*tgt+(step*count)-17228
msp      mov   sp,@msm           ; bomb alternately with spl & mov
tgt      jmz   in,#0             ; bombed with spl to start clear
clr      mov   @cp,>gate
cp       djn.b clr,{wipe+1
     for 2
         dat   0,0
     rof
sm       mov   step+1,>step+1    ; mov half of the incendiary
```

Notice that in the inner loop the instructions are reversed from the example - instructions following a SPL execute in reverse order.

Torch is bigger than a 4-line stone and will lose most of those battles. However, those stones are paper-bait even with supporting imps while Torch has the punch to stay on the Hill. The current version also uses a decoy to foil programs like Withershins Thrice and Porch Swing.

Questions for thought:
   What is the best 1-line bomb?
   What is the best 2-line bomb?
   What is the best 3-line bomb?

Answer correctly and you could go straight to the top of the heap .. uh Hill!

Paul Kline
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Let’s speak a bit of bombs; what is the best possible bomb?
The answer to this question is another question: who are you shooting at?

If our enemy is a single process, long warrior like a scanner the answer is easy, no bomb at all... yes no bomb, taking a cell from somewhere in the core, usually a dat 0,0 and throwing it in the middle of our enemy is enough to kill him, and we have no need to include the bomb in our code, reducing our size. This is the approach of Blue Funk and juliet.

If our enemy is a replicator this is pointless; we have no chance to kill all paper bodies at the rate they spread. To kill them we have to slow them first and, at the end deliver our deadly blow at wounded enemy, yes a very evil act :-) This can be accomplished with more complex bombs either spl 0 followed by jmp -1, as Iron gate does when it finds a target, or with the so called incendiary,

```
        mov   step,  >step    ;alternated with
        spl   0,     -step+1
```

when the mov is executed it take the spl, step cells away, and moves it immediatly after the mov itself; if the mov is executed by a multiprocess paper the effect is creating a spl carpet. Devastating indeed.

If our enemy is a coreclear, something with a very reduced footprint like:

```
gate    dat     -20,20
wipe    spl     #-20,20
```

...

```
split   spl     0,0
move    mov     @1,>gate
jump    djn     -1,{wipe
```

A dat 0,0 hit at the gate, split or jump instruction won't stop the clear running, we need something more effective like Tornado's bomb, (I have not invented it, it's due to Paul Kline if I'm not wrong, I just used it)

```
        mov     step,1  ;step away there is another one
```

Using this bomb we have added to our target the 'split' line and the 'gate' line, increasing our chances to kill.

To finish bombers argument I'll introduce now Tornado, the faster pure bomber and, BTW, one of my favourite babies. It has never had a great success alone, its best version stayed on hill little more than 200 challenges, never climbing higher than 10th position, but proved very effective as component of successful warrior like Jack in the box.

Tornado pushes the indirect bombing one step farther, he lays down two bombs and uses the second one as pointer for the third reaching a speed of 60% c, three bombs in a five instruction loop.
This is the version included as scanner/clear killer in the p-warrior Jack in the box

```
step    equ     95
count   equ     533

bomber  mov     bd,     *stone
        mov     bm      @stone
stone   mov     *step+2,*(2*step)+2
```

stone line is the hearth of the bomber. It can be changed slightly if we want to use bombs with fixed a or b fields of values different from the step What's important is that the bomb addressed by b field of stone had one of its fields with the value step

```
        add     incr,   stone
jump    djn.b   bomber, #count
```

Three bombs in a 5 instructions loop means 60% c speed, comparable with that of a cmp scanner (66%c) and without any problem of being delayed by decoys and bomb's color. In fact Tornado easily kills any scanner and clear

```
incr    spl     #3*step,#3*step
clr     mov     -12,    }bomber+1
djmp    jmp     clr,    <bomber-5
```

This is not the best clear, giving no imp protection, is those with the smallest footprint using the bombs as pointers.

...[some empty lines]

```
bm      mov     step,   1       ;have care that bm be overwritten by another bm
bd      dat     #step, #1
```

Tornado drops a dat, then a mov step cells away, then takes this mov and drops it step cells away from it before adding and jumping.
Once finished the run there is a dat bombs 12 cells before the clr line, this is used to clear core.
This is not the most effective all purpose version of Tornado, v1.8 alternate spl and mov and uses a multipass clear to better resist paper attacks and a > clear to try catching imps, but is the best fit for the role of 'scanners/clears killer' in the p-warrior.
Tweaking a litle the code Tornado can be armed with incendiary bombs too; the incendiary version has been submitted to the hill as Firestorm, and was included in the p-warrior Brain Wash.

I won't tell you now, without a substantial payment to my bank account :-),

what I have put in La Bomba, and how I use it; stay tuned near Christmas, with most chances I'll make you a gift.

For next hint I'm waiting your suggestions.

Tournament Time
(details at http://www.stormking.com/~koth/nsfcwt.html)
No tournament round this week, Thanksgiving break.

This is the rank after round 6:

Name	1	2	3	4	5	6	total
Steven Morrell	5	10	9	13	14	10	61
P.Kline	7.5	9	7	11	11	12	57.5
Paulsson	7.5	11	11	9	2	5	45.5
Anders Ivner	5.5	8	4	0	10	14	41.5
Beppe Bezzi	7	7	13	2	8	3	40
M R Bremer	7	4	3.6	5	7	11	37.6
Maurizio Vittuari	6.5	5	6	3	9	8	37.5
John K. Wilkinson	4	6	12	0	13	2	37
Robert Macrae	0	0	0	12	12	13	37
Karl Lewin	0	0	10	4	6	10	30
Randy Graham	0	0	8	10	4	7	29
Derek Ross	3.5	3	3.3	7	3	6	25.8
G. Eadon	1.5	2	5	6	1	4	19.5
Kurt Franke	0	0	0	8	0	0	8
Michael Constant	0	0	0	0	5	0	5
Anders Scholl	0	1	2	1	0	0	4
John Lewis	0	0	3	0	0	0	3
Calvin Loh	0	0	1	0	0	1	2

Planar's Corner:

Continuous imp-launching (final part)

Impfinity v1 is now close to dying of old age, after being published in Core Warrior 4 and spending most of its life in the bottom half of the beginner hill.

I was writing version 2 when I realized that binary launching is not the only way of launching a continuous spiral. The JMP/ADD launch can also be adapted.

I'll first explain JMP/ADD launching. Old-timers may want to skip three paragraphs. This is a JMP/ADD launcher, taken from the FAQ:

```
    A   spl     1, 0
    B   spl     1, 0
    C   spl     E, 0
    D   jmp     imp, 0
    E   add.a   #step, D
    F   dat     0, 0
    imp mov.i   #0, step
```

This is how it works:

```
   [A]
   [B B]
   [C C C C]
   [D E D E D E D E]
   [imp F imp+step F imp+2*step F imp+3*step F]
   [imp+1 imp+step+1 imp+2*step+1 imp+3*step+1]
```

It's pretty straightforward: we interleave processes at D and E, the processes at D jump to the spiral, and the processes at E increment the JMP at D to make it point to the right place for each jump.

How do we convert this into a continuous launch ? We have to alternate ADDs and JMPs. The easiest way to do it:

```
    Z   spl     0, 0
    A   add.a   #step+1, J
    J   jmp     imp-step-1, 0
```

Here is what it does:

```
                        [Z]
                      [A Z]
                   [J A Z]
               [imp J A Z]
  [imp+1 imp+step+1 J A Z]
```

So this code will alternate ADDs and JMPs and add one process to the spiral at each turn. We have to ADD step+1 because the spiral will advance by one location before we add a process.

The above piece of code is what I call the "pump", because it pumps processes into the spiral.

There's one little problem because the pump only adds one process per round. An incomplete spiral is not viable, its processes will die within one round. So we have to keep the spiral alive until the first ring is completed. There are several ways of doing this. I've considered launching a complete ring with one of the three classical launchers, and synchronizing the pump to add processes at the right place. Finally, I've decided to use a little piece of code to prime the pump:

```
    instr   mov.i   #0, step
    primer  spl     0, >1
            mov.i   instr, imp
```

This will unroll a carpet of imp instructions under the tail of the spiral. If you locate the primer at the right place in front of the spiral, it will be overwritten by the spiral when its job is finished (or you can arrange for your stone to kill it, or whatever). Note that you have to do one MOV in each turn. A DJN loop will not work here.

So this is it. Six lines of code, three of them can be located away from the three others, and they are only used for a few dozen cycles. What is left for scanners to find is just three lines. Pretty good, no ?

A few ideas occured to me while I was writing this. I'll give them as exercises to the reader:

- There may be a way of launching several processes per round with something like this:

```
    Z   spl     Z, }J
    A   spl     1, 0
    B   spl     1, 0
    C   spl     E, 0
    J   jmp     imp, 0
    E   add.a   #step, J
    F   dat     0, 0
    imp mov.i   #0, step
```

  This will add 4 processes to the imp in each round, so it doesn't need a primer for a 3-point imp. It launches faster but it's longer.

- We could incorporate the primer into the pump (build an auto-prime pump ?) like this:

```
    Z   spl     0, >P
    P   mov.i   imp, imp
```

```
     A   add.a   #step+1, J
     J   jmp     imp-step-1, 0
     imp mov.i   #0, step
```

  Hmm, I think I'm going to integrate something like this into a
  future version of Impfinity.

- Because in a core of size 55440 imp spirals have at least 13 points,
  launchers tend to be bigger and easier to kill. This is not true
  for this launcher, so this technique may be more useful in the
  experimental hill.

Finally, I'll give you the latest version of Impfinity. I've provided a reasonable set of constants that are completely different from what I've sent to the hill.

Impfinity v3i implements the ideas given by Magnus Paulsson in Core Warrior 2 about how Die Hard might be working. We now know that Die Hard has nothing to do with Magnus' guesses, but his ideas are still good. I'll quote him:

>Now if you place two spirals on top of each other, and plan in which order
>they and the rest of the code will be in the execution. In the coreclear the
>spl processes will be like 4000 processes, spiral, 4000 processes, spiral.
>That means the clear has to kill spiral in 4000 cycles which isn't possible
>in a clear.

Right. And since scanners were the real danger for Impfinity, I've interleaved the two spirals with two self-splitting stones that eat most of the processes (because they will be stunned anyway). When one of the stone is stunned, the other one keeps going at about the same speed because it splits almost as fast as the stunned one. In the real world, it's more like 2000 processes, spiral, 6000 processes, spiral. But it does give better protection against core-clears.

>So, because there is a thing called gate which kills spirals. In order to tie
>you have to have something like 100 processes in a spiral to slow it down as
>much that it doesn't reach the gate. Now you can't launch such a monster
>without getting killed before the launch is complete.

Aha, but with continuous launching, you can launch a monster of any size with a 3-line launcher that scanners (and stones) will find hard to kill. And because the self-splitting stones eat most of the cycles, 60 processes in the spirals are largely enough: by the time the stones are killed and the spirals advance at full speed, the game is almost over.

Impfinity v3i starts with an SPL that divides the cycles in half. Each half is doing the same thing (but with different offsets): bootstrap the pump, primer, and stone; launch the pump and primer. The primer will launch the stone after a (short) while. If I start the stone too early, the spiral is too short (it doesn't grow much, once the stone is started).

So we have two stones and two spirals. The spirals are exactly on top of each other, so they help keep each other alive.

The stones are synchronized with magic01, magic02, stnof01, and stnof02, so they won't kill each other (or themselves) until very late, and one of them turns itself into a core-clear (one-pass, unfortunately). Oh, and I have a 7-point spiral, so I can use anti-3-point bombs, but I have no idea how much good it does.

Finally, I think the stone design warrants a few words. It is self-splitting, changes 3 core locations in 4 cycles, throws colored bombs, and turns itself into a suicidal core-clear if you use the right magic constant. And I can make it switch bombs in the middle of the bombing run (not shown here). Is it original ? I don't know.

A little bit of version history:

Version 3e7, which stayed on the bottom half of the ’94 hill for some time, didn’t have the twin spirals and stones, and had a slower bootstrap.
Version 3c11 (sent to the beginner hill after it failed to enter the ’94 hill) has a slower stone and an 11-point spiral.

I’ll put them both on my Web page, along with version 3i, when this issue of Core Warrior is posted.

```
;redcode-94
;name Impfinity v3i
;author Planar
;strategy boot,imp,stone,clear
;assert CORESIZE == 8000

; The constants on the lines marked with "C" are all different
; from the version on the hill.
; To synchronize the two stones, I had to do a lot of tweaking of
; magic01, magic02, stnof01, and stnof02.  Thanks to cdb, it only
; took a few hours.

istep   equ     1143
bstep01 equ     2214
bstep02 equ     3285
magic01 equ     (-2)                    ; C
magic02 equ     (-3)                    ; C
fuse    equ     13                      ; C

trash   equ     (Z-200)                 ; C
impoff  equ     (Z+500)                 ; C
prmof01 equ     (impoff+2*istep+20)     ; C
prmof02 equ     (impoff+5*istep+20)     ; C
pmpof01 equ     (impoff+4*istep-20)     ; C
pmpof02 equ     (impoff+1*istep-20)     ; C
stnof01 equ     (impoff+3*istep-21)     ; C
stnof02 equ     (impoff+6*istep-19)     ; C

        org     boot
Z
boot    spl     boot02

i FOR 2

boot&i  mov.i   {ppmp&i, <ppmp&i
        mov.i   {ppmp&i, <ppmp&i
        mov.i   {ppmp&i, <ppmp&i

        mov.i   {pprm&i, <pprm&i
        mov.i   {pprm&i, <pprm&i
        mov.i   {pprm&i, <pprm&i
        mov.i   {pprm&i, <pprm&i

        mov.i   {pstn&i, <pstn&i
        mov.i   {pstn&i, <pstn&i
        mov.i   {pstn&i, <pstn&i
        mov.i   {pstn&i, <pstn&i
        mov.i   {pstn&i, <pstn&i

        mov.i   >trash-15-i*2, pstn&i
        spl     @ppmp&i, >pprm&i
        mov.i   >trash-i*2, ppmp&i
        spl     @pprm&i, >trash-5-i*2
        mov.i   >trash-10-i*2, pprm&i

ppmp&i  dat     ptr&i+1, pmpof&i+ptr&i+1-pump&i
pprm&i  dat     prime&i+3, prmof&i+prime&i+3-instr&i
pstn&i  dat     jump&i+1, stnof&i+jump&i+1-bomb&i

pump&i  spl     #1, >ptr&i
        add.f   #istep+1, ptr&i
```

```
ptr&i   jmp     pump&i-pmpof&i+impoff-istep-1, {200   ; C

instr&i mov.i   #1, istep
prime&i spl     #instr&i-prmof&i+impoff, >23          ; C
        mov.i   instr&i, }prime&i
        jmn.b   instr&i-prmof&i+stnof&i+1, instr&i-prmof&i+impoff+fuse

bomb&i  dat     <5334, <2667
stone&i spl     #stone&i+bstep&i+magic&i, {-1000      ; C
        mov.i   bomb&i, }stone&i
        add.f   #bstep&i-1, stone&i
jump&i  djn.f   stone&i, <-30                         ; C

ROF

FOR (MAXLENGTH-CURLINE)/3
        mov     #1, 1
        mov     #1, @1
        spl     #1, 1
ROF

FOR MAXLENGTH-CURLINE
        dat     #1, 1
ROF

        end
```

Unless I’m mistaken, Calvin Loh has not published his JMP/ADD continuous launching design yet. Does it look like the above ?

<Damien.Doligez@inria.fr>

Extra Extra:
Quickscanners
by Robert Mcrae

Core_Warrior_#4 carried a description of scanners. 0.66c or 0.80c is fast, but they’re not _quick_! Lets look at the central loop of a very basic 0.66c scanner and ask what baggage can be removed.

```
; Code loosely based on simplified Core_Warrior_#4 scanner

inc     add.f   step, scan      ; nudge scan along
scan    sne.i   100, 112        ; scan
        djn.b   inc, #1000      ; repeat 1000 times
attack  <different stuff we can do here; avoid self-bombing>
step    dat     24, 24
```

The main loop takes 3 cycles to check 2 locations, hence the 0.66c figure. INC nudges the locations which are compared by SEQ instruction, DJN is needed to jump back to INC -- this looks like about as fast as we can get. But...

Quickscanners Use INLINE CODING.

The essential instruction to the above code is the comparison SNE. If we "unwrap" the loop into a long list of SNEs with no ADDs (since we hard-code the addresses to be scanned) and no DJNs (because we are not looping) then the comparison speed hits 2c -- every (executed) instruction is a SNE comparing _2_ locations. The result might look like this:

```
start   sne.i   start+100, start+112
         mov.ab  #100, target
        sne.i   start+124, start+136
         mov.ab  #124, target
        sne.i   start+148, start+160
```

```
 mov.ab  #148, target
sne.i   start+172, start+184
 mov.ab  #172, target
sne.... etc
```

where target is used by the attack code as a pointer to the locations which have failed the SNE test. These may be attacked by any method such as SPL carpet, incendiary etc, but before considering attacks, ask whether the above code gains more than it loses compared to the scanner we derived it from:

Good

We have scanned 8 locations in just 4 cycles (given no hits).

Bad

The code to scan 8 locations fills 8 locations, so we are very vulnerable to bombers and scanners.
We don't know where we've hit till the end of the inline sequence.
A maximum-length warrior (100 instruction) can only scan 100 locations, or 1.3% of core. What do we do then?

These features make Quickscans rather specialised tools. They are always (AFAIK) used as the _first_ stage of a composite warrior. Scanning less than 100 locations they cannot guarantee to hit anything, so some fallback strategy is needed -- scanner, bomber, whatever -- to handle the warriors they miss. If they hit, you should win. If they miss, you've just lost a few tens of cycles.

Since they are run once through and then discarded, the vulnerability to bombers is ameliorated. It is a good exercise to calculate how likely a c=0.33 bomber is to kill a Quickscanner (say) 80 words long. (No, I don't know either, but I'd like to :)

Quickscanners will be scanning early in the battle, certainly in the first 100 cycles, before many bombs have been thrown or replicators sprouted. Anything they detect is quite likely to be the enemy warrior code or a decoy close to it. This means they can afford to invest a _lot_ of effort on damaging that area of core.

This completes the outline and philosophy of Quickscanners (didn't take long:), so now onto practical tips. Actually, since asking the right kind of question is more useful than reading a recipe, most of the work is up to you...

Where to Scan?

You occupy 100 cells, and the enemy is at least 100 away. That gives you 7700 to examine; why not space them evenly? Where should the end points be?

What Order to Scan?

If you do enough scans so that the spacing between locations is less than 100,

here is a minor gain to scanning 1st, 3rd, 5th .. n-1th before you do 2nd, 4th .. nth. To see why, imagine your target is 100 cells long. Once you have scanned the 3rd location and found it empty, you have eliminated _some_ of the possible positions of the enemy which would give rise to a hit in the 2nd and 4th locations. This makes them worse bets than other locations, so leave them till later. (How big is the gain here? Is there any cost?)

Are There Other Forms of QS?

Several. The most interesting makes somewhat more efficient use of space by a sequence:

```
SNE.i   start+150, start+250
SEQ.i   start+350, start+450
MOV.ab  #150, Target
...
```

Speed is still 2c, but this method packs 4 comparisons into 3 locations at the cost of requiring more work in decoding exactly where the hit occurred. This method was used in Pyramid and Thermite, which aim to win via their thorough QS, but Paul Klein's recently-published Die Hard used the simpler SNE/MOV scheme for maximum speed in decoding. He was just aiming to hit often enough to do damage with his brainwash, so packing density came second to decoding speed.

Randy Graham came up with a scheme intermediate between a QS and a scanner, in which a long block of DAT pointers were used. This scans at "only" c=1, but has benefits in robustness (why?) and packing.

```
          SNE.i @ListTop, *ListTop
          DJN.f -1, -1

          <attack here>

List    DAT     #7750, #7850
        ...
ListTop DAT     #150, #250
```

[BTW I should credit the rest of the article too. Most of the things I know about Quickscanners came from experimenting with Michael Constant's Sauron-T, which is in the 1993 competition archive. Pyramid, a later QS of Michael's, is an excellent basis for experiment because it is fully parameterised. Apologies for any missed names, mistakes, misrepresentations or misrecollections.]

How Should I Attack?

Big topic, vital to any warrior so I'm going to digress.

Any attack has to pay off being deadly against being quick to deliver. Classic bombers go for fast delivery, but typically of a single <, DAT or SPL. Scanners only spend time attacking plausible targets, by ignoring blank areas, so when they find something they can afford to take more time and deliver bigger, nastier bombs -- SPL carpets, incendiaries etc.

Right at the end of the quick-to-nasty spectrum come Quickscanners. These will usually only find one target, but it is very high quality, meaning that there is a good chance that the enemy has a substantial fraction of his processes working near to the scanned location. We should invest substantial time flattening the whole area. I've seen various schemes for this. I like launching vampiric JMP instructions which suck enemy processes into a prepared SPL pit. Multiple incendiaries could do the trick, and so could SPL carpets, though this gets slow if you want to carpet a large area.

How large Should the Area Be?

Well... not more than +-100 cells from the location scanned. (Why?) This decision interacts with the speed of the method of bombing you use. We _hope_ we have clobbered the opponents code before he can boot away, but we cannot assume it. Another salutary calculation is just how fast we have to be; big imps are easy meat (you should probably make that "extinct" meat) but a bomber can boot in 20 cycles and leave you pasting his decoy. If he has booted away, we can't waste too long bombing air before we fall back on our second strategy...

+-50 cells is probably as long as is needed, and you certainly hit diminishing returns if you bomb more than every 4th cell. Using a 0.33c bomber and hitting every 6th cell takes about 50 cycles to complete. Die Hard hit a smaller range, every 8th cell, with a 0.4c bomber for 20 cycles or so. The best solution here, as usual, is to experiment. If you can get hold of likely opponents and work out how quickly they boot, this will help guide the choices.

Thermite

[Editor note: Thermite has been posted in Core warrior # 5; you can find it at Planar's home page -

http://pauillac.inria.fr/~doligez/corewar/rc/Thermite.txt]

I hope that these notes have given sufficient background so that the choices made in Thermite (Core_Warrior_#5) make sense. These notes go into a little more detail than the in-code comments but see #5 for the source.

Most importantly, I use FOR/ROF rather than typing the addresses! Pyramid goes further, with adjustable parameters for number of scans etc. I use the SNE/SEQ form of scan to get the scan spacing down to 81 cells. When I have a hit, I scan through the 4 alternatives in a short loop. (Spot the weakness here; Randy pointed out a wasted cycle or two, but I don't remember where...) I launch an SPL bomb straight at my hit, before starting the main vampiric bomb run. I believe this reduces the chance of the enemy booting away before the bomb-run gets back to the original hit (but why not check?).

The occasional JMN instructions check whether a hit has been made. If it has, I jump direct to the bombing routine saving a few wasted scanning cycles. The gain is not great, because each JMN test is guaranteed to cost one cycle but has a relatively small chance of saving any. (For _real_ enthusiasts, what is the spacing of the JMNs which optimises expected speed of hits? I think there are more JMNs near the beginning...)

I bite at 0.33c, from about 50 after the hit to 100 before. The asymmetry arose because I was keen to bomb "near" the original hit quickly, but didn't mind spending a few extra cycles "making sure" on the far end. Does the asymmetry pay? What is the chance that I miss a kill by not biting +50 to +100? What is the (weak) reason for bombing from -81 to -100?

I use fangs which do an indirect jump via a location well away from the trap. This is meant to help against indirect-bombing silks, because I have only 1 pointer to the trap which is shared by all the bites. My pit concentrates on splitting as fast as possible, but why not add a brainwash? Beppe pointed out that if you plan to use the QS with a paper, the pit should commit suicide eventually because the paper cannot guarantee to kill it. Perhaps use a DJN trail wrapping round core? Or should the pit work as a bomber?

How many points do I lose not booting?

There are lots of options to explore. It is easy to add a QS to most conventional warriors and the performance gain can be substantial. If you already have a reasonable warrior less than 70 cycles long, why not trade in the decoy for a QS, which will work for its living..?

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.reston.ans.net!newsfeed.internetmci.com!in2.uu.net!brighton.openmarket.com!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Tue Dec 5 11:41:17 1995
Article: 3214 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.reston.ans.net!newsfeed.internetmci.com!in2.uu.net!brighton.openmarket.com!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core_ Warrior_ 8
Date: 4 Dec 1995 16:09:26 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 1544
Message-ID: <49v6fm$pko@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 8 December 4, 1995

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.

BIG changes this week. The Pizza server has some new additions. The 'Holding Pen' lists the queue of warriors awaiting battle much like the StormKing page. Beppe grilled Thos on the meanings of the numbers at the bottom labeled load average and he had this to say:

3:39pm load average: 3.49, 2.75, 2.68

The numbers are the load average for the last 1, 5, and 15 minutes.
1 / (load average) = % CPU pmars is getting. During the day here load is about 2.5, at night it drops to 1.8 or less. When the pen finally empties, the load average should go to less than 1.0.

Going by the "last challenge" times of the hill, it looks like it takes about 35 minutes to run the 94 hill with a load of around 2.5. It looks like it takes about 45 minutes to run the 94x hill, but that may just be standard deviation. Looks like a 94 + 94x challenge will take around 1:15 or so during the day here, and a little under an hour at night.

Those are about as accurate as I can give you.

-Thos

Pizza has also opened a new hill, the 5*40. Also notice that five new slots have opened up on the pizza hills and the number of battles was reduced to

200. Makes the division easier for slow people like me.

We've said it once, and we'll say it again--the big (CORESIZE 55440) hill has been reopened at the Stormking server, address: <koth@stormking.com>. Access the hill with ;redcode-94x

In addition to Planar's Corner, we have the staffs'--M R Bremer's and Beppe Bezzi's--tournament entires for you to enjoy along with comments by the authors. Check out Extra, Extra for all the goods.

The hints section is the last in the line in presenting basic warrior strategies. Maybe one more. The question is: where do we go from here? Your input is always appreciated. Also included in the hint: a version of myVamp by Magnus Paulsson.

Tournament Time:

The results of round 7 are in. To recap, the challenge was to beat your up to 500 line long opponent loaded at a fixed position halfway through core. This was an exciting round with huge score ranges. Robert Macrae's Last Laugh won by a land slide, with 90% wins. We saw some intriguingly new P-space strategies, and we'd like to ask the top 3 contenders, Robert Macrae, Myer Bremer and Beppe Bezzi to post their warriors with discussion of their strategy. (Editior's Note: Macrae has already posted his warrior to the newsgroup. Bremer's and Bezzi's warrior are in Extra Extra.)

The results in detail:

Battle 1 of 66 (2%) is finished:
Back Propagation by M R Bremer scores 471 (93 1 6)
BlackMoor by P.Kline scores 11 (1 93 6)

Battle 2 of 66 (3%) is finished:
Back Propagation by M R Bremer scores 484 (96 0 4)
Burger Chef & Jeff by Karl Lewin scores 4 (0 96 4)

Battle 3 of 66 (5%) is finished:
Back Propagation by M R Bremer scores 500 (100 0 0)
Frontwards by Steven Morrell scores 0 (0 100 0)

Battle 4 of 66 (6%) is finished:
Back Propagation by M R Bremer scores 15 (3 97 0)
Last Laugh by Robert Macrae scores 485 (97 3 0)

Battle 5 of 66 (8%) is finished:
Back Propagation by M R Bremer scores 176 (19 0 81)
Mister Bond by Derek Ross scores 81 (0 19 81)

Battle 6 of 66 (9%) is finished:
Back Propagation by M R Bremer scores 0 (0 100 0)
myVamp v3.7 by Paulsson scores 500 (100 0 0)

Battle 7 of 66 (11%) is finished:
Back Propagation by M R Bremer scores 50 (8 82 10)
run and hit by Beppe Bezzi scores 420 (82 8 10)

Battle 8 of 66 (12%) is finished:
Back Propagation by M R Bremer scores 240 (38 12 50)
Settete by Maurizio Vittuari scores 110 (12 38 50)

Battle 9 of 66 (14%) is finished:
Back Propagation by M R Bremer scores 483 (96 1 3)
Slayer by Randy Graham scores 8 (1 96 3)

Battle 10 of 66 (15%) is finished:
Back Propagation by M R Bremer scores 444 (86 0 14)
Tim by G. Eadon scores 14 (0 86 14)

Battle 11 of 66 (17%) is finished:
Back Propagation by M R Bremer scores 443 (88 9 3)

Victory or death by Anders Ivner scores 48 (9 88 3)

Battle 12 of 66 (18%) is finished:
BlackMoor by P.Kline scores 0 (0 100 0)
Burger Chef & Jeff by Karl Lewin scores 500 (100 0 0)

Battle 13 of 66 (20%) is finished:
BlackMoor by P.Kline scores 485 (97 3 0)
Frontwards by Steven Morrell scores 15 (3 97 0)

Battle 14 of 66 (21%) is finished:
BlackMoor by P.Kline scores 5 (1 99 0)
Last Laugh by Robert Macrae scores 495 (99 1 0)

Battle 15 of 66 (23%) is finished:
BlackMoor by P.Kline scores 425 (84 11 5)
Mister Bond by Derek Ross scores 60 (11 84 5)

Battle 16 of 66 (24%) is finished:
BlackMoor by P.Kline scores 500 (100 0 0)
myVamp v3.7 by Paulsson scores 0 (0 100 0)

Battle 17 of 66 (26%) is finished:
BlackMoor by P.Kline scores 93 (15 67 18)
run and hit by Beppe Bezzi scores 353 (67 15 18)

Battle 18 of 66 (27%) is finished:
BlackMoor by P.Kline scores 113 (22 75 3)
Settete by Maurizio Vittuari scores 378 (75 22 3)

Battle 19 of 66 (29%) is finished:
BlackMoor by P.Kline scores 96 (18 76 6)
Slayer by Randy Graham scores 386 (76 18 6)

Battle 20 of 66 (30%) is finished:
BlackMoor by P.Kline scores 50 (10 90 0)
Tim by G. Eadon scores 450 (90 10 0)

Battle 21 of 66 (32%) is finished:
BlackMoor by P.Kline scores 75 (15 85 0)
Victory or death by Anders Ivner scores 425 (85 15 0)

Battle 22 of 66 (33%) is finished:
Burger Chef & Jeff by Karl Lewin scores 100 (0 0 100)
Frontwards by Steven Morrell scores 100 (0 0 100)

Battle 23 of 66 (35%) is finished:
Burger Chef & Jeff by Karl Lewin scores 97 (19 79 2)
Last Laugh by Robert Macrae scores 397 (79 19 2)

Battle 24 of 66 (36%) is finished:
Burger Chef & Jeff by Karl Lewin scores 140 (13 12 75)
Mister Bond by Derek Ross scores 135 (12 13 75)

Battle 25 of 66 (38%) is finished:
Burger Chef & Jeff by Karl Lewin scores 0 (0 100 0)
myVamp v3.7 by Paulsson scores 500 (100 0 0)

Battle 26 of 66 (39%) is finished:
Burger Chef & Jeff by Karl Lewin scores 8 (1 96 3)
run and hit by Beppe Bezzi scores 483 (96 1 3)

Battle 27 of 66 (41%) is finished:
Burger Chef & Jeff by Karl Lewin scores 100 (0 0 100)
Settete by Maurizio Vittuari scores 100 (0 0 100)

Battle 28 of 66 (42%) is finished:
Burger Chef & Jeff by Karl Lewin scores 0 (0 100 0)
Slayer by Randy Graham scores 500 (100 0 0)

Battle 29 of 66 (44%) is finished:
Burger Chef & Jeff by Karl Lewin scores 32 (6 92 2)
Tim by G. Eadon scores 462 (92 6 2)

Battle 30 of 66 (45%) is finished:
Burger Chef & Jeff by Karl Lewin scores 225 (45 55 0)
Victory or death by Anders Ivner scores 275 (55 45 0)

Battle 31 of 66 (47%) is finished:
Frontwards by Steven Morrell scores 0 (0 100 0)
Last Laugh by Robert Macrae scores 500 (100 0 0)

Battle 32 of 66 (48%) is finished:
Frontwards by Steven Morrell scores 500 (100 0 0)
Mister Bond by Derek Ross scores 0 (0 100 0)

Battle 33 of 66 (50%) is finished:
Frontwards by Steven Morrell scores 0 (0 100 0)
myVamp v3.7 by Paulsson scores 500 (100 0 0)

Battle 34 of 66 (52%) is finished:
Frontwards by Steven Morrell scores 496 (99 0 1)
run and hit by Beppe Bezzi scores 1 (0 99 1)

Battle 35 of 66 (53%) is finished:
Frontwards by Steven Morrell scores 500 (100 0 0)
Settete by Maurizio Vittuari scores 0 (0 100 0)

Battle 36 of 66 (55%) is finished:
Frontwards by Steven Morrell scores 10 (2 98 0)
Slayer by Randy Graham scores 490 (98 2 0)

Battle 37 of 66 (56%) is finished:
Frontwards by Steven Morrell scores 204 (26 0 74)
Tim by G. Eadon scores 74 (0 26 74)

Battle 38 of 66 (58%) is finished:
Frontwards by Steven Morrell scores 35 (7 93 0)
Victory or death by Anders Ivner scores 465 (93 7 0)

Battle 39 of 66 (59%) is finished:
Last Laugh by Robert Macrae scores 496 (99 0 1)
Mister Bond by Derek Ross scores 1 (0 99 1)

Battle 40 of 66 (61%) is finished:
Last Laugh by Robert Macrae scores 486 (97 2 1)
myVamp v3.7 by Paulsson scores 11 (2 97 1)

Battle 41 of 66 (62%) is finished:
Last Laugh by Robert Macrae scores 500 (100 0 0)
run and hit by Beppe Bezzi scores 0 (0 100 0)

Battle 42 of 66 (64%) is finished:
Last Laugh by Robert Macrae scores 500 (100 0 0)
Settete by Maurizio Vittuari scores 0 (0 100 0)

Battle 43 of 66 (65%) is finished:
Last Laugh by Robert Macrae scores 500 (100 0 0)
Slayer by Randy Graham scores 0 (0 100 0)

Battle 44 of 66 (67%) is finished:
Last Laugh by Robert Macrae scores 104 (19 72 9)
Tim by G. Eadon scores 369 (72 19 9)

Battle 45 of 66 (68%) is finished:
Last Laugh by Robert Macrae scores 500 (100 0 0)
Victory or death by Anders Ivner scores 0 (0 100 0)

Battle 46 of 66 (70%) is finished:
Mister Bond by Derek Ross scores 23 (0 77 23)

myVamp v3.7 by Paulsson scores 408 (77 0 23)

Battle 47 of 66 (71%) is finished:
Mister Bond by Derek Ross scores 53 (6 71 23)
run and hit by Beppe Bezzi scores 378 (71 6 23)

Battle 48 of 66 (73%) is finished:
Mister Bond by Derek Ross scores 194 (32 34 34)
Settete by Maurizio Vittuari scores 204 (34 32 34)

Battle 49 of 66 (74%) is finished:
Mister Bond by Derek Ross scores 276 (50 24 26)
Slayer by Randy Graham scores 146 (24 50 26)

Battle 50 of 66 (76%) is finished:
Mister Bond by Derek Ross scores 211 (28 1 71)
Tim by G. Eadon scores 76 (1 28 71)

Battle 51 of 66 (77%) is finished:
Mister Bond by Derek Ross scores 130 (26 74 0)
Victory or death by Anders Ivner scores 370 (74 26 0)

Battle 52 of 66 (79%) is finished:
myVamp v3.7 by Paulsson scores 10 (2 98 0)
run and hit by Beppe Bezzi scores 490 (98 2 0)

Battle 53 of 66 (80%) is finished:
myVamp v3.7 by Paulsson scores 100 (0 0 100)
Settete by Maurizio Vittuari scores 100 (0 0 100)

Battle 54 of 66 (82%) is finished:
myVamp v3.7 by Paulsson scores 0 (0 100 0)
Slayer by Randy Graham scores 500 (100 0 0)

Battle 55 of 66 (83%) is finished:
myVamp v3.7 by Paulsson scores 87 (9 49 42)
Tim by G. Eadon scores 287 (49 9 42)

Battle 56 of 66 (85%) is finished:
myVamp v3.7 by Paulsson scores 85 (17 83 0)
Victory or death by Anders Ivner scores 415 (83 17 0)

Battle 57 of 66 (86%) is finished:
run and hit by Beppe Bezzi scores 96 (16 68 16)
Settete by Maurizio Vittuari scores 356 (68 16 16)

Battle 58 of 66 (88%) is finished:
run and hit by Beppe Bezzi scores 481 (96 3 1)
Slayer by Randy Graham scores 16 (3 96 1)

Battle 59 of 66 (89%) is finished:
run and hit by Beppe Bezzi scores 319 (57 9 34)
Tim by G. Eadon scores 79 (9 57 34)

Battle 60 of 66 (91%) is finished:
run and hit by Beppe Bezzi scores 75 (15 85 0)
Victory or death by Anders Ivner scores 425 (85 15 0)

Battle 61 of 66 (92%) is finished:
Settete by Maurizio Vittuari scores 363 (66 1 33)
Slayer by Randy Graham scores 38 (1 66 33)

Battle 62 of 66 (94%) is finished:
Settete by Maurizio Vittuari scores 314 (58 18 24)
Tim by G. Eadon scores 114 (18 58 24)

Battle 63 of 66 (95%) is finished:
Settete by Maurizio Vittuari scores 85 (17 83 0)
Victory or death by Anders Ivner scores 415 (83 17 0)

Battle 64 of 66 (97%) is finished:
Slayer by Randy Graham scores 88 (1 16 83)
Tim by G. Eadon scores 163 (16 1 83)

Battle 65 of 66 (98%) is finished:
Slayer by Randy Graham scores 480 (96 4 0)
Victory or death by Anders Ivner scores 20 (4 96 0)

Battle 66 of 66 (100%) is finished:
Tim by G. Eadon scores 491 (98 1 1)
Victory or death by Anders Ivner scores 6 (1 98 1)

Elapsed time: 5286 seconds (01:28:06)

Rank	Name	Author	%W	%L	%T	Score
1	Last Laugh	Robert Macrae	90	9	1	4963
2	Back Propagation	M R Bremer	57	27	16	3306
3	run and hit	Beppe Bezzi	54	36	10	3096
4	Victory or death	Anders Ivner	52	48	0	2864
5	Slayer	Randy Graham	45	41	14	2652
6	Tim	G. Eadon	40	27	32	2579
7	myVamp v3.7	Paulsson	37	48	15	2201
8	Settete	Maurizio Vittuari	30	37	33	2010
9	Frontwards	Steven Morrell	31	53	16	1860
10	BlackMoor	P.Kline	33	64	3	1853
11	Burger Chef & Jeff	Karl Lewin	17	57	26	1206
12	Mister Bond	Derek Ross	15	54	31	1164

The scores so far:

Name	1	2	3	4	5	6	7	total
Steven Morrell	5	10	9	13	14	10	4	65
P.Kline	7.5	9	7	11	11	12	3	60.5
Paulsson	7.5	11	11	9	2	5	6	51.5
Anders Ivner	5.5	8	4	0	10	14	9	50.5
Beppe Bezzi	7	7	13	2	8	3	10	50
Robert Macrae	0	0	0	12	12	13	12	49
M R Bremer	7	4	3.6	5	7	11	11	48.6
Maurizio Vittuari	6.5	5	6	3	9	8	5	42.5
Randy Graham	0	0	8	10	4	7	8	37
John K. Wilkinson	4	6	12	0	13	2	0	37
Karl Lewin	0	0	10	4	6	10	2	32
Derek Ross	3.5	3	3.3	7	3	6	1	26.8
G. Eadon	1.5	2	5	6	1	4	7	26.5
Kurt Franke	0	0	0	8	0	0	0	8
Michael Constant	0	0	0	0	5	0	0	5
Anders Scholl	0	1	2	1	0	0	0	4
John Lewis	0	0	3	0	0	0	0	3
Calvin Loh	0	0	1	0	0	1	0	2

As this tournament draws to a close -- only 2 more rounds to go, it looks like we’re up for some up for some final stretch excitement. The lead of Steven Morrell and Paul Kline has dwindled to a mere 9 points and the midfield is densely packed with 5 players scoring between 48 and 51 points. The game is still wide open. Just as a reminder, the GIFs of winner and two runners-up will be featured in the upcoming Core War Hall of Fame at stormking -- how’s that for an incentive?

Good luck for the remaining rounds,
Nandor & Stefan

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100

```
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft

Last challenge: Sun Dec  3 10:16:49 PST 1995
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	44/ 37/ 19	quiz	Schitzo	151	137
2	38/ 36/ 25	Derision	M R Bremer	140	156
3	42/ 44/ 14	TestTTB	Maurizio Vittuari	139	6
4	35/ 31/ 34	Tornado 2.0	Beppe Bezzi	138	1
5	40/ 42/ 18	Porch Swing 2	JKW	138	45
6	37/ 37/ 26	myVamp v3.7	Paulsson	137	484
7	20/ 5/ 75	Die Hard	P.Kline	135	38
8	33/ 30/ 36	Torch t18	P.Kline	135	516
9	30/ 25/ 44	La Bomba	Beppe Bezzi	134	132
10	27/ 20/ 53	juliet and paper	M R Bremer, B. Bezzi	133	133
11	29/ 27/ 43	Jack in the box	Beppe Bezzi	131	504
12	19/ 7/ 74	Night Train	Karl Lewin	130	24
13	38/ 46/ 17	Taking Names	P.Kline	130	25
14	37/ 46/ 16	ltest	Anders Ivner	128	53
15	33/ 37/ 30	endpoint .	M R Bremer	128	161
16	24/ 20/ 56	Hector 2	Kurt Franke	128	52
17	21/ 15/ 64	Impfinity v3i	Planar	127	66
18	34/ 40/ 26	Test z	JKW	127	44
19	26/ 25/ 49	test9q	Kurt Franke	126	11
20	31/ 36/ 33	Saveme!	Maurizio Vittuari	126	51
21	22/ 19/ 59	Evolve-- v.1	JKW	124	33
22	36/ 47/ 17	Leprechaun on speed	Anders Ivner	124	312
23	30/ 36/ 34	Son & Father	Maurizio Vittuari	123	167
24	22/ 23/ 55	test9p	Kurt Franke	120	8
25	31/ 45/ 24	The Inferno	Kurt Franke	116	2

Two behemoths get pushed off this week. Armory has been suffering for a awhile and was finally pushed off by JKW's own test. Phq has had similar problems. His last ditch defense (Saveme!) wasn't quite enough to keep it on the hill. Torch t18 and Jack in the box move up to claim the vacated spots. Torch is in very good health, as high as third, as low as 11th, but overall hanging around 5th or 6th. Jack in the box is a super elastic yo-yo. Bezzi thought it may get pushed off soon, but it has hung out in the top 5 this week and is currently in 11th place. You'll have to see next week's issue for the updated Hall of Fame. Sorry.

quiz continues to dominate, usually enjoying a >10 point advantage. Someone _really_ needs to smash that thing. Who would be king then? ;-) La Bomba RULED and is now sliding down the hill. Are qscanners becoming ineffective? Hector 2 is a qscan --> replicator. Smart Bomb is a qscan --> p-warrior. We'll see how these three fare in the weeks ahead.

The five additional slots on the hill means lots of new boys. P.Kline decided to increase his presence on the hill with the addition of Taking Names (which pushed off Phq) and Die Hard. Maurizio Vitturari has a warrior under wraps that looks to be a worthy successor to Phq.

---

94 - What's New

3	42/ 44/ 14	TestTTB	Maurizio Vittuari	139	6
4	35/ 31/ 34	Tornado 2.0	Beppe Bezzi	138	1
5	40/ 42/ 18	Porch Swing 2	JKW	138	45
7	20/ 5/ 75	Die Hard	P.Kline	135	38
12	19/ 7/ 74	Night Train	Karl Lewin	130	24
13	38/ 46/ 17	Taking Names	P.Kline	130	25
14	37/ 46/ 16	ltest	Anders Ivner	128	53
16	24/ 20/ 56	Hector 2	Kurt Franke	128	52
18	34/ 40/ 26	Test z	JKW	127	44
19	26/ 25/ 49	test9q	Kurt Franke	126	11
20	31/ 36/ 33	Saveme!	Maurizio Vittuari	126	51
21	22/ 19/ 59	Evolve-- v.1	JKW	124	33
24	22/ 23/ 55	test9p	Kurt Franke	120	8
25	31/ 45/ 24	The Inferno	Kurt Franke	116	2

---

94 - What's No More

21	22/	21/	57	test4	Kurt Franke	122	2
21	31/	35/	33	Father & Son	Maurizio Vittuari	127	110
21	36/	45/	19	myZizzor v2.0	Paulsson	127	12
21	35/	49/	16	Frontwards	Steven Morrell	121	10
21	36/	47/	17	Porch Swing +	Randy Graham	124	166
21	32/	40/	28	Armory - A5	Wilkinson	123	609
26	25/	27/	47	Fly Fishing w/Plastic Wor	Karl Lewin	122	83
26	31/	40/	29	Phq	Maurizio Vittuari	121	589
26	1/	2/	1	test lp 2	Beppe Bezzi	4	36

What's Old

8	33/	30/	36	Torch t18	P.Kline	135	516
11	29/	27/	43	Jack in the box	Beppe Bezzi	131	504
6	37/	37/	26	myVamp v3.7	Paulsson	137	484
22	36/	47/	17	Leprechaun on speed	Anders Ivner	124	312

No other warrior is even above 200.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Sun Dec 3 15:11:21 PST 1995

#	%W/	%L/	%T	Name	Author	Score	Age
1	54/	29/	16	Fire Master v1.5	JS Pulido	179	26
2	52/	32/	15	Clear Sighted v1	JS Pulido	172	23
3	41/	15/	44	Paper8-IV 1.1	G. Eadon	167	6
4	47/	34/	18	dualstrat v.0.2	Brian Haskin	160	22
5	36/	14/	49	Schizo	J. Doster	158	73
6	38/	28/	34	Hint Test v6	M R Bremer	148	9
7	42/	37/	21	Look	J. Doster	147	70
8	29/	14/	57	Impfinity v3c11	Planar	144	85
9	28/	13/	59	Sheet 1.0	J. Doster	143	83
10	27/	17/	56	RingWorm_v2.4	Calvin Loh	136	71
11	21/	9/	69	RingWorm_v2.5	Calvin Loh	133	56
12	34/	40/	26	Good old DJN Test	Karl Lewin	127	36
13	33/	43/	24	Test-G	G. Eadon	124	1
14	26/	28/	46	Loh_tst_1.3	Calvin Loh	123	46
15	23/	30/	47	Serendipity	A. Nevermind	115	10
16	31/	48/	21	Headache	Andy Nevermind	113	7
17	27/	50/	23	Enlightenment III	Scott Manley	104	12
18	10/	16/	74	Fortitude	A. Nevermind	103	8
19	21/	55/	24	Joy!	Kevin Deitchman	87	11
20	21/	8/	13	test L 9	Beppe Bezzi	78	24
21	22/	11/	10	Lurker 1.1	Kurt Franke	76	41
22	14/	56/	29	Frau Langmeier v2.4	Ian Oversby	73	4
23	17/	5/	20	Trapper 1.1	Kurt Franke	70	21
24	1/	46/	53	PlinyScan 1.1	G. Eadon	57	3
25	15/	17/	11	Paper Shredder 2.1	Kurt Franke	55	40

Twenty new entries on the hill this week.

Pulido has had solid lock on the hill lately. Fire Master was seen on the '94 draft hill for awhile. The top 5 warriors are the same this week except the absence of two of Franke's--Lurker and teamwork. Franke has been trying to gain a foothold on the '94 hill. Hector 2 is in 16th place there. His test program is at the _top_ of the '94x hill. Lewin has also claimed a

spot on the ’94 hill with Night Train riding in 12th place. From the looks of his score, it seems to be some kind of Die Hard derivative.

Bezzi’s test L 9 is in 20th place. It was riding high on the ’94 draft hill if you can recall. If your program dominates the b hill and fares poorly on the ’94 draft hill, don’t lose confidence. The composition of the hill has a huge effect on how your warrior scores. Keep trying.

Planar’s Corner

The mathematics of imp steps

If you find this too mathematical, there is some redcode and cdb macros in section 4.

0. Notations

We’ll talk about an imp number N and its corresponding imp step S in a core of size C. This will give us an N-point ring or spiral with this instruction:

```
    MOV     0, S
```

N, S, and C must be such that, for some integer k,

$$N*S = k*C + 1 \qquad (1)$$

Given C and N, the game is to find an S that satisfies equation (1). We’re not really interested in the value of k. We’ll call (N,S) an imp pair in C. When C is implicit from the context, we’ll simply say that (N,S) is an imp pair.

We can see that equation (1) is unchanged when we exchange N and S: if (N,S) is an imp pair, then (S,N) is also an imp pair.

1. Existence

Let me state here the most important theorem of mathematics (as far as imp rings are concerned, anyway), Bezout’s theorem:

For any integers x, y, and g, there exists integers u and v such that

$$u*x + v*y = g \qquad (2)$$

if and only if g is a multiple of the Greatest Common Divisor of x and y.

I won’t explicitely prove Bezout’s theorem here. One of the implications is easy, and the programs below are proof of the other. Trust me, Bezout’s theorem is true.

Let us take x = N, y = C, and g = 1, and equation (2) is almost the same as equation (1): $u*N + v*C = 1$

If we can find u and v that satisfy this relation, then (u,N) is an imp pair. Conversely, if (N,S) is an imp pair, then $S*N + (-k)*C = 1$, so 1 must be a multiple of GCD(N,C). This means that 1 = GCD(N,C), so N and C have no common factors.

Our first result is:
In a core of size C, there is an imp step for N if and only if N and C have no common factor.

Examples:
In a core of size 8192 all odd numbers are imp numbers.
In a core of size 8000 all numbers ending in 1, 3, 7, or 9 are imp numbers.
In any core size, (1,1) is an imp pair.
In any core size C, (C-1,C-1) is an imp pair.
In any odd core size C, ((C-1)/2,C-2) is an imp pair.

2. Unicity

Assume that (N,S) and (N,T) are both imp pairs. We have:
(a) $N*S = k*C + 1$

(b) N*T = i*C + 1

Subtracting (b) from (a), we get:
(c) N*(S-T) = (k-i)*C

But N and C have no common factors, so S-T must be a multiple of C.
Thus, S = T + j*C: S and T are congruent modulo C. In a redcode
program they are equal, since all redcode arithmetic is done modulo C.

Our second result is:
In a core of size C, if both (N,S) and (N,T) are imp pairs, then S
and T must be congruent modulo C, and thus equal, as far as redcode
programs are concerned.

3. Computation with recursion

Computing the u and v parameters of equation (1) can be done with
Euclid's extended algorithm. This is a simple extension of Euclid's
algorithm for computing the GCD. Given x and y, Euclid's extended
algorithm will compute g = GCD(x,y) and values for u and v that make
equation (1) hold.

The algorithm is extremely simple. You want to solve
u*x + v*y = g

if x > y, solve u'*y + v'*x = g and take u = v', v = u'.
if x = 0, take g = y, u = 0, and v = 1.
else compute q and r such that y = q*x + r and 0 <= r < x;
solve u'*r + v'*x = g;
take u = v'-q*u' and v = u'.

This is the same as Euclid's algorithm except that you keep track of the
quotients of the divisions and use them to compute u and v.

4. Computation without recursion

There is a version of Euclid's extended algorithm that uses a loop
instead of the recursion. Instead of boring you with a description
of how it works, I'll simply give the code:

```
;redcode
;name Euclid's extended
;author Planar
;assert MAXLENGTH >= 15 && CORESIZE >= 16

; To compute the imp step for a given imp number,
; enter the imp number in the following line:

n       equ     3

; The program terminates with gcd (n,CORESIZE) in the a-value at
; address 0.  If this is 1, there is a spiral of size n, and the
; b-value at address 1 is the corresponding step.

; This program works in any core size, and it computes imp steps
; for that core size.

; Use the following cdb macro to display all the (N,S) imp pairs
; with N <= 100 in the current core size.
; imps=@ca z=0~!!~@ca z=z+1~@ed 0~dat z~@g~@0~if a==1~!!~@1~ca z,b~!1~@s~!100
; (and launch pMARS with -r 100)

        org     start

yx      dat     0, n            ; y = CORESIZE = 0
ab      dat     1, 0

done    equ     ab
start   sub.b   yx, q           ; (CORESIZE-n)
        div.b   yx, q           ; ((CORESIZE-n)/n)
```

```
        add.ab  #1, q         ; q = (CORESIZE-n)/n+1 = CORESIZE/n
loop    mul.ab  ab, q         ; (a*q)
        mov.x   ab, ab        ; (b);   b' = a
        sub.ba  q, ab         ; a' = b - a*q
        mov.x   yx, yx        ; (y);   y' = x
        sub.ab  yx, yx        ; (y - x)
        mod.ab  yx, yx        ; x' = (y-x) % x = y % x
        jmz.b   done, yx      ; We're done if x = 0
        mov.ab  yx, q         ; (y)
        div.b   yx, q         ; q' = y' / x'
        jmp     loop

q       end
```

This program is quite fast for every imp number N and core size C:
the number of loop iterations is bounded by 2*ceil(log N/log 2).

And this is a version entirely written in cdb macros:

```
euclid=@ca c=1,d=0~m eucloop
eucloop=!!~@ca t=d-y/x*c,d=c~@ca c=t,t=y%x~@ca y=x,x=t~if x!=0~!
imp-pairs=@ca s=$~@ca z=0~!!~@ca x=z=z+1,y=$+1~m euclid~if y==1~ca z,d~!s
```

(Do not try to tune your modem, the above is not line noise.)

This macro is much faster than Stefan's "imp-numbers", and it really
finds all imp pairs, whereas Stefan's misses a few.

To use it, save it in a file named "planar.mac", launch pMARS with the
core size you're interested in and type "m imp-pairs,planar.mac".
pMARS will list all (N,S) imp pairs. When N = S, for some reason
pMARS will only display one of them. (Bug or feature ?)

If you dislike negative numbers, just add CORESIZE to them. This is
an easy exercise in cdb programming.

If you only want the reasonable imp numbers, change the "s" at the end
of the last line into 100, and it will display only the imp numbers up
to 100.

5. Future work

There is a relation between imp numbers, Euclid's algorithm, and
bombing patterns. I'll try to work it out.

Now that I've been showing off my new cdb skills (two months ago I was
reading the docs for the first time), I guess I'll have to write the cdb
tutorial I promised to Beppe and Myer.

<Damien.Doligez@inria.fr>

Extra Extra

You ask; we deliver. As promised the second and third place entries for
the tournament--round 7.

_____

run and hit by BEPPE BEZZI

I pswitch 5 attack modules:

A very fast static, non booted, vector bomber mov <x,y followed by a quick
boot of Tornado

A booted away multiprocess vector vampire to a large pit, self clearing and
brainwashing. This is followed by a forward running continual dat clear.

```
shot1   mov     >0,     @vector1-A0
```

This is the module that, hanging your warrior, cused my victory against you
after a few wins yours and ties.

A Tornado bomber with multipass clear.

A stone--juliet storm.

A paper module, in case someone uses a single pass clear.

I’m too surprised of how good I did. In fact, having nothing to test it against I tried to mix as many thing I was able to.

-Beppe

```
;redcode-94
;name run and hit
;author Beppe Bezzi
;contact bezzi@iol.it
;NSFCWT round 7 entry
;assert CORESIZE == 8000 && MINDIST == 4000
;strategy flee then shot (not always :-)

org     start
RES     equ     #0
STR     equ     #299

vstep   equ     8
proc    equ     8
disp1   equ     0
disp2   equ     70
disp3   equ     140
disp4   equ     210
disp5   equ     280
disp6   equ     350
disp7   equ     420
disp8   equ     -100
spacer  equ     0
A0      equ     1800
A1      equ     3740
A2      equ     -2024

;Tornado equ
step    equ     95
count   equ     530
away    equ     4456
djnoff  equ     -2000

;juliet equs
ptr     EQU     -1333

;Paper equ

dest0   equ     2200
dest1   equ     3740
dest2   equ     -1278
range   equ     933

;vector bomber equ

target  equ     (zero+4000+20)

zero
q for 20
        dat     q%7,    1
rof

point1  dat     vbomb,  vbomb+A0

vboot
        spl     1,      <pit
        spl     1,      <-10
        spl     bclear
```

```
        spl     1,      <-10
        mov.i   {point1,<point1         ;copy
        jmp     @point1
;break
shot1   mov     >0,     @vector1-A0
        mov     >0,     @vector2-A0
        mov     >0,     @vector3-A0
        mov     >0,     @vector4-A0
        mov     >0,     @vector5-A0
        mov     >0,     @vector6-A0
        mov     >0,     @vector7-A0     ;vector bombing
;break
        jmp     clear1+A2-A0-5
vbomb   dat     10,     10

point2  dat     clear1+4,A2
bclear  mov     {point2,<point2

clear1  dat     #10,    #10
        spl     #0,     #100
        mov     -2,     >-5
        djn.f   -1,     <-100

vector1
s for proc
        jmp     pit-zero+4000-vstep-disp1,zero+4000+s*vstep+disp1
rof
vector2
s for proc
        jmp     pit-zero+4000-vstep-disp2,zero+4000+s*vstep+disp2
rof
vector3
s for proc
        jmp     pit-zero+4000-vstep-disp3,zero+4000+s*vstep+disp3
rof
vector4
s for proc
        jmp     pit-zero+4000-vstep-disp4,zero+4000+s*vstep+disp4
rof
vector5
s for proc
        jmp     pit-zero+4000-vstep-disp5,zero+4000+s*vstep+disp5
rof
vector6
s for proc
        jmp     pit-zero+4000-vstep-disp6,zero+4000+s*vstep+disp6
rof
vector7
s for proc
        jmp     pit-zero+4000-vstep-disp7,zero+4000+s*vstep+disp7
rof
vector8
s for proc
        jmp     pit-zero+4000-vstep-disp8,zero+4000+s*vstep+disp8
rof

pit     mov     -1000, <zero+3500
        stp     #0,     #0
for 30
        spl     pit,    <pit+1
        spl     pit,    {pit+1
        rof
for 50
        dat     zero,   zero+500
rof
;****** START *********

start
res     ldp.ab  RES,    #0      ;load result last match
str     ldp.a   STR,    str1    ;load strategy in use
```

```
        seq.ab  #1,     res     ;check result, win OK
lost    add.a   #1,     str1    ;lost change
        mod.a   #5,     str1    ;secure jump
win     stp.ab  str1,   STR     ;save strategy
str1    jmp     @0,     vboot   ;booted vector bomber + clear
        dat     0,      vector  ;static vector bomber
        dat     0,      tornado ;
        dat     0,      juliet
        dat     0,      paper
for 20
        dat     1,1
rof
tornado
        mov     bombm,  away
for 12
        mov     {tornado,<tornado
rof
        jmp     @tornado,<tornado

warr
gate
        nop     split,  100 ;(clear start)

incr    spl     #3*step,#3*step
start1  add     incr    ,stone
stone   mov     step+jump, *(2*step)+jump
        mov     bombm,   @stone
        mov     bombs,   *stone
jump    djn.f   start1, <djnoff

clr     mov     *gate,  >gate
djmp    djn.f   clr,    {gate-20
wip     dat     <2667,  <20
split   spl     #wip-gate,  #wip-gate+5
bombs   spl     #step,   #1
;break
bombm   mov     step,   1
for 50
        dat     zero,   zero+500
rof

;juliet storm (sorry Myer I'm very short of time :-)

jgate   dat <-445, <-446
s       spl #445, <-445
        spl #0, <-446
        mov {445-1, -445+2
        add -3, -1
        djn.f -2, <-2667-500
        mov 32, <-20
go      dat     #0,     #ptr
juliet  mov     {-1,    <-1
        mov     {-2,    <-2
        mov     {-3,    <-3
        mov     {-4,    <-4
        mov     {-5,    <-5
        mov     {-6,    <-6
        mov     jgate,  ptr+24
        mov     jgate,  ptr+24
        jmp     @go,    <4000
for 50
        dat     1,1
        rof
paper
        spl     1,      <300    ;\
        spl     1,      <400    ;-> generate 8 consecutive processes
        spl     1,      <500

silk    spl     @0,     {dest0
        mov.i   }-1,    >-1
```

```
silk1   spl     @0,     <dest1  ;split to new copy
        mov.i   }-1,    >-1     ;copy self to new location
        mov.i   bomba,  }range
        mov     {silk1, <silk2
silk2   jmp     @0,     >dest2
bomba   dat     <2667,  <1


;linear vector bomber

vector
        mov     <target+50, target+100
        mov     <target+450,target+300
        mov     <target+150,target+200
        mov     <target+250,target+400
        mov     <target+350,target

        mov     <target+130,target+330
        mov     <target+230,target+430
        mov     <target+30, target+370
        mov     <target+270,target+70
        mov     <target+170,target+220
;now it's sure escaped
step1   equ     85
count1  equ     533
away1   equ     -3750

        mov     bm,     djmp1+away1+31
        mov     bd,     djmp1+away1+32
        mov     *tptr,  @tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        jmp     @tptr,  <tptr

tptr    dat     djmp1,   away1+djmp1

bomber1 mov     bd+30,  *stone1
        mov     bm+30,  @stone1
stone1  mov     *step1+2,*(2*step1)+2
        add     incr1,   stone1
jump1   djn.b   bomber1, #count1
incr1   spl     #3*step1,#3*step1
clr1    mov     -12,    }bomber1+1
djmp1   djn     clr1,   <bomber1-5
bm      mov.i   #step1, 1
bd      dat     #step1, #1

a for (MAXLENGTH-CURLINE-1) /3
        dat     zero,   a
        dat     1,1
        dat     fine,   a
rof
fine    jmp     zero

end
```

Back Propagation by M R BREMER

No one knew how they would fare this round, myself included--nothing to test against, only vague ideas of what to expect. Seeing Ivner's program after the fact had me laughing. I have lots of respect for an author who will intentionally cause his program to die. Anyways. I operated on two lines of thought:

(1) everybody is going to vamp to a brainwashing pit.
(2) everybody is going to use switching.

After all, that's what I was doing 8). My program contains ten totally independent vector vamping modules. Each module throws 10 fangs of the type jmp 50 (50 addresses later) jmp 50 (+50 spaces) . . . jmp pit. I only need two fangs per module instead of 10. Is this better? I have no idea.

A switching routine (out of Jack in the box) selects one of 5 strategies. Each strategy executes module x and module x+5 yielding twenty fangs, 25 addresses apart. At the end of module x is code to cleanse module x+5 by using a-indirect bombing on it. If I have been targeted by a fang, hopefully I'll eliminate the pit with a mov #1, }1 bomb. I think it should have been a mov#1, }0. Error #1. Next the code totally eliminates the module, over-writing it with dat 1, 1s. Hopefully this will eliminate any stun attacks. Of course module x+5 does the same of x.

Next launch two copies of Phoenix by Jippo. Plenty of a-indirect bombing. Hard on imps. Of course I also have a backup continuous imp ring launcher acquiried from Keystone.

By filling my code with pointers to locations 4000-4500, any bombing done by the paper on my code will land on the enemy.

My pit is actually a jumper to two different pits. One brainwashes and the other pit just keeps growing. Check it out at the very end of my source listing. Neither of my pits core clear. Error #2.

It seems to have worked though. Unbelievable. Sorry it's so long. I'm not good with macros.

-M R Bremer

```
;name Back Propagation
;author M R Bremer
;nsfcwt round 7
;contact <bremermr@ecn.purdue.edu>
;strategy       create 10 independent vector fang bombing modules targeting
;strategy       different parts of enemy code.
;strategy       use that module from now until start to lose
;strategy       launch Phoenix (from Jippo) as backup to all
;strategy       i take _way_ too much time.  i expect to get creamed
org start

STEP EQU 50

PSTEP   equ     3520
NSTEP   equ     1520
ESTEP   equ      830

_STR    EQU #336
_RES    EQU #0

         spl mimp+5334
launch2  spl -1                    ; continuous imp-ring launcher
         spl mimp+2667             ; activated by stone if needed
mimp     mov.i #0,2667             ;
for 23
        jmp 4000, start-5
rof
start
res     ldp.ab _RES, #0
str     ldp.a _STR, str1        ;load strategy in use
        seq.ab #1, res          ;check result
lost    add.a #1, str1          ;lost or tie --> change
        mod.a #5, str1         ;secure result
win     stp.ab  str1, _STR
str1    jmp @0, mod1
        dat 0, mod2
        dat 0, mod3
        dat 0, mod4
        dat 0, mod5
```

```
for 17
        jmp 4075, start
rof
        spl p1, 0
pit     spl -1, 0
        jmp p2, 0
for 11
        jmp 4050, start
rof
p2      spl #0
        spl -1
        spl -2, 0
        stp.b >-1, -1
        jmp pit

for 19
        jmp 4400, start
rof

mod1    spl mod6
        mov.i m1fang, start+4000+9*STEP
        mov.i fang1, start+4000+8*STEP
        mov.i fang1, start+4000+7*STEP
        mov.i fang1, start+4000+6*STEP
        mov.i fang1, start+4000+5*STEP
        mov.i fang1, start+4000+4*STEP
        mov.i fang1, start+4000+3*STEP
        mov.i fang1, start+4000+2*STEP
        mov.i fang1, start+4000+STEP
        mov.i fang1, start+4000
        mov.i av1, *mod6
        mov.i dat1, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang1   jmp STEP
m1fang  jmp -1*(start+4000+9*STEP)+pit
av1     mov.i #1, }1
dat1    dat 1, 1

for     12
        jmp 4250, 4350
rof

mod2    spl mod7
        mov.i m2fang, start+4005+9*STEP
        mov.i fang2, start+4005+8*STEP
        mov.i fang2, start+4005+7*STEP
        mov.i fang2, start+4005+6*STEP
        mov.i fang2, start+4005+5*STEP
        mov.i fang2, start+4005+4*STEP
        mov.i fang2, start+4005+3*STEP
        mov.i fang2, start+4005+2*STEP
        mov.i fang2, start+4005+STEP
        mov.i fang2, start+4005
        mov.i av2, *mod7
        mov.i dat2, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang2   jmp STEP
m2fang  jmp -1*(start+4005+9*STEP)+pit
av2     mov.i #1, }1
dat2    dat 1, 1

for 19
        jmp 4400, 4090
rof

mod3    spl mod8
```

```
        mov.i m3fang, start+4010+9*STEP
        mov.i fang3, start+4010+8*STEP
        mov.i fang3, start+4010+7*STEP
        mov.i fang3, start+4010+6*STEP
        mov.i fang3, start+4010+5*STEP
        mov.i fang3, start+4010+4*STEP
        mov.i fang3, start+4010+3*STEP
        mov.i fang3, start+4010+2*STEP
        mov.i fang3, start+4010+STEP
        mov.i fang3, start+4010
        mov.i av3, *mod8
        mov.i dat3, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang3   jmp STEP
m3fang  jmp -1*(start+4010+9*STEP)+pit
av3     mov.i #1, }1
dat3    dat 1, 1
for 19
        jmp 4400, 4090
rof

mod4    spl mod9
        mov.i m4fang, start+4015+9*STEP
        mov.i fang4, start+4015+8*STEP
        mov.i fang4, start+4015+7*STEP
        mov.i fang4, start+4015+6*STEP
        mov.i fang4, start+4015+5*STEP
        mov.i fang4, start+4015+4*STEP
        mov.i fang4, start+4015+3*STEP
        mov.i fang4, start+4015+2*STEP
        mov.i fang4, start+4015+STEP
        mov.i fang4, start+4015
        mov.i av4, *mod9
        mov.i dat4, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang4   jmp STEP
m4fang  jmp -1*(start+4015+9*STEP)+pit
av4     mov.i #1, }1
dat4    dat 1, 1
for 19
        jmp 4400, 4090
rof


mod5    spl mod10
        mov.i m5fang, start+4020+9*STEP
        mov.i fang5, start+4020+8*STEP
        mov.i fang5, start+4020+7*STEP
        mov.i fang5, start+4020+6*STEP
        mov.i fang5, start+4020+5*STEP
        mov.i fang5, start+4020+4*STEP
        mov.i fang5, start+4020+3*STEP
        mov.i fang5, start+4020+2*STEP
        mov.i fang5, start+4020+STEP
        mov.i fang5, start+4020
        mov.i av5, *mod10
        mov.i dat5, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang5   jmp STEP
m5fang  jmp -1*(start+4020+9*STEP)+pit
av5     mov.i #1, }1
dat5    dat 1, 1
for 19
        jmp 4400, 4090
```

```
rof

mod6    mov.i m6fang, start+4025+9*STEP
        mov.i fang6, start+4025+8*STEP
        mov.i fang6, start+4025+7*STEP
        mov.i fang6, start+4025+6*STEP
        mov.i fang6, start+4025+5*STEP
        mov.i fang6, start+4025+4*STEP
        mov.i fang6, start+4025+3*STEP
        mov.i fang6, start+4025+2*STEP
        mov.i fang6, start+4025+STEP
        mov.i fang6, start+4025
        mov.i av6, *mod1+1
        mov.i dat6, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang6   jmp STEP
m6fang  jmp -1*(start+4025+9*STEP)+pit
av6     mov.i #1, }1
dat6    dat 1, 1
for 12
        jmp 4400, 4090
rof

c2      spl     1,          <start+4000+123
        mov.i   -1,         0
        mov.i   -1,         0
        mov.i   -1,         0

phoenix spl     @phoenix,   PSTEP
        mov.i   }phoenix,   >phoenix
nest    spl     @nest,      NSTEP
        mov.i   }nest,      >nest
egg     spl     @egg,       ESTEP
        mov.i   }egg,       >egg
        mov.i   ash,        {3999
        mov.i   ash,        }4001
ash     dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
for 12
        jmp 4400, 4090
rof

mod7    mov.i m7fang, start+4030+9*STEP
        mov.i fang7, start+4030+8*STEP
        mov.i fang7, start+4030+7*STEP
        mov.i fang7, start+4030+6*STEP
        mov.i fang7, start+4030+5*STEP
        mov.i fang7, start+4030+4*STEP
        mov.i fang7, start+4030+3*STEP
        mov.i fang7, start+4030+2*STEP
        mov.i fang7, start+4030+STEP
        mov.i fang7, start+4030
        mov.i av7, *mod2+1
        mov.i dat7, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang7   jmp STEP
m7fang  jmp -1*(start+4030+9*STEP)+pit
av7     mov.i #1, }1
dat7    dat 1, 1
for 12
        jmp 4400, 4090
rof
```

```
mod8    mov.i m8fang, start+4035+9*STEP
        mov.i fang8, start+4035+8*STEP
        mov.i fang8, start+4035+7*STEP
        mov.i fang8, start+4035+6*STEP
        mov.i fang8, start+4035+5*STEP
        mov.i fang8, start+4035+4*STEP
        mov.i fang8, start+4035+3*STEP
        mov.i fang8, start+4035+2*STEP
        mov.i fang8, start+4035+STEP
        mov.i fang8, start+4035
        mov.i av8, *mod3+1
        mov.i dat8, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang8   jmp STEP
m8fang  jmp -1*(start+4035+9*STEP)+pit
av8     mov.i #1, }1
dat8    dat 1, 1
for 12
        jmp 4400, 4090
rof

mod9    mov.i m9fang, start+4040+9*STEP
        mov.i fang9, start+4040+8*STEP
        mov.i fang9, start+4040+7*STEP
        mov.i fang9, start+4040+6*STEP
        mov.i fang9, start+4040+5*STEP
        mov.i fang9, start+4040+4*STEP
        mov.i fang9, start+4040+3*STEP
        mov.i fang9, start+4040+2*STEP
        mov.i fang9, start+4040+STEP
        mov.i fang9, start+4040
        mov.i av9, *mod4+1
        mov.i dat9, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang9   jmp STEP
m9fang  jmp -1*(start+4040+9*STEP)+pit
av9     mov.i #1, }1
dat9    dat 1, 1

for 12
        jmp 4400, 4090
rof

mod10   mov.i m10fang, start+4045+9*STEP
        mov.i fang10, start+4045+8*STEP
        mov.i fang10, start+4045+7*STEP
        mov.i fang10, start+4045+6*STEP
        mov.i fang10, start+4045+5*STEP
        mov.i fang10, start+4045+4*STEP
        mov.i fang10, start+4045+3*STEP
        mov.i fang10, start+4045+2*STEP
        mov.i fang10, start+4045+STEP
        mov.i fang10, start+4045
        mov.i av10, *mod5+1
        mov.i dat10, >-1
        djn.b -1, #10
        spl launch1
        jmp launch2
fang10  jmp STEP
m10fang jmp -1*(start+4045+9*STEP)+pit
av10     mov.i #1, }1
dat10    dat 1, 1

for 12
        jmp 4400, 4090
rof
```

```
launch1
        spl     c2
        spl     1,          <start+4000+123
        mov.i   -1,         0
        mov.i   -1,         0
        mov.i   -1,         0

phoenix2 spl     @phoenix2,   PSTEP
        mov.i   }phoenix2,   >phoenix2
nest2   spl     @nest2,      NSTEP
        mov.i   }nest2,      >nest2
egg2    spl     @egg2,       ESTEP
        mov.i   }egg2,       >egg2
        mov.i   ash2,        {3999
        mov.i   ash2,        }4001
ash2    dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667
        dat.f   <2667,      <2*2667

for 12
        jmp 4400, 4090
rof

        spl #0, 0
p1      spl -1, 2
        mov -1, >-1
```

The Hint

This will be the last hint in Core_ Warrior_’s attempt to introduce basic warrior strategies. And we’ve saved the best for last, at least in my opinion. Vampires such as Sucker, Twilight Pits, Request, Snake, Pyramid, and probably a host of others, used to rule the hills of old. But then came A-indirect addressing making anti-vamping much easier to do. Silk Warrior by Jippo incorporated a-indirect bombing in his replicator, which greatly improved a vampire resistance. Soon the slavers were dropping of the hills in droves. Vampires were thought to be obselete, but Paulsson’s myVamp continues to hold a top spot on the ’94 hill so vamping could be your next effective strategy. Or has Paulsson come up with something unexpected? Code for a version (perhaps the one on the hill) is included for your review. Magnus is very busy and didn’t have time to offer his comments. I would if I could, but someone has my corewar disk (I don’t own a computer), plus the server for my university account can’t access the internet right now. *sigh*

The following comments were taken from a _PUSH OFF_ by P.Kline. Hope he doesn’t mind. Edited for clarity (just kidding, sheesh).

Basically a pit-trapper works by making your processes jump into a rapid-splitting, core-clearing, self-destroying, nasty bit of code. You are forced to split many many processes, thereby robbing your healthy processes of time. You are forced to erase the core, destroying any surviving components. And you finally erase the pit itself, killing your remaining processes.

Vampire strategy goes back to one of the standard battle programs, ’Vampire’, and was used successfully by Eugene P. Lilitko’s Cowboy program to win the 1988 tournament. Here’s a modern version of Vampire:

```
fang  jmp trap,4

inc   spl #3364, #-3364 ; start here
      add inc,fang
      mov fang,@fang
      jmp -2

trap  mov 10,<-10       ; Of course this wouldn’t have a prayer in stunning
      spl -1            ; today’s paper.  How about mov, spl -1, spl -1,
```

```
      jmp -2            ; spl -1, jmp?
```

All vampires eventually cause their own processes to jump into the trap to speed up the core clear (and to guarantee one).

Vampire's strengths include small size, rapid bombing (with fangs), and complete core-clear. Their most important feature, however is enslaving the opponent's processes to do their dirty work.

Variations include booting the code to separate the bomber from the trap, putting the fang in different locations, multiple spl's to more rapidly overpower the opponent, and 'gates' to stop imps.

Areas to explore:
- What else can the pit do?
- Using multiple fang-bombers to better deal with stones.
- Evolving the fang-bomber into a repeating core-clear.

_____

myVamp by MAGNUS PAULSSON

```
;redcode-94
;name myVamp v3.7
;author Paulsson
;strategy Throw jmp's around at 2/3c.
;strategy Then a spl/spl/dat and djn coreclear.
;strategy All in the tiny space of 14 bytes!
;strategy Submitted: 30 september 95
;assert CORESIZE > 1
;kill myVamp

;The vamp bomb is the best bomb, unless it fights a special oponent with
;anti vamp, most programs on the hill cant affod anti vamp.  Normal vamp
;adds +step to a field, -step to b field of jmp then uses as bomb (once, to
;b field) and pointer, myVamp also scans the a-field and bombs if not zero.

step    equ 3024                ;good step, mod 16
boot    equ     8*200           ;offset so that bomb/scan will be mod 8
org     start

trap    jmp             11      ;use a as pointer to the pit.
i       for     10
                dat.f   0, 0
rof
                spl             #0,<trap        ;real trap a bit away from
                 spl             5,0            ;trap line. note that b-field
                spl             #0,0            ;is none zero as the enemy is
                spl             #0,0            ;trapped
                spl             #0,0
                spl             #0,0
                spl             #0,0
                spl             #0,0
                spl             #0,0
                jmp             -4,0

i       for     39-16
                dat.i   #1, i
rof
start   mov.i   }ptr,>ptr       ;boot away
i for 13
                mov.i   }ptr,>ptr
rof
                jmp             st+boot,1       ;start fighting
ptr             dat.f   c2,boot+c2

c2      spl.f   #b1, b2+2       ;pointer for coreclear, spl incase of djn'ed
st      add.f   s, c
                mov.i   c, @c   ;bomb
                jmz.a   st, *c  ;scan other place
                mov.i   @0,*c   ;bomb
                mov.x   *c,*c   ;make sure bomb points right
```

```
exit    jmz.b   st, trap-boot   ;start clear if trap is hit or enemy trapped
b1      spl     #b2-c2, b2-c2+2 ;coreclear, same as myZizzor
                mov.i   *c2, >c2
                djn.f   -1, {c2-b2+c2-2
b3      dat.f   <-2666, <2667   ;a little something for Die Hard
                                ;most imps wont survive anyway.
b2      spl     #b3-c2, b2-c2+2
c       jmp     *trap-boot, 0   ;bomb and counter, standard vamp
s       dat.f   -step, step     ;step
i for 13
                dat.i   #1,1    ;filling it up
                dat.f   1,#1
rof
```

We will be taking your suggestions for hints. If any of you beginner’s (or veterans for that matter) would like to see a topic covered in more detail, just ask.

Questions? Concerns? Comments? Complaints? Mail them to:
Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu>

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```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                              ,    .
$$$$$$P'   '                              .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 9 December 18, 1995

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.
After two weeks, filled by Steven Paper, we are back with Corewarrior. This one is a juicy issue too with Armory and La Bomba code, not considering Provascan the hint warrior. Planar after some number theory begins its turorial on cdb, something surely useful even to veteran redcoders.
After removal of forced submission to 94x, Pizza's hills are now going fine, very good; I think that submission to Pizza 94x, an intermediate level beetween -b and -94, is still possible. A bit of advertsing fo Stormking 94x, it's but half filled and without queue, you have entry assured and both redcode and strategies are the same of standard 94, just imps are a bit stronger and replicators weaker.
I'll be away from the net, for Christmas holidays, from 24-12 to 5-1-96, so next number will be taken care by Maurizio Vittuari <pan0178@comune.bologna.it>, send to him your inputs for next issue and feel free to flame him heavily, he'll be happy to learn some new english word :-)
Congratulations to Steven, Robert and Paul for tournament results, we'll see soon your face on Stormking web page.
I wish you a merry Christmas and happy new year, take care of Jack while I'm away.

Tournament Time:

Tournament is over, we have a champion, but I want to keep a bit of suspence :-)

Round 8 was about writing a big hill (94x) warrior.
Myer Bremer's victorious warrior "finals: no time" is a straight one-shot scanner and shows that Myer works best under stress :-). Runner-up Bigboy by Robert Macrae features some interesting switching code.

Rank	Name	Author	%W	%L	%T	Score
1	finals: no time	M R Bremer	61	29	10	2511
2	Bigboy	Robert Macrae	55	29	17	2346
3	Illusion-94/55	Randy Graham	54	41	6	2161
4	myVamp v3.7	Paulsson	46	30	24	2107
5	Frontwards v2	Steven Morrell	48	37	14	2076
6	Cocktail	Maurizio Vittuari	38	37	25	1797
7	black & white	Anders Ivner	39	40	21	1791
8	Jack in the (big) box	Beppe Bezzi	27	24	49	1700
9	Mister Bump	Derek Ross	33	55	12	1446
10	MSweep	P.Kline	18	40	42	1242
11	Night Train 55440	Karl Lewin	9	37	54	1057
12	Paper8-IV (54400)	G. Eadon	10	39	52	1045

Results of the ninth and final round of NSFCWT are in. This round was about writing a warrior in a minimalist version of ICWS'88. Robert Macrae's One Fat Lady finished first and catapults him to rank 2 overall. Remarkably, Robert joined NSFCWT late in the fourth round. Greg Eadon also did really well with Nothing Special, finishing second. Beppe Bezzi's Turkey (do Italian's have turkey for Chrismas dinner?) landed on place three.

Rank	Name	Author	%W	%L	%T	Score
1	One Fat Lady	Robert Macrae	38	10	52	1985
2	Nothing Special	G. Eadon	31	3	65	1913
3	Turkey	Beppe Bezzi	31	6	64	1872
4	myVamp3.7 :-)	Paulsson	32	14	54	1790
5	RingThing2	Anders Ivner	26	5	70	1755
6	Nine	P.Kline	38	44	18	1588
7	RISC-88	Maurizio Vittuari	15	8	77	1473
8	Chris	Steven Morrell	17	45	38	1070
9	No Hope	M R Bremer	24	58	18	1069
10	Baby Swing	Randy Graham	22	55	23	1063
11	Miss Impertinent	Derek Ross	10	34	56	1016

NSFCWT is over, and the winners are ......

```
&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&
&                                          &
&    Winner:          Steven Morrell       &
&    1st runner up:   Robert Macrae        &
&    2nd runner up:   Paul Kline           &
&                                          &
```

&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&

Please email a GIF file or mail a printed portrait of yourself (postal address below) to us for inclusion in the "Core War Hall of Fame" at stormking. Try to keep the GIF under 60K or so, otherwise we'll have to crop the image or lower the resolution.

Below are the complete rankings:

Name	1	2	3	4	5	6	7	8	9	total
Steven Morrell	5	10	9	13	14	10	4	8	4	77
Robert Macrae	0	0	0	12	12	13	12	11	11	71
P.Kline	7.5	9	7	11	11	12	3	3	6	69.5
Paulsson	7.5	11	11	9	2	5	6	9	8	68.5
Beppe Bezzi	7	7	13	2	8	3	10	5	9	64
M R Bremer	7	4	3.6	5	7	11	11	12	3	63.6
Anders Ivner	5.5	8	4	0	10	14	9	6	7	63.5
Maurizio Vittuari	6.5	5	6	3	9	8	5	7	5	54.5
Randy Graham	0	0	8	10	4	7	8	10	2	49
G. Eadon	1.5	2	5	6	1	4	7	1	10	37.5
John K. Wilkinson	4	6	12	0	13	2	0	0	0	37
Karl Lewin	0	0	10	4	6	10	2	2	0	34
Derek Ross	3.5	3	3.3	7	3	6	1	4	1	31.8
Kurt Franke	0	0	0	8	0	0	0	0	0	8
Michael Constant	0	0	0	0	5	0	0	0	0	5
Anders Scholl	0	1	2	1	0	0	0	0	0	4
John Lewis	0	0	3	0	0	0	0	0	0	3
Calvin Loh	0	0	1	0	0	1	0	0	0	2

Thanks to everyone for playing. We hope you had as much fun playing as we had holding the tournament. We have one favor to ask: Please give us some feedback and tell us which round(s) you liked best, which least. Also let us know what other types of rounds you'd like to see in the next tournament. We'd like your feedback even if you were just a spectator; maybe you'll join us next time?

The code for all warriors submitted to NSFCWT will soon appear at Planar's web site and an archive inclucing code and all announcements will eventually make it to ftp.csua.berkeley.edu.

Happy Holidays,
Nandor & Stefan

;-----------

Many thanks to Nandor and Stefan for the great job organizing the tournament, I enjoyed it a lot and I think the same was for all. Congratulations to Steven Morrell for winning and to all others for playing and see you at next tournament.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

#	%W/ %L/ %T	Name	Author	Score	Age
1	45/ 37/ 17	quiz	Schitzo	153	224
2	30/ 16/ 53	Impfinity v4g1	Planar	144	24
3	43/ 42/ 15	Frontwards v2	Steven Morrell	144	77
4	34/ 26/ 40	La Bomba	Beppe Bezzi	142	219
5	40/ 39/ 21	Derision	M R Bremer	141	243
6	36/ 32/ 32	Torch t18	P.Kline	140	603
7	43/ 46/ 12	crow	Karl Lewin	140	57
8	35/ 31/ 35	Jack in the box	Beppe Bezzi	139	591
9	23/ 7/ 71	Night Train	Karl Lewin	139	111
10	41/ 44/ 15	Porch Swing 2	JKW	138	132
11	41/ 45/ 15	Provascan 2.0d	Beppe Bezzi	137	1
12	36/ 36/ 29	Tornado 2.0 h1	Beppe Bezzi	136	64
13	29/ 23/ 47	juliet and paper	M R Bremer, B. Bezzi	135	220
14	20/ 8/ 72	DoorMat v0.1	K Lewin	133	73
15	35/ 38/ 27	endpoint .	M R Bremer	132	248
16	27/ 22/ 50	Hector 2	Kurt Franke	131	139

17	38/ 44/ 18	Persistence	Kurt Franke	131	31
18	38/ 45/ 18	Porch Swing +	Randy Graham	130	74
19	31/ 33/ 36	Mason 1.01	Robert Macrae	129	7
20	38/ 47/ 15	ltest	Anders Ivner	129	140
21	36/ 43/ 21	Qwiksand	Wayne Sheppard	128	30
22	30/ 31/ 40	Paper8-IV 2.1	G. Eadon	128	20
23	35/ 42/ 23	myVamp v3.7	Paulsson	128	571
24	31/ 34/ 35	Charybdis	Kafka	128	6
25	38/ 51/ 11	Babbo Natale	Maurizio Vittuari	126	61

Usual great battles in the 94 hill caused a great turnover, more than half warriors are new entries, and this with but an aging of 87. Quiz still hold strongly King position, but the two runners up are new entries: Frontward and Impfinity, enhanced versions of old warriors. Leprechaun on speed greeted us at 344 age, entering the hall of fame. Welcome back to Wayne Sheppard with his new warrior Qwicksand, Rober Mcrae with Mason and a welcome to Eadon and Kafka entering the main hill with their Paper8-IV and Charybdis; keep on good work.
The warrior diversity is very high, all main categories are well represented on the hill, this give even chances for all good warriors to enter.

---

94 - What’s New

2	43/ 41/ 17	Frontwards v2	Steven Morrell	145	1
3	30/ 16/ 53	Impfinity v4g1	Planar	144	1
3	37/ 33/ 30	Tornado 2.0 h1	Beppe Bezzi	141	1
7	43/ 42/ 15	crow	Karl Lewin	143	1
11	37/ 42/ 21	Porch Swing +	Randy Graham	132	1
13	40/ 41/ 19	Persistence	Kurt Franke	138	1
16	37/ 44/ 18	Provascan 2.0d	Beppe Bezzi	131	1
17	17/ 6/ 77	DoorMat v0.1	K Lewin	127	1
17	40/ 49/ 11	Babbo Natale	Maurizio Vittuari	132	1
21	31/ 33/ 36	Charybdis	Kafka	128	1
22	30/ 30/ 40	Paper8-IV 2.1	G. Eadon	130	1
23	30/ 32/ 38	Mason 1.01	Robert Macrae	127	1
23	37/ 42/ 22	Qwiksand	Wayne Sheppard	132	1

13 new entries with 25 spots, more than half hill is new. Worth mention as top ten entries Frontwards v2, Impfinity v4g1, Tornado 2.0h1 and the misterious crow.

---

94 - What’s No More

26	36/ 48/ 15	Leprechaun on speed	Anders Ivner	125	344
26	29/ 35/ 35	Son & Father	Maurizio Vittuari	123	182
26	0/ 0/ 3	Die Hard	P.Kline	4	109
26	30/ 37/ 32	Saveme!	Maurizio Vittuari	123	98
26	20/ 17/ 63	Impfinity v3i	Planar	122	82
26	36/ 49/ 15	Taking Names	P.Kline	122	66
26	33/ 42/ 25	Test z	JKW	123	58
26	22/ 21/ 57	Evolve-- v.1	JKW	124	50
26	31/ 39/ 30	anything box	schitzo	124	40
26	28/ 29/ 43	test9q	Kurt Franke	126	30
26	21/ 24/ 56	test9p	Kurt Franke	117	12
26	1/ 1/ 2	Tornado 2.0	Beppe Bezzi	5	10
26	31/ 49/ 19	The Inferno	Kurt Franke	114	2

One veteran, Leprechaun on speed, two ultra centenaries and a lot of younger warrior are no more.

What’s Old

6	36/ 32/ 32	Torch t18	P.Kline	140	603
8	35/ 31/ 35	Jack in the box	Beppe Bezzi	139	591
23	35/ 42/ 23	myVamp v3.7	Paulsson	128	571
15	35/ 38/ 27	endpoint .	M R Bremer	132	248
5	40/ 39/ 21	Derision	M R Bremer	141	243
1	45/ 37/ 17	quiz	Schitzo	153	224
13	29/ 23/ 47	juliet and paper	M R Bremer, B. Bezzi	135	220

4	34/ 26/ 40	La Bomba	Beppe Bezzi	142	219

A few warrior passed 200 age, the three veterans are around 600 and but myVamps seems to be in danger even if, with present hill turmoil, none can be sure to see again his beloved warrior next day.
Worth notice the other gap in age, after La Bomba next warrior is 80 younger; maybe there are good and bad seasons for warriors.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age	Strategy
1	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
2	Agony II	Stefan Strack	912	CMP scanner
3	Blue Funk	Steven Morrell	869	Stone/ imp
4	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766	Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666	Bomber
7	Armory - A5	Wilkinson	609	P-warrior
8	Torch t18	P.Kline	603 *	Bomber
9	Jack in the box	Beppe Bezzi	591 *	P-warrior
10	Phq	Maurizio Vittuari	589	Qscan -> replicator
11	myVamp v3.7	Paulsson	571 *	Vampire
12	B-Panama X	Steven Morrell	518	Stone/ replicator
13	NC 94	Wayne Sheppard	387	Stone/ imp
14	Cannonade	P.Kline	382	Stone/ imp
15	Torch t17	P.Kline	378	Bomber
16	Lucky 3	Stefan Strack	355	Stone/ imp
17	Request v2.0	Brant D. Thomsen	347	Qvamp -> vampire
18	Dragon Spear	c w blue	346	CMP scanner
19	Leprechaun on speed	Anders Ivner	344	Qscans -> scanner/bomber
20	juliet storm	M R Bremer	333	Stone/ imp

Armory and Phq stop their run for glory at the venerable age of 609 and 589. The three musketeers, Torch, Jack and myVamp, pass the 500 milestone and continue running. Leprechaun on speed enters the hall of fame, pushing Frontwards off, just to stop its run shortly after.

Current Status of the Internet Pizza Server Beginner’s Hill:

#	%W/ %L/ %T	Name	Author	Score	Age
1	58/ 29/ 13	Fire Master v1.5	JS Pulido	188	75
2	48/ 22/ 30	Hint Test v6	M R Bremer	175	58
3	47/ 21/ 33	Spacehead1.1	Warpi	173	3
4	46/ 22/ 32	Spacehead	Warpi	169	14
5	52/ 34/ 14	dualstrat v.0.2	Brian Haskin	169	71
6	53/ 37/ 9	Clear Sighted v1	JS Pulido	168	72
7	41/ 27/ 32	Serendipity	A. Nevermind	156	59
8	47/ 40/ 13	Hey, Kool-Aid! v1.6	David Boeren	155	4
9	45/ 36/ 19	test3	Kafka	153	39
10	45/ 38/ 16	Hey, Kool-Aid! v1.0	David Boeren	152	8
11	43/ 14/ 20	test L 9	Beppe Bezzi	150	73
12	42/ 37/ 20	test4	Kafka	148	38
13	45/ 45/ 10	polyphemous	Kafka	146	25
14	44/ 45/ 12	test	Kafka	143	48
15	40/ 41/ 19	Paperstone	Warpi	139	18
16	36/ 34/ 31	Loh_tst_1.3	Calvin Loh	138	95
17	35/ 37/ 27	Everybody Must Get Stoned	Nathan Summers	133	27
18	31/ 30/ 39	Good old DJN Test	Karl Lewin	132	85
19	37/ 46/ 17	Test-G	G. Eadon	129	50
20	20/ 14/ 66	Fortitude	A. Nevermind	127	57
21	33/ 43/ 24	Paperstone v1.2	Warpi	122	15
22	37/ 53/ 11	Headache	Andy Nevermind	121	56
23	35/ 50/ 16	Slave Master v0.5	Brian Haskin	120	31
24	31/ 48/ 21	Dwarf	T. H. Davies	114	23
25	0/ 78/ 22	JumpingJack v0.1	Uranov	23	1

The hill aged 50 in last two weeks, JS Pulido still holds the top. Eadon removed his warriors after entering the pro as did Franke last week.

The hint
How to improve your beginner’s warrior.

This week hint is again an how to improve a warrior; having received no warrior I was able to improve :-), I toke a warrior of a six months ago beginner, good in the -b hill but unable to enter 94: Provascan 2.0 by ... me :-)

Here is Provascan code, ’prova’ in italian means test, a tweaking of XTC a very successful warrior of a few years ago, and a classic sample of beginner’s coding (Provascan not XTC :-)

```
;redcode-94
;name Provascan 2.0
;author Beppe Bezzi
;strategy B-scanner
;strategy a six months ago beginner’s warrior :-)
;kill Provascan
;assert CORESIZE == 8000
;
step    equ #3364
loop    add.ab step,    ptr ;scanner modulo 4
ptr     jmz loop,       trap
        mov ptr,        dest
cnt     mov #17,        cnt     ;0
kill    mov @trap,      <dest
        djn kill,       cnt
        jmn loop,       trap
        jmp cocl                ;0
        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0                  ;0
        dat 0,0
dest    dat 0,0
        dat 0,0
        dat 0,0                  ;0
        dat 0,0
        dat 0,0
        dat 0,0
trap    dat #1                  ;0
bomb    spl 0
        dat 0,0
        dat 0,0
        dat 0,0                  ;0
        dat 0,0
        dat 0,0
gate    dat 0,0
        dat 0,0                  ;0
        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0                  ;0
cocl    sub #15,        cont
        mov cocl-4,     <cocl-4
        djn -1,         cont
cont    spl 1 ,<0               ;0
        spl 0,<gate
        mov mark,<cocl-1
        jmp -1,<gate
        dat 0,0                 ;0
mark    dat <-11, <-11
void    for 35
        dat 0,0
        rof
esca    for 4
        dat 0,2
        dat 0,2
        dat 0,2
```

```
        dat 0,0
        rof
        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0
end loop
```

lines with ;0 must have a zero b-field to avoid self bombing.

It’s a classic b-scanner that covers nonzero locations with a wide carpet of spl 0,0 until it covers the label trap; at such point it begins a coreclear with spl and then dats, ugly indeed, but I was a beginner :-)

I resubmitted it to 94 hill and I scored a nice 109, just what I needed to start with. The idea of a carpet bombing b-scanner isn’t that bad, the implementation is really nasty, we can cut it _a lot_ and have it make the same work, 17 is a too big number for the carpet, a smaller one, 7, is sure better, so we are not delayed too much by decoys. Another improvement is using the post increment for bombing, better with imps and allowing us another trick we’ll speak of later, and adding a forward running perpetual clear;
The new code:

```
name author blah blah ...
;
step    equ     #3364

trap    dat     0,      1       ;0
        dat     0,      0
dest    dat     0,      0
        dat     0,      0
        dat     0,      0       ;0

;the use of postincrement allow us to put dest before our code

loop    add.ab  step,   ptr
ptr     jmz     loop,   trap
        mov.b   ptr,    dest
cnt     mov     #7,     0       ;0
kill    mov     bomb,   >dest
        djn     kill,   cnt
        jmn     loop,   trap
bomb    spl     #0,     0       ;0
        mov     2,      >ptr
        djn.f   -1,     {ptr
        dat     -5,     #15
end loop
```

Much better, isn’t it, now we are but 10 lines long plus two dats nonzero. We have not to worry of self bombing when we bomb dest to end scanning, because moving a spl 0,0 at a cell addressed with > is uneventful, the cell is overwritten with zero after the increment, because of ’in register’ evaluation.

With a bit more confidence I resubmitted it to pizza 94 to score a 121, better but not enough, something is still going wrong.
We lose a lot from Frontwards, Porch Swing and others once through scanners, and we cannot stop Impfinity and Night Train’s imps. To solve the first problem the solution is simple, boot away and leave a decoy behind; for second problem the solution is more subtle. Let’s give a look at our clear: we are using ’ptr’ as clear pointer, when imps get incremented and attacked, they stop being imps but begin executing our code, so we cannot kill them; to do so we must have a dat after the clear pointer; we can use the line ’dest’, it will be split covered but it’s goo for our job.

New version:

```
;redcode-94
;name Provascan 2.0d
;author Beppe Bezzi
;strategy B-scanner
;strategy a six months ago beginner's warrior :-)
;strategy trying to improve it for the hint
;kill Provascan
;assert CORESIZE == 8000
;
step    equ     #3364
away    equ     3198

trap    dat     0,      0       ;0
        dat     0,      0       ;we can use equs for those dat 0,0 they are left
dest    dat     0,      0       ;for clarity
        dat     0,      0
        dat     0,      0       ;0
loop    add.ab  step,   ptr     ;
ptr     jmz     loop,   trap
        mov.b   ptr,    dest
cnt     mov     #7,     0       ;0
clear   mov     bomb,   >dest
        djn     clear,  cnt
        jmn     loop,   trap
bomb    spl     #0,     0       ;0
        mov     2,      >dest
        djn.f   -1,     {dest
kill    dat     -5,     #kill-dest+2
        dat     0,      0       ;0

boot    mov     kill,   away
for 10
        mov     {boot,  <boot           ;the faster way to boot away
rof
        mov     #0,     boot+3          ;we have to set those b-fields to zero
        mov     #0,     boot+7          ;to save time later
        mov     #0,     boot+11
jump    jmp     @boot,  >away-29        ;> is to set trap b-field non zero

a for (MAXLENGTH-CURLINE)/4
        dat     jump,   0               ;this decoy doesn't have two equal cells
        dat     bomb,   boot            ;and still has all fourth b-field at zero
        dat     boot,   kill
        dat     clear,  boot
rof
end boot
```

Results are good now: 136.5 and 11th place in 94 hill, yuppee :-)

We beat Frontwards and La Bomba, we tie Impfinity, Porch Swing2, and Torch and we score an high nuber of wins that boost our score, it's better losing 45/55/0, as we did against Derision, than scoring 100 ties. We are still losing bad against quiz, solving this problem is left as an exercise for the reader :-)
BTW it's my best ever result with a scanner, were it not the hint test I'm not sure I had published it. ;-)

Detailed 94 scores are available on request (mail me), I haven't tested the warrior against beginners hill, feel free to do it and make public domain the results.

Next hint will be made by Maurizio <pan0178@comune.bologna.it>, mail him with your requests.

Extra Extra:
La Bomba
by Beppe Bezzi

La Bomba is the first program allowing me to become King of the Hill

and to remain in such position for some time, Jack in the box was King for but few challenges. The reasons of its success was its very high speed together with the very favourable environment it found; looking at it now I can see some ways to improve it, like using the faster decoding of Pyramid, but now it's no time for La Bomba 2.

La Bomba is a qscan followed by a simple replicator, the same of the hint of CW #3, the innovative part is the Tornado bombing engine used to drop a cluster of dat bombs on the opponent, in the hope of catching it during boot; this proved very effective against p-warriors and stationary warriors using a decoy.

```
;redcode-94
;name La Bomba
;author Beppe Bezzi
;assert CORESIZE == 8000
;kill La Bomba

org     start
qstep   equ     5
qrounds equ     7
bigst   equ     99

qst     equ     qstart -(4*bigst)
qstart  equ     start+145

dest0   equ     2200
dest1   equ     3740
dest2   equ     -1278
range   equ     933


start
s1 for 5
        sne.x   qst+4*bigst*s1, qst+4*bigst*s1+bigst*1  ;check two locations
        seq.x   qst+4*bigst*s1+bigst*2, qst+4*bigst*s1+bigst*3
        mov.ab  #qst+4*bigst*s1-found, found  ;they differ so set pointer
     rof
        jmn  which,   found
s2 for 5
        sne.x   qst+4*bigst*(s2+5), qst+4*bigst*(s2+5)+bigst*1
        seq.x   qst+4*bigst*(s2+5)+bigst*2, qst+4*bigst*(s2+5)+bigst*3
        mov.ab  #qst+4*bigst*(s2+5)-found, found
     rof
        jmn  which,   found
s3 for 5
        sne.x   qst+4*bigst*(s3+10), qst+4*bigst*(s3+10)+bigst*1
        seq.x   qst+4*bigst*(s3+10)+bigst*2, qst+4*bigst*(s3+10)+bigst*3
        mov.ab  #qst+4*bigst*(s3+10)-found, found
     rof
        jmn.b   which,  found
s4 for 5
        sne.x   qst+4*bigst*(s4+15), qst+4*bigst*(s4+15)+bigst*1
        seq.x   qst+4*bigst*(s4+15)+bigst*2, qst+4*bigst*(s4+15)+bigst*3
        mov.ab  #qst+4*bigst*(s4+15)-found, found
     rof
        jmn.b   which,  found

found   jmz.b   warr,   #0        ;skip attack if qscan found nothing
        add     #bigst, -1        ;increment pointer till we get the
which   jmz.f   -1,     @found    ;right place
qattack                           ;found.b points target
        mov     bomba,  @found    ;in case small and dangerous
for 0
        After decoding enemy position it checks the location found+32 and, if it
        proves not to be empty, shifts 30 cells the bombing zone to the right
        This added near 5 points to my score
rof
```

```
        add.ba  found,  qstone
        add.b   found,  qstone
        seq     *qstone,-100
        add.f   shift,  qstone

qst1    mov     qbomb,   *qstone       ;Tornado bombing engine the faster way
        mov     qbomb,   @qstone       ;to fill your enemy with hot lead
qstone  mov     32,     *32-qstep
        sub.f   qincr,   qstone
        djn.b   qst1,   #qrounds

warr                                    ;Paper01 the hint warrior
paper   spl     1,      <300
        spl     1,      <400
        spl     1,      <500
silk    spl     @0,     {dest0
        mov.i   }-1,    >-1
silk1   spl     @0,     <dest1
        mov.i   }-1,    >-1
        mov.i   bomba,  }range
        mov     {silk1, <silk2
silk2   jmp     @0,     >dest2
bomba   dat     <2667,  <1

qbomb   dat     #-qstep, #-qstep
qincr   dat     #3*qstep,#3*qstep
shift   dat     #30,    #30

for MAXLENGTH-CURLINE-9
        dat     0,0
rof

for 9
        dat     1,1
rof
end
```

Extra Extra:
Armory - A5
by J.K. Wilkinson

Ok, Armory was my first succesful Hill challenge.
It’s based on a simple idea: beat scanners/scissors with a stone,
beat stones with an imp-stone, and beat papers with scissors.

The only thing really new/interesting is the boot method and
pspace. All the components are highly standard and well-known
warriors.

In order to squeeze all this code in, (and do it fast, I wanted
to make a splash on the Hill!) I had to throw together some stuff
like this:

```
sboot:   mov.a  #cgate-2-tboot, tboot
         mov.a  #T+18-goboot, goboot
         jmp    2

tboot:   dat    gate,   T
tornado: mov    }tboot, >tboot
         djn    -1,     #8
```

That "jmp 2", for instance, is 100% pointless. :)
100%! I mean, I’ve seen code where I thought something _could_
be trimmed down... but placing your own dats so your jumping
over them???
As you can see, there’s much room for optimizing, but when A5
hit the big time, I decided to leave well enough alone. :)

As for the pspace, it’s perhaps the smartest one that’s been
attempted on the Hill. You can’t be too smart, or you get you

ass kicked while your trying to decide what to do. Heh.
I think I struck I happy medium with my system.

Basically, if I've just been brainwashed, I reinitialize
pspace and just keeping going with what ever is in my NUM_STR
(my strategy pspace.) That means if I'm washed with 0 I go
to scissors when I lose. Is that a good idea?

Well, think about this: If I'm brainwashed and I don't lose
I go to tornado, because on a loss I add 1 to the strategy.
This means that q-brainwash->papers can't really lock on.
I've still got a shot do bounce out of the "just lost, now
you're brainwashed->your screwed" cycle. :)
In retrospect, a better system might be just the opposite,
but it's difficult to predict your opponent's methodology.

It seemed to work fairly well though, until I went and killed
it. :(<g>

Oh, and if you're wondering what the "Major changes" were,
I removed a paper module. The paper just couldn't launch
in enough time, from that much space... so I redesigned all
the boots. You'll notice they aren't in-line boots (they
use djn.b to loop the boot.)

Here's Armory...

```
----------c-u-t---o-n---t-h-e---d-o-t-t-e-d---l-i-n-e--:-)----------
;redcode-94
;name Armory - A5
;kill Armory - A4a
;author Wilkinson
;strategy use pspace to go to battle
;strategy v 5 - well, I'm still losing to Brain Wash... I may still
;strategy have a pcode bug. :/
;strategy Major changes.  Hoping for more wins, and less ties...
;assert 1

i       equ imp+100
NUM_STR equ #3
_RESULT equ #0
_LOSS   equ #222
_STR    equ #333
BOUND   equ #800
CDIST   equ 12
IVAL    equ 42
FIRST   equ scan+OFFSET+IVAL
OFFSET  equ (2*IVAL)
DJNOFF  equ -431
BOMBLEN equ CDIST+2
GATE    equ tie-4000
stinc   equ 190
d       equ 2667
S       equ stone+2537
T       equ gate+5500
step    equ 52
count   equ 665

res:  ldp _RESULT,  #0      ;load last result into B-field
loss: ldp   _LOSS,  #0
      jmz goloss,   res          ;a zero indicates a loss in the last round

      djn tie,res

win:     add    #-1,    loss
         stp.b  loss,   _LOSS
tie:
go:      ldp    _STR,   #0
```

```
         slt    BOUND-100, loss   ;check for illegal _LOSS record
         stp    BOUND,     _LOSS

         mod.ab NUM_STR,   go      ; in case _STR ever gets screwed up
         mov.ba go,      case
gojmp:   jmp    case               ;after this gojmp, we jump again from case

goloss:  add    #1,     loss
         slt    loss,   BOUND+2;if we've lost more than we won, then switch
         jmp    switch

         slt    BOUND-100, loss   ;check for illegal _LOSS record

         jmp    switch
         stp.b  loss,   _LOSS
         jmp    go

switch:  ldp    _STR,   #0
         add    #1,     -1
         slt    -2,     NUM_STR
         mov    #0,     switch
         stp    BOUND,  _LOSS
         stp.b  switch, _STR
         add.ba switch, case

case:
         jmp    @0,     tornado    ;3
         jmp    @0,     sboot      ;3
         jmp    @0,     stonespir  ;3

;***Cannonade
stone:   mov   <1+5+(stinc*800),1
         spl   -1,    <2
         add    3,    stone
         djn   -2,    <5141+1
         dat    0,    0
         mov   stinc, <-stinc

           dat stone,   S
stonespir: mov }-1,     >-1
           djn -1,      #6
           spl S+1

spir:      mov.i  imp,   i
           spl.a  1,     <GATE-200
           mov.i -1,     0          ;2
           spl.a  1,     <GATE-300  ;3
           spl.a  1,     <GATE-400  ;6
           spl    2                 ;12
           jmp.a @imp-1, {0
           jmp.a *imp-1, {0

           dat   #i+2*d+7, #i+1*d+7
           dat   #i+7,     #i+2*d+6
           dat   #i+1*d+6, #i+6
           dat   #i+2*d+5, #i+1*d+5
           dat   #i+5,     #i+2*d+4
           dat   #i+1*d+4, #i+4
           dat   #i+2*d+3, #i+1*d+3
           dat   #i+3,     #i+2*d+2
           dat   #i+1*d+2, #i+2
           dat   #i+2*d+1, #i+1*d+1
           dat   #i+1,     #i+2*d
           dat   #i+1*d,   #i
imp:       mov.i #1,    2667

sboot:   mov.a  #cgate-2-tboot, tboot
         mov.a  #T+18-goboot, goboot
         jmp    2
```

```
tboot:   dat    gate,   T
tornado: mov    }tboot, >tboot
         djn    -1,     #8
         add.ab #10,    tboot
         mov    }tboot, >tboot
         djn    -1,     #4
goboot:  jmp    T+1,    {0

;***Tornado
gate    dat     #step,       #-step           ;step equ 52
start   mov     bombd+10,    *tstone
        mov     bombd+10,    @tstone
tstone  mov     *(2*step)+1, *(3*step)+1
        add     incr+10,     tstone
jump    djn.b   start,       #count          ;count equ 665
        spl     #step,       #0
clr     mov     gate,        }gate-5 ;jump ;gate-3

; 10 "dat 0, 0"'s need to be inserted here

incr    dat     3*step, 3*step
bombd   dat     #52   , #1         ;hit dat
dat 0, 0
dat 0, 0

;***Scissors
         dat    #cgate-10, clear-cgate+8+10    ; just in case clr is decremented
cgate    dat    #4000,    3000
wipe4    dat    #4000,    clear-cgate+8+10
wipe3    dat    #4000,    clear-cgate+8+10
         spl    #6000,    clear-cgate+8+10   ; redundant wipers
wipe2    spl    #6000,    clear-cgate+8+10   ; redundant wipers
wipe1    spl    #3050,    clear-cgate+8+10

; 10 "dat 0, 0"'s need to be here
clear    spl    #0, >-20
         mov    @2, >cgate-10
         mov    @1, >cgate-10
         djn.b  -2, {wipe1-10
end
```

As you can see from the Armory ;strategy lines, I thought I was losing to brainwashes. It turns out that my scissors was so pitiful that any decent paper could thrash me, and I don't think Brainwash's brainwashing was really much of a factor. :/

Planar's corner

CDB tutorial, part 1

This is the first article of a long series that we will write, Stefan Strack and I. We will start at the level of "I haven't even read the docs yet" and we'll hopefully end up at the level of "why don't we have a CDB macro programming contest ?"

Because Stefan has written CDB itself, he probably wouldn't see much difference between a three-line macro and a one-character command, so I get to write this first article. We're writing this in the hope that it will be useful to you, so your feedback is vital: tell us what is missing, what is unclear, what you would like to see explained in more detail, etc.

After this introduction, we can start learning CDB. The hardest step is the first one: you must realize that CDB is at the same time extremely powerful and quite easy to use. I'll take myself as an

example. I was reading the docs for the first time less than three months ago. Have a look at Core Warrior 8 to see what kind of macros I can write now. And I'm still far from Stefan's level.

So CDB is easy to use, and by learning it you can greatly speed up your warrior development: once you master CDB, you'll be able to do such things as:

+ explore the functioning of a warrior in a single-warrior "fight" and discover any unexpected problems (i.e. debug a program)
+ find the right set of constants for a stone to remove its suicidal tendencies
+ optimize a paper's constants to cover the most core locations in the smallest time
+ gather statistics on how much of a spiral is still alive at the end of a typical fight
+ automatically find the best constants for a warrior against a given "White warrior"
+ many other things that I haven't thought of yet: the only limit is your imagination.

Let's go on to the technical stuff. We will use the following program for the examples. Save it in a file named "fahr.red".

```
;redcode-94
;name Fahrenheit 0
;author Planar
;assert CORESIZE == 8000

steps   spl     #2044, <3039
ptr     mov.i   <100, <1000
attack2 mov.i   <-2000, *-1
        add.f   steps, ptr
        djn.f   -3, {attack2
        end
```

This is a fast stone with a strong suicidal tendency. We'll try to find a good set of constants to replace those 100 and 1000.

General description

CDB is a line-oriented debugger. CDB controls the pMARS simulator and you control CDB by typing commands to the (cdb) prompt. The best way to get this prompt is using the "-e" option to the pMARS command line. We will use the following command line. Type this at your shell, or (if you use a Macintosh) use the "command line" item in the "file" menu:

```
    pmars -e -b -r 100 fahr.red
```

This launches pMARS and immediately enters CDB. CDB displays the next instruction to execute (i.e. the first instruction of the program), and our good friend the (cdb) prompt. Now we get to decide what happens next simply by typing a command.

You can also get the prompt by typing 'd' (in the DOS version), or control-C (in the Unix versions) or command-. (in the Mac version) when pMARS is running. If you're looking at a battle and you see something strange happen, you can stop the battle and use CDB to investigate.

The best way to read this tutorial is to launch your pMARS on your own computer and try the commands when you read their description. I was going to show the example commands and CDB's answers in the following format:

```
00000   SPL.B  #  2044, <  3039
(cdb) echo coucou
```

```
coucou
(cdb)
```

CDB displays the first line when it is triggered by the "-e" option on the command line. If you enter CDB with control-C, you'll get a different display. The (cdb)'s are the prompts, "echo coucou" is what I typed, and "coucou" is CDB's answer. After printing "coucou", CDB is ready for a new command.

Because this tutorial is mostly useless if you're not trying the commands on your pMARS, and because Beppe won't be happy if Planar's corner gets bigger than the rest of Core Warrior, I'm not going to show CDB's answers to my example commands. Try them and see. If you can't view this file and use pMARS at the same time, print this file. If you don't have a printer, contact me and I'll send you a paper copy.

The first thing to learn is of course how to get out of CDB. Here is one command to do that:

```
(cdb) quit
```

After this command, CDB is not ready for a new command because it has exited, along with pMARS itself. Here is the other command to exit CDB:

```
(cdb) continue
```

With this command, CDB exits and lets pMARS run as if CDB had not been invoked, until the end of the 100 rounds we specified on the command line. If you type control-C again, you get back in control.

Displaying the current state

The most useful command of CDB is "list". It takes as argument a core address or a range of addresses, and it displays the contents of the core at that address or range of addresses. For example, you can get a listing of Fahrenheit by typing:

```
(cdb) list 0,4
```

If you want to see the next core cell:

```
(cdb) list 5
```

This cell contains "DAT 0, 0", which CDB displays as blank, because it is the default cell contents at the beginning of a battle.

You can abbreviate "list" to "l", or even nothing at all, like this:

```
(cdb) 1,3
```

Instead of numbers, you can use expressions as arguments to "list" (this is true for all cdb commands that take numeric arguments). I won't describe in detail the syntax of expressions, they are the same as what you use in redcode programs. There are a few special values that you can use in CDB expressions.

The most important of these special values is the dot address; it is entered as a period, and it represents the address of the last core cell displayed by CDB. For example, after the last example above, you can type:

```
(cdb) .
```

And to see what the B-field of this instruction points to:

```
(cdb) .-2
```

The variables A and B contain the A-field and B-field of the instruction at the dot address. And as a further shortcut, CDB accepts "+expr" and "-expr" for ".+expr" and ".-expr", so the above example could be entered as:

```
(cdb) 3
(cdb) +b
```

You can also type:

```
(cdb) +1,+10
```

Then press <Enter> at the CDB prompt. When you enter a null command like this, CDB will repeat the previous command, so you can list the whole core 10 cells at a time by simply pressing <Enter> repeatedly.

That’s all for the "list" command. It took a long explanation because it is the most often used. With some graphical interfaces, you can also activate it by clicking in the core with the mouse.

To get a general view of what’s going on, type:

```
(cdb) registers
```

This will display a the number of the current round, the number of cycles remaining before the end of this round, and a listing of each warriors with its name, its number of processes, and a summary of its process queue and p-space.

The process queue is a list of core addresses. The process that will execute next is in [brackets], and the following process is pointed by the arrow.

Running the program

To run the program until completion, just type:

```
(cdb) go
```

pMARS will run until the program dies or the cycles have run out. While the program is running, you can still press control-C to get the prompt back. To know which condition ended the "go", use "registers".

To execute one instruction and get back to the (cdb) prompt, type:

```
(cdb) step
```

To step again, just press <Enter>.

Executing one instruction at a time is useful, but you’ll often want to go forward in time at a faster pace. To this end, CDB provides the "skip" command, which takes an argument. Just type

```
(cdb) skip 999
```

The simulator will execute 1000 steps before giving back the (cdb) prompt. Use "registers" to check the number of cycles left: 1000 fewer than before you used "skip". Note that "skip 0" is equivalent to "step".

With "skip" commands, we can already zero in on the most interesting parts of a fight. For example, let us find out when Fahrenheit bombs itself. Use "go" to finish the current round, then "step" to get to the first cycle of a new round. Now type

```
(cdb) skip 999
(cdb) 0,4
```

You'll see that Fahrenheit is still intact after 1000 cycles. Type that sequence a second and a third time. Fahrenheit has bombed itself between the 4000th and the 5000th cycle. Use "go" to skip the rest of this round, skip to cycle 4000, and then 100 by 100 until the self-bombing. Then 10 by 10, then just step until the self-bombing. If you lose track of how many cycles have elapsed, "registers" will tell you.

This is a bit tedious, and CDB provides much better ways for doing this, but I have to keep something for next time, or I'll lose all my readership. We already have a useful piece of information: after 4136 cycles, Fahrenheit destroys its own SPL instruction.

Use "go" to reach the end of the battle, step once to start a new battle, and "skip 4135". Type "registers" and look at the process queue. Between the brackets is the address of the instruction about to execute: 1. type "1" and you'll see how this instruction bombs the SPL. (Note that the instruction at 1 was already displayed by CDB right after your "skip".)

Exercise: change the constant 1000 in Fahrenheit to avoid self-bombing at cycle 4136. Find out when the self-bombing occurs with your new constant, and which instruction of Fahrenheit is bombed.

There is one more way to do big steps. You can step all processes once by typing:

```
(cdb) thread
```

CDB will step once for every process in the process queue, and you'll get right back at your current process, one step later. This is very useful when you're debugging multi-threaded programs (which is not the case of Fahrenheit, but you can try it on the bootstrap sequence of Impfinity v3i, for example).

To conclude this first part, here is the great debugger classic, breakpoints. Type:

```
(cdb) trace 0
```

CDB will place a breakpoint on the SPL instruction of Fahrenheit. Every time a traced instruction is about to be executed, CDB will stop and display the instruction. If you repeatedly enter

```
(cdb) go
(cdb) registers
```

you'll notice how often the SPL injects a process into the loop. You'll also notice that the listing of the traced instruction has a "T" at its right. To remove a breakpoint, use "untrace".

For your homework, look up the "moveable" command in the docs, and think up a use for moveable breakpoints, and one for non-moveable breakpoints.

Abbreviations

CDB provides a good way of saving your fingers: you may abbreviate a command to its first few letters. Here is a complete list of the shortest abbreviations accepted by CDB. Each command is listed with its optional part in (parentheses).

c(ontinue)	g(o)	r(egisters)
ca(lc)	h(elp)	res(et)
cl(ear)	if	s(tep)
cl(s)	l(ist)	se(arch)
clo(se)	m(acro)	sk(ip)

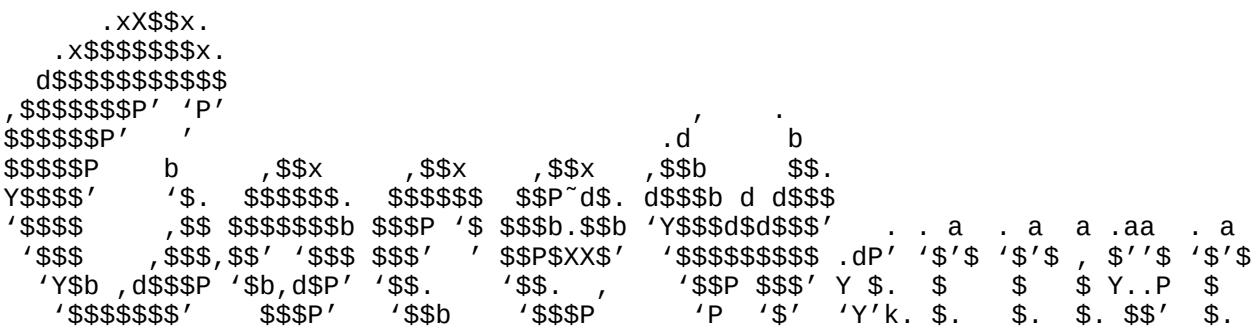
```
d(isplay)                mo(veable) of(f)         sw(itch)
d(isplay) c(lear)        mo(veable) on            t(race)
d(isplay) o(ff)          p(rogress)               th(read)
d(isplay) on             pq(ueue)                 u(ntrace)
e(dit)                   pq(ueue) of(f)           w(rite)
ec(ho)                   ps(pace)                 wq(ueue)
ex(ecute)                ps(pace) of(f)           wq(ueue) of(f)
f(ill)                   q(uit)
```

Next time, we'll yield much more power with ~! !!@& and the commands for changing the core.

-- Planar <Damien.Doligez@inria.fr>

Many thanks to Stefan for the very useful remarks he made on a draft of this text.

From corewar-l@stormking.com Sat Dec 30 15:56:31 1995
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA03815; Sat, 30 Dec 95 15:56:31 +0100
Received: from valhalla.stormking.com (root@valhalla.stormking.com [204.141.14.1]) by nez
-perce.inria.fr (8.7.1/8.7.1) with SMTP id PAA06203 for <damien.doligez@inria.fr>; Sat, 3
0 Dec 1995 15:56:20 +0100 (MET)
Received: from (server@localhost [127.0.0.1]) by valhalla.stormking.com (8.6.12/8.6.12)
with SMTP id JAA25784; Sat, 30 Dec 1995 09:51:54 -0500
Date: Sat, 30 Dec 1995 09:51:54 -0500
Message-Id: <199512301440.JAA19567@valhalla.stormking.com>
Errors-To: tuc@stormking.com
Reply-To: pan0178@comune.bologna.it
Originator: corewar-l@stormking.com
Sender: corewar-l@stormking.com
Precedence: bulk
From: pan0178@comune.bologna.it (MV)
To: Multiple recipients of list <corewar-l@stormking.com>
Subject: Core Warrior 10
X-Listprocessor-Version: 6.0b -- ListProcessor by Anastasios Kotsikonas
X-Comment: Usenet News "rec.games.corewar"
X-Mailer: Windows Eudora Version 1.4.4
Status: R



Issue 10 January 1, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Happy New Year!
The 1996 begins, and we have reached the issue number 10 of your favourite Core War newsletter!
At the moment Beppe is skiing so I have the honour to keep this number.
I remind you that Nandor & Stefan tourney is over, and soon you’ll be able to look at winners’ faces on Stormking web pages!
At the moment maybe we’re all busy in eating big Milanese cakes or similar, but I hope you’ll have some free time to "waste" in redcoding (or at least to read us ;-).
In this issue, among other things, Planar continues the useful tutorial on cdb, while I try to show to the beginners some basic rules to keep in mind, when starting making a warrior.
Let’s go!

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

1	45/	39/	16	quiz	Schitzo	150	267
2	42/	41/	18	Frontwards v2	Steven Morrell	143	120
3	38/	34/	29	Mason 2.0	Robert Macrae	141	3
4	40/	40/	20	Boombastic	Maurizio Vittuari	141	2
5	34/	26/	40	La Bomba	Beppe Bezzi	141	262
6	36/	32/	32	Torch t18	P.Kline	140	646
7	41/	42/	18	Harmony	P.Kline	139	13
8	29/	19/	53	Impfinity v4g1	Planar	139	67
9	42/	46/	12	crow	Karl Lewin	139	100
10	34/	30/	36	Jack in the box	Beppe Bezzi	138	634
11	41/	44/	15	Provascan 3.0	Beppe Bezzi	138	17
12	40/	44/	15	Porch Swing 2	JKW	135	175
13	29/	22/	49	Hector 2	Kurt Franke	135	182
14	35/	36/	29	Tornado 2.0 h1	Beppe Bezzi	135	107
15	40/	45/	15	Provascan 2.0d	B.Bezzi	135	1
16	29/	24/	47	juliet and paper	M R Bremer, B. Bezzi	134	263
17	39/	45/	15	testPW	Maurizio Vittuari	134	8
18	21/	9/	70	Night Train	Karl Lewin	134	154
19	37/	41/	22	Derision	M R Bremer	133	286
20	37/	43/	20	Qwiksand	Wayne Sheppard	130	73
21	31/	32/	36	Dynamo v.1a	John K. Wilkinson	130	6
22	37/	45/	18	Persistence	Kurt Franke	130	74
23	27/	24/	49	Aeka	T.Hsu	129	27
24	19/	9/	72	DoorMat v0.1	K Lewin	129	116
25	36/	43/	22	myVamp v3.7	Paulsson	128	614

As you can see quiz still strongly holds the leadership, followed by Frontwards, La Bomba and two new entries: R. Macrae’s Mason 2.0, an evolution of Mason 1.0, and my own Boombastic, a fast bomber based on Tornado engine.
A new entry gets also a good position: Harmony’s P. Kline, a couple of scanners that work in parallel (you can find it just published!).
Provascan 2.0d, by B. Bezzi, has been subscribed by me as a test (and yet alive only for error): I’ll kill it as soon as possible.
Note that it has been subscribed also a copy of Aeka, an old warrior: we aren’t able to guess the reason...
We think it would be fair to free a slot, in favour of other original programs.

---

94 - What’s New (in order of appearance)

10	40/	42/	18	Fire Master v1.5	JS Pulido	138	1
23	20/	13/	67	test	P.Kline	127	1
25	35/	45/	20	testSC	P.Kline	126	1
13	28/	24/	48	Aeka	T.Hsu	132	1
16	38/	44/	18	Prova_e_Riprova	Maurizio Vittuari	133	1
4	30/	13/	57	test i4h	Planar	146	1
8	39/	41/	21	Harmony	P.Kline	136	1
21	39/	46/	15	testPW	Maurizio Vittuari	132	1
15	33/	32/	34	Dynamo v.1a	John K. Wilkinson	134	1
17	35/	36/	29	Brand 3.0	Robert Macrae	133	1
6	37/	34/	29	Mason 2.0	Robert Macrae	140	1
8	40/	41/	20	Boombastic	Maurizio Vittuari	139	1

A particular mention to Mason 2.0, Harmony, a redundant (published) scanner, and... Boombastic, my new bomber under costruction.

---

94 - What’s No More

26	37/	46/	17	Porch Swing +	Randy Graham	127	79
26	33/	39/	28	endpoint .	M R Bremer	126	254
26	29/	33/	38	Paper8-IV 2.1	G. Eadon	125	28
26	20/	15/	65	test	P.Kline	125	12
26	2/	2/	1	testbns	Maurizio Vittuari	5	15
26	1/	2/	0	testbn	Maurizio Vittuari	5	26
26	2/	1/	1	testSC	P.Kline	6	4
26	4/	0/	0	test i4h	Planar	12	1
26	36/	51/	13	Babbo Natale	Maurizio Vittuari	121	5
26	2/	1/	0	Prova_e_Riprova	Maurizio Vittuari	7	5

26	1/ 2/ 1	Brand 3.0	Robert Macrae	4	2
26	36/ 45/ 19	Fire Master v1.5	JS Pulido	127	38
26	37/ 48/ 14	ltest	Anders Ivner	126	183

Many tests, two ultra centenaries (ltest and endpoint .) and some younger warriors are no more.

What’s Old

6	36/ 32/ 32	Torch t18	P.Kline	140	646
10	34/ 30/ 36	Jack in the box	Beppe Bezzi	138	634
25	36/ 43/ 22	myVamp v3.7	Paulsson	128	614
19	37/ 41/ 22	Derision	M R Bremer	133	286
1	45/ 39/ 16	quiz	Schitzo	150	267
16	29/ 24/ 47	juliet and paper	M R Bremer, B. Bezzi	134	263
5	34/ 26/ 40	La Bomba	Beppe Bezzi	141	262

Seven warriors passed 200 age, the three veterans are over 600.
They’re quite healthy, excepted myVamp with more than one trouble to solve...

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
2	Agony II	Stefan Strack	912		CMP scanner
3	Blue Funk	Steven Morrell	869		Stone/ imp
4	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766		Stone/ imp
6	HeremScimitar	A.Ivner,P.Kline	666		Bomber
7	Torch t18	P.Kline	646	*	Bomber
8	Jack in the box	Beppe Bezzi	634	*	P-warrior
9	myVamp v3.7	Paulsson	614	*	Vampire
10	Armory - A5	Wilkinson	609		P-warrior
11	Phq	Maurizio Vittuari	589		Qscan -> replicator
12	B-Panama X	Steven Morrell	518		Stone/ replicator
13	NC 94	Wayne Sheppard	387		Stone/ imp
14	Cannonade	P.Kline	382		Stone/ imp
15	Torch t17	P.Kline	378		Bomber
16	Lucky 3	Stefan Strack	355		Stone/ imp
17	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
18	Dragon Spear	c w blue	346		CMP scanner
19	Leprechaun on speed	Anders Ivner	344		Qscan -> scanner/bomber
20	juliet storm	M R Bremer	333		Stone/ imp

The "three musketeers", Torch, Jack and myVamp, pass Phq and Armory and continue running (with some problems for myVamp...).
The next step will be HeremScimitar ?

Current Status of the Internet Pizza Server Beginner’s Hill:

#	%W/	%L/	%T	Name	Author	Score	Age
1	48/	8/	44	Aeka	T.Hsu	187	22
2	59/	31/	9	Rave	Stefan Strack	187	21
3	48/	16/	37	Spacehead1.1	Warpi	179	39
4	49/	20/	31	Hint Test v6	M R Bremer	178	94
5	55/	34/	11	Our Vamp v2	R Bartolome & JS Pul	175	27
6	48/	20/	32	Serendipity	A. Nevermind	175	95
7	45/	17/	38	Spacehead	Warpi	173	50
8	47/	30/	23	Winter Werewolf	W. Mintardjo	163	19
9	44/	29/	27	Hey, Kool-Aid! v2.9	David Boeren	160	10
10	46/	33/	21	Hey, Kool-Aid! v2.2	David Boeren	159	18
11	30/	7/	63	Fortitude	A. Nevermind	152	93
12	33/	15/	52	GCSpiral	Example	150	20
13	43/	36/	21	Paperstone	Warpi	150	54
14	42/	38/	20	test3	Kafka	145	75
15	45/	48/	7	polyphemous	Kafka	143	61

16	39/ 39/ 23	test4	Kafka	139	74
17	38/ 38/ 24	Paperstone v1.2	Warpi	138	51
18	33/ 36/ 31	Everybody Must Get Stoned	Nathan Summers	129	63
19	40/ 51/ 9	test	Kafka	129	84
20	37/ 48/ 16	test-b	Raul Bartolome	125	2
21	35/ 50/ 16	test-A	Raul Bartolome	119	1
22	33/ 55/ 12	Dwarf	T. H. Davies	111	59
23	25/ 67/ 9	Cancer v1.0	David Boeren	83	5
24	25/ 70/ 5	Hopper 2.0	J.Shelton	81	6
25	21/ 74/ 5	Hopper	J.Shelton	69	9

As you can see the hill is actually leaded by two old warriors, not beginner’s warriors at all!
We have received lots of remostrances...
What we can tell here is that it would be fair that they’d be deleted, as soon as possible, by the person who has subcribed them if possible.

The hint
The very basics of Core War game strategy.
(How to improve your beginner’s warrior)

In this issue we shall try to discuss about improving warriors.
First of all a little preface for the beginner: we want to clarify the meaning of the sentence "a warrior better than another one".
At the moment, as you know, our "work" is to try to make our warriors enough powerful so that they can enter in a 25 warrior populed heap, that we usually call hill ;-).
One of the first things that a novice (apart the redcode language ;-) should know about this game, is that for each given warrior, there exists a warrior that can defeat it in the long distance.
Maybe one of the main differences between a beginner’s and a veteran’s program is the range of enemy types it can succesfully face: this is often the reason why a warrior going very well in the beginner hill, often finds many problems if subscribed on the 94 hill.
Let’s see some examples...
In the last number Beppe showed us how to improve a beginner’s scanner, and he put it into the 94-hill (Provascan 2.0); then he modified again the warrior and reached the second place (Provascan 3.0)!
I tried to make some changes to version 2.0, and even if I couldn’t score as high as Beppe (Provascan 3.0 is in the top ten, and it can be considered, as his previous version, no more a beginner’s warrior!), I think it’s an useful challenge for the beginner trying to improve it (not such an easy exercise!).
Now we discuss some basic and reasonable moves that can be attempted to modify it succesfully.
I remind you that Provascan is a 50%c B-scanner with boot and relative decoy, and spl0-dat core clear (for further details see Core Warrior 9); it plays conventionally the role of scissors, in the well known scissors-paper(replicators)-stone(bombers) analogy.

We start analizying some interesting results of Provascan 2.0:

Provascan 2.0d vs Frontwards	95/72/33	(one shot scanner)
Noboot vs Frontwards	55/129/16	
Provascan 2.0d vs La Bomba	87/70/43	(QScan--> Paper)
Noboot vs La Bomba	97/76/27	
Provascan 2.0d vs Impfinity4g1	93/93/14	(Imp stuffs! ;-)
Noboot vs Impfinity v4g1	90/88/22	
Provascan 2.0d vs Torch t18	85/88/27	(incendiary bomber)
Noboot vs Torch t18	91/77/32	
Provascan 2.0d vs Porch Swing 2	81/80/39	(one shot scan/bomber)
Noboot vs Porch Swing 2	59/111/30	

Question: but booting is truly useful ?
Let’s see the result!
Noboot (the same version but without boot) is faster, because doesn’t

have to spend some initial cycles executing the copy, and can immediately start scanning.
It’s reasonable to think that Noboot will gain something against warriors not scanning the core.
If we neglect fluctuations, we see that Noboot works quite better against Torch (a bomber) and also against La Bomba (maybe Noboot can reach and hit, with a spl0 carpet, the paper before it spreads away.
Against Impfinity we can’t see any obvious difference.
But take a look of what happens with one-shot scanners!
Against these guys the boot is highly recommended, as you can see from the scores: they stop scanning and start to fire from your decoy (with the core clear), while you are safe in another part of the core, scanning and ready to bomb them later.
Overally we understand that isn’t a very good idea to take away the booting section (at least in the current hill) from our 50%c scanner!

Now, extablished that booting is a quite pretty idea ;-), we want to try another stuff: who of you, did never hate (maybe even for a while) those little, ugly and hard-to-die imps ;-) ?
(answer: maybe only our dad_of_imp_Planar never hated his little and *pretty* "creatures"...;-)
So what about on installing an anti-imp core clear on our favourite scanner ?
Let’s take a look at this version of ProvaScan (I left the original comments of Beppe and changed just the clear and very very other little things):
BTW Prova_and_Riprova means Try_and_Try_Again!

```
;redcode-94
;name Prova_e_Riprova
;author Maurizio Vittuari
;strategy B-scanner
;strategy This is a personal defiance to Beppe ;-)
;strategy hoping to improve Provascan for the hint
;strategy on the New Year’s Day issue
;assert CORESIZE == 8000

step    equ     3364
away    equ     3198+1

trap    dat     0,      0       ;0
        dat     0,      0    ;we can use equs for those dat 0,0 they are left
dest    dat     0,      0    ;for clarity
        dat     0,      0
        dat     0,      0       ;0
loop    add     #step,  ptr
ptr     jmz     loop,   trap+step
        mov.b   ptr,    dest
cnt     mov     #7,     0       ;0
clear   mov     bomb,   >dest
        djn     clear,  cnt
        jmn     loop,   trap
bomb    spl     #6,     0       ;0
        mov     kill,   }bomb   ;1st pass: spl0-dat carpet
        mov     kill-1, }bomb   ;and then 2nd pass: only dat <2667,<-2666
        jmp     -2
        spl     #4,     0       ;0
kill    dat     <2667,  <-2666

boot    mov     kill,   away
for 12
        mov     {boot,  <boot        ;the faster way to boot away
rof
        mov     #0,     boot+2       ;we have to set those b-fields to zero
        mov     #0,     boot+6       ;to save time later
        mov     #0,     boot+10
        mov     #0,     boot+14
jump    jmp     boot+away-11,>away-34   ;> is to set trap b-field non zero

for (MAXLENGTH-CURLINE)/4
        dat     jump,   0           ;this decoy doesn’t have two equal cells
        dat     bomb,   boot        ;and also has all fourth b-field at zero
```

```
        dat     boot,   kill
        dat     clear,  boot
rof
end boot
```

```
Prova_e_Riprova vs Impfinity v4g1       10/96/94    (AArgh!)
Prova_e_Riprova vs Torch t18            81/86/33
Prova_e_Riprova vs Provascan 3.0        93/94/13
Prova_e_Riprova vs Frontwards v2        86/74/40
Prova_e_Riprova vs La Bomba             58/85/57
Prova_e_Riprova vs Night Train          98/36/66
Prova_e_Riprova vs DoorMat              99/36/65

Provascan 2.0d vs Night Train wins:     44/39/117
Provascan 2.0d vs DoorMat v0.1 wins:    46/48/106
```

Two words about these results:
They follow our expectations when fighting against Torch and Provascan 3.0; this version is quite better then 2.0d against imp stuffers as Doormat and Night Train.
On the contrary I can't understand what actually happened against La Bomba (at home my tests gave very different results...); against Frontwards the performance was slightly worse than the one by version 2.0d, maybe for the couple of istructions added for the clear (now P_e_R is no more so tiny, and also a bit slower in core cleaning!).
What is quite unexpected is the score against Impfinity; maybe here the bi-directional core clear is much better, and probably P_e_R is very often stoned!

Some interesting changes, left as an useful exercise to my twenty-five readers, can be:
-try to change the scan step
-try to change the carpet dimension
-try to change the starting offset of the core clear
-try to change boot distance
-try to write a better coreclear: smaller than mine [not so hard] and possibly bidirectional and anti-imp [not so easy]
-reengineer the program and reduce the number of istructions [quite hard]
-find the changes that make this version score better than Provascan 3.0 ;-)

Well, I think that's all for this issue, hoping to have been clear...
anyway you can mail me at pan0178@bologna.iperbole.it
Now I leave you with Planar and his interesting tutorial.

CDB tutorial, part 2

In the first part of this tutorial, we explored the most basic commands of GDB. Now we are ready for much more powerful features, features that give most of its power to CDB (and make its input look like line noise). We won't write macros yet, but we'll write CDB programs in the form of complex command lines.

Sequence

Last time, we found the point where Fahrenheit bombed itself with the "skip" command. It was a bit tedious because we were typing these two commands over and over:

```
(cdb) skip 999
(cdb) 0,4
```

There is a better way. Just type:

```
(cdb) skip 999 ~ 0,4
```

CDB will execute the two commands and display their results before giving the prompt back. So you can put a tilde instead of pressing <Enter> between two commands. Big deal.

Indeed, this feature will save a lot of your time. Press <Enter> now, and CDB will repeat the entire command line, not just the last command. You don't have to retype the two commands over and over.

Suppose you lose track of the time and you want to use "registers" to see the current cycle. If you type

```
(cdb) registers
```

you'll see the cycle count, but you lose your "previous command" buffer and you have to type "skip 999~0,4" again. But if you type

```
(cdb)  registers
```

with a space before the "registers", CDB will execute "registers" but keep the old "previous command". Now if you press <Enter>, CDB will execute the "skip" and the "list".

Notice that, when you type "skip 999 ~ 0,4", CDB will execute both commands and display their results. "skip" executes first and displays the next instruction to execute, then "0,4" displays the first five core locations. This is messy. If you type instead

```
(cdb) @skip 999 ~ 0,4
```

the "skip" command will execute without display. The "@" operator, placed before a command, will tell CDB to suppress the display of this command.

Tests

Use "go" to skip to a new battle, then type

```
(cdb) @skip 999 ~ @list 0 ~ if B!=3039 ~ 0,4
```

Here is what CDB will do:
1. silently step 1000 times (@skip 999)
2. silently list the first core location (@list 0)
   What's the point in listing the first core location if you don't display the listing ? It's to set the dot address (and the A and B values). You'll do it all the time in CDB programming.
3. Test if the B-value of location 0 is different from 3039. If so, CDB will execute the next command (0,4); if not, CDB will skip the next command and give the prompt back.

Now, you can press <Enter> until CDB displays the listing of Fahrenheit. You'll see that Fahrenheit has bombed itself.

So this is how the "if" command works: execute the following command only if the condition is true. The condition is any expression, it is true if not equal to zero, false if equal to zero. Easy, isn't it ?

Loops

Try this:

```
(cdb) @step ~ !1000
```

and notice that it is exactly equivalent to "@skip 999". What does it mean ? The "!" command means "repeat the beginning of the command line up to this (!) command". Here, this will repeat the "@step". The argument to "!" is the number of times that CDB must repeat the

line. (Warning: for some strange reasons, sometimes MacpMARS will not accept a space between the ~ and the !)

So we told CDB to repeat 1000 times "@step". If we use

```
(cdb) @step ~ !999 ~ step
```

this is equivalent to "skip 999": step 999 times silently and once with display.

If you omit the argument to "!", CDB will loop forever. Typing

```
(cdb) @step ~ !
```

is equivalent to "continue", but slower. You'll have to press Control-C to get back to the prompt. (In this case, Control-C doesn't work in the X-window version. I have to type Control-C in the terminal window where I launched pMARS from. This will be fixed in the next version of pMARS.)

In addition to the loop count, you can use "if" to break out of a loop: if you use "if" to skip over the "!" command, the loop will stop. Use "go" to skip to a new battle and type:

```
(cdb) @step ~ @list 0 ~ if B==3039 ~ !
```

CDB will step until Fahrenheit has bombed itself. Use "registers" to get the exact cycle when this happens, subtract the remaining cycles from 80000, use "go" to start an new battle and skip to just before the bombing. Check that the next instruction will bomb core location 0, step over it and check that it does bomb that core location.

So this is finally the right way of finding when and how Fahrenheit bombs itself. In just one short command line, we can do the same work as the tedious process of skipping in decreasing increments that we used last time. Note that we can use this technique only if we know which of Fahrenheit's instructions is bombed. I think Stefan has some predefined macros that will help us further. We'll keep them for part 3.

Changing the core

We'll want to experiment by changing some of Fahrenheit's constants to see which one makes it bomb itself the latest. For example, to set the B-value of location 1, we'll set the whole location with the command "edit". It takes an address as argument. In interactive mode, "edit" will prompt you for a line of redcode to put at this address. In a command line, "edit" will take the next "command" (whatever is between the next ~ and the following one) as the line of redcode. For example, if you type:

```
(cdb) edit 1
mov.i <100, <2000
```

CDB will set the contents of core location 1 to this instruction, in effect changing the B-value of the instruction to 2000. You could instead type:

```
(cdb) edit 1 ~ mov.i <100, <2000
```

If we want to see the effect of a big decoy on Fahrenheit's DJN stream, we can use:

```
(cdb) fill 5700,5800
dat 1, 1
```

This will set the 101 core locations between 5700 and 5800 to

"DAT 1, 1". As with "edit", we can give the instruction on the command line after a ~. Determine on which cycle Fahrenheit bombs itself when this decoy is present.

Computing

CBD can also do arbitrary calculations (and display the results). The command to use for this is "calc". Try:

```
(cdb) calc 2+2
(cdb) calc B+1, .+A
(cdb) calc D=D+1
```

CDB provides 24 variables for your use: C...Z (remember that A and B contain the A-value and B-value of the dot address; you cannot assign to them). An expression can contain an assignment, as in the C language. You will often use "@calc" to do an assignment and avoid printing the result.

Nested loops

Let's make CDB work hard to determine the constant that will make Fahrenheit bomb its SPL line as late as possible. We'll try the values of the interval [1004,1007] for the B-field of the first MOV.

We'll use two nested loops: the outer loop will enumerate the 4 values for the constant, and the inner loop will execute the battle step by step, checking the SPL after each instruction.

For nested loop, we use the "!!" instruction. It marks the opening of the loop, which is closed by a matching "!". Our command lines will be (I've broken the long line, but you must type it in one line without the \):

```
(cdb) ca C=1003,X=3039
(cdb) !!~ca C=C+1,D=0~@ed1~mov.i<100,<C~!!~@ca D=D+1~@s~@0~if \
B==X~!~ca d~@g~@s~!4
```

This is a detailed explanation:

```
!!                        start the outer loop
   ca C=C+1, D=0             increment the outer loop counter, reset
                             the inner loop counter (and print the
                             constant)
   @ed 1~mov.i <100,<C       set the first MOV instruction
   !!                        start the inner loop
      @ca D=D+1                increment the inner loop counter
      @s                       step the warrior once
      @0                       set the dot address to 1
      if B==3039~!             end the inner loop if self-bombed
   ca D                      print the constant and number of cycles
   @g~@s                     skip to the first cycle of the next battle
!4                         loop 4 times for the outer loop
```

Four values is not a lot, but I couldn't do better with the strong suicidal tendency of Fahrenheit (see exercise 6 below). What would you do to reduce this tendency ?

There's no reason I should be the one doing all the work, so here are a few exercises. Note that you won't be able to test your solutions because my command line is very close to the maximum size allowed by pMARS. We'll have to define macros to overcome this limitation.

1. The above loop will take a lot of time. Accelerate it by stepping 10 by 10 instead of 1 by 1.
2. We're only interested in the value that gives the greatest number

of cycles. Change the command line to display only that value and the corresponding number of cycles.
3. Use "fill" to abort the current battle instead of finishing it with "go". How much faster is this ?
4. Even faster: instead of doing the inner loop step by step all the way, skip to the greatest number of cycles so far, and start stepping from there if the SPL is still not bombed. (Is that clear ?)
5. Figure out a way of putting a sequence of instructions under an "if" instead of a single instruction, so that the sequence is executed only when the condition is true.
6. [hard] The inner loop fails to stop if the self-bombing doesn't occur on the SPL. How do you make it work in all cases ?

The end

This is all for this part. In the next one, you'll have the answers to the exercises, and Stefan will tell us about macros. There's a whole lot of useful predefined macros that come with pMARS.

Stefan is on vacation, so he didn't proofread this part. Blame him if it is not as good as part 1 (-:

I want to greet you with a few lines written by Myer R Bremer on issue 4...

##
EDITOR'S NOTE: Damien is much too modest. Imp spirals are one of the most difficult subjects to understand. Impfinity missed the '94 draft hill by only a fraction of a point. I'm sure he'll breach the hill very soon. Spoke too soon. Impfinity has just entered the hill as I am posting.
##

Well, I think that now Impfinity is going very well!
Myer has a very good sight! ;-)

Questions? Concerns? Comments? Complaints? Mail them to:
Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu> or
for this issue to Maurizio Vittuari <pan0178@iperbole.bologna.it>

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Article: 3521 of rec.games.corewar
Path: news-rocq.inria.fr!univ-lyon1.fr!in2p3.fr!oleane!tank.news.pipex.net!pipex!swrinde!gatech!newsfeed.internetmci.com!solaris.cc.vt.edu!news.new-york.net!news.stormking.com!bezzi@iol.it
From: Beppe Bezzi <bezzi@iol.it>
Newsgroups: rec.games.corewar
Subject: Core Warrior 11
Date: 9 Jan 1996 14:05:58 -0500
Organization: Storm King Ind. Inc.
Lines: 358
Sender: server@news.stormking.com
Distribution: world
Message-ID: <199601081715.SAA09346@iol-mail.iol.it>
Reply-To: bezzi@iol.it
NNTP-Posting-Host: valhalla.stormking.com
Originator: corewar-l@stormking.com
X-Mailer: Windows Eudora Light Version 1.5.2

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                                ,    .
$$$$$$P'   '                                .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 11 January 8, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Hi, and happy new year.

Back home, after some days at the mountains one of my first thoughts was checking mail to be sure my old Jack was still here, he is, you have been kind with him, so I'll give you another issue of Corewarrior instead of spending the time crying on my bed.:-)

Tuc is working hard to change the scripts of Stormking koth, soon we'll have new features available, password, detailed status and the chance to change ;redcode attribute of our warrior from verbose to quiet, for example. Everyone is invited to submit some sample warrior to kothtest@valhalla.stormking.com trying any oddity to crash it, this avoid problems in future; any suggestion for enhancement is also welcome, mail them to tuc@stormking.com

Stefan is still on vacations so we cannot yet see Steven's, Robert's, and Paul's, tournament winner and medalists, faces on the web; I'm sure all corewar girls are waiting.

And now stop rambling, let the dat bombs speak for me.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

#	%W/ %L/ %T	Name	Author	Score	Age
1	41/ 38/ 20	quiz	Schitzo	144	341
2	39/ 36/ 24	Harmony	P.Kline	142	11
3	39/ 37/ 24	Frontwards v2	Steven Morrell	140	194
4	33/ 31/ 36	Mason 2.0	Robert Macrae	134	77
5	19/ 6/ 74	Evol Cap 6.2a	John Wilkinson	133	8
6	23/ 13/ 64	Impfinity v4g1	Planar	132	141
7	25/ 19/ 56	juliet storm	M R Bremer	132	31
8	26/ 20/ 54	La Bomba	Beppe Bezzi	132	336
9	18/ 5/ 77	Evol Cap 6.2	John Wilkinson	132	25
10	23/ 14/ 63	Hector 2	Kurt Franke	131	256
11	28/ 24/ 49	Jack in the box	Beppe Bezzi	131	708
12	24/ 17/ 59	juliet and paper	M R Bremer, B. Bezzi	131	337
13	30/ 30/ 40	Torch t18	P.Kline	130	720
14	37/ 45/ 18	seventyfive	Anders Ivner	130	50
15	27/ 24/ 48	endpoint .	M R Bremer	130	13
16	35/ 41/ 24	Boombastic	Maurizio Vittuari	129	76
17	36/ 44/ 20	Provascan 3.0	Beppe Bezzi	127	91
18	17/ 7/ 76	Night Train	Karl Lewin	126	228
19	29/ 32/ 39	Tornado 2.0 h1	Beppe Bezzi	125	181
20	19/ 14/ 67	myOmy	Paulsson	125	5
21	16/ 7/ 77	DoorMat v0.1	K Lewin	125	190
22	18/ 12/ 70	Cheap Hack	M R Bremer	125	28
23	35/ 54/ 11	itest	ai	116	4
24	21/ 36/ 43	test9	Maurizio Vittuari	105	1
25	28/ 55/ 17	John's Zizzor 2g	John Wilkinson	100	7

The hill aged 74 this week with 11 new entries. quiz is always holding the king position even if less strongly than in the short past; having given the top position to Frontwards, Impfinity and Harmony for short periods.

After Aeka we have a new resubmission of an old warrior, juliet storm, this time by its author, she holds a good 7th position.

Hill scores are much lower, average 128 (136 last week). Average age is 162 (168 last week)

---

94 - What's New (in order of appearance)

5	43/ 45/ 12	seventyfive	Anders Ivner	140	1
14	30/ 25/ 45	juliet storm	M R Bremer	134	1
24	21/ 16/ 63	Cheap Hack	M R Bremer	126	1
9	19/ 4/ 77	Evol Cap 6.2	John Wilkinson	134	1
24	29/ 31/ 40	endpoint .	M R Bremer	127	1
2	40/ 40/ 20	Harmony	P.Kline	141	1
5	19/ 5/ 77	Evol Cap 6.2a	John Wilkinson	132	1
25	28/ 55/ 17	John's Zizzor 2g	John Wilkinson	100	1
18	19/ 13/ 68	myOmy	Paulsson	125	1
24	36/ 53/ 11	itest	ai	118	1
24	21/ 36/ 43	test9	Maurizio Vittuari	105	1

Many new entries this week, above all new version of Harmony, after some dissonant trial, by Paul Kline; other entries worth noting are the fast bomber seventyfive by Anders Ivner, the two Evol Caps by John Wilkinson and the evergreen juliet storm by Myer Bremer.

---

94 - What's No More

26	0/ 1/ 3	testPW	Maurizio Vittuari	3	9
26	4/ 0/ 0	Dynamo v.1a	John K. Wilkinson	11	8
26	1/ 3/ 0	Provascan 2.0d	B.Bezzi	3	4
26	2/ 1/ 1	Harmony	P.Kline	7	22
26	35/ 47/ 19	Qwiksand	Wayne Sheppard	122	99
26	34/ 43/ 22	myVamp v3.7	Paulsson	125	643
26	23/ 21/ 56	Aeka	T.Hsu	124	75
26	36/ 47/ 18	Porch Swing 2	JKW	125	226

26	34/ 44/ 22	Persistence	Kurt Franke	125	136
26	32/ 40/ 27	Derision	M R Bremer	124	351
26	33/ 50/ 17	crow	Karl Lewin	117	167

The leading trio is broken, myVamp is no more at the venerable age of 643, 9th in the 94 hall of fame.

Other losses include Derision at 351, Porch swing 2 at 226, two centenaries crow and Persistance, a near centenary, Qwiksand, and a bunch of warriors killed by their authors. The old Aeka, whose resubmission caused a few discussions, is no more a problem, at least in 94 hill.

What’s Old

13	30/ 30/ 40	Torch t18	P.Kline	130	720
11	28/ 24/ 49	Jack in the box	Beppe Bezzi	131	708
1	41/ 38/ 20	quiz	Schitzo	144	341
12	24/ 17/ 59	juliet and paper	M R Bremer, B. Bezzi	131	337
8	26/ 20/ 54	La Bomba	Beppe Bezzi	132	336
10	23/ 14/ 63	Hector 2	Kurt Franke	131	256
18	17/ 7/ 76	Night Train	Karl Lewin	126	228

The warrior passing 200 age are still seven, but they are no more the same. myVamp and Derision are not more, replaced by Hector and Night Train.

quiz, juliet and paper and La Bomba are all very near entering hall of fame.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
2	Agony II	Stefan Strack	912		CMP scanner
3	Blue Funk	Steven Morrell	869		Stone/ imp
4	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
5	Blue Funk 3	Steven Morrell	766		Stone/ imp
6	Torch t18	P.Kline	720	*	Bomber
7	Jack in the box	Beppe Bezzi	708	*	P-warrior
8	HeremScimitar	A.Ivner,P.Kline	666		Bomber
9	myVamp v3.7	Paulsson	643		Vampire
10	Armory - A5	Wilkinson	609		P-warrior
11	Phq	Maurizio Vittuari	589		Qscan -> replicator
12	B-Panama X	Steven Morrell	518		Stone/ replicator
13	NC 94	Wayne Sheppard	387		Stone/ imp
14	Cannonade	P.Kline	382		Stone/ imp
15	Torch t17	P.Kline	378		Bomber
16	Lucky 3	Stefan Strack	355		Stone/ imp
17	Derision	M R Bremer	351		Scanner
18	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
19	Dragon Spear	c w blue	346		CMP scanner
20	Leprechaun on speed	Anders Ivner	344		Qscan -> scanner/bomber

myVamp leave the venerable trio a little before establishing the Swedish top score, Torch and Jack pass HeremScimitar and 700 in good health, next target Blue Funk 3.

Bremer’s Derision enters the hall in 17th position pushing juliet storm off.

Current Status of the Internet Pizza Server Beginner’s Hill:

#	%W/ %L/ %T	Name	Author	Score	Age
1	61/ 26/ 12	Koolaid II: The Wrath of	David Boeren	196	11
2	48/ 14/ 38	Spacehead1.1	Warpi	182	72
3	45/ 12/ 43	Spacehead	Warpi	178	83
4	55/ 31/ 14	Our Vamp v2	R Bartolome & JS Pul	178	60
5	38/ 14/ 48	Thunder V 1.0	Andy Nevermind	163	7
6	42/ 31/ 27	Winter Werewolf	W. Mintardjo	153	52

7	43/ 36/ 21	Paperstone	Warpi	151	87
8	32/ 17/ 51	Spiral Again	Calvin Loh	147	1
9	27/ 12/ 62	GCSpiral	Example	142	53
10	26/ 14/ 59	SpiralTest2	Calvin Loh	139	10
11	36/ 36/ 28	Paperstone v1.2	Warpi	137	84
12	43/ 49/ 7	polyphemous	Kafka	137	94
13	36/ 39/ 25	RedPixel.2	John Lewis	134	8
14	33/ 35/ 32	Everybody Must Get Stoned	Nathan Summers	132	96
15	33/ 36/ 30	Everybody Must Get Vamped	Nathan Summers	131	19
16	37/ 43/ 20	Slime 1.1	Anton Marsden	130	12
17	35/ 45/ 20	Test Stone #1	David Boeren	125	27
18	31/ 38/ 30	EveryoneMustGetStoned 2.5	Nathan Summers	125	18
19	33/ 43/ 24	test-A	Raul Bartolome	124	34
20	35/ 45/ 20	Czar Master 3.0	Dark Scneider	124	21
21	33/ 43/ 24	test-b	Raul Bartolome	122	35
22	30/ 38/ 32	Forked Lite Ning 4.02	Ansel Greenwood Serm	121	9
23	29/ 41/ 30	Forked Lite Ning 4.06	Ansel Greenwood Serm	117	3
24	29/ 42/ 30	Craw IIe	Bach	116	2
25	25/ 39/ 35	Forked Lite Ning 4.03	Ansel Greenwood Serm	111	5

Aeka and Rave have been retired and now the hill is dominated by Boren’s Koolaid II that, if I’m not wrong, did the 94 hill for a while too. Go on trying, if you made it once you are not so far.

The hint Steps

Bombing and scanning steps are an important choice to make when coding a warrior; the right choice may be the thing that change your score of many positions in the hill, and require a bit of wisdom.

Having to bomb, for example, every fourth cell of core (modulo 4) we can choose any number with 4 as greater common divisor with Coresize, but results are greatly different if we choose a bad or a good one.

Using four as step against a twelve lines long opponent, makes us bomb it thrice every time we bomb it once, a sort of overkill that’s not needed in most cases; our oponent instead, using a smarter step and better spreading its bombs may bomb us but once three times as often. Result: 75/25 for him :-(

Number theory help us in our choice, even if, as usual in corewar, there is not a best choice but a sort of tradeoff.

Steven Morrell so speaks in its book:

One factor that could mean the difference between a top-rate stone and an unsuccessful stone is the choice of step size. The program that manages to bomb the enemy first has a decided advantage, and some bombing step sizes are more efficient at scanning for the enemy than others. So what makes a good step size?

Ideally, it ought to hit every location in 8000 bombs, every other location in 8000/2=4000 bombs, every third location in 8000/3=2667 bombs, etc. Unfortunately, this is impossible, especially with a single step size, but it suggests a basic strategy -- go for the biggest programs first and then fill in the gaps.

One way of rating the efficiency of a step size is to find the length of the largest unbombed section of code after each bomb is dropped. By adding up all of these lengths, we get a number that tells us how big an average gap is. (Indeed, by dividing this number by the number of bombs dropped, we get the average gap size.) If we minimize this number over all step sizes, we get the "Optima Numbers." For a coresize of 8000, these optima numbers are:

```
    mod-1  3359/3039  under-100 -> 73
    mod-2  3094/2234  under-100 -> 98
    mod-4  3364/3044  under-100 -> 76
    mod-5  3315/2365  under-100 -> 95
    mod-8  2936/2376
```

mod-10 2930/2430

Another common rating is how closely to in half the new bomb subdivides the old gap when it is dropped. By taking the differences between where the bombs fall and the middle of each gap and adding these distances up, we get an alternate method for testing efficiency.

Both of these methods are useful for finding general-purpose step sizes. But suppose you wanted to find a step size optimized for killing other stones. Since stones usually have four or five instructions, you would want a step size that would bomb every 4th and 5th instruction quickly, regardless of how it does in general.

Fortunately, there is a program in the public domain that calculates all of these things quicky:
Corestep by Jay Han can be found as
misc/corestep.c, and calcutates optima numbers and optimal step sizes.
You will need a C compiler to use it, but it is otherwise self-contained.
For more infromation, FTP a copy and read through it. The classic formula calculates optima numbers, the alternate formula calculates the sum of the distances between bombs and midpoints, and find-X calculates optimal step sizes against a specific program length.

If you don’t have access to a C compiler or want this for some other reason, P. Kline has compiled a list of all 8000 step-sizes with their mod, find-4, find-5, find-10, and find-13 numbers, along with imp-killing constants and imp-numbers. This table is designed for use in spreadsheets or databases. It is available in the misc/ directory under the name num8000.txt
---

If you look at the steps of published warriors you can notice that the optima numbers are not always used and smaller steps are usually preferred; the reason of this is mainly because there is no nedd to quickly find a 500 lines long target and a small step can be used as a gate, or as pointer in the clear, saving some space.

How to choose, beetween some good number, the one to use is often a matter of choice. The modulo has to be chosen according to the size of our warrior, in such a way as not to bomb ourself; once chosen it we have to select a target size: tiny (5 lines), small (around 10 lines), average (around 13/15) and select a number with a good find for our target, and an average one for the others. In our choice we have to consider the mod 1 numbers with a good find for our selected modulo. They have bombing patterns approximating closely the one we want, and usually end bombing the cell immediately before or after the one we start with.

Planar’s corner

This is Impfinity v4g1, the latest (and first truly successful) version of my stone/imp.

The general organization is the same as v3i: a pair of stones and a pair of continuous-launching spirals on top of each other. The stones haven’t changed either.

What has changed is the pumps: I’ve implemented the idea of self-priming pumps that I got while writing for Core Warrior 7. This replaces a 3-instruction pump and 4-instruction primer with a 4-instruction pump.

But the most important change is the length of the fuse. In Impfinity v3i, I start the imp-launcher, wait for a while, then start the stones. The "wait for a while" part is what I call the fuse. I experimented with the fuse length. A shorter fuse will make the spiral weaker, thus giving up more losses, but it will also make the bombing more aggressive, thus bringing in more wins. Against my test suite, the shorter fuse was always better.

Finally, instead of having the pump start the stone after a while, I made the boot code start the stone right after the pump, jumping to the loop body instead of the SPL itself: the closer to the JMP, the earlier the SPL will start accumulating processes (the shorter the fuse). Again, the shortest fuse is the best one.

Anyway, this is Impfinity v4g1, seen as low as 11th and as high as 1st on the hill. There was a lot of movement on the hill recently. Now that the papers seem to be back, I don't think Impfinity will fare so well. This is the exact code that I sent to the hill. Try and abuse the boot constants if you dare !

-- Planar

```
;redcode-94
;name Impfinity v4g1
;author Planar
;strategy boot,imp,stone,clear
;strategy   With self-priming pump and very short fuse.
;assert CORESIZE == 8000
;kill Impfinity

istep   equ     1143
bstep01 equ     2214
bstep02 equ     3285
magic01 equ     (2)
magic02 equ     (-1)

trash   equ     (Z-285)
impoff  equ     (Z+437)
pmpof01 equ     (impoff+1*istep-577)
pmpof02 equ     (impoff+4*istep-496)
stnof01 equ     (impoff+3*istep-215)
stnof02 equ     (impoff+6*istep-158)

        org     boot
Z
boot    spl     boot02

i FOR 2

boot&i
j FOR 4
        mov.i   <psrc&i, <pdst&i
        mov.i   }psrc&i, }pdst&i
ROF
        mov.i   *psrc&i, *pdst&i
        mov.i   instr&i, impoff+(i-1)*istep
        spl     @pdst&i, >trash-15-i*2
        jmp     *pdst&i, >trash-i*2

psrc&i  dat     bomb&i, pend&i
pdst&i  dat     stnof&i, pmpof&i+pend&i-pump&i

point&i equ     (pump&i-pmpof&i+impoff+(i-1)*istep)

pump&i  spl     #1, >prime&i
ptr&i   spl     pump&i-pmpof&i+impoff-istep-1, {335+i
        add.f   #istep+1, ptr&i
prime&i mov.i   point&i, point&i-2
pend&i

instr&i mov.i   #1, istep

bomb&i  dat     <2667, <5334
stone&i spl     #stone&i+bstep&i+magic&i, {-650
        mov.i   bomb&i, }stone&i
        add.f   #bstep&i-1, stone&i
```

```
j&i     djn.f   stone&i, <i-50
send&i

j FOR i==1
k FOR 17
        mov.i   #1, 1
        mov.i   #1, @1
        spl     #1, 1
ROF
ROF
ROF
        end
```

Questions? Concerns? Comments? Complaints? Mail them to:
Beppe Bezzi <bezzi@iol.it>, Myer R Bremer <bremermr@ecn.purdue.edu> or
Maurizio Vittuari <pan0178@iperbole.bologna.it>

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Article: 3570 of rec.games.corewar
Path: news-rocq.inria.fr!univ-lyon1.fr!in2p3.fr!oleane!plug.news.pipex.net!pipex!tube.news.pipex.net!pipex!lade.news.pipex.net!pipex!tank.news.pipex.net!pipex!howland.reston.ans.net!gatech!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior #12
Date: 15 Jan 1996 21:02:08 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 732
Message-ID: <4defcg$gtd@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 12 January 15, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.

Everyone get a chance to check out that mega-queue at Pizza? Sheesh. It's interesting that everyone concentrates almost exclusively on the one vs one coresize equals 8000 hills. Other hills were created out of discussions in the newsgroup, and many initially received a lot of activity. But everyone eventually moves back to the -94 and -b hills. The beginners' hill may condition authors to the one vs one 8000 style hill. The -94 hill is a logical progression. And since all the veterans still submit there quite regularly, that's where all the competition is. With the corewar farm system the way it is and the momentum of the -94 draft hill, the situation won't likely get any more diverse. Which is a shame since Tuc recently has revised Stormking's hills to accomodate a lot of the requests mentioned in various postings. Revisions include the following:

;password	identifies the password for this warrior.
;kill	kills a warrior. Must be used with ;password
;newpasswd	assigns a new password for a warrior. Must be used with the original ;redcode ;name and ;password lines.
;newredcode	assigns a new redcode line for a warrior. Must include the new ;redcode line ;name and ;password lines. This allows allows authors to change from ;redcode quiet to ;redcode verbose or whatever the desired response level.

For a complete listing mail kothtest@stormking.com (;help for a menu). There

are also additional modifications to the web page that let browsers view strategy lines and source code at the author's discretion.

Lots of thanks goes to Tuc for his work. Let's really put his coding skills to the test and try to break his hills.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Mon Jan 15 05:13:19 PST 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	35/	39/	26	quiz	Schitzo	131	388
2	21/	12/	67	Impfinity v4g1	Planar	130	188
3	31/	33/	36	Test	Robert Macrae	130	38
4	17/	6/	77	Evol Cap 6.6	John Wilkinson	129	3
5	22/	15/	63	Hector 2	Kurt Franke	128	303
6	25/	23/	51	Jack in the box	Beppe Bezzi	128	755
7	33/	38/	29	Harmony	P.Kline	127	30
8	16/	6/	78	Evol Cap 6.2a	John Wilkinson	127	22
9	34/	42/	24	Frontwards v2	Steven Morrell	127	241
10	15/	5/	79	Night Train	Karl Lewin	126	275
11	24/	23/	54	La Bomba	Beppe Bezzi	125	383
12	28/	33/	39	Mason 2.0	Robert Macrae	124	124
13	14/	5/	81	DoorMat v0.1	K Lewin	124	237
14	33/	42/	25	Provascan 3.0	Beppe Bezzi	123	138
15	17/	11/	71	Cheap Hack	M R Bremer	123	75
16	31/	39/	31	Boombastic	Maurizio Vittuari	123	123
17	30/	37/	33	Koolaid II: WoGG v2.2	David Boeren	123	5
18	16/	10/	73	Evol Cap VII .3	John Wilkinson	123	19
19	13/	5/	82	.2 Evolve VIII	John Wilkinson	122	9
20	31/	39/	30	testnorm	Maurizio Vittuari	122	7
21	26/	30/	43	Torch t18	P.Kline	122	767
22	20/	19/	61	juliet and paper	M R Bremer, B. Bezzi	121	384
23	29/	38/	33	paris	Kafka	120	2
24	24/	28/	48	Blue Funk 5	Steven Morrell	120	24
25	10/	0/	90	Evolve VIII	John Wilkinson	119	1

The hill has aged 47 this week. Average scores continue downward to 120 (128 last week, 136 the week before) as the five versions of evol* tie everything on the hill. Only 12 points separate number 1 from number 25. The average age is 182 compared with 162 last week.

Torch has been suffering lately. It was seen as high as fifth, but it has been sulking in the high teens and low twenties the last few challenges. Jack in the box continues to prove effective. With the loss of interest in pspace and as a result--brainwashing, Jack can adapt fairly well to new warriors. Redundant scanners and Torch style bombers are effective against it, but some--Pulido's FireMaster and Macrae's Harm--were forced off the hill earlier. Now Jack rides in 6th place.

Dat bombers seem to be ineffective. Aeka and juliet storm were removed from the hill after debuting quite well. The newest version of Tornado was also eliminate. Blue Funk 5 still clings to life, but with a tenuous grasp at best. It did shoot up the hill into the top ten with the introduction of a few scanners, but they were very short lived. Impfinity seems to be an exception, even with a published source code. Also successful is Macrae's Test warrior which the strategy lines proclaim to be a quick scan / bomber.

quiz is on top of the heap as usual. However it's grasp is not the steel fist it once was. Impfinity, Test, and Frontwards have all been in first place this week.

---

94 - What's New

3	31/ 33/ 36	Test	Robert Macrae	130	38
4	17/ 6/ 77	Evol Cap 6.6	John Wilkinson	129	3
17	30/ 37/ 33	Koolaid II: WoGG v2.2	David Boeren	123	5
18	16/ 10/ 73	Evol Cap VII .3	John Wilkinson	123	19
19	13/ 5/ 82	.2 Evolve VIII	John Wilkinson	122	9
20	31/ 39/ 30	testnorm	Maurizio Vittuari	122	7
23	29/ 38/ 33	paris	Kafka	120	2
24	24/ 28/ 48	Blue Funk 5	Steven Morrell	120	24
25	10/ 0/ 90	Evolve VIII	John Wilkinson	119	1

Test entered the hill in first place and reclaims that spot every few hill challenges. Perhaps Macrae will give his warrior a name sometime soon.

---

94 - What's No More

26	2/ 2/ 0	test9	Maurizio Vittuari	5	2
26	3/ 1/ 0	itest	ai	8	8
26	25/ 47/ 28	John's Zizzor 2h	John Wilkinson	103	2
26	17/ 19/ 65	myOmy	Paulsson	114	15
26	28/ 35/ 37	Tornado 2.0 h1	Beppe Bezzi	122	193
26	0/ 0/ 4	Evol Cap 6.2	John Wilkinson	4	38
26	25/ 30/ 45	endpoint .	M R Bremer	121	37
26	24/ 24/ 52	juliet storm	M R Bremer	124	59
26	34/ 47/ 19	seventyfive	Anders Ivner	121	82

Tornado is the biggest loss at age 193.

What's Old

21	26/ 30/ 43	Torch t18	P.Kline	122	767
6	25/ 23/ 51	Jack in the box	Beppe Bezzi	128	755
1	35/ 39/ 26	quiz	Schitzo	131	388
22	20/ 19/ 61	juliet and paper	M R Bremer, B. Bezzi	121	384
11	24/ 23/ 54	La Bomba	Beppe Bezzi	125	383
5	22/ 15/ 63	Hector 2	Kurt Franke	128	303
10	15/ 5/ 79	Night Train	Karl Lewin	126	275
9	34/ 42/ 24	Frontwards v2	Steven Morrell	127	241
13	14/ 5/ 81	DoorMat v0.1	K Lewin	124	237

Another of Lewin's warriors, DoorMat, enters the over 200 mark. La Bomba, juliet and paper, and quiz all begin their journey up the hall of fame ranks.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
2	Agony II	Stefan Strack	912		CMP scanner
3	Blue Funk	Steven Morrell	869		Stone/ imp
4	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
5	Torch t18	P.Kline	767	*	Bomber
6	Blue Funk 3	Steven Morrell	766		Stone/ imp
7	Jack in the box	Beppe Bezzi	755	*	P-warrior
8	HeremScimitar	A.Ivner,P.Kline	666		Bomber
9	myVamp v3.7	Paulsson	643		Vampire
10	Armory - A5	Wilkinson	609		P-warrior
11	Phq	Maurizio Vittuari	589		Qscan -> replicator
12	B-Panama X	Steven Morrell	518		Stone/ replicator
13	quiz	Schitzo	388	*	scanner/ bomber
14	NC 94	Wayne Sheppard	387		Stone/ imp
15	juliet and paper	Bremer & Bezzi	384	*	P-warrior
16	La Bomba	Beppe Bezzi	383	*	Qscan -> replicator
17	Cannonade	P.Kline	382		Stone/ imp
18	Torch t17	P.Kline	378		Bomber
19	Lucky 3	Stefan Strack	355		Stone/ imp
20	Derision	M R Bremer	351		Scanner
21	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire

```
22  Dragon Spear           c w blue          346    CMP scanner
23  Leprechaun on speed    Anders Ivner      344    Qscan -> scanner/bomber
```

The hall of fame will be slowly expanded to 25 slots to match the number of rankings on the ’94 hill.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Sun Jan 14 17:35:23 PST 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	57/	23/	20	Fire Master v1.6	JS Pulido	191	4
2	58/	27/	15	Koolaid II: The Wrath of	David Boeren	190	34
3	51/	29/	20	Our Vamp v2	R Bartolome & JS Pul	173	83
4	48/	36/	16	Assassin XII	Andy Nevermind	160	16
5	34/	9/	57	RingWorm_v2.5	Calvin Loh	160	23
6	46/	36/	19	Monitor	M R Bremer	155	12
7	36/	22/	42	Spacehead1.1	Warpi	151	95
8	32/	19/	48	Thunder V 1.0	Andy Nevermind	145	30
9	39/	34/	27	Winter Werewolf	W. Mintardjo	143	75
10	35/	32/	33	Inherit v0.9	Philemon	138	14
11	37/	37/	25	RedPixel.2	John Lewis	137	31
12	37/	38/	25	Test Stone #1	David Boeren	135	50
13	35/	39/	26	test.1	Anton Marsden	131	1
14	31/	34/	34	Everybody Must Get Vamped	Nathan Summers	129	42
15	22/	21/	57	Spiral Again	Calvin Loh	122	24
16	21/	21/	57	Spiral Again	Calvin Loh	121	22
17	29/	40/	31	EveryoneMustGetStoned 2.5	Nathan Summers	117	41
18	11/	5/	84	Evol Cap 6.1	John Wilkinson	117	13
19	17/	19/	65	SpiralTest2	Calvin Loh	115	33
20	25/	36/	39	StoneTest v2.1	Raul Bartolome	114	8
21	29/	44/	27	Forked Lite Ning 4.07	Ansel Greenwood Serm	114	5
22	23/	44/	33	Mixed 0.1	Philemon	101	7
23	23/	47/	29	StoneTest v1.2	Raul Bartolome	99	11
24	24/	50/	26	FireSilk v1.3B	Raul Bartolome	98	20
25	26/	56/	17	Test	Ian Oversby	96	2

Koolaid had a lock on the top spot until Pulido re-introduced Fire Master. However, Koolaid has settled in on the ’94 draft hill at 17th place while Fire Master was pushed off. Don’t be discouraged if your warrior does well on the b-hill and not the ’94 draft hill. The composition of the hill has a lot to do with a warrior’s success. Keep trying. A big welcome to some of the new names I’ve seen here. The core war community is generally willing to answer your questions in the rec.games.corewar newgroup. Don’t be shy. The ’Monitor’ing warrior I submitted to track the hill is included below. Feel free to hack any piece of it for yourself.

```
;redcode-b
;name Monitor
;author M R Bremer
;kill Monitor
;strategy Need to track the b-hill.
;strategy 3-shot to scan to partial spl dat clear
;strategy Not the time or energy for full double spl/dat

u       jmp o, o
s       add.f inc, 2
        mov.i off, @1
p       mov.i >-2, @0
        jmz.a -3, *-1
```

```
        djn.b -4, #2
o       spl #20, 10     ; self hit in b field sometimes
        mov.i @u, }p
        mov.i @u, }p
        djn.f -2, <-20
d       dat 20, <2667
for 27
        dat 0, 0
rof
off     dat 1, 445
inc     dat -445, 445*2
```

The Hint

C. The speed of light. Authors use C to denote the speed of a scan or bomb pattern. A sne/seq/mov quick scan operates at 2c or 200% of C until it finds something. An add/mov/djn bomber dat bombs at .33c. The decrement or increment in the move and the djn stream typically makes it more viscious. At times, a corewar challenge simply reduces to who can find who first. So the quest becomes to increase speed while keeping as small a profile as possible.

A cmp scanner usually uses an add/cmp/slt/djn engine. This warrior will search core at .66c. By postponing the djn and 'unrolling' the engine, we can increase the speed to .8c. Taking Names is a good example. Notice the scan engine now uses an add/sne/add/seq/slt/djn sequence. If the sne spots something, the second add is skipped and the seq will fall through to the slt instruction.

```
;redcode-94 quiet
;name Taking Names
;kill Taking Names
;author P.Kline
;strategy sne.x/seq.x scanner using spl-spl-jmp bomb
;strategy and continuous forward-clear

step    equ    98
clrptr  dat    jump+2
        dat    0,0
reset   dat    #step-2,#step
    for 19
        dat    0,0
    rof

attack  mov    jump,*comp           ; drop wide bomb on a-pointer
compptr mov    split,{comp
        mov    split,{comp          ; after bombing, reset to
        sub    reset,@compptr       ; make b-pointer the next a-pointer

scan    add    split,@compptr
comp    sne    2*step,3*step        ; take a look
        add    split,@compptr
        seq    *comp,@comp          ; take another look
        slt    #100+step,@compptr   ; don't attack self
ctr     djn    scan,#1000           ; countdown to finish
        jmn    attack,-1

split   spl.i  #(2*step),#(2*step)
clear   mov    reset,>clrptr        ; continuous forward clear
jump    jmp    -1
    for 30
        dat    0,0
    rof
    for 12
        dat    #1,1                 ; simple decoy
        mov.i  #attack+1000,2667
    rof
        end    comp
```

Of course you pay for the increased speed with increased size. Is an

increase from .66c to .8c worth 2 extra instructions? Perhaps. Another way to increase speed is to use on of your bombs as a pointer for the other. A .5c jmz scan can be increase to .66c using just one more instruction.

```
bomb    add.ab #8, scan         ;of course you can use anything as the bomb
        mov.i bomb, @scan       ;the bomb falls wherever scan points to
scan    jmz.f -2, *XXXX         ;the scan is made +8 addresses from the bomb
```

This loop can be further modified to scan/bomb at .75c by adding yet another instruction.

```
        add.f inc, stone        ;you'll need an inc and bomb line
        mov.i bomb, @stone
stone   mov.i XX, @XX
        jmz.f -3, *-1
```

Ivner created a .75c bomber using the following code. While more a hybrid scanner/bomber, this fragment bombs normally until the cmp finds something. Then the bomb pattern is realigned so that the bomb hits the scanned locations.

```
b1      dat     #2*STEP,#2*STEP
c       dat     #3*STEP,#3*STEP

loop    add     c,      pt
        mov     b1,     @pt
pt      cmp     A,      @A-STEP
        sub     b1,     pt
        djn     loop,   #COUNT
```

Here is the full code to Anders Ivner's seventyfive.

```
;redcode-94
;name seventyfive
;kill seventyfive
;author Anders Ivner
;assert (CORESIZE == 8000)
;strategy 75% bomber -> separate multipass coreclear
;strategy Credits to Karl Lewin for crow.

STEP    EQU     14
        ORG     bomber
STEPB   EQU     85
COUNT   EQU     500
A       equ     (jump+STEPB*2)

head    dat     #0,     #tail+100
d1      dat     <0,     <tail-head+5
s2      spl     #3450,  #tail-head+5
s1      spl     #3450,  #tail-head+5
incr    spl.a   #-STEP, <-STEP
go      mov.i   @tail,  >head
        mov.i   @tail,  >head
tail    djn.b   go,     {s1
for 74
        dat     0,0
rof
bd      dat     #2*STEPB,#2*STEPB
incrb   spl     #3*STEPB,#3*STEPB
        dat     0,      0
bomber  mov     bd,     @pt
pt      cmp     A,      @A-STEPB
        sub     bd,     pt
        add     incrb,  pt
jump    djn.b   bomber, #COUNT
        jmp     incr

        end
```

Porch Swing takes this type of idea and expands it to .8c by adding another

bombing line before the cmp instruction and changing the cmp to indirect addressing in the a field. However, Porch Swing does not loop back to the beginning when the scan finds something like seventyfive does. Once the scan finds something, PS moves on to a core clear. It is simple to change this into a bombing loop if desired.

```
;redcode-94
;name Porch Swing
;kill Porch Swing
;Author Randy Graham
;assert 1
;strategy Swing with a little wider range.
;strategy Now 80% bomb/scan with djn-stream once-thru

STEP    equ    12
EXTRA   equ    4
DJNOFF  equ    (-426-EXTRA)

        dat.f  #gate-10,  step-gate+5
gate    dat.f  #gate-10,  sneer-STEP+1
dat2    dat.f  #gate-20,  step-gate+5
dat1    dat.f  #gate-25,  step-gate+5
site2   spl.a  #gate-30,  step-gate+5
site    spl.a  #gate-40,  step-gate+5
for EXTRA
        dat.f  0,         0
rof

adder   sub.f  sweeper,   sneer
hithigh mov.i  step,      *sneer
hitlow  mov.i  step,      @sneer
sneer   sne.i  @gate+STEP*6-1-EXTRA, *gate+STEP*3-EXTRA  ;so we bomb step
looper  djn.b  adder,     <DJNOFF
setup   add.f  sneer,     gate
sweeper spl.a  #-STEP*4+1,<-STEP*4+1
mover   mov.i  @swinger,  >gate
swinger djn.b  mover,     {site
step    dat.f  <STEP,     <-STEP

end     hithigh
```

Other successful warriors that use these techniques to increase speed include Tornado, HeremScimitar, and Leprechaun deluxe. Perhaps all your warrior needs is a little extra adrenaline to challenge the king of the hill.

Planar’s Corner

Stefan Strack, aka Macro Master, is kind enough to provide us with the third sequence of the CDB tutorial. Macros can eliminate some of the tedium of debugging complex warriors. Planar has also appended the answers to the exercises presented in part 2 of the tutorial last week.

CDB tutorial, part 3

In the last part of the CDB tutorial, Planar showed us command sequences, loops and tests and how to combine them into fairly long command lines. In practice, you would rarely want to type such a long command line at the CDB prompt, unless you have a way to copy and paste previous commands (as in MacpMARS). This is where macros come into play.

Macro input

Macros are short-hands for long command sequences. A macro definition looks like this:

```
    name=command1 ~ command2 ~ ..
```

The sequence "command1 ~ .." is assigned to the macro "name". There are two ways to input macro definitions into CDB: You can create a text file with

macro definitions (or add definitions to the default macro file pmars.mac) and read the macro file using the "macro" command:

```
(cdb) macro ,mymacro.mac
```

The comma is important here. If it is omitted, CDB thinks "mymacro.mac" is a macro to be executed.

The second way to input macros is to type them straight into CDB memory. That's useful if you don't think you'll need a macro for more than one CDB session. Try this:

```
(cdb) m=
F1=help
hello=echo hello world
.
(cdb)
```

What kind of a command is "m="? It's actually a macro that expands into

```
    @macro ,user
```

The special file name "user" tells CDB to read macros from the console instead of a file. We've already learned about the "@" operator; it suppresses the macro listing produced by the "macro" command. The line with the period in the example above marks the end of input. The EOF character (^Z or ^D) followed by <Enter> does the same thing.

Macro execution

Macros are executed, you guessed it, with the "macro" command. To continue our example above,

```
(cdb) m hello
```

prints the line "hello world". With the PC version of pMARS, you can display the help screen by pressing the "F1" key. With other versions of pMARS you have to execute this macro with "m F1". Of course, macros can call other macros. This way, you can write complicated macro programs that are longer than one line. I am explaining some of them below. They are contained in the default macro file "pmars.mac".

Predefined macros

```
ctrl-n= m next
next= echo Advancing to next round~@pq~@f0,$~dat 0,0~@pq off~@go~@st
```

This macro aborts the current round and advances to the beginning of the next round. This may be much quicker than waiting it out with the "go" command. To kill the current program, "next" uses a command we haven't talked about yet: the process queue or pqueue command. In pqueue mode, "list", "edit" and "fill" operate on the process queue instead of core addresses. What the "@f0,$~dat 0,0" sequence does is to fill each core address about to be executed with dat 0,0. We could have gotten the same effect by wiping out the entire core, but this would've been slower.

```
-------------------------------------------------------------------------
count= &ca z=.~m w?~&ca x=.,c=0~!!~m w?~&ca c=c+1~if .!=x~!~ca c~&l z
w?= &search ,
```

"Count" is extremely useful if you want to find out things like how many bombs have been dropped, how far paper replication has gone, etc.. The macro reports the number of core addresses the match the search string given in the "w?" macro. As is, "count" searches for a comma, which matches all non-zero addresses. To count something else, say all SPL instructions, simply replace the "w?" macro from within CDB:

```
(cdb) m=
w?= &search spl
.
```

```
(cdb)
```

By the way, the "&" operator is similar to "@", but whereas "@" only suppresses screen output, "&" also suppresses output to logfiles.

---

pcur - count number of processes pointing to the current address

```
pcur= m _pstep~if.==z~@ca n=n+1~m _pend
```

These two (sub)macros are shared code:

```
_pstep=@ca z=.,c=n=0~!!~@pq~@l c=(c+1)%($+1)~@pq off
_pend=if c!=0~!~ca n~@l z
```

pseg - calculates how many processes are operating inside segment [x,y]

```
pseg= m _pstep~m _ptest~m _pend
_ptest= if y>=x && x<=. && y>=. || y<x && !(x<=. && y>=.)~@ca n=n+1
```

"pcur" and "pseg" are related macros that use shared submacros. It is a good idea to use a special naming convention for macros that are not to be called directly from the CDB prompt. In "pmars.mac", submacros start with the underscore character. One scenario where, e.g. "pseg" is useful: You want to find out how many processes are still alive in an imp-spiral at the end of a round, but you also have a self-splitting stone, so "registers" won't work. Simply exclude the range that the stone occupies and run "pseg". Suppose the stone extends from 0 to 4:

```
(cdb) ca x=5,y=7999
5,7999
(cdb) m pseg
19
(cdb)
```

Macro check: execute until a core segment [x,y] changes

```
check= if x==y && x==0~m c_err~@ca c=0~!!~m c_step ~m _check~if z==c~!~m _cd
```

Subroutine c_step, advance execution. Change this to "@skip n" for more speed

```
c_step= @step
```

Subroutine _check computes the actual checksum, expects x,y; uses i,j; returns z

```
_check= @ca (i=x)&&(j=(y+1)%($+1)),z=0~!!~@l i~m _c2
_c2= @ca z=z+i+(A+B),i=(i+1)%($+1)~if i != j~!~if !c~@ca c=z
```

A difference was detected

```
_cd=@ca c=z~echo Code segment has changed
```

Usage info if x and y were not set

```
_ce= echo Set x to start, y to end of code to be checksummed (x <= y)~reset
```

"Check" is one the more complex macros in "pmars.mac". It is does the same thing as Planar's commands to detect self-bombing of "Fahrenheit", but is more general. The macro steps and then calculates a checksum over a user-defined core range. If the range has changed, the macro stops with the message "Code segment has changed". A warning: "check" is very slow, and it is not practical to use a range of more than 10 addresses or so. You can speed up execution by rewriting the "c_step" submacro. Replacing the "@step" with "@skip 10" will do the trick, or set a break point inside a loop and use "@go".

Exercises:

1) The "next" macro only works for battles with one or two warriors. Modify it so it skips to the next round even if more than 2 warriors are loaded.

2) Write a macro that steps until the number of processes of a warrior decreases (Hint: use the pqueue command).

Answers to the exercises from part 2:

Hello, this is Planar again. I got only one answer to my request for answers to the exercises. Are you all sleeping or what ? Since I'm very lazy, I'll mostly quote.

(I didn't have the time to test the following, so a good exercise is to find the bugs and fix them.)

```
>From: jgpletin@vub.ac.be (Pletinckx Jurgen)
>
>Okay. Let's see about this. Your original instructions were:
>
>(cdb) ca C=1003,X=3039
>(cdb) !!~ca C=C+1,D=0~@ed1~mov.i<100,<C~!!~@ca D=D+1~@s~@0~if \
>B==X~!~ca d~@g~@s~!4
>
>First off, I rewrote this to a couple of macros. (I _am_ new to cdb,
>it's just that I'm lazy enough to dig macro's.)
>
>tilt=@ca c=999~!!~m prep~m inn~@g~@s~!8
>prep=@ca c=c+1,d=0~@ed1~mov.i <100, <c
>inn=!!~@ca d=d+1~@s~@0~if b==3039~!~ca c,d
>
>where "prep" does the preparation and "inn" is the inner loop.
>"tilt" would mean "boinkers", or perhaps "wacko", if you need to know.
>
>|1. The above loop will take a lot of time.  Accelerate it by stepping
>|   10 by 10 instead of 1 by 1.
>
>Pretty easy. I just change "inn" to
>
>inn=!!~@ca d=d+10~sk9~@0~if b==3039~!~ca c,d
                    ^ maybe you should insert an @ here
>
>|2. We're only interested in the value that gives the greatest number
>|   of cycles.  Change the command line to display only that value and
>|   the corresponding number of cycles.
>
>Let's say I store the maximum number of steps in e, and the correspon-
>ding constant in f. I don't need to change "prep", and I can leave off
>the last ca in "inn":
>
>tilt=@ca c=999,e=0~!!~m prep~m inn~if d>e~@ca e=d,f=c~@g~@s~!8~ca f,e
>inn=!!~@ca d=d+1~@s~@0~if b==3039~!
>
>|3. Use "fill" to abort the current battle instead of finishing it with
>|   "go".  How much faster is this ?
>
>Pass. If I understand correctly, you'd want to fill lines 0-4 with
>"dat0,0", so that the warrior crashes on its next step? So that you can
>replace the "g" with a single "s"?

Yes, or you can use what Stefan taught us today and change the "@g~@s"
in "tilt" to a "@m next":

tilt=@ca c=999,e=0~!!~m prep~m inn~if d>e~@ca e=d,f=c~@m next~!8~ca f,e

>|4. Even faster: instead of doing the inner loop step by step all the
>|   way, skip to the greatest number of cycles so far, and start
>|   stepping from there if the SPL is still not bombed.  (Is that
>|   clear ?)
>
>I can nicely use the counter d for this. Add a skip to "tilt", and initialise
>d to maximum-1, instead of to 0. To make it work, I need to initialise
>e to 1 instead of to 0. And I keep the modifications from question 2.
>
>tilt=@ca c=999,e=1~!!~m prep~sk d~m inn~if d>e~@ca e=d,f=c~@g~@s~!8~ca f,e
>prep=@ca c=c+1,d=e-1~@ed1~mov.i <100, <c
```

You’re missing an @ again.

>|5. Figure out a way of putting a sequence of instructions under an
>| "if" instead of a single instruction, so that the sequence is
>| executed only when the condition is true.
>
>Pass. Something with !!, if I recall correctly. But what’s the point of
>a tutorial, if I have to go look things up in a manual :)?

OK, then I’ll give you the answer: use a loop with a counter of 1.
When the next command after an "if" is a loop, CDB will skip the whole
loop if the condition is false. If it’s true, CDB will loop once,
i.e. execute the sequence, so you’d write:

```
   if condition ~ !! ~ command 1 ~ command 2 ~ !1
```

For a real example, you’ll have to wait a few weeks, or you can look
up "_sd" in pmars.mac.

>|6. [hard] The inner loop fails to stop if the self-bombing doesn’t
>| occur on the SPL. How do you make it work in all cases ?
>
>I haven’t got a clue. You can’t just go and check each line, I guess.
>And neither can you just store away an untouched version of the warrior
>since it wouldn’t remain untouched in the core for very long. Hmpf.
>Sounds like an important question, though.

You could stop at the bombing lines and check what they are going to
bomb. You could try to use the macro "check" but the "ADD" line will
get in the way. I was hoping that somebody could come up with a
better idea. I’ll publish one or two solutions next week.

>--
> Jurgen Pletinckx Department of Ultrastructure
> Vrije Universiteit Brussel Belgium jgpletin@vub.ac.be
> ********** Kwaliteit drijft boven **********

Congratulations Jurgen, you gave the best answer to every exercise.
You win a lifetime subscription to Core Warrior :-)

Questions? Concerns? Comments? Complaints? Mail them to people who care:
Beppe Bezzi <bezzi@iol.it>, Myer R Bremer <bremermr@ecn.purdue.edu> or
Maurizio Vittuari <pan0178@iperbole.bologna.it>

From bezzi@iol.it Mon Jan 22 23:52:21 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA21774; Mon, 22 Jan 96 23:52:21 +0100
Received: from iol-mail.iol.it (root@iol-mail.iol.it [194.20.24.2]) by nez-perce.inria.fr
(8.7.1/8.7.1) with SMTP id XAA04132 for <Damien.Doligez@inria.fr>; Mon, 22 Jan 1996 23:5
2:13 +0100 (MET)
Received: from sw24-178.iol.it (sw24-178.iol.it [194.20.24.178]) by iol-mail.iol.it (8.6.
11/8.6.11) with SMTP id XAA04002; Mon, 22 Jan 1996 23:49:14 +0100
Date: Mon, 22 Jan 1996 23:49:14 +0100
Message-Id: <199601222249.XAA04002@iol-mail.iol.it>
X-Sender: bezzi@popmail.iol.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: corewar-l@stormking.com
From: Beppe Bezzi <bezzi@iol.it>
Subject: Core Warrior 13
Cc: "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
Damien.Doligez@inria.fr (Damien Doligez)
Status: RO

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                                ,    .
$$$$$$P'   '                                .d      b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 13 January 22, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.
Guessing from the lot of mail I got in last week end, Pizza's problem has been solved, as Thos told us some time ago, good.

At Stormking Tuc is working on new hill scripts, with a lot of new features like password and newredcode. Everybody is invited to help development mailing to kothtest@stormking.com with ;help for menu, and submitting their warrior to the -94x test hill.
It's good for beginners too, the rules are the same as those of 94 but the coresize is bigger.
We are invited to try crashing the hill, yes we can do it, to see if there is some bug hidden in the script, have fun.

Everybody is waiting the Corewar hall of fame, with gifs of last tournament winners; Stefan asked for help, should someone have an .htm page good for including names and faces, please mail it to <stst@idnsun.gpct.Vanderbilt.Edu>

I have been very busy at work this week and Myer too. So we invite everybody to join the staff and make his own number of Corewarrior as did Maurizio during Xmas holydays.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	37/	29/	34	Jack in the box	Beppe Bezzi	145	811
2	35/	25/	40	La Bomba	Beppe Bezzi	144	439
3	31/	18/	52	Impfinity v4g1	Planar	144	244
4	40/	39/	21	testnorm	Maurizio Vittuari	142	27
5	32/	23/	46	juliet and paper	M R Bremer, B. Bezzi	141	440
6	41/	41/	18	quiz	Schitzo	140	444
7	24/	8/	68	Night Train	Karl Lewin	140	331
8	22/	6/	71	Evol Cap 6.6	John Wilkinson	139	59
9	40/	42/	17	Frontwards v2	Steven Morrell	139	297
10	39/	41/	20	Wraith	Kurt Franke	137	3
11	29/	22/	48	Hector 2	Kurt Franke	137	359
12	38/	41/	21	Boombastic	Maurizio Vittuari	136	179
13	36/	36/	29	Thermite II	Robert Macrae	135	45
14	35/	34/	31	Mason 2.0	Robert Macrae	135	180
15	33/	31/	36	Blue Funk 5	Steven Morrell	134	80
16	34/	35/	31	Tornado 2.3 a	Beppe Bezzi	133	43
17	33/	33/	34	Torch t18	P.Kline	132	823
18	34/	38/	27	Time Lapse v0.1	David Boeren	131	15
19	37/	45/	18	Harmony	P.Kline	130	8
20	34/	39/	27	jtest	Kafka	129	1
21	26/	23/	51	Hazy Shade Of Winter	John K W	129	34
22	36/	44/	19	Mirage 1.3	Anton Marsden	129	6
23	38/	47/	15	Provascan 3.0	Beppe Bezzi	128	194
24	35/	44/	20	Wraith	Kurt Franke	126	5
25	34/	42/	24	Persistence	Kurt Franke	126	2

One is always happy to write a report of such an hill :-)

The hill has aged 56 this week. Average scores jumped up to 135 (120 last week and 128 the week before) 19 points separate number 1 from number 25. The average age is 203 (182 last week).

Torch had very bad times this week, going to just one step from being pushed off; Jack in the box is having a second jouth, performing better than ever against the new wave of warriors, and climbing to the top of the hill.

After many weeks quiz loses the hilltop, it has already happened in past weeks but never on monday :-)
Many warriors alternated in King position this week: Thermite II, Harmony, Evol cap 6.6, SETI, Jack in the box, juliet and paper, Impfinity and testnorm. Near to incredible SETI's performance, entering at king position to be pushed off at age 37, a real comet; the cause of this behaviour is, with most chances, that it toke most of its points from warrior that have been pushed off shortly after.

---

94 - What's New

2	41/	39/	20	testnorm	Maurizio Vittuari	143	1
9	40/	40/	20	Wraith	Kurt Franke	139	1
4	31/	33/	36	Thermite II	Robert Macrae	129	1
10	29/	32/	38	Tornado 2.3 a	Beppe Bezzi	126	1
14	35/	37/	28	Time Lapse v0.1	David Boeren	133	1
19	27/	27/	46	Hazy Shade Of Winter	John K W	128	1
22	36/	43/	21	Mirage 1.3	Anton Marsden	129	1
18	37/	43/	19	Harmony	P.Kline	131	1
7	39/	40/	22	odysseus	Kafka	137	1

```
 6  39/ 40/ 21                  Wraith          Kurt Franke     139       1
25  34/ 42/ 24              Persistence          Kurt Franke     126       1
```

Some interesting new entries this week caused another revolution with eleven new entries and standings changed a lot. Worth mention testnorm, Wraith, Thermite II, odysseus, and new Tornado, all them entering in the top ten.

---

94 - What's No More.

```
26  16/ 11/ 73              DoorMat v0.1              K Lewin     121     257
26  21/ 18/ 61                Cheap Hack          M R Bremer     125     126
26  34/ 42/ 24     Koolaid II: WoGG v2.2         David Boeren     126      51
26   1/  2/  1                      Test        Robert Macrae       4      40
26   1/  2/  0                  testnorm    Maurizio Vittuari       5      37
26   1/  2/  1                   Harmony              P.Kline       5      36
26  16/ 10/ 74            .2 Evolve VIII       John Wilkinson     122      31
26   0/  0/  4           Evol Cap VII .3       John Wilkinson       4      30
26   2/  0/  6             Evol Cap 6.2a       John Wilkinson      11      26
26  29/ 40/ 31                    paris                Kafka     119      11
26   8/  0/ 92              Evolve VIII       John Wilkinson     115       2
```

Main losses are DoorMat at 257 age and Cheap Hack. Nothing else over 100 age

---

What's Old

```
17  33/ 33/ 34                Torch t18              P.Kline     132     823
 1  37/ 29/ 34          Jack in the box          Beppe Bezzi     145     811
 6  41/ 41/ 18                    quiz              Schitzo     140     444
 5  32/ 23/ 46         juliet and paper M R Bremer, B. Bezzi     141     440
 2  35/ 25/ 40                La Bomba          Beppe Bezzi     144     439
11  29/ 22/ 48                Hector 2          Kurt Franke     137     359
 7  24/  8/ 68              Night Train           Karl Lewin     140     331
 9  40/ 42/ 17            Frontwards v2       Steven Morrell     139     297
 3  31/ 18/ 52           Impfinity v4g1               Planar     144     244
```

A new entry in the over 200 club, Planar's Impfinity, and one loss, Lewin's DoorMat v01

HALL OF FAME
* means the warrior is still running.

```
Pos    Name                 Author          Age     Strategy
 1  Iron Gate 1.5         Wayne Sheppard    926    CMP scanner
 2  Agony II              Stefan Strack     912    CMP scanner
 3  Blue Funk             Steven Morrell    869    Stone/ imp
 4  Torch t18             P.Kline           823 *  Bomber
 5  Jack in the box       Beppe Bezzi       811 *  P-warrior
 6  Thermite 1.0          Robert Macrae     802    Qscan -> bomber
 7  Blue Funk 3           Steven Morrell    766    Stone/ imp
 8  HeremScimitar         A.Ivner,P.Kline   666    Bomber
 9  myVamp v3.7           Paulsson          643    Vampire
10  Armory - A5           Wilkinson         609    P-warrior
11  Phq                   Maurizio Vittuari 589    Qscan -> replicator
12  B-Panama X            Steven Morrell    518    Stone/ replicator
13  quiz                  Schitzo           444 *  scanner/ bomber
14  juliet and paper      Bremer & Bezzi    440 *  P-warrior
15  La Bomba              Beppe Bezzi       439 *  Qscan -> replicator
16  NC 94                 Wayne Sheppard    387    Stone/ imp
17  Cannonade             P.Kline           382    Stone/ imp
18  Torch t17             P.Kline           378    Bomber
19  Hector 2              Kurt Franke       359 *  Qscan -> replicator
20  Lucky 3               Stefan Strack     355    Stone/ imp
21  Derision              M R Bremer        351    Scanner
22  Request v2.0          Brant D. Thomsen  347    Qvamp -> vampire
23  Dragon Spear          c w blue          346    CMP scanner
24  Leprechaun on speed   Anders Ivner      344    Qscan -> scanner/bomber
```

The hall of fame will be expanded to 25 slots with next entry.
The 'twins', Torch and Jack in the box, passed 800 milestone and Thermite; now they are near Blue Funk and the all time podium positions.

The other trio is quickly climbing the standings while Hector makes its entry in 19th position.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	52/	32/	17	Koolaid II: The Wrath of	David Boeren	171	67
2	36/	8/	57	RingWorm_v2.5	Calvin Loh	164	56
3	47/	34/	18	Mirage 1.0	Anton Marsden	160	17
4	35/	14/	51	Papery	Ian Oversby	156	25
5	28/	9/	64	RingWorm_v2.6	Calvin Loh	147	26
6	42/	38/	20	Our Vamp v3 R	Bartolome & JS Pul	145	1
7	33/	22/	45	Spacehead 1.3	Warpi & Philemon	144	23
8	38/	31/	31	Qwiksand	Wayne Sheppard	144	11
9	42/	41/	18	Mary Janes	J. E. Long	142	12
10	40/	39/	21	Assassin XII	Andy Nevermind	142	49
11	28/	17/	55	Thunder V 1.0	Andy Nevermind	140	63
12	37/	41/	22	Monitor	M R Bremer	134	45
13	37/	42/	21	White Rose v0.14	Tomasz Radon	132	15
14	35/	47/	18	Equalizer	Matthias Wollnik	124	20
15	32/	41/	27	RedPixel.2	John Lewis	124	64
16	20/	20/	59	Spiral Again	Calvin Loh	121	55
17	18/	16/	66	SpiralTest2	Calvin Loh	120	66
18	20/	20/	60	Spiral Again	Calvin Loh	120	57
19	31/	43/	27	Three Core Monty	Andrew Fabbro	119	9
20	12/	5/	82	Evol Cap 6.1	John Wilkinson	119	46
21	23/	29/	49	live 0.2	Philemon	117	24
22	24/	40/	36	Inherit v0.9	Philemon	108	14
23	28/	48/	24	Test Stone #1	David Boeren	107	83
24	21/	40/	39	Veeble Jr.	T. H. Davies	103	2
25	23/	43/	34	EveryoneMustGetStoned 2.5	Nathan Summers	102	74

Koolaid hold top position, followed by RingWorm and Mirage 01. None of those warriors is in the 94 hill, even if Boeren and Marsden have others.

The Hint
Spiral and Stargate

It's not Science Fiction, it's still corewar; Spiral is an imp spiral and Stargate is my nickname for the clear:

```
gate    dat     stun,   100
...
stun    spl     #kill-gate, 100
clr     mov     *gate,      >gate
        djn     clr,        {nnn
kill    dat     kill-gate,  100
```

this come from the instuction mov *gate,>gate; being 'asterisk' too long, I like to call it 'star'
This clear is simple and very good against silk, with his djn.f stream; I always considered it good against imps too, but I had to change my mind.
Forward running clears are usually good against spirals because, when an imp instryction overwrites gate it transfers the attack to the next process, it works with imp instructions like Blue Funk's one

```
        mov.i   #3044,  2667
```

but if we use an instruction of the form:

```
        mov.i   #-5,    2667    ;any small negative value is good
```

the clear will copy an imp instruction over the next imp instruction, and this is not the best way to kill a spiral.:-)

To be effective we have to use this other clear I used in my last Tornado.

```
gate1

...

gate    dat     -25,    last-gate1+3
bombs   spl     #-step, step
...
jump    spl     #nn,    #nn
clr     mov     @djmp,  >gate1
djmp    djn.b   clr,    {bombs
last
```

Being sure to have some space beetween gate1 and our code. In this way we are sure to move a dat instruction over the next process and avoid the spiral crashing our gate.

The increase in performances is real, against Impfinity for example:

```
Tornado 2.0 h1 wins: 25 ;uses Stargate clear
Impfinity v4g1 wins: 91
Ties: 84

Tornado 2.3 wins: 75    ;uses new clear
Impfinity v4g1 wins: 61
Ties: 64
```

It right to say that the clear used by Tornado 2.3 is the same used by Torch, another code snippet I have stolen from Paul, and that the improvement against Impfinity is not all thanks the clear, new code is stronger, more decrement resistant, and one line shorter; I'll post it but not today. ;-)

The drawback, there is always a drawback, is that the djn.b is less effective against silk and, if we use djn.f instead we'll end jumping to our spl, and this will reduce the anti imp effectiveness having some delays beetween executions of the mov that the imp can use to slip through.

Again the last hint is: test this one and the other one against some published warrior, looking when one is better and when the other one. Stepping while the imp is overwriting the clear is a good exercise, you can use sk 500 till the spiral is near, then use sk 1 to position in the leading process of the spiral and ctrl-t to advance the spiral step by step.

As usual, if you have problems, mail me <bezzi@iol.it>

Planar's Corner

These are the solutions to exercise 6 from part 2 of the tutorial. I'm short of time, so this is all untested code. The problem was:

>6. [hard] The inner loop fails to stop if the self-bombing doesn't
>   occur on the SPL. How do you make it work in all cases ?

The first solution is to stop Fahrenheit each time it is about to bomb some core location, and check whether this location is within Fahrenheit itself. Borrowing from Jurgen's code, I get the following:

```
tilt=@ca c=999~!!m prep~m inn~@m next~!8
prep=@ca c=c+1,d=0~@ed1~mov.i<100,<c~@t1,2~@ca x=0
inn=!!~@ca d=d+1~@s~if1==pc~m _inn1~if2==pc~m _inn2~if0==x~!
_inn1=@1~@+b~@+b-1~if.<5~@ca x=1
_inn2=@2~@+b~@+a~if.<5~@ca x=1
```

When we stop at the first MOV, check the location before the location pointed by the b-field of the location pointed by the b-field of the first MOV. When we stop at the second MOV, etc.

The second solution uses Stefan's "check" macro. We'll run the program with "check" and, if it has changed, look at the last instruction executed to see if it's the ADD. This one will stop when the DJN stream overruns Fahrenheit, the previous one didn't.

```
tilt=@ca c=999~@ca x=0,y=4~!!m prep~m inn~@m next~!8
prep=@ca c=c+1,d=0~@ed1~mov.i<100,<c
inn=!!~@ca d=d+1~@m check~@ps~@$~@ps of~if .==4~!
```

Unfortunately, I had to use the "pspace" command, that I have not explained yet. And I just noticed that the "d" counter is not updated properly. Hmmm. Maybe it would work with a hacked version of "check".

-- Planar

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!magnus.acs.ohio-state.edu!csn!ub!news.kei.com!newsfeed.internetmci.com!gatech!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Tue Jan 30 11:18:46 1996
Article: 3725 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!magnus.acs.ohio-state.edu!csn!ub!news.kei.com!newsfeed.internetmci.com!gatech!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: CoreWarrior 14
Date: 29 Jan 1996 20:31:40 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 426
Message-ID: <4ejarc$a2j@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 14 January 29, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.

Another issue of the world's premier core war e-zine!

Tuc has gone insane. He spent the weekend popping Vivarin, chasing them with Mountain Dew, and coding like a maniac. I copied this off the Stormking core war page. It's copyrighted. Please don't sue me.

Major changes and improvements are being made to SKI-ICWS to prepare for the release of SKI-ICWS-II, the next generation in Koth service. There are two major areas that this involves, the front end and the back end.

The front end is the part of the system that processes your mail and replies back to any immediate requests such as ;status, ;help, etc. These require no processing other than sending a file or two.

The back end is where the warriors actually do battle. ;kill gets processed here only because by the time your warrior is ready for battle, it may have already been pushed off the hill. ;password is associated with this for a submission, but not for the ;newpasswd command.

Currently, all work is being done on the front end. This means that ;kill and ;password processing is not working, and any other suggestions for battle, like ;fight, are not being worked on.

Phase I - Front End

   * Ability to add ;redcode lines to a ;status request to only get certain hill results - DONE
   * Addition of a ;password line in a warrior. If not given, one will be randomly generated for you. - DONE
   * ;newpasswd has been added to change passwords. - DONE
   * ;newredcode has been added to allow you to change the ;redcode line to quiet or verbose or standard - DONE
   * A ;version command has been added to see if a new version of the system is operational and any errors identified fixed. - DONE
   * ;url to point to a url when viewing the scores via the web - DONE
   * ;newurl to change what url you point to for those viewing on the web - TBD
   * (Add a NEW Function) and your idea could be here

Phase II - Back End

   * ;scores to display the last sets of scores for a hill (This is actually a Front-End modification, but requires Back-End work to support it)
   * ;fight to specifically fight one/more warriors (Front End Mod, but needs Back-End support for it)
   * (Add a NEW Function) and your idea could be here

Nice to haves

   * During reply of a warrior compile and being placed in the pen, estimate the length of time it will be before the battle is completed. - MEDIUM PRIORITY

Your chance to help out with suggestions/bug reports

* Enter a New Function you would like to see
* Enter a Bug Report for either SKI-ICWS or SKI-ICWS-II

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Sun Jan 28 22:12:28 PST 1996

#	%W/ %L/ %T	Name	Author	Score	Age
1	45/ 39/ 16	Frontwards v2	Steven Morrell	150	405
2	36/ 31/ 33	Tornado 2.7e	Beppe Bezzi	140	37
3	37/ 36/ 28	Thermite II	Robert Macrae	137	153
4	40/ 43/ 18	Mirage 1.5	Anton Marsden	137	66
5	21/ 6/ 73	Evol Cap 6.6	John Wilkinson	136	167
6	34/ 34/ 32	Mason 2.0	Robert Macrae	135	288
7	25/ 15/ 61	Impfinity v4g1	Planar	135	352
8	38/ 41/ 21	quiz	Schitzo	135	552
9	33/ 31/ 36	Torch t18	P.Kline	134	931
10	22/ 11/ 67	Hazy.Shade.Of.Winter	John K W	133	99
11	30/ 26/ 44	Jack in the box	Beppe Bezzi	133	919
12	37/ 44/ 19	blister soul	schitzo	130	39
13	19/ 9/ 72	The Lime Twig 2.1	John K W	130	22
14	25/ 20/ 55	Hector 2	Kurt Franke	130	467
15	36/ 43/ 21	testnorm	Maurizio Vittuari	129	2
16	36/ 43/ 21	ajax	Kafka and Kurt	129	48
17	34/ 42/ 24	Boombastic	Maurizio Vittuari	127	287
18	28/ 28/ 44	La Bomba	Beppe Bezzi	127	547
19	24/ 21/ 55	juliet and paper	M R Bremer, B. Bezzi	127	548
20	34/ 41/ 25	daedelus	Kafka	126	1
21	27/ 29/ 43	patroclus	Kafka and Kurt	125	7
22	17/ 9/ 73	Night Train	Karl Lewin	125	439
23	27/ 30/ 43	Blue Funk 5	Steven Morrell	124	188

24	35/ 46/ 19	seventyfive	Anders Ivner	124	52
25	21/ 21/ 58	Delusion	M R Bremer	120	6

Weekly age: 108
Average age: 265 (203 last week, 182 the week before)
Average score: 131 (135 last week, 120 the week before)

Torch is one tenacious warrior. Many times this week, Torch has fallen into the 20s, even 24th place for a few challenges. But recent challenges have boosted it to 9th place. How long can it (he/she?) survive? Are warriors like ships? All female?

Reports of Blue Funk's imminent demise (by me) was premature. Stones still haven't found the glory they once knew, with Blue Funk 5, seventyfive, and Delusion in the bottom ranks. Impfinity is the exception. Tornado is also doing quite well in second place. All that _tweaking_ gave an extra 15 challenges to the age of all the warriors 8)

Anton Marsden is a relatively new name to the '94 draft hill, as is Kafka. Mirage 1.4 is doing quite well at 4th place utilizing a 2/3c scan/bomb strategy. Hopefully the recent hints have helped some.

The 25 warriors on the hill are represented by 14 authors.

---

94 - What's New

7	40/ 45/ 15	Mirage 1.5	Anton Marsden	136	1
17	38/ 45/ 17	seventyfive	Anders Ivner	131	1
17	36/ 42/ 22	ajax	Kafka and Kurt	130	1
12	23/ 12/ 65	Hazy.Shade.Of.Winter	John K W	134	1
8	39/ 44/ 17	blister soul	schitzo	135	1
2	38/ 32/ 30	Tornado 2.7e	Beppe Bezzi	144	1
22	23/ 22/ 55	Delusion	M R Bremer	125	1
22	38/ 47/ 15	patroclus	Kafka	128	1
20	34/ 41/ 25	daedelus	Kafka	126	1

And The Lime Twig. I don't have records for it. Sorry JKW!

---

94 - What's No More.

26	2/ 5/ 1	Wraith	Kurt Franke	5	8
26	31/ 41/ 29	jtest	Kafka	121	8
26	33/ 43/ 24	Persistence	Kurt Franke	123	12
26	34/ 45/ 21	Mirage 1.3	Anton Marsden	123	18
26	1/ 2/ 1	Tornado 2.3 a	Beppe Bezzi	5	57
26	26/ 25/ 49	Hazy Shade Of Winter	John K W	127	99
26	29/ 39/ 31	Time Lapse v0.1	David Boeren	120	44
26	34/ 44/ 22	Wraith	Kurt Franke	123	33
26	36/ 46/ 19	Harmony	P.Kline	126	91

No significant losses. Yes I called your program insignificant.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Torch t18	P.Kline	931	*	Bomber
2	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
3	Jack in the box	Beppe Bezzi	919	*	P-warrior
4	Agony II	Stefan Strack	912		CMP scanner
5	Blue Funk	Steven Morrell	869		Stone/ imp
6	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
7	Blue Funk 3	Steven Morrell	766		Stone/ imp
8	HeremScimitar	A.Ivner,P.Kline	666		Bomber
9	myVamp v3.7	Paulsson	643		Vampire
10	Armory - A5	Wilkinson	609		P-warrior
11	Phq	Maurizio Vittuari	589		Qscan -> replicator
12	quiz	Schitzo	552	*	Scanner/ bomber
13	juliet and paper	Bremer & Bezzi	548	*	P-warrior
14	La Bomba	Beppe Bezzi	547	*	Qscan -> replicator
15	B-Panama X	Steven Morrell	518		Stone/ replicator

16	Hector 2	Kurt Franke	467	*	Qscan -> replicator
17	Night Train	Karl Lewin	439	*	Replicator
18	NC 94	Wayne Sheppard	387		Stone/ imp
19	Cannonade	P.Kline	382		Stone/ imp
20	Torch t17	P.Kline	378		Bomber
21	Lucky 3	Stefan Strack	355		Stone/ imp
22	Impfinity v4g1	Damien Doligez	352	*	Stone/ imp
23	Derision	M R Bremer	351		Scanner
24	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire
25	Dragon Spear	c w blue	346		CMP scanner

Torch t18! Torch t18! Torch t18! Torch t18! Torch t18! Torch t18! Torch t18!

Paul Kline’s Torch t18 claims the top spot in the ’94 draft hall of fame. Many of Kline’s warriors have reigned on the standard hill and the ’94 draft hill. Why not add one more? Congratulations.

Karl Lewin and Planar also have warriors climbing up the ranks this week at the expense of Leprechaun on speed. Mason 2.0 is the next in line for ascension.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Mon Jan 29 04:43:28 PST 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	55/	29/	16	Mirage 1.0	Anton Marsden	180	31
2	53/	32/	15	Koolaid II: The Wrath of	David Boeren	175	81
3	37/	13/	50	Breeder	J. E. Long	162	7
4	32/	12/	56	New Papery v0.1	Ian Oversby	153	5
5	44/	39/	17	Our Vamp v3	R Bartolome & JS Pul	149	15
6	40/	30/	30	Qwiksand	Wayne Sheppard	149	25
7	27/	8/	66	RingWorm_v2.5	Calvin Loh	146	70
8	30/	16/	54	Water Bomb	Ian Oversby	144	6
9	31/	21/	48	Spacehead 1.3	Warpi & Philemon	142	37
10	24/	9/	68	RingWorm_v2.6	Calvin Loh	138	40
11	38/	41/	21	Monitor	M R Bremer	135	59
12	35/	37/	28	RedPixel.2	John Lewis	133	78
13	38/	44/	18	Assassin XII	Andy Nevermind	133	63
14	23/	21/	56	Thunder V 1.0	Andy Nevermind	126	77
15	23/	27/	50	Veld	Julian	118	11
16	16/	16/	68	SpiralTest2	Calvin Loh	117	80
17	34/	52/	14	Mary Janes	J. E. Long	117	26
18	11/	6/	83	Evol Cap 6.1	John Wilkinson	116	60
19	33/	58/	9	Our CoreClear v1	R Bartolome & JS Pul	109	4
20	18/	30/	52	Veld 3	Julian	107	3
21	27/	52/	22	White Rose v0.14	Tomasz Radon	102	29
22	12/	23/	64	Spiral Again	Calvin Loh	102	69
23	12/	23/	64	Spiral Again	Calvin Loh	101	71
24	20/	49/	31	CounterMeasures V4	Chris Arguin	91	2
25	20/	66/	14	Hello	Ian Oversby	74	1

Marsden holds first place with Mirage 1.0. An update, Mirage 1.5 holds an impressive 4th place on the ’94 draft hill. Koolaid II has had little trouble dominating the b-hill being near the top for the last few weeks. J. E. Long has had a couple impressive warriors. Breeder entered the hill at number two and has remained in the top 5 since.

The Hint

The question has been asked many times: is the hill getting more difficult or does it merely cycle, with warriors being pushed off the hill only to regain glory at a later date? I looked through some of the old issues of the ’94 Warrior and CoreWarrior to see what was successful a month or a year ago. Of course the introduction of pspace has changed the dynamics of the game somewhat, but not many warriors are currently using it. I choose the following veterans--former kings--to assult the hill.

Porch Swing by Randy Graham
Rank: 19 Score: 38/ 45/ 16 131 points
Did not score decisive victory over any current warriors. Less than 15 wins against Evol Cap and Night Train. Total inability to handle Die Hard type warriors. Marginally better than seventyfive and Blue Funk 5. Would have scored less if not for some beginner warriors at the bottom of the hill.

HeremScimitar by Paul Kline
Rank: 17 Score: 37/ 45/ 18 130 points
No analysis.

nobody special by Michael Nonemacher
Rank: 19 Score: 23/ 18/ 59 128 points
Ties all papers and Impfinity. Frontwards and Torch play even. Mirage trounces it. seventyfive scores 33% wins which means it has some decent stun capability. Same with Tornado. Only scores big against Blue Funk 5.

Taking Names by Paul Kline
Rank: 25 Score: 33/ 50/ 17 116 points
Totally inadequate to deal with current replicators. La Bomba has scores over 50% wins as does Hector 2. Frontwards, quiz, Tornado all score massively. Wins big over Mirage and ajax.

Pyramid 5.5 by Michael Constant
Rank 25 Score: 29/ 52/ 20 106 points
Gets annihlated by replicators. Simply cannot handle TimeScape style papers. Night Train destroys it 74% wins, 0% losses. Evol Cap doesn’t score like Night Train at all. Interesting. Marginally wins against a few warriors, big over seventyfive.

What has happened to make the hill tougher? Replicators have been evolving into increasingly nastier warriors. First there was Silk Paper which introduced silk style replicating (obviously). Silks split so quickly, they are somewhat immune to stunning attempts. Simple split/jump bombs weren’t enough to take them out. Then J. Pohjalainen, the same author, gave us TimeScape, which is the replicating engine used in most papers today. Not only does it split faster than Silk Warrior, but leaves behind decoys to fool scanners. Scanners had to move to spl/spl/jmp bombs and two pass coreclears to be effective. Warriors that didn’t have as much stunning power had to develop multipass coreclears with multiple split passes. Next Paul Kline develops Die Hard, combining the TimeScape engine with imps. Even some multipass clears were unable to handle it!

What else has changed? Many scanners didn’t color core in the old days. You could spot a scanner by the lack of instructions in core. Homemade Ice Cream used this property by scanning in one direction in a small step size knowing that the scan would either hit a decoy or the scanner itself. Then it would launch paper. Many scans today are combinations bomb/scans. Not only do they color core, but increase speed as well.

Stones have been the poor relation. But they may be gaining a new emergence with continously launching imp spirals ala Impfinity.

Some may argue that we’ve exhausted the possibilities of the ’94 draft instruction set with these innovations/evolutions. Possible, but doubtful. If you’re interested in the full statistics, just send me mail at bremermr@ecn.purdue.edu.

Planar’s Corner

by Stefan Strack

CDB tutorial, part 4

This week, we're going to cover the "mode" commands: pqueue, wqueue and pspace. We already encountered the pqueue command in the macros covered in part 2 and 3. The mode commands change what is being displayed and edited: When you first enter CDB, "list" works on the core address space, that is, "list 0,10" lists core addresses 0 through 10. We will refer to this default mode as "core mode". After you entered, e.g. the pqueue command, "list", "edit" will work on the process queue instead. Let's fire up Planar's Fahrenheit from part 1 and enter these commands:

```
pq
@step~list 0,$
```

The last command steps and then lists the contents of the process queue. Since Fahrenheit is self-splitting, you'll see two entries in the queue. Process 0 in the process queue points to the address that is about to be executed, process 1 is the following process. If you keep hitting <Enter>, you can watch the process queue grow every time the SPL instruction is executed. The process queue display is especially helpful if you need to debug a complex multi-process warrior. The dollar symbol in the list command is a predefined variable that is assigned the number of the last element and incremented as the process queue grows. (In core mode, $ is assigned to the last core address). So if you enter

```
calc $+1
```

CDB gives you the number of processes Fahrenheit has running. There are several examples for the use of $ in the solutions to the macro exercises from part 3 below.

The pqueue command takes an optional numeric argument. Without it, the process queue of the current warrior is displayed. "pqueue 1" enters process queue mode for warrior 1, irrespective of whether it is the current warrior. "pqueue off" returns back to core mode.

The "pspace" command makes P-space the target of the list, edit and fill commands. Similar to "pqueue", you use an optional number argument to select the P-space of a specific warrior. Finally, "wqueue" is useful if you're running multi-warrior battles: it selects a "warrior queue" display, with one line for the current process of every warrior. I won't give any specific examples here, but check the multi-warrior macros contained in "mw.mac". A feature of the pqueue and wqueue commands that's useful especially in macros: when you re-enter core mode, the current address becomes the address of the last line displayed in process or warrior queue mode.

Solutions to exercises from part 3

> 1)The "next" macro only works for battles with one or two warriors. Modify
> it so it skips to the next round even if more than 2 warriors are loaded.

Here the original:

```
next= echo Advancing to next round~@pq~@f0,$~dat 0,0~@pq off~@go~@st
```

We'll use the "wqueue" command that we just learned about to get the number of warriors (N=$+1), and then zero each warrior's process queue in a loop using "pqueue N". Since the macro now exceeds the line length, we'll break it up by using a continuation macro:

```
next= echo Advancing to next round~m _next
_next=@wq~@ca N=$+1~!!~@pq N~@f0,$~dat 0,0~if N=N-1 > 0~!~@pq off~@go~@st
```

> 2) Write a macro that steps until the number of processes of a warrior
> decreases (Hint: use the pqueue command).

Here’s a version that works when exactly two warriors are running:

```
dying=@pq~@ca N=$~!!~@sk 1~@pq~if $<N~m _dying~@ca N=$~!
_dying=echo Process has died~@pq off~reset
```

Change the "sk 1" to a larger skip number for greater speed, but make sure you use an odd number to return to the current warrior. Below the deluxe version that uses "wq" to get the number of warriors and then "sk X" to skip over as many executions as are needed to return to the current warrior. This version works for any number of warriors loaded:

```
dying=@pq~@ca N=$~!!~@wq~@ca X=$~@sk X~@pq~if $<N~m _dying~@ca N=$~!
_dying=echo Process has died~@pq off~reset
```

Questions? Concerns? Comments? Complaints? Mail them to people who care:
Beppe Bezzi <bezzi@iol.it>, Myer R Bremer <bremermr@ecn.purdue.edu> or
Maurizio Vittuari <pan0178@iperbole.bologna.it>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.reston.ans.net!newsfeed.internetmci.com!in1.uu.net!news.new-york.net!news.stormking.com!bezzi@iol.it Tue Feb 6 11:21:49 1996
Article: 3799 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.reston.ans.net!newsfeed.internetmci.com!in1.uu.net!news.new-york.net!news.stormking.com!bezzi@iol.it
From: Beppe Bezzi <bezzi@iol.it>
Newsgroups: rec.games.corewar
Subject: Core Warrior 15
Date: 5 Feb 1996 12:32:46 -0500
Organization: Storm King Ind. Inc.
Lines: 391
Sender: server@news.stormking.com
Distribution: world
Message-ID: <199602051722.SAA18469@iol-mail.iol.it>
Reply-To: bezzi@iol.it
NNTP-Posting-Host: valhalla.stormking.com
Originator: corewar-l@stormking.com
X-Mailer: Windows Eudora Light Version 1.5.2

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                              ,    .
$$$$$$P'   '                              .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 15 February 5, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.

This week I were hoping to be the men to announce the first 94 warrior passing 1000 age; I was wrong because the hill has been calm and aged half than the week before so this honor will go, with most chances, to my co-authour Myer, who has already announced the new King of the Hall of Fame; some person have all lucks :-)

This week is announced the Core War Hall of Fame in Stormking's web page. I haven't been able to submit my GIF, I hope to do it soon, but I'm curious to see others.

Last week Myer asked if warriors are all females like ships; apart that a female named Jack will have a few problem when greeting, I can say that Jack, Tornado and La Bomba are all male, while was a female Marcia Trionfale, being a replicator :-)

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000

```
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Sun, 4 Feb 1996 18:37:20 -0800

#	%W/	%L/	%T	Name	Author	Score	Age
1	37/	29/	34	Tornado 3.0	Beppe	145	8
2	43/	41/	16	Frontwards v2	Steven Morrell	144	459
3	41/	40/	19	quiz	Schitzo	141	606
4	42/	42/	16	Mirage 1.5	Anton Marsden	141	120
5	37/	35/	28	Thermite II	Robert Macrae	140	207
6	34/	31/	35	Torch t18	P.Kline	137	985
7	39/	40/	22	testnorm	Maurizio Vittuari	137	13
8	39/	40/	21	Boombastic	Maurizio Vittuari	137	341
9	36/	37/	27	Koolaid II: WoGG v2.2	David Boeren	136	11
10	40/	44/	17	seventyfive	Anders Ivner	135	106
11	21/	9/	70	Evol Cap 6.6	John Wilkinson	133	221
12	38/	44/	18	smart crow again	Karl Lewin	132	3
13	24/	18/	58	Impfinity v4g1	Planar	130	406
14	22/	15/	63	Hazy.Shade.Of.Winter	John K W	130	153
15	30/	29/	41	Jack in the box	Beppe Bezzi	130	973
16	30/	31/	39	patroclus	Kafka and Kurt	130	2
17	36/	43/	21	Harmony	P.Kline	130	1
18	17/	8/	75	Night Train	Karl Lewin	127	493
19	36/	45/	20	ajax	Kafka and Kurt	127	102
20	38/	49/	13	Days	John K W	127	36
21	28/	31/	41	La Bomba	Beppe Bezzi	125	601
22	23/	22/	54	Hector 2	Kurt Franke	124	521
23	28/	33/	39	Breeder v2	J. E. Long	123	54
24	19/	15/	66	The Lime Twig 2.1	John K W	123	76
25	24/	25/	52	juliet and paper	M R Bremer, B. Bezzi	123	602

Weekly age: 54
New warriors 8 Turnover/age rate 15%
Average age: 284 (265 last week, 203 the week before)
Average score: 132 (131 last week, 135 the week before)
The 25 warriors on the hill are represented by 16 authors.

The hill has been rather calm this week, aging little more than 50, and few warriors changed a lot their positions. Impressive the fall of Mason, pushed off from sixth place in few challenges, and the rise of seventyfive gaining more than 10 positions.

Fast bombers and scanners are dominating, replicators are still having bad times and stone/imps are losing positions. The average score is the same of last week and the hill aged a bit in the average having lost but two 100+ aged warriors.

The king position has been held by Frontwards, quiz, Mirage and Tornado, but none kept a strong grasp on it.

Congratulations to J. E. Long, making the 94 hill with his warrior Breeder v2.

Torch has solved its problems and now is running toward age 1000 in a safe position, as does Jack in the box; both have an high chance to break the wall soon.

A few veterans have been for long, and still are indeed, in the bottom of the hill at great risk of being pushed off, thy are juliet and paper, La Bomba and Hector; next week announces to be full of meaningful events and I hope my partner will be able to reenter and report them :-)

A few notes:
Of the 25 warriors on hill but 7 have been published in a working format, plus 7 others published in an older version and but a few published only as samples and code snippets. Publishing our warriors, once they aged enough

not be subject to further improvements, can help to reduce the number of test submitted.

Some authors don't use the ;strategy line to tell what their warriors do. I think that adding a few words like bomber, scanner, etc.. won't hinder their warriors performance.

---

94 - What's New

Last week

25	19/ 11/ 70	The Lime Twig 2.1	John K W	127	1
1	38/ 29/ 33	Tornado 3.0	Beppe	148	1
4	39/ 39/ 22	testnorm	Maurizio Vittuari	139	1
10	30/ 29/ 42	Breeder v2	J. E. Long	131	1
12	36/ 37/ 27	Koolaid II: WoGG v2.2	David Boeren	134	1
15	39/ 43/ 18	smart crow again	Karl Lewin	136	1
17	30/ 31/ 39	patroclus	Kafka and Kurt	130	1
17	36/ 43/ 21	Harmony	P.Kline	130	1
19	38/ 49/ 13	Days	John K W	126	1

Worth mention are Tornado 3.0 and testnorm, both coming after a very long serie of test; Breeder is the only other new warrior entering the top ten

---

94 - What's Old

8	34/ 30/ 35	Torch t18	P.Kline	138	985
14	31/ 28/ 41	Jack in the box	Beppe Bezzi	133	973
3	41/ 39/ 20	quiz	Schitzo	144	606
25	25/ 24/ 52	juliet and paper	M R Bremer, B. Bezzi	125	602
20	29/ 30/ 41	La Bomba	Beppe Bezzi	128	601
22	24/ 22/ 53	Hector 2	Kurt Franke	127	521
17	19/ 7/ 75	Night Train	Karl Lewin	131	493
2	43/ 41/ 16	Frontwards v2	Steven Morrell	146	459
7	39/ 40/ 21	Boombastic	Maurizio Vittuari	138	341
11	22/ 8/ 70	Evol Cap 6.6	John Wilkinson	136	221
6	37/ 35/ 28	Thermite II	Robert Macrae	139	207

Eleven warrior aged more than 200. Two new entries: Evol cap and Thermite; and a loss: Mason, the discovery of it's secret hanshake proved deadly for it. Torch and Jack are now very near 1000 age and in good health, as are quiz and Frontwards v2, always near the hilltop.
Three of the oldest warriors, juliet & paper, La Bomba and Hector, seem to be in trouble, even if Torch and Jack in the box have swown us that some warriors have nine lives, like cats.

---

94 - What's No More.

Last week

26	36/ 46/ 19	Provascan 3.0	Beppe Bezzi	126	281
26	31/ 40/ 30	Mason 2.0	Robert Macrae	122	333
26	25/ 31/ 43	Blue Funk 5	Steven Morrell	119	189
26	1/ 2/ 1	blister soul	schitzo	5	44
26	32/ 44/ 24	daedelus	Kafka	119	32
26	25/ 31/ 44	patroclus	Kafka and Kurt	120	27
26	2/ 2/ 0	testnorm	Maurizio Vittuari	5	13
26	20/ 21/ 59	Delusion	M R Bremer	119	9
26	4/ 3/ 1	Tornado 2.7e	Beppe Bezzi	12	3

Mason is the older guy killed, followed by Blue Funk 5

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Torch t18	P.Kline	985	*	Bomber
2	Jack in the box	Beppe Bezzi	973	*	P-warrior
3	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
4	Agony II	Stefan Strack	912		CMP scanner

5	Blue Funk	Steven Morrell	869		Stone/ imp
6	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
7	Blue Funk 3	Steven Morrell	766		Stone/ imp
8	HeremScimitar	A.Ivner,P.Kline	666		Bomber
9	myVamp v3.7	Paulsson	643		Vampire
10	Armory - A5	Wilkinson	609		P-warrior
11	quiz	Schitzo	606	*	Scanner/ bomber
12	juliet and paper	Bremer & Bezzi	602	*	P-warrior
13	La Bomba	Beppe Bezzi	601	*	Qscan -> replicator
14	Phq	Maurizio Vittuari	589		Qscan -> replicator
15	Hector 2	Kurt Franke	521	*	Qscan -> replicator
16	B-Panama X	Steven Morrell	518		Stone/ replicator
17	Night Train	Karl Lewin	493	*	Replicator
18	Frontwards v2	Steven Morrell	459	*	One shot scanner
19	Impfinity v4g1	Damien Doligez	403	*	Stone/ imp
20	NC 94	Wayne Sheppard	387		Stone/ imp
21	Cannonade	P.Kline	382		Stone/ imp
22	Torch t17	P.Kline	378		Bomber
23	Lucky 3	Stefan Strack	355		Stone/ imp
24	Derision	M R Bremer	351		Scanner
25	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire

Torch and Jack are leading the 94 Hall of fame, and near 1000 age. The second wave is climbing fast and facing the top ten position even if j&p and La Bomba have some trouble and a third wave is around 500 age Next in line to enter is Vittuari’s Boombastic

---

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Mon Feb 5 00:51:59 PST 1996

#	%W/ %L/ %T	Name	Author	Score	Age
1	58/ 25/ 16	Mirage 1.0	Anton Marsden	191	79
2	51/ 18/ 31	CoreWarrior	M R Bremer	183	4
3	39/ 13/ 47	Breeder v2	J. E. Long	166	45
4	37/ 11/ 52	silkworm v3.0	Brian Haskin	164	32
5	34/ 11/ 55	Breeder	J. E. Long	156	55
6	31/ 7/ 62	Test2	George Eadon	155	12
7	43/ 32/ 25	Qwiksand	Wayne Sheppard	154	73
8	31/ 11/ 58	New Papery v0.1	Ian Oversby	151	53
9	44/ 38/ 18	Our Vamp v3	R Bartolome & JS Pul	149	63
10	31/ 15/ 53	Paper8-IV 2.5	George Eadon	147	30
11	25/ 5/ 69	RingWorm_v2.6	Calvin Loh	145	88
12	23/ 11/ 66	Thunder V 1.2	Andy Nevermind	136	44
13	27/ 23/ 50	Spacehead 1.3	Warpi & Philemon	131	85
14	30/ 32/ 39	You Wouln’t Let It Lie!	Scott Manley	128	39
15	24/ 22/ 55	AB Scanner 2.9.1	Chris Hodson	125	15
16	30/ 35/ 35	Szyzyg	Scott Manley	124	29
17	28/ 33/ 39	D’arko	Scott Manley	122	19
18	28/ 34/ 38	Uvavu	Scott Manley	121	40
19	29/ 38/ 33	idiot/savant v0.1	Brian Haskin	119	47
20	28/ 41/ 31	Maya v1.6c	Christoph C. Birk	116	13
21	30/ 46/ 25	Slaver v1.1	Christoph C. Birk	114	7
22	17/ 29/ 55	Paper3	Christoph C. Birk	104	8
23	24/ 50/ 26	CounterMeasures V4	Chris Arguin	98	1
24	28/ 58/ 14	Lenochka 3p	Julian	97	6
25	23/ 61/ 16	Maya v2.0	Christoph C. Birk	86	9

Marsden still holds first place with Mirage 1.0 a new version of it is in

the top of 94 hill J.E. Long's Breeder v2 is too in the 94 hill. Is not difficult to guess that Bremer too will soon make the step in the big league :-)

The Hint
by Kurt Franke

This week the hint has been made by Kurt Franke that will explain a way to start core clears with bombers and scanners. I thank Kurt a lot, for saving me some time to develop Tornado 3.0 :-)

Self-bombing and number of scans

One thing I found particularly confusing when learning core war was self-bombing programs. It seemed impossible to figure out where the bomb was going to hit and how many bombs are thrown before the program hits itself. With the macros of pmars, it is easy to control (some kinds of) self-bombing.

Here is an example, the bomber from juliet storm.

```
s       spl #445, <-445
        spl #0, <-446
        mov {445-1, -445+2
        add -3, -1
        djn.f -2, <-2667-500
        mov 33, <-20
go      dat #0, #ptr
```

Here was my impression when I first saw this code: "Huh??"

The mov/add/djn loop is the bomber, while the mov 33, <-20 line will do the core clear, once the djn line is bombed with a split 0 instruction. Adding a few labels,

```
start   spl #445, <-445
ptr     spl #start+1, <-446
bomb    mov {445+ptr, -445+target
        add start, bomb
target  djn.f -2, <-2667-500
clear   mov 33, <-20
go      dat #0, #ptr
```

The start line contains the increments that are added to the bomb line each time. If the bomb line read

```
bomb    mov {ptr, target
```

then it would decrement ptr, take what it points to (start) and put it onto target (the djn line). Good; that's what we want. Now we just back up. If the bomb line were

```
bomb    mov {ptr-445, target+445
```

then after adding start once, the bomb line will make the self-modification. And of course

```
bomb    mov {ptr-2*445, target+2*445
```

would take two adds before the bomb line modifies our code. Here's the general idea:

```
NBOMBS  equ     <whatever we want>

start   spl #445, <-445
ptr     spl #start+1, <-446
bomb    mov {ptr-445*NBOMBS, target+445*NBOMBS
        add start, bomb
target  djn.f -2, <-2667-500
clear   mov 33, <-20
```

```
go      dat #0, #ptr
```

Now we get NBOMBS number of bombs (more or less) before the self-bomb that starts a core clear. Except NBOMBS can be at most the total number of places to bomb. (445 will hit every fifth place in memory, for 1600 total). Putting a -1 for NBOMBS would give the maximum number of bombs (like -1 is the maximum number in core), and that is what is coded in Juliet.

Here is a cmp scanner (strikingly similar to Rave) done the same way.

```
;redcode-94
;assert CORESIZE == 8000
;author Kurt Franke
;name CMP scanner

;strategy rave-type scanner (original by Stefan Strack)
;strategy
;strategy this will bomb itself after SCANS iterations,
;strategy triggering a core clear.

WIDTH   equ     12
STEP    equ     42                      ;; modula 2 step
SCANS   equ     3999                    ;; the maximum
FIRST   equ     (next - STEP * SCANS)   ;; need to end up bombing 'next'
BOMBLEN equ     WIDTH+2

next    sub.f   $incr, $scan            ;; Get next location
scan    seq     $FIRST-WIDTH, $FIRST    ;; check for code
        slt.ab  #incr-scan+BOMBLEN, $scan
        jmp     next, <next-WIDTH       ;; gate

att     mov.i   $sbomb, }scan           ;; attack phase of scanner
ct      djn     att, #BOMBLEN           ;; drop BOMBLEN bombs
        sub.a   #BOMBLEN, $scan         ;; reset the scanning position
        mov.ab  #BOMBLEN, $ct           ;; reset the counter
        jmn.a   next, $next             ;; scan finishes on self-hit
sbomb   spl     #0, <-STEP+1
        mov     1, {-1                  ;; simple core clear -> gate
incr    dat     #-STEP, <-STEP

end     scan


        - Kurt
```

Planar's Corner

Sorry, no Planar's corner this week :-(

Questions? Concerns? Comments? Complaints? Mail them to people who care: Beppe Bezzi <bezzi@iol.it>, Myer R Bremer <bremermr@ecn.purdue.edu>, Kurt Franke <kurt@protector.lovett.rice.edu>

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Article: 3851 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!howland.reston.ans.net!newsfeed.internetmci.com!in1.uu.net!despina.neptune.com!news.new-york.net!news.stormking.com!bezzi@iol.it
From: Beppe Bezzi <bezzi@iol.it>
Newsgroups: rec.games.corewar
Subject: Core Warrior 16
Date: 12 Feb 1996 13:19:34 -0500
Organization: Storm King Ind. Inc.
Lines: 337
Sender: server@news.stormking.com
Distribution: world
Message-ID: <199602121754.SAA32297@iol-mail.iol.it>
Reply-To: bezzi@iol.it
NNTP-Posting-Host: valhalla.stormking.com
Originator: corewar-l@stormking.com
X-Mailer: Windows Eudora Light Version 1.5.2

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   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P’ ‘P’                          ,    .
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  ‘Y$b ,d$$$P ‘$b,d$P’ ‘$$.    ‘$$.  ,    ‘$$P $$$’ Y $.  $    $   $ Y..P  $
   ‘$$$$$$$’    $$$P’   ‘$$b    ‘$$$P      ‘P  ‘$’  ‘Y’k. $.   $.  $. $$’  $.
```

Issue 16 February 12, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/˜koth ;Stormking
http://www.ecst.csuchico.edu/˜pizza/koth ;Pizza
http://pauillac.inria.fr/˜doligez/corewar/ ;Planar

Greetings.

Hi,
being my partner Myer away for work I’m back again for second week in a row; Myer’s fans will read again theyr favourite next week, don’t worry.
This week an historical event is happened, Paul Kline’s Torch t18 broke the 100 wall for first time in the 94 hill history, congratulations Paul.

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/ %L/ %T	Name	Author	Score	Age
1	43/ 31/ 26	T.N.T.	Maurizio Vittuari	154	1
2	38/ 28/ 34	Tornado 3.0	Beppe	149	63
3	42/ 39/ 19	quiz	Schitzo	144	661
4	42/ 42/ 17	test i7a	Beppe Bezzi	142	17
5	29/ 16/ 55	Impfinity v4g1	Planar	141	461
6	24/ 7/ 69	Evol Cap 6.6	John Wilkinson	141	276
7	29/ 16/ 55	Clisson	P.Kline	141	3
8	37/ 34/ 29	Thermite II	Robert Macrae	141	262
9	26/ 12/ 62	Hazy.Shade.Of.Winter	John K W	141	208
10	42/ 44/ 13	seventyfive	Anders Ivner	140	161
11	35/ 29/ 36	Torch t18	P.Kline	140	1040
12	41/ 42/ 18	Mirage 1.5	Anton Marsden	140	175
13	42/ 44/ 13	Frontwards v2	Steven Morrell	140	514
14	40/ 42/ 18	Boombastic	Maurizio Vittuari	139	396
15	39/ 41/ 20	Harmony	P.Kline	138	44
16	41/ 45/ 14	orestes	Kafka	137	26
17	39/ 41/ 21	testnorm	Maurizio Vittuari	137	32
18	33/ 29/ 39	patroclus	Kafka and Kurt	136	57
19	22/ 9/ 69	Night Train	Karl Lewin	135	548
20	40/ 46/ 14	smart crow again	Karl Lewin	135	58
21	28/ 21/ 52	Blizzard	Anton Marsden	135	11
22	32/ 30/ 38	Jack in the box	Beppe Bezzi	134	1028
23	37/ 40/ 23	Koolaid II: WoGG v2.2	David Boeren	133	66
24	28/ 23/ 48	Hector 3	Kurt Franke	133	7
25	32/ 31/ 37	Breeder v2	J. E. Long	132	109

Results have been obtained submitting a lose all warrior, so as not to be biased.

Weekly age: 55
New warriors 8 Turnover/age rate 15%
Average age: 249 (284 last week, 265 the week before)
Average score: 139 (132 last week, 131 the week before)
The 25 warriors on the hill are represented by 15 authors.

The 1000 age wall is no more !! Torch t18 and Jack in the Box have passed this magic quote for first time in the 94 hill, even if some 88 warrior passed 2000.

Stats are more or less the same as last week, the increased average score is due to the loss against the scorekeeping warrior; we have a younger age, having the hill lost 3 aged veterans: La Bomba, juliet and paper, and Hector 2 All warriors pushed off were in the bottom positions last week, apart obviously those replaced by their authors.

Maurizio’s new warrior, T.N.T. is the new King with a confortable lead over the second from the moment it entered.

Fast bombers are still dominating, holding position 1 and 2, scanners are still proving good as are stone imps; replicators are confined in the last positions.

Those with ;redcode verbose may have noticed some strange experiment made by two authors, Paul Kline and your beloved writer, attemping the hill with warriors unable to enter and scoring in a strange way; Paul has now showed down with Clisson, entering the top ten, what Beppe is Planning to do nobody knows :-)

---

94 - What’s New

1	40/ 32/ 28	T.N.T.	Maurizio Vittuari	147	1
3	42/ 43/ 15	test i7a	Beppe Bezzi	140	1
5	41/ 40/ 19	testnorm	Maurizio Vittuari	141	1
9	25/ 17/ 58	Clisson	P.Kline	134	1
17	26/ 22/ 52	Blizzard	Anton Marsden	130	1
17	38/ 47/ 16	orestes	Kafka	129	1
18	27/ 24/ 48	Hector 3	Kurt Franke	131	1
18	37/ 43/ 20	Harmony	P.Kline	130	1

A new king, T.N.T., and three others new warriors in the top ten.

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94 - What's No More.

26	29/ 32/ 39	La Bomba	Beppe Bezzi	126	650
26	23/ 25/ 51	juliet and paper	M R Bremer, B. Bezzi	121	607
26	24/ 22/ 54	Hector 2	Kurt Franke	125	561
26	34/ 46/ 20	ajax	Kafka and Kurt	123	131
26	19/ 15/ 66	The Lime Twig 2.1	John K W	123	85
26	36/ 52/ 12	Days	John K W	119	51
26	2/ 2/ 0	testnorm	Maurizio Vittuari	5	16
26	1/ 1/ 1	Harmony	P.Kline	5	2

:-(((((((((((((((

I'm not in the mood to comment those results, just to say this is new record of lost age in a week: 2103 (previous record 1617 on 4 December 95)

---

94 - What's Old

13	31/ 30/ 39	Torch t18	P.Kline	132	1040
22	28/ 30/ 42	Jack in the box	Beppe Bezzi	126	1028
3	38/ 40/ 22	quiz	Schitzo	136	661
19	18/ 9/ 73	Night Train	Karl Lewin	127	548
14	38/ 46/ 16	Frontwards v2	Steven Morrell	131	514
6	25/ 16/ 59	Impfinity v4g1	Planar	134	461
15	37/ 43/ 20	Boombastic	Maurizio Vittuari	131	396
7	20/ 7/ 72	Evol Cap 6.6	John Wilkinson	133	276
11	34/ 35/ 32	Thermite II	Robert Macrae	133	262
10	22/ 12/ 66	Hazy.Shade.Of.Winter	John K W	133	208

A new entry, the mysterious, and poetic, Hazy Shade of Winter, and three losses, see above.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Torch t18	P.Kline	1040	*	Bomber
2	Jack in the box	Beppe Bezzi	1028	*	P-warrior
3	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
4	Agony II	Stefan Strack	912		CMP scanner
5	Blue Funk	Steven Morrell	869		Stone/ imp
6	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
7	Blue Funk 3	Steven Morrell	766		Stone/ imp
8	HeremScimitar	A.Ivner,P.Kline	666		Bomber
9	quiz	Schitzo	661	*	Scanner/ bomber
10	La Bomba	Beppe Bezzi	650		Qscan -> replicator
11	myVamp v3.7	Paulsson	643		Vampire
12	Armory - A5	Wilkinson	609		P-warrior
13	juliet and paper	Bremer & Bezzi	607		P-warrior
14	Phq	Maurizio Vittuari	589		Qscan -> replicator
15	Hector 2	Kurt Franke	561		Qscan -> replicator
16	B-Panama X	Steven Morrell	518		Stone/ replicator
17	Night Train	Karl Lewin	548	*	Replicator
18	Frontwards v2	Steven Morrell	514	*	One shot scanner
19	Impfinity v4g1	Damien Doligez	461	*	Stone/ imp
20	Boombastic	Maurizio Vittuari	396	*	Bomber
22	NC 94	Wayne Sheppard	387		Stone/ imp
22	Cannonade	P.Kline	382		Stone/ imp
23	Torch t17	P.Kline	378		Bomber
24	Lucky 3	Stefan Strack	355		Stone/ imp
25	Derision	M R Bremer	351		Scanner
25	Request v2.0	Brant D. Thomsen	347		Qvamp -> vampire

Torch and Jack passed 1000 age, now both have a 100 advantage over the previous leader, being 2000 next 'round number' I don't think to speak again of them until ...
quiz and La Bomba enters the top ten even if La Bomba has finished his run,

as did juliet and paper and Hector. Vittuari’s Boombastic enters in 20th spot.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	49/	16/	34	CoreWarrior	M R Bremer	183	35
2	40/	11/	49	Breeder v2	J. E. Long	168	76
3	38/	10/	52	silkworm v3.0	Brian Haskin	166	63
4	34/	9/	57	Breeder	J. E. Long	159	86
5	31/	5/	64	Test2	George Eadon	158	43
6	31/	8/	61	New Papery v0.1	Ian Oversby	154	84
7	32/	14/	54	Paper8-IV 2.5	George Eadon	150	61
8	43/	42/	15	Our Vamp v3	R Bartolome & JS Pul	144	94
9	23/	10/	67	Wanderer v0.1	Ian Oversby	136	17
10	30/	25/	46	Yakumo v0.3	David Boeren	135	10
11	41/	48/	12	Veld’s fist	Julian	134	9
12	23/	14/	63	Banshee VI	Andy Nevermind	132	1
13	39/	46/	14	Auntie v0.2	Ian Oversby	132	14
14	21/	11/	69	Thunder V 1.2	Andy Nevermind	130	75
15	31/	33/	35	Szyzyg	Scott Manley	130	60
16	31/	33/	36	Uvavu	Scott Manley	129	71
17	30/	31/	40	You Wouln’t Let It Lie!	Scott Manley	128	70
18	22/	17/	61	AB Scanner 2.9.1	Chris Hodson	128	46
19	30/	32/	38	D’arko	Scott Manley	127	50
20	28/	36/	36	idiot/savant v0.1	Brian Haskin	119	78
21	31/	49/	20	Slaver v1.1	Christoph C. Birk	114	27
22	30/	49/	21	MJv5	J. E. Long	111	12
23	24/	44/	32	Maya v1.6c	Christoph C. Birk	105	44
24	20/	36/	44	beemer 1.5	Chris Hodson	104	25
25	7/	36/	57	Multi-Worm v1.0	Christoph C. Birk	78	2

Hill top is kept by Myer Bremer, we are waiting his return in 94, followed by J. E. Long with a warrior that’s in 94 too and Brian Haskin.

The Hint
The defence.

What is the defence ? it’s using part of your resources not to damage you enemy but to avoid it damage you; in soccer and basketball the defence is as much important as attack is, if not more, same in Corewar even if the scoring system gives some advantage to attack.

A defence only warrior, even if a perfect one, has no chances to make the hill being an all ties score too low, but some form of defence is needed and the right balance can help you score better and live longer on the hill.

Let’s give a look at some forms of defence, how well they work and how much they cost in terms of resources expended.

Self splitting

If we add a spl 0 instruction on top of a stone we have some advantages:

A hit in the first or the last line don’t stop it working, we accumulate processes so as an imp spiral won’t kill but only tie us, we can use a djn stream because a process falling off it won’t kill us and we can couple an imp spiral to our bomber

This is payed somewere because:
We have larger footprint for a scanner to find and there is slight speed reduction.

The sum of advantages is more than those of disadvanages so, in practice, every stone is self splitting and some use even more process eating structure to accumulate processes even faster, see Cannonade, Impfinity and juliet storm for examples.

Adding imps

In 94 imps are used more for survival than for attack; adding imp spirals to stones and replicators my get them much harder to kill for a replicator, without reducing too much their offensive potential. The drawback is that a stun attack on the spiral can have a negative effect on the stone, so the number of wins is reduced.

Boot and decoy

Booting away from a decoy is a common form of defence against scanner, very effective against one shoot like Frontwards and Porch Swing if you have a good way to attack a core clear of course. There are very little negative effects for bombers, apart the time spent booting away, but it’s difficult to make a decoy invisible to your own scanner, Agony II is the only cmp scanner I know using this tecnique.

Some warriors now use a decoymaker instead of booting, i.e. they add at the beginning some lines like
```
mov     <xx,    <yy
```
creating a pattern of dat 0,1 good to trigger one shot scanners; another advantage is that, in the meantime, you drop some bombs. The drawback is that this decoy is less effective against opponent cmp scanners, the colored cells are not many, and that a qscan can find the decoymaker and from it bomb the warrior too.

Active decoys

It’s a tecnique I use from long and I always kept secret, but having Robert published it in his warrior Mason I have to unveil my secret ;-)
There is no nedd to use dats to make your decoy, if you use spl #xx,yy instructions instead you can sometimes manage to stun wounded silk modules that happen to land here; the cost is nothing and you can gain a few points. I f you like you can insert a few stp instruction, to try brainwashing a pspacer, or even some mov -10,<3000 instruction to make your enemy create a spl #0 carpet somewere in core; just be careful not to be here :-)

Is a good thing if you insert some $$$ 1,1 line to stop djn streams and erase your boot pointer, a mov bomb, >xx hitting it can have devastating effects.

Pspace

Should your warrior score very good against one opponent class but be useless against another, you can switch it with something else, able to score against your enemy; obviously using pspace has its weaknesses: brainwash and slow startup.

---
djn defence

It’s sometimes good to have a jmp clear+1 line leading your warrior; should it be decremented by a stream it will jump to the core clear that, if well made, will work even if decremented.

Planar’s Corner

Due to heavy work and study needs of mr. Damien we are sorry not to have our favourite columnist article this week.

Questions? Concerns? Comments? Complaints? Mail them to people who care:
Beppe Bezzi <bezzi@iol.it>, Myer R Bremer <bremermr@ecn.purdue.edu>

From news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!swrinde!gatech!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Wed Feb 21 10:49:13 1996
Article: 3933 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!swrinde!gatech!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 17
Date: 20 Feb 1996 20:37:38 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 388
Message-ID: <4gdbei$r21@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 17 February 19, 1996

Core_Warrior_ is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

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http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Greetings.

Much thanks to Beppe for covering my issue. I've been out of things as of late, so Bezzi has been keeping me current. He even offered to help me get back on the hill. The _nerve_ of that guy 8) !

Tournament Time

It's been a long while since the end of the NS fall core war tournament. Nandor and Stefan forced us to play in a different set of rules than the '94 draft hill's. In the same spirit Wilkinson presents the Intellignet Warrior Tournament.

The Details:

The Intelligent Warrior Tournament
v1.0

The subject of intelligent warriors often revolves around the idea that programs don't need to be intelligent to win. The reason for this is fairly simply, the core is very forgiving. There is little need for intelligence if the only thing you can break in core is the other program. This isn't true in most computers. Most computers need an operating system. Programs might act a little smarter if there was an OS in core.

The rules are fairly straight forward, they are exactly the same as the 94 hill on Pizza, with one small exeption: RedOS. The RedOS is a

simulated operating system which resides somewhere in core with the two combatants. Should the RedOS die, for any reason, the computer will "crash". Scoring goes something like this.

Points	Condition
3	Program kills opposing program and kept OS alive.
1	Program, opponent, and OS live.
0	Program dies, opponent and OS live.
-3	OS dies.

Below you will find a listing for the RedOS. Bear in mind that the RedOS is dynamic. It makes several calls to P-Space and uses these numbers for internal checks.

```
;redcode-94
;name RedOS
;author jkl


org start

version equ 2,0

head    dat     CORESIZE,CORESIZE-toe   ;CORESIZE, CORESIZE-OS
        dat version
input   dat 0,0

start   ldp     #0,#0                   ; last state request
        sne.b   start,#-1               ; check for start up
        jmp     cold                    ; goto cold_boot
        sne.b   start,#0                ; check for error after hard crash
        jmp     error                   ; goto error
        stp     #1,#1

wait    jmz     0,input                 ; wait for input
        sne     input,#1                ; check for run
        jmp     run                     ;
        sne     input,#2                ; check for user clear
        jmp     clear
        sne     input,#3                ; user cold boot
        jmp     cold
        mov     clean,input
        jmp     error
        jmp     wait                    ; future function go here

error   ldp     #1,#0                   ; load previous error count
        add     #1,error
        stp.b   -2,#1                   ; store error codes
        slt.b   #10,error
        jmp     wait

clear   mov.b   head,2
        mov     clean,>toe              ; clear memory
        djn     -1,#0
        mov.ab  #1,toe
        mov     fix,head                ; bug fix
        mov     clean,input
        jmp     wait                    ; goto wait

cold    stp     #0,#1                   ; clean error count
        mov     clean,input
        jmp     wait

run     spl     *input
        mov     clean,input
        jmp     wait

fix     dat     CORESIZE,CORESIZE-toe+head      ;CORESIZE, CORESIZE-OS
clean   dat     0,0
toe     dat     1,1
```

;----------end os----------

The tournament rules:

One program person. Programs should be mailed to jklewis@umich.edu before 3/5/96. The tournament will be round robin style. Results will be given on rec.games.corewars as soon as they are completed.

If you have further questions feel free to contact me at the address above.

John K. Lewis
Ph# 747-3748
text pager: http://www.us.itd.umich.edu/~facu/page

** Please remember to CC:facu **
John's sig.virus; copy me!

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minimum distance: 100
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#	%W/	%L/	%T	Name	Author	Score	Age
1	41/	26/	34	Grilled Octopus v0.1	David Boeren	155	47
2	44/	40/	15	Memories	Beppe Bezzi	148	21
3	30/	12/	58	Hazy Shade Of Winter	John K W	147	8
4	38/	28/	34	Tornado 3.0	Beppe	147	181
5	41/	40/	18	Frontwards v2	Steven Morrell	142	632
6	34/	27/	39	Blue Funk 5	Steven Morrell	141	53
7	37/	33/	30	Thermite II	Robert Macrae	140	380
8	41/	42/	16	quiz	Schitzo	140	779
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10	33/	27/	40	test	P.Kline	139	2
11	40/	41/	19	Mirage 1.5	Anton Marsden	138	293
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14	27/	18/	55	Impfinity v4g1	Planar	136	579
15	24/	12/	63	Evol Cap 6.6	John Wilkinson	136	394
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17	41/	46/	13	seventyfive	Anders Ivner	135	279
18	34/	33/	33	Torch t18	P.Kline	135	1158
19	22/	10/	68	Night Train	Karl Lewin	134	666
20	39/	43/	18	Blur	Anton Marsden	134	5
21	30/	27/	43	patroclus	Kafka and Kurt	134	175
22	27/	21/	51	Hector 3	Kurt Franke	133	125
23	37/	42/	20	Boombastic	Maurizio Vittuari	132	514
24	38/	45/	18	Test	J E Long	131	27
25	36/	48/	16	test	Beppe Bezzi	125	3

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New warriors 8 Turnover/age rate 7%
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Average score: 138 (139 last week, 132 the week before)
The 25 warriors on the hill are represented by 15 authors.

Sorry I've been out of things.

Master of Weird Names--Boeren--has held the top spot for most of the week. Bezzi's new entry, Memories, has jockeyed for that slot more than a few times. And Hazy Shade of Winter sits at number 3. These three new warriors take the three top slots. Not bad gentleman. Blue Funk makes a reapperance, stronger than ever. Does the Funk retain its roots as an imp/stone or has it evolved into the stunning bombers that are quite successful right now?

---

94 - What's New

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24	38/ 45/ 18	Test	J E Long	131	27
25	36/ 48/ 16	test	Beppe Bezzi	125	3

---

94 - What's No More.

26	1/ 1/ 2	test i7a	Beppe Bezzi	5	23
26	29/ 34/ 37	Breeder v2	J. E. Long	124	150
26	36/ 50/ 14	smart crow again	Karl Lewin	122	106
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26	34/ 45/ 21	testnorm	Maurizio Vittuari	123	104
26	33/ 44/ 22	Harmony	P.Kline	123	55
26	33/ 44/ 23	Koolaid II: WoGG v2.2	David Boeren	122	162
26	1/ 0/ 6	Hazy.Shade.Of.Winter	John K W	10	320

---

94 - What's Old

23	31/ 35/ 34	Torch t18	P.Kline	127	1158
13	31/ 28/ 42	Jack in the box	Beppe Bezzi	133	1146
7	40/ 43/ 16	quiz	Schitzo	137	779
22	19/ 11/ 70	Night Train	Karl Lewin	127	666
5	41/ 41/ 18	Frontwards v2	Steven Morrell	142	632
10	26/ 19/ 54	Impfinity v4g1	Planar	134	579
24	35/ 44/ 21	Boombastic	Maurizio Vittuari	126	514
18	22/ 14/ 64	Evol Cap 6.6	John Wilkinson	130	394
6	37/ 35/ 29	Thermite II	Robert Macrae	139	380
8	40/ 43/ 17	Mirage 1.5	Anton Marsden	137	293
17	39/ 47/ 13	seventyfive	Anders Ivner	131	279

Geez. We ought to think about raising the price of admission here. And most of these programs are rising in the hall of fame! Mirage will be the next one to enter the HOF. Tornado 3.0 is the next warrior staged to pass 200.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Torch t18	P.Kline	1158	*	Bomber
2	Jack in the box	Beppe Bezzi	1146	*	P-warrior
3	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
4	Agony II	Stefan Strack	912		CMP scanner
5	Blue Funk	Steven Morrell	869		Stone/ imp
6	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
7	quiz	Schitzo	779	*	Scanner/ bomber
8	Blue Funk 3	Steven Morrell	766		Stone/ imp
9	HeremScimitar	A.Ivner,P.Kline	666		Bomber
10	Night Train	Karl Lewin	666	*	Replicator
11	La Bomba	Beppe Bezzi	650		Qscan -> replicator
12	myVamp v3.7	Paulsson	643		Vampire
13	Frontwards v2	Steven Morrell	632	*	One shot scanner
14	Armory - A5	Wilkinson	609		P-warrior
15	juliet and paper	Bremer & Bezzi	607		P-warrior
16	Phq	Maurizio Vittuari	589		Qscan -> replicator
17	Impfinity v4g1	Planar	579	*	Stone/ imp
18	Hector 2	Kurt Franke	561		Qscan -> replicator
19	B-Panama X	Steven Morrell	518		Stone/ replicator
20	Boombastic	Maurizio Vittuari	514	*	Bomber
21	Evol Cap 6.6	John Wilkinson	394	*	Replicator
22	NC 94	Wayne Sheppard	387		Stone/ imp
23	Cannonade	P.Kline	382		Stone/ imp
24	Thermite II	Robert Macrae	380	*	Bomber
25	Torch t17	P.Kline	378		Bomber

Lucky 3, Derision, and Request v2.0 have been dropped from the hall to make way for Thermite II, Evol Cap 6.6, and Boombastic. Now there are nine active warriors climbing the ladder.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	55/	18/	27	CoreWarrior	M R Bremer	191	91
2	51/	14/	35	Pretentious	Ian Oversby	188	32
3	57/	30/	13	Assassin XII-b	Andy Nevermind	184	6
4	50/	18/	32	Gluttony	JEL	183	42
5	56/	34/	10	test	J E Long	177	11
6	43/	10/	47	Test2	George Eadon	175	99
7	44/	18/	37	Hyakutake C/1996 B2'	Scott Manley	171	13
8	51/	34/	14	Paper Eater	David Boeren	168	23
9	43/	27/	30	Uvavu II (revistited)	Scott Manley	160	34
10	43/	27/	30	Uvavu II (test 25)	Scott Manley	159	30
11	40/	22/	39	Shabba	J E Long	158	24
12	34/	16/	50	Banshee VI	Andy Nevermind	153	57
13	43/	41/	16	Auntie v0.2	Ian Oversby	145	70
14	30/	17/	53	AB Scanner 2.9.3	Chris Hodson	144	36
15	43/	45/	12	Assassin XI	Andy Nevermind	142	17
16	36/	34/	29	Jezebel's Revenge CXX	Andy Nevermind	138	21
17	39/	50/	11	Fei-Oh v0.6	David Boeren	129	29
18	32/	49/	18	Slaver v1.1	Christoph C. Birk	115	83
19	34/	55/	11	XPEH	Julian	113	2
20	31/	50/	18	MJv5	J. E. Long	112	68
21	24/	42/	34	Fizz Wiz v0.1	David Boeren	105	19
22	24/	45/	31	Inchworm	J E Long	103	18
23	24/	53/	24	Constrictor v2	Julian	94	4
24	7/	45/	48	Test-bomb	Jens Heunemann	69	27
25	13/	59/	28	193g014 pop 500.2	Martin M. Pedersen	67	1

J E Long has made an apperance on the '94 draft hill as has Boeren--as King! The last time I remember a b-hill author vaulting to the top of the '94 hill was when Jippo's Silk Warrior claimed the top spot. But perhaps Marsden's Mirage did so recently. I can't be sure.

The Hint

Just a short hint today since I'm feeling quite ill and want to go home.

In the golden age, you could make a simple spl/jump scanner with a coreclear and expect to kill replicators. We all know this isn't true anymore. The evolution of paper products has forced scanners to move to spl/spl/jump bombs and spl/dat coreclears. Sometimes spl/spl/dat clears are needed for diehard type replicators, but they can also fail. How do you kill these things? Try using a spiral clear with 381 as an increment. It has a scan 2667 and a scan 1143 number of 7 and 3 respectively. It should be able to eliminate 3 and 7 point imps. 127 is also a decent step size. (Bezzi told me all this.)

But what if you don't have time for fancy coreclears and the like but need a better endgame than just a plain dat clear? Try using

```
        mov gate, <clear
        djn.f 0, <somewhere
```

You can get a 100%c decrement stream to wrap around the core without affecting spl #0s but mutating every other instruction. Then the dat clear can clean up the cripples. I remember this from one of Kline's programs way

back when.

Planar's Corner

CDB tutorial, part 5

I don't have much time, so this part will be very short. I hope it will still be useful.

"search" is the only command we haven't described in detail yet. This command is much more useful than it seems. It looks like a command you'd only use once in a while, in interactive mode.

But we can also put it to good use in loops and macros. Have a look at Fahrenheit (in Core Warrior 9). Say you want to run it until the first MOV (the "ptr" line) is bombed. You cannot use Stefan's "check" macro, because the operands of "ptr" are changed by the ADD in the normal operation of the warrior. What you want to do is compare the "ptr" line with "MOV.I <something, <otherthing". "search" is the only CDB command that can do it.

This is how I do it:

```
(cdb) @s~@0~@se mov.i <*,<*~if .==1~!
```

What it does: step once, then search for the first occurence of "MOV.I <*, <*" from address 0. The "*" are wildcards: they will match anything (here: any number). The dot address is set to this first occurence. If Fahrenheit has not bombed "ptr" yet, it will be 1. If not, it will be some other number. If there is no occurence of the search pattern in the whole core, the dot address will stay 0.

I have not tested the above code, so there must be some but in it. If anybody is reading this, find the bug and post it in the newgroup.

Another way of using "search" is to search from $ (the address before 0) for a DAT, then check if its address is less than 5. If it is, then one of Fahrenheit's instructions has been bombed. This is not perfect either, because "DAT $0, $0" is seen as the empty string by "search", just like "list", so we can't search for it.

We could also do a search for a comma "," starting from each of the 5 addresses, to check each instruction for emptyness, but this would be quite slow (as described in the docs, searching for "," will find every instruction that is not "DAT $0, $0").

-- Planar

Path: news-rocq.inria.fr!univ-lyon1.fr!pasteur.fr!jussieu.fr!rain.fr!news.sprintlink.net!
newsfeed.internetmci.com!howland.reston.ans.net!math.ohio-state.edu!magnus.acs.ohio-state
.edu!lerc.nasa.gov!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 18
Date: 26 Feb 1996 19:21:00 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 364
Message-ID: <4gt16s$1q6@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 18 February 26, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar.

Greetings.

It's me again--unfortunate for you. Bezzi threatened to fire me for the poor job I did on the last issue. I didn't think you could get fired from a job you did for free. Apparently the rules are different in Europe.

My apologies to J K Lewis for mistaking him with J K Wilkinson. How could I have done that? JKL = redcode-quiet. JKW = redcode-verbose. Won't happen again. Remember the deadline for Lewis' tournament is March 5th. Mail entries to jklewis@umich.edu.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

Last challenge: Mon Feb 26 05:33:26 PST 1996

#	%W/ %L/ %T	Name	Author	Score	Age
1	43/ 30/ 26	Grilled Octopus v0.2	David Boeren	157	16
2	42/ 34/ 24	Chameleon	M R Bremer	149	10

3	39/ 32/ 29	Thermite II	Robert Macrae	146	539
4	38/ 30/ 32	Tornado 3.0	Beppe	145	340
5	37/ 31/ 31	T.N.T.	Maurizio Vittuari	143	264
6	33/ 22/ 46	Barrage	Anton Marsden	143	12
7	31/ 18/ 51	Clisson	P.Kline	143	25
8	42/ 42/ 15	quiz	Schitzo	142	938
9	41/ 40/ 19	Frontwards v2	Steven Morrell	142	791
10	43/ 46/ 11	Memories	Beppe Bezzi	139	77
11	34/ 30/ 36	Trade Wars	P.Kline	139	34
12	40/ 42/ 17	Mirage 1.5	Anton Marsden	138	452
13	43/ 48/ 9	Wild Card	M R Bremer	137	92
14	28/ 18/ 54	Impfinity v4g1	Planar	137	738
15	26/ 15/ 59	Hazy Shade Of Winter	John K W	137	167
16	29/ 22/ 49	Haziest Shade Of Winter	John K W	137	4
17	39/ 41/ 20	Wraith	Kurt Franke	137	18
18	37/ 38/ 25	C I A	Anders Ivner	137	1
19	34/ 32/ 33	Torch t18	P.Kline	136	1317
20	29/ 24/ 47	Link	Kurt Franke	134	41
21	32/ 29/ 39	Jack in the box	Beppe Bezzi	134	1305
22	23/ 12/ 66	Evol Cap 6.6	John Wilkinson	134	553
23	26/ 19/ 55	Blizzard	Anton Marsden	132	258
24	30/ 29/ 40	patroclus	Kafka and Kurt	131	334
25	37/ 46/ 17	test	me	129	2

Weekly age: 159
New warriors 10 Turnover/age rate 6%
Average age: 333 (308 last week, 249 the week before)
Average score: 139 (139 last week, 132 the week before)
The 25 warriors on the hill are represented by 14 authors.
(Lost Karl Lewin’s Night Train)

Boeren has been nothing but dominate. Grilled Octopus v0.1 was on top of the hill most this week, but was strongly contested by Memories and Frontwards v2, each claiming the number one rank for more than a few challenges. And then replicators Night Train and Hector 3 fell off the hill hurting the scanners’ scores and dropping them into the middle of the pack. None the less, David started a new test series to consolidate his position. Clisson took the top spot for awhile as testing continued, but quickly fell to the successor--Grilled Octopus v0.2. Since it’s introduction, only Chameleon--another new warrior--has been able to steal the lead, and for only one challenge. Can his dominance continue?

This week also marks the return of pspace. Somewhat neglected for a few months, pspace is back with a vengence. Is it any coincidence that bombers started falling off the hill shortly after? Blue Funk 5 was doing very well at the beginning of the week, but with Boeren testing his new pspacer and Trade Wars making it onto the hill, it was easy for Marsden’s new paper warrior to force Blue off. seventyfive was pushed off much the same way.

With the code bloat associated with p-warriors, qscanners should score some easy points. Thermite has enjoyed a boost in score, and Barrage is doing well. I suppose we’ll see the real test of booting versus decoy making as more qscans appear to do battle. The pspace cycle: Here we go again . . .

Vampires are attempting a comeback with Paulsson’s classic myVamp seen on the hill earlier. Wraith has managed to cling onto the lower half of the heap. It’s too early to tell if it has staying power.

M R Bremer (me) finally returns with Chameleon and Wild Card. Both programs have been ranked number one albeit for only one challenge each. Ivner didn’t much care for the loss of seventyfive, so he’s back with C I A. And what exactly are intelligence bombs anyway?

Lots of significant losses this week with Night Train and Boombastic falling the farthest. Night Train by Karl Lewin stops at 10th place in the Hall Of Fame at an age of 755. Maurizio Vittuari’s Boombastic will rest at 21st place at an age of 521.

Torch t17 and Jack in the box are both still alive and kicking. Will a pspace comeback help or hurt the dynamic duo? Find out next week.

94 - What's New

#	%W/ %L/ %T	Name	Author	Score	Age
1	43/ 30/ 26	Grilled Octopus v0.2	David Boeren	157	16
2	42/ 34/ 24	Chameleon	M R Bremer	149	10
6	33/ 22/ 46	Barrage	Anton Marsden	143	12
11	34/ 30/ 36	Trade Wars	P.Kline	139	34
13	43/ 48/ 9	Wild Card	M R Bremer	137	92
16	29/ 22/ 49	Haziest Shade Of Winter	John K W	137	4
17	39/ 41/ 20	Wraith	Kurt Franke	137	18
18	37/ 38/ 25	C I A	Anders Ivner	137	1
20	29/ 24/ 47	Link	Kurt Franke	134	41
25	37/ 46/ 17	test	me	129	2

94 - What's No More.

#	%W/ %L/ %T	Name	Author	Score	Age
26	38/ 45/ 18	Test	J E Long	131	27
26	36/ 48/ 16	test	Beppe Bezzi	125	3
26	33/ 45/ 22	Boombastic	Maurizio Vittuari	122	521
26	2/ 2/ 0	test	P.Kline	6	23
26	36/ 50/ 14	seventyfive	Anders Ivner	122	311
26	1/ 1/ 1	Blur	Anton Marsden	6	27
26	17/ 12/ 72	Night Train	Karl Lewin	121	755
26	25/ 30/ 45	Blue Funk 5	Steven Morrell	120	152
26	22/ 23/ 56	Hector 3	Kurt Franke	120	266
26	1/ 1/ 2	Grilled Octopus v0.1	David Boeren	5	192

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
19	34/ 32/ 33	Torch t18	P.Kline	136	1317
21	32/ 29/ 39	Jack in the box	Beppe Bezzi	134	1305
8	42/ 42/ 15	quiz	Schitzo	142	938
9	41/ 40/ 19	Frontwards v2	Steven Morrell	142	791
14	28/ 18/ 54	Impfinity v4g1	Planar	137	738
22	23/ 12/ 66	Evol Cap 6.6	John Wilkinson	134	553
3	39/ 32/ 29	Thermite II	Robert Macrae	146	539
12	40/ 42/ 17	Mirage 1.5	Anton Marsden	138	452
4	38/ 30/ 32	Tornado 3.0	Beppe	145	340
24	30/ 29/ 40	patroclus	Kafka and Kurt	131	334
5	37/ 31/ 31	T.N.T.	Maurizio Vittuari	143	264
23	26/ 19/ 55	Blizzard	Anton Marsden	132	258

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Torch t18	P.Kline	1317	*	Bomber
2	Jack in the box	Beppe Bezzi	1305	*	P-warrior
3	quiz	Schitzo	938	*	Scanner/ bomber
4	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
5	Agony II	Stefan Strack	912		CMP scanner
6	Blue Funk	Steven Morrell	869		Stone/ imp
7	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
8	Frontwards v2	Steven Morrell	791	*	One shot scanner
9	Blue Funk 3	Steven Morrell	766		Stone/ imp
10	Night Train	Karl Lewin	755		Replicator
11	Impfinity v4g1	Planar	738	*	Stone/ imp
12	HeremScimitar	A.Ivner,P.Kline	666		Bomber
13	La Bomba	Beppe Bezzi	650		Qscan -> replicator
14	myVamp v3.7	Paulsson	643		Vampire
15	Armory - A5	Wilkinson	609		P-warrior
16	juliet and paper	Bremer & Bezzi	607		P-warrior
17	Phq	Maurizio Vittuari	589		Qscan -> replicator
18	Hector 2	Kurt Franke	561		Qscan -> replicator
19	Evol Cap 6.6	John Wilkinson	553	*	Replicator
20	Thermite II	Robert Macrae	539	*	Bomber
21	Boombastic	Maurizio Vittuari	521		Bomber

22	B-Panama X	Steven Morrell	518	Stone/ replicator
23	Mirage 1.5	Anton Marsden	452 *	Scanner/ bomber
24	NC 94	Wayne Sheppard	387	Stone/ imp
25	Cannonade	P.Kline	382	Stone/ imp

Anton Marsden joins the ranks of the Hall of Fame replacing Torch t17.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Mon Feb 26 06:05:01 PST 1996

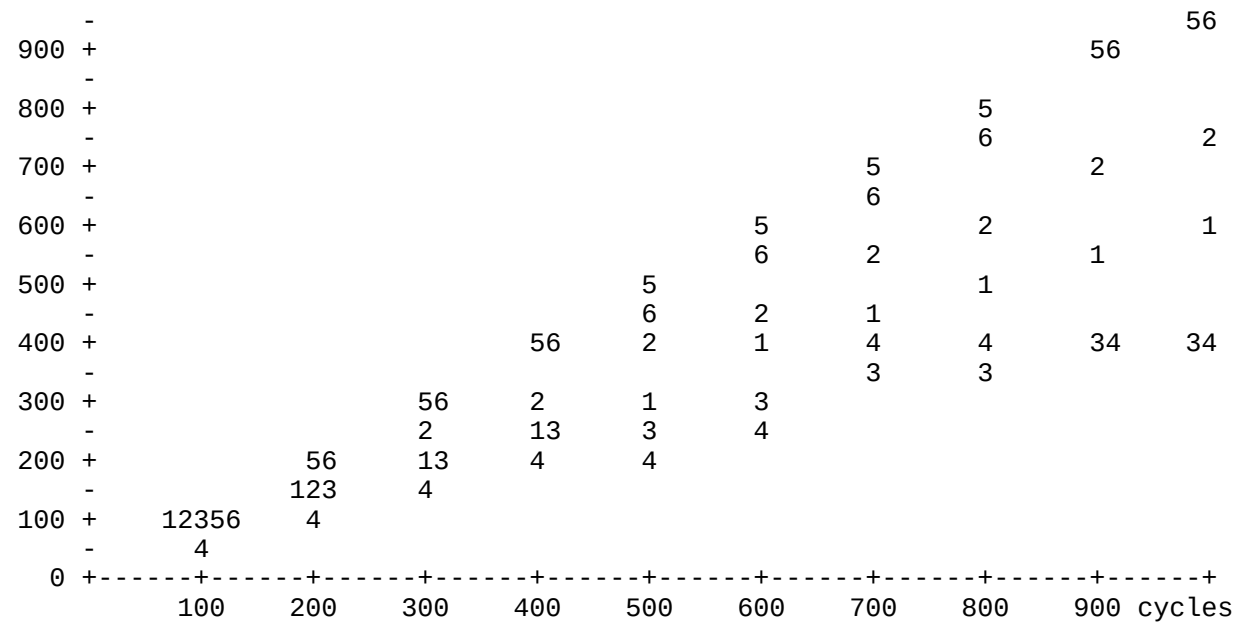
#	%W/ %L/ %T	Name	Author	Score	Age
1	52/ 14/ 34	Pretentious	Ian Oversby	191	78
2	52/ 19/ 29	Gluttony	JEL	184	88
3	58/ 33/ 9	Assassin XII-b	Andy Nevermind	184	52
4	55/ 35/ 10	test	J E Long	176	57
5	55/ 34/ 11	CoreWarrior	M R Bremer	175	38
6	48/ 22/ 31	Shabba	J E Long	174	70
7	47/ 20/ 33	Hyakutake C/1996 B2'	Scott Manley	174	59
8	45/ 29/ 26	Uvavu II (revistited)	Scott Manley	162	80
9	45/ 29/ 26	Uvavu II (test 25)	Scott Manley	161	76
10	49/ 41/ 10	Paper Eater	David Boeren	157	69
11	49/ 43/ 8	Assassin XI	Andy Nevermind	155	63
12	40/ 39/ 20	Swan's Lament	Chris Arguin	142	26
13	38/ 35/ 27	Jezebel's Revenge CXX	Andy Nevermind	141	67
14	41/ 43/ 16	Lenochka 3	Julian	140	7
15	44/ 49/ 6	Fei-Oh v0.6	David Boeren	139	75
16	31/ 25/ 44	AB Scanner 2.9.3	Chris Hodson	138	27
17	42/ 46/ 12	XPEH 2	Julian	138	6
18	39/ 42/ 19	Swan's Lament	Chris Arguin	136	10
19	39/ 46/ 14	test	Julian	133	8
20	39/ 54/ 7	XPEH	Julian	123	48
21	28/ 45/ 27	Evil Elf	Andy Nevermind	112	5
22	30/ 50/ 20	Pommes-Ketchup V1.03	S. Schroeder	110	4
23	28/ 47/ 26	Inchworm	J E Long	109	64
24	27/ 51/ 23	Blubbi V1i.0b	bjoern guenzel	103	11
25	28/ 68/ 4	A-Cluster v2	Iain Hogg	88	1

Is your only goal in life getting a warrior on the 'pro' hill? (If it is you should seek professional help.) Want to know the tricks those mensa geniuses use to tweak their programs? Just mail your warrior to us at Core Warrior. We'll attempt to point out strengths, weaknesses, and strategies you can use to improve your core warring skills. And requests for hints are always welcome.

The Hint

Modern replicators breed like epileptic rabbits. Scanners need to take extreme measures to eradicate Timescape and DieHard style papers. The trick is to stun them as rapidly and thoroughly as possible. Simple spl/jmp bombs aren't enough. Even spl/spl/jmp bombs may be inadequate without a multipass coreclear. So what type of payload should a warrior deliver to maximize stunning power? A paper product typically employs parallel processes to achieve replication. I tested 6 stun bombs by executing 6 parallel processes on the first bomb instruction. The number to total processes after 100, 200, 300, etc. cycles was recorded and entered into the graph below.

#Processes
1000 +



These are the payloads delivered:

```
1. spl 0    2. spl 0    3. spl 0    4. spl -1    5. spl #N+1   6. spl #2, 0
   jmp -1      spl 0       spl 0       spl -1       . . .         mov -1, }-1
               jmp -2      spl 0       spl -1       mov -N, }N
                          (spl 0)     (spl -1)
```

The raw data:

Cycle						
100	70	85	89 (105)	49 (67)	101	85
200	132	161	142 (188)	96 (128)	202	180
300	195	238	189 (265)	129 (193)	303	277
400	257	314	228 (330)	192 (252)	402	375
500	319	391	263 (393)	193 (315)	501	474
600	382	466	294 (454)	240 (378)	598	574
700	444	543	325 (513)	341 (443)	695	673
800	507	619	356 (564)	384 (504)	786	773
900	569	696	383 (617)	385 (567)	877	873
1000	632	771	414 (676)	384 (628)	974	973

Initially, the bombs were limited to 3 instructions, but the split carpets performed so miserably I executed them with an extra instruction just to see how much improvement it would make. The 4 line versions are shown in parentheses. The graph contains the 3 line versions.

The analysis:

The spl/jmp bomb is used for a reference point. It is not effective against modern replicators.

The spl/spl/jmp bomb is more powerful and attacks three locations as opposed to two. There is little difference if the jmp instruction is the first to execute.

The spl 0 carept is only effective if four instructions long. However, its performance degrades rapidly if the lead spl 0 is not the first instruction to be executed.

The spl -1 carpet is ineffective even in the 4 instruction version. A 5 instruction carpet with the middle split executing first generates about the same number of processes as the spl/spl/jmp bomb.

The spl/mov bombs generate the most amount of processes. The incendiary bomb is the equivalent of a 6 instruction split carpet when the move is executed. However, sometimes the other instruction is executed reducing the effectiveness of the bomb. In addition, the powerful part (the move) attacks only one instruction. It is very easy to miss the active part of a silk module with this bomb. The last spl/mov bomb is slightly less effective

in stunning capability, but is more effective overall. If the move is the first instruction to be executed than the bomb is the equivalent of a 6 instruction spl 0 carpet (same as the incendiary bomb). However, if the spl #2 is first to execute, we get a continously expanding split carpet-- forty-three instructions long after 1000 cycles. This could even overwrite other silk modules. There are some disadvantages however. The split carpets can color core thus distracting the scanner. And the bomb only attacks two instructions.

Real life test:
Wild Card is a spl/spl/jmp scanner. At this time it is scoring around 131 points on the hill. A similar scanner using spl/mov bombs only scored 111 points. Changing the bombs to spl/spl/mov increased the score to 115 points, BUT the stun power of this bomber is not as good as the spl/mov. The double split spends more time increasing the size of the carpet and not stunning. The increase in the score is most likely due to the increased coverage of the bomb. I didn't spend any time trying to integrate the bomb components into the executing code. The resulting warrior is more fragile and larger resulting in an increase in losses. It also attacks the split carpets. By eliminating these problems, perhaps someone could write a more credible, quick stunning scanner.

Questions? Concerns? Comments? Complaints? Mail them to people who care:
Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu>

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Newsgroups: rec.games.corewar
Subject: Core Warrior 19
Date: 5 Mar 1996 05:19:11 -0500
Organization: Storm King Ind. Inc.
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```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                              ,    .
$$$$$$P'   '                              .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 19 March 4, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar.

Notice: ftp.csua.berkeley.edu is out of service, eveen is Michael assured it will be soon OK You can download Pmars at Terry's web page:

   http://www.infi.net/~wtnewton/corewar/

Greetings.

Hi,
after two weeks I'm back again to you with a new issue of Corewarrior. I'm a bit sorry for delay, but I don't know how, Myer managed to transmit me its intestinal disease. I heard of computer viruses transmitted in the net, but I were thinking that Montezuma curse were not one of them :-)

This issue we have a lot of interesting posting: Frontwards v2 by Steven Morrell, that's now near 1000 age in 94 hill, Wayne Sheppard's

Cleaver/75, an interesting imp scanning engine, and a p-space hint written by David Boeren, maybe the 'secret of the Octupus' can be found here.

Many thanks to them and to anyone wishing to send us something to publish. As I tell every time, anyone wanting to join the staff is welcome.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

Last challenge: Mon, 4 Mar 1996 06:23:37 -0800

#	%W/	%L/	%T	Name	Author	Score	Age
1	43/	31/	26	Grilled Octopus v0.3	David Boeren	155	34
2	44/	36/	20	Stepping Stone	Kurt Franke	152	30
3	39/	29/	32	Tornado 3.0	Beppe	150	490
4	41/	35/	24	Chameleon	M R Bremer	146	160
5	39/	32/	30	T.N.T.	Maurizio Vittuari	146	414
6	39/	34/	27	Thermite II	Robert Macrae	145	689
7	43/	41/	16	quiz	Schitzo	145	1088
8	40/	35/	25	C I A	Anders Ivner	145	1
9	42/	40/	18	Frontwards v2	Steven Morrell	144	941
10	27/	14/	59	Hazy Shade Of Winter	John K W	141	317
11	44/	47/	10	Memories	Beppe Bezzi	141	82
12	32/	23/	45	Clisson	P.Kline	141	16
13	29/	18/	53	Impfinity v4g1	Planar	140	888
14	36/	32/	32	Torch t18	P.Kline	139	1467
15	32/	26/	42	Barrage	Anton Marsden	139	162
16	41/	48/	11	Wild Card	M R Bremer	135	242
17	24/	13/	63	Evol Cap 6.6	John Wilkinson	135	703
18	39/	44/	17	S.E.T.I. II	John K W	134	90
19	39/	45/	16	Mirage 1.5	Anton Marsden	134	602
20	33/	31/	36	Jack in the box	Beppe Bezzi	134	1455
21	22/	10/	68	Q.S.P.	John K W	133	3
22	39/	47/	14	Hipshot	J E Long	131	33
23	26/	20/	54	Blizzard	Anton Marsden	131	408
24	31/	34/	35	Breeder V3.1	J E Long	129	31
25	4/	0/	0	test cia	Anders Ivner	12	2

Weekly age: 150
New warriors 10 Turnover/age rate 7%
Average age: 414 (333 last week, 308 the week before)
Average score: 135 (139 last week, 139 the week before)
The 25 warriors on the hill are represented by 14 authors. Congratulation to J E Long making the 94 hill with a couple of warriors.

Not many news this week, even if the number of challenges has been very high. New version of the Octopus holds hilltop from its coming, apart a very brief lead by Franke's new vampire, Stepping stone. No other challenger did the hill in the top positions.

quiz joined the 'we have a four number age' restricted club and Frontwards is near passing 1000 age. At present hill aging rate Impfinity too is scheduled to pass this score for next week.

Apart the pspacers Grilled Octopus and Chameleon, and the vampire Stepping Stone, bombers seem to be the winning strategy compared to scanners and replicators. Qscanners too seem to have lost a little

All aged warriors hold their positions, worth noting are quiz and

Frontwards, still in the top ten.

---

94 - What's New

#	%W/	%L/	%T	Name	Author	Score	Age
1	41/	31/	28	Grilled Octopus v0.3	David Boeren	152	1
3	43/	38/	19	Stepping Stone	Kurt Franke	149	1
7	38/	36/	26	C I A	Anders Ivner	139	1
8	38/	36/	26	test cia	Anders Ivner	139	1
12	43/	48/	10	Memories	Beppe Bezzi	137	1
15	28/	25/	47	Clisson	P.Kline	131	1
17	39/	45/	16	S.E.T.I. II	John K W	132	1
21	18/	10/	71	Q.S.P.	John K W	126	1
23	36/	52/	12	Hipshot	J E Long	120	1
23	29/	35/	35	Breeder V3.1	J E Long	124	1

Two entries in the top five: Grilled Octopus v0.3 and Stepping Stone.

---

94 - What's No More.

#	%W/	%L/	%T	Name	Author	Score	Age
26	28/	35/	38	patroclus	Kafka and Kurt	121	363
26	2/	1/	0	Wraith	Kurt Franke	7	136
26	26/	29/	46	Link	Kurt Franke	123	134
26	2/	2/	0	Grilled Octopus v0.2	David Boeren	5	133
26	0/	1/	3	Trade Wars	P.Kline	4	38
26	2/	1/	0	test MT00	Beppe Bezzi	7	27
26	0/	0/	4	Clisson	P.Kline	4	26
26	1/	1/	1	C I A	Anders Ivner	5	26
26	0/	0/	3	Haziest Shade Of Winter	John K W	4	14
26	34/	48/	19	test	me	120	9

Patroclus is the only aged warrior to leave us.

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
14	36/	32/	32	Torch t18	P.Kline	139	1467
20	33/	31/	36	Jack in the box	Beppe Bezzi	134	1455
7	43/	41/	16	quiz	Schitzo	145	1088
9	42/	40/	18	Frontwards v2	Steven Morrell	144	941
13	29/	18/	53	Impfinity v4g1	Planar	140	888
17	24/	13/	63	Evol Cap 6.6	John Wilkinson	135	703
6	39/	34/	27	Thermite II	Robert Macrae	145	689
19	39/	45/	16	Mirage 1.5	Anton Marsden	134	602
3	39/	29/	32	Tornado 3.0	Beppe	150	490
5	39/	32/	30	T.N.T.	Maurizio Vittuari	146	414
23	26/	20/	54	Blizzard	Anton Marsden	131	408
10	27/	14/	59	Hazy Shade Of Winter	John K W	141	317
16	41/	48/	11	Wild Card	M R Bremer	135	242

quiz joined the the 1000+ exclusive club. 1500 milestone is at easy reach for Torch and Jack.

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Torch t18	P.Kline	1467	*	Bomber
2	Jack in the box	Beppe Bezzi	1455	*	P-warrior
3	quiz	Schitzo	1088	*	Scanner/ bomber
4	Frontwards v2	Steven Morrell	941	*	One shot scanner
5	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
6	Agony II	Stefan Strack	912		CMP scanner
7	Impfinity v4g1	Planar	888	*	Stone/ imp
8	Blue Funk	Steven Morrell	869		Stone/ imp
9	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
10	Blue Funk 3	Steven Morrell	766		Stone/ imp
11	Night Train	Karl Lewin	755		Replicator

12	Evol Cap 6.6	John Wilkinson	703	*	Replicator
13	Thermite II	Robert Macrae	689	*	Bomber
14	HeremScimitar	A.Ivner,P.Kline	666		Bomber
15	La Bomba	Beppe Bezzi	650		Qscan -> replicator
16	myVamp v3.7	Paulsson	643		Vampire
17	Armory - A5	Wilkinson	609		P-warrior
18	juliet and paper	Bremer & Bezzi	607		P-warrior
19	Mirage 1.5	Anton Marsden	602	*	Scanner/ bomber
20	Phq	Maurizio Vittuari	589		Qscan -> replicator
21	Hector 2	Kurt Franke	561		Qscan -> replicator
22	Boombastic	Maurizio Vittuari	521		Bomber
23	B-Panama X	Steven Morrell	518		Stone/ replicator
24	Tornado 3.0	Beppe Bezzi	490	*	Bomber
25	T.N.T.	Maurizio Vittuari	414	*	Bomber

NC 94 and Cannonade leave the Hall, replaced by Tornado 3.0 and T.N.T. The first 4 warriors in the hall are living, the 1500 milestone is now near and 2000 too isn't that far.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft
Last challenge: Mon Mar 4 21:42:59 PST 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	56/	33/	11	Hipshot	J E Long	179	27
2	45/	19/	36	Breeder V3	J E Long	171	47
3	43/	21/	37	Pretentious v0.2	Ian Oversby	164	2
4	49/	36/	15	Test	Ian Oversby	163	1
5	48/	35/	16	Auntie v1.0	Ian Oversby	161	32
6	45/	30/	24	Evil Elf V.8	Andy Nevermind	161	36
7	37/	14/	49	silkworm v3.0	Brian Haskin	159	48
8	45/	35/	20	Judge Nutmeg	Scott Manley	155	51
9	37/	25/	38	Hyakutake C/1996 B2 +	Scott Manley	149	8
10	34/	20/	46	AB Scanner 2.9.4	Chris Hodson	148	62
11	41/	38/	22	Paralyze v0.1	Ian Oversby	144	31
12	40/	37/	23	Swan's Lament	Chris Arguin	142	92
13	31/	23/	47	RingWorm_v2.7	Calvin Loh	140	38
14	42/	44/	14	Maniac v0.3	Ian Oversby	139	25
15	36/	34/	30	Hyakutake Rising	Scott Manley	138	50
16	35/	38/	28	Forked Lite Ning 4.074	Ansel Greenwood Serm	132	55
17	27/	26/	47	XXXOOO v2.0	Joshua Houk	128	13
18	32/	36/	33	Pommes-Ketchup V1.32	S. Schroeder	128	3
19	32/	37/	31	Pommes-Ketchup V1.31	S. Schroeder	127	4
20	28/	42/	31	Blubbi V1i.0b	bjoern guenzel	114	58
21	32/	50/	18	Pensive v0.1	Ian Oversby	113	12
22	25/	42/	33	Test-bomb V1.5	Jens Heunemann	108	15
23	33/	59/	8	Optma Dwarf v3.0	Phoenix	107	44
24	27/	49/	24	Pink Bunny V 2.1	Neil Padgett	106	52
25	4/	0/	0	El Cheapo Scanner	David Boeren	12	64

Sorry, but I haven't checked the level of the beginners hill submitting one of my warriors. J E Long leads it, with a couple of warriors that are in the pro hill too.

The Hint
Memories

Memories is my first cmp scanner of success, having climbed, in one of its previous versions, up to the top position. I started it as a 94 improvement of the classic Iron gate, but, tweaking here and there, it's now like my old knife I changed three times the blade and twice

the handle but it’s always my old knife. :-)

The article is a bit long, but shows how to, or better how I, work to make a warrior. Prepare your coffee, Italian of course, and be sure to have cigarettes for the night.

Scanners are the kind of warriors that look at core and attack it only when they find something. They can be divided in two big subclasses, according to the instruction they use to scan the core: cmp scanners and jmz (most usually jmz.b) scanners.

Scanner’s code is composed by three parts: scan, attack and clear. The clear is a must because usually scanners don’t kill the enemy with their attacks but drop bombs that make it generate many processes, the so called stun attack; so we have to kill them filling core with dats once finished our scan routine.

Wishing to make a cmp scanner I started with Wayne Sheppard’s Iron Gate, an 88 classic scoring more than 900 age in the 94 hill too. Here is is code:

```
;redcode-94
;name Iron Gate
;author Wayne Sheppard
;strategy cmp scanner-SPL/JMP-Gate

dist    equ 73
scan    equ dist*2

        add     off,    @x      ;Scan block. It exits the b-field of the cmp
loc     cmp     dist-1, -1      ;instruction if the lines pointed by the cmp
        slt     #14,    @x      ;itself are different
        djn     -3,     <7000

        mov     j,      @loc    ;Attack block. Drops a spl 0/ jmp -1 bomb and
x       mov     s,      <loc    ;restore value of b-field
        sub     new,    @x
        jmn     loc,    loc-1   ;attacking loc-1 line starts the core clear

s       spl     #0,     <1-dist ;core clear that end in an imp gate
        mov     2,      <-2
j       jmp     -1
new     dat     <0-dist,<0-dist-1
off     dat     <scan,  <scan
end
```

Worth noting is the use of indirect addressing @x every time we have to refer to label ’loc’ That’s because doing such way, should any of those @x be decremented, the warrior will continue working unhindered because the line x-1 is pointing ’loc’ too

Iron Gate has been very successful in 88 and early 94, before silk paper come in use, but now it has to be enhanced some way to compete with newer warriors. First step was changing the bomb, from spl/jmp to spl/spl/jmp for a better stunning of enemy (see previous number hint) another improvement was changing the clear from backward running to continual forward running using > addressing.
Having a jmp -2 line to be used for the bomb I added a mov in the clear, making it faster, even if more vulnerable. Here is first Memories version:

[header omitted]

```
dist    equ     229     ;not the real one
scan    equ     dist*2
safe    equ     (kill-first+2)
stun    equ     kill+30

        jmp     s+1             ;jmp to clear if hit by djn stream
```

```
first   add     off,    @x      ;scan part is the same as Iron Gate
loc     cmp.f   dist-1, -1      ;Only removed the djn stream to keep core clean
        slt     #safe,  @x      ;mostly for lazyness :-)
        jmp     first

        mov     j,      @loc   ;attack block drops a wider bomb
x       mov     stun,   <loc   ;notice that we are protected from increment
        mov     stun,   <loc   ;not only decrement
        sub     s,      @x
        jmn.b   loc,    loc-1

s       spl     #-dist, <-dist-2
        mov     kill,   >first-1  ;forward running dat clear
        mov     kill,   >first-1
j       jmp     -2,     #0
off     dat     <scan,  <scan
kill    dat     <2667,  kill-first+6

for 5
        dat     0,0
rof
for MAXLENGTH-CURLINE-12
        spl     #0,#0          ;Active decoy; gain with paper lose with qscan
rof
```

The use of one of the spl #0 of the decoy as stun is needed to avoid self triggering.
Memories is bigger than Iron gate and has the same speed, this is balanced by better bombs and clear. It made the 94 hill in the top 10 positions.

Second evolution was increasing the scan speed. Being 16 lines long with a speed of .66 c we have a size speed ratio of 24, very bad compared with those of bombers like Tornado. Big we are, why not being bigger but faster? adding two lines we can scan at .8 c and reduce our size/speed ratio to 22.5 I also added a decoymaker for Frontwards pleasure :-) Here is the enhanced version:

```
org     dmake

dist    equ     509
scan    equ     dist*2
safe    equ     (last-first+1) ;decoy maker is protected
clzone  equ     (stun-first+1)
decoy   equ     -2000
dst     equ     13*4

        jmp     s+1
first   add     off,    @x      ;80%c scan engine
loc     sne.f   dist-1, -1
        add     off,    @x
        seq.f   *loc,   @loc
        slt     #safe,  @x
        jmp     first
        mov     j,      @loc
x       mov     stun,   <loc
        mov     stun,   <loc
        sub     s,      @x
        jmn.b   @x,     loc-1
s       spl     #-dist, <-dist-2
        mov     kill,   >first-1
        mov     kill,   >first-1
j       jmp     -2,     #0
off     dat     <scan,  <scan
kill    dat     <2667,  clzone

for 7
        dat     0,0
rof
stun    spl     #0,     0
```

```
for MAXLENGTH-CURLINE-12
        spl     #0,     #0
rof

dmake           ;half the decoy is reflected at dist and invisible for me
a for 11
        mov    <decoy+a*dst, <decoy+dist+a*dst
rof
last
        jmp     first
end
```

This version scored King, but then come Clisson and Paul's 'Spirals and Harmony' posting. While this version is very good against 3 pts continual imps like Night Train it's powerless against Clisson that includes a paper imp with 7+ pts So, to keep pace I had to fit a spiral clear in it, increasing imp killing power at expense of being even more fragile. The clear is like the one published by JKW in SETI, slightly modified.
Other enhancement are one more spl in the bomb, to better contrast paper, and the use of jmn at the end of the scan loop, not to jmp if 'first' is zero. All those details added 1.5 points to total score. The jmp to clear if decremented line is pointless now, the spiral clear is suicidal if decremented :-(

This is Memories as is now on the hill, as you can see it doesn't look like Iron Gate, or first Memories version anymore, but it's still the same warrior :-)

```
;redcode-94
;name Memories
;author Beppe Bezzi
;strategy cmp scanner like Iron Gate
;strategy with spl spl jmp bombs and 94 improvements
;strategy v06 changed to sne/seq scan engine
;strategy v a01 spiral clear; v b* c* super clear
;strategy v d08 details
;assert 1
;kill Memories

org     dmake

dist    equ     239             :not true
scan    equ     dist*2
safe    equ     (last-first+1)
clzone  equ     (stun-first+1)
decoy   equ     -2345           ;not true
dst     equ     13*4
ISTEP   equ     381

first   sub     off,    @x
loc     sne.f   dist-1+scan, -1+scan
        sub     off,    @x
        seq.f   *loc,   @loc
        slt     #safe,  @x
        jmn.f   first,  first
        mov     j,      @loc
x       mov     stun,   <loc
        mov     stun,   <loc
        mov     stun,   <loc
        sub     s,      @x
        jmn.b   @x,     first
        add.a   #ISTEP+1,cpt
        mov     @-1,    {cpt
j       jmp     -2,     #0
off     dat     -scan,  -scan
cpt     spl     #2,     #3
kill
s       spl     #-dist, -dist-3
```

```
for 7
        dat     0,0
rof
stun    spl     #0,     0

for MAXLENGTH-CURLINE-12
        spl     #0,     #0
rof

dmake
a for 11
        mov     {decoy+a*dst,   {decoy+dist+a*dst
rof
last
        jmp     loc
end
```

Extra Extra
Frontwards v2 by Steven Morrell

Here is the version of Frontwards that is currently on the hill. I think it is the same as the code from round 8.

The differences between the first version and this one are very subtle. First, the SPL 30 at "cc" is not a SPL #, as it was in the original. This avoids the logjam that can be caused trying to stun imp-rings. It also kills off low-process bomber/scanners immediately, so that damage to the core-clear bombs won't hurt. The other difference is an extra DAT round of core-clearing. This does well against moderately heavy imp-rings.

Here is a map around: Most of this code is just decoy that Frontwards doesn't detect until the second time through. The lines from p to cc hold the scanning pointer and the battery of bombs used for the two-pass core-clear. The 6 lines starting with top is the scan engine and the core-clear engine.

An advantage of separating the data from the code is that the CMP instruction doubles as the thing to add to p to get this to scan. It is hard-wired to 2*step.

```
;redcode-94 verbose
;name  Frontwards v2
;author  Steven Morrell
;strategy  One-shot/two-pass
;assert VERSION >= 80

step equ 12
offset equ 608  ;608
stream equ cc-1406   ;-806
first equ (cc-offset+202) ;203
gate equ -50

org boot

      stp #1,{1
for 17
      stp #1,}1
      stp.b #1,{1
      stp #1,{1
rof
      stp #1,}1

p     dat #first,{first+step
      dat #30,{-1
      dat #30,{-2
      stp.b #30,{-3
cc    spl 30,stream-660

;      stp #1,{1
;      stp #1,}1
```

```
boot  mov top+5,top+offset+5

for 5
      mov {boot,<boot
rof
boot2 mov cc,cc+offset
for 4
      mov {boot2,<boot2
rof

      jmp x+offset

      stp #1,{1
      mov {-1,<-1

;      stp.b #1,{1
      stp #1,{1
      stp #1,}1

      stp.b #1,{1
      stp #1,{1

top   sub x,@x
x     sne *p,@p
      djn.f top,<stream
      spl #0,<p
      mov @1,}p
      djn -1,<cc

for 6
      stp #1,}1
      stp.b #1,{1
      stp #1,{1
rof

end
```

"Steven C. Morrell" <morrell@math.utah.edu>

Extra Extra
Cleaver /75
by Wayne Sheppard

Guys, here's the code for Cleaver/75. I was about to post it to r.g.c when I thought that you might want to include it in the CoreWarrior.

So everyone doesn't think I was kidding, here is how I can scan for imps with two lines of code. As a warning, this can't catch 94 imps (mov #1234,2667), but it does detect 88 and diehard imps. This code can catch 3, 7, and 9 point imps.

3, 7, and 9 point imps all have one thing in common, they are all evenly divisable by 127. This has been used to make spiral clears that can kill imps before. But it can also be used to detect imps. If you MOD an instruction with DAT 127,127 the result will be 0,0 if the instruction was a multiple of 127. Then a simple JMZ.F to the imp routine.

I implemented this at the bottom of a bombing loop.

```
        ADD offset,loc
loc     MOV starta,startb
        jmz.f -2,*loc
        mod impdat,*loc
        jmn.f -4,*loc
        ;impstomper starts here
```

The final version adds another indirect bomb for a total speed of .75c. But 19 lines of code and no paper protection makes the final version score too low.

```
;redcode-94
;name Cleaver/75
;author Wayne Sheppard
;strategy .75c bomber/scanner with active imp scan
;strategy

mod10 equ -70
starta equ hit-1+mod10
startb equ starta+mod10*2
irun equ loc-15
      ;hit here
hit   mov bomb,*loc ;not in main loop, executed only when mod doesnt find imp
      mov bomb,@loc
loc   mov starta,@startb
      sub s,loc
      jmz.f -3,*loc     ;check a-pointer
      mod i127,*loc     ;see if multiple of 127
      jmn.f hit,*loc    ;if not, bomb it and continue bombing
      jmp scc           ;jump to SpiralCC
i127  dat 127,127
      dat 0 ;hit here
scc   add.x {loc,*loc   ;get impnumber into A
      mov *loc,scc      ;move increment to where I can use it
      jmn.f 0,{loc      ;back up to start of imp
      mov s,*loc        ;spiral SPL
      add scc,loc
      djn -2,#400
s     spl #mod10*3,<mod10*3  ;Then CC and GATE
      mov 1,<-2
bomb  dat <mod10*3-1,mod10
```

wsheppar@st6000.sct.edu (Wayne Sheppard)

Extra Extra
Pspace hints
by David Boeren

Hello! This is David Boeren providing you with an extra hint this week. Some of you have been wondering how I've managed to jump out of nowhere and become King of the Hill, so I've decided to write an article and tell you all about some pspace techniques that I've been experimenting with. I hope you all learn something, and feel free to write me if you have any questions or ideas of how to use or improve these techniques. Remember, the Hill is for competition, but Core Warrior is for cooperation and sharing of ideas!

This first trick is for those of you who don't want to write switching programs, in fact, it's mostly a trick for bombers. Poor bombers always get picked on for not being "smart", so perhaps these tips will help your "dumb brute" shed that image :)

The basic idea is that you can use pspace to switch key data values in your program to tune its performance. Mostly, we're talking about changing the step size, but see below for more ideas.

I think this works best with a pspace algorithm that counts losses, similar to the code posted from Clisson a while ago, since a switch-on-loss algorithm is too volatile to truly measure the change in performance. What you can do is run your regular bomber, and if you are losing too much, then set a flag and permanently switch to the new step size for the rest of the rounds. This kind of use of pspace is not really vulnerable to brainwashing, the worst they can do is make you switch to your other step, not make you change to a totally different program.

Everyone who has written a bomber knows all about what a big difference the step size can make. You know about find-N scores, and bombing-mods, and all that. Using a good step or using a bad step can make a sizable difference in your performance. But a "good" step isn't always good against EVERY opponent. Your step with a good find-23 value to whip on big scanners is going to do poorly against smaller opponents. So why not make a self-tuning bomber? A bomber that attempts to adjust itself to find a good step vs. each opponent?

The code isn't that hard, and it depends a bit on the details of your switching algorithm, but basically if you're using a switcher like Clisson which tracks total performance (whether or not you use a mod-property to detect brainwash) then you can have something like this:

```
        step    equ 95
        stepz   equ 184             ; "second chance" step

        SLT.B  *PRESULT,   #thresh   ; See if old step is losing...
        MOV.A    #stepz,   loop+1    ;     Try a new step
```

You just see if your win/loss accumulated total has slipped below a certain threshold, and if so then you alter your bomber to a new step. Now, this code doesn't trigger a permanent switch on its own, but it's quite small and it WILL continue to switch the the backup step every time the score falls below the desired performance point. Is it better to switch permanently? I don't think I know yet, but I DO know that it's riskier. You don't want a little bad luck early in the rounds to make you change to a worse step if you can help it. If you want a permanent switch, think carefully about what point to place your threshold! Depending on your code, it will hopefully only take one or possibly two MOVs to re-code your bomber with the new step, so this should not cost you too much in terms of speed. I'd do it up front before you boot.

Altering boot distance with pspace seems more uncertain than altering step sizes, but you can try it if you like. Perhaps a better idea is altering your bomb to fit the opponent. Let's say that you have a bomber with a 2-instruction bomb. With only one MOV instruction, you can change that bomb from SPL/JMP -1 for papers to STP/JMP -1 for brainwashing to DAT/JMP -1 for a DAT bomber. I'd recommend using this setup with the mini-vamp technique used by warriors like Quiksand and Koolaid, which let you drop the equivalent of three 2-instruction bombs in a loop at .5c, which is fast and makes the "waste" for the DAT/JMP-1 bomb minimal. Of course don't forget to follow your bombing run up with your usual coreclear! Did you know that any DAT bomber with a SPL/SPL/DAT coreclear can turn into a nice paper-muncher by altering your step so that your bombing run terminates after only one pass through the bombing loop? Sometimes I wonder if I ought to be telling you guys all this stuff :)

What would happen if you pswitched bombs between an anti-imp bomb and some other bomb? What if you did this with your paper? Could your program adapt to the imp-number of the opponent's spiral? What about if your vampire pswitched one instruction in its pit between a SPL and an STP, would that give you better scores vs. pspacers while still letting you hit the papers just as hard? Try it!

The next technique is something to help protect you from brainwashers. Some of you probably know about this already, but I'm sure not everyone does.

Basically, there are two types of brainwashes that I know about. One type tries to pick up your pspace pointers and brainwash you through them. The other type does essentially a coreclear of your pspace, looping to overwrite all of it with all zeros, random junk, or whatever. I call these second types "Brainwash Pits", even if they don't come from a Vampire.

The first type of brainwash is not dissimilar to programs that try to find your boot pointer and attack you through it, and the defense is the same as well. Just be sure to erase all of your pspace pointers after using them. Let me show you how I do this in Grilled Octopus:

```
sflag   DAT.F   #pdata1, #pdata2     ; pspace pointers
pflag   DAT.F   #pdata3, #pdata4     ; more pspace pointers

boot_component
        MOV.I         0,    sflag    ; Safety-net for our pspace stuff
        MOV.I         0,    pflag
boot    MOV.I   clear+1,    bdist    ; fast boot away tail first
for N
        MOV.I     {boot,    <boot
rof
        ADD.AB       #3,     boot    ; adjust to split to the correct start
        SPL.B     @boot,       #1    ; split to main program
        MOV.I         0,     boot    ; obliterate boot pointer
        DAT.F        #0,       #0    ; die
```

By using this type of boot routine and keeping all my pspace pointers packed into a couple of DAT elements, I can erase my "dangerous" data quickly. The SPL booting method lets me split to my main program and leave one process behind to wipe my boot pointer to protect me from papers that like to do A-indirect bombing. To access pspace, all I have to do is have my LDP/STP instructions reference the sflag and pflag instructions with the appropriate .AB type modifiers. Although most of the pspace code I've found in the archives always uses immediate mode to access pspace, there is no reason why this has to be so.

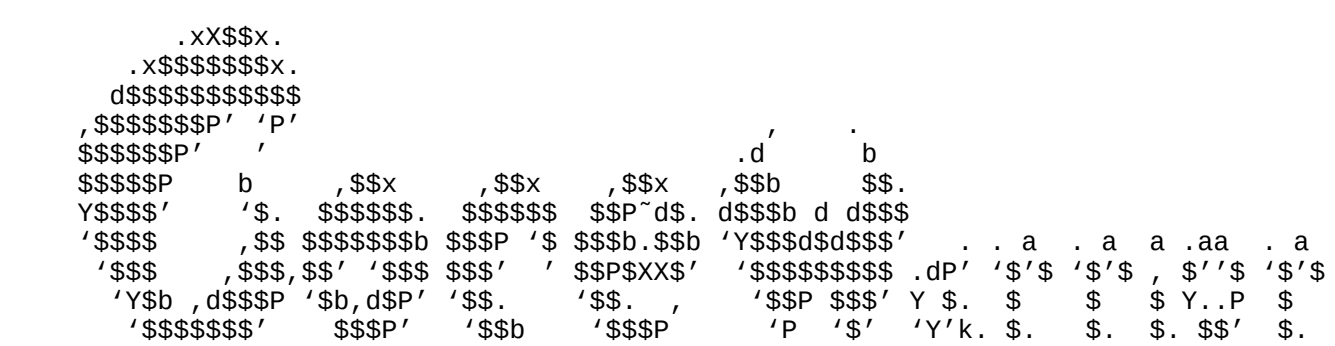
I think that the whole area of dynamically recoding programs based on pspace performance data is very underexplored at the moment, and that some of you may like to try a few experiments. Maybe you think that it's not worthwhile, but hopefully the Hill standings will convince some of you that I know something about pspace after all :)

Anyway, if there is interest in hearing more about pspace techniques, then I will probably write another article soon covering inexpensive brainwash detection, or perhaps more information on how programs which do not use component switching can benefit from using pspace as a tuning mechanism. I am also considering a description of how to use multiple pspace algorithms in conjunction with each other, such as Grilled Octopus uses. Please everyone feel free to email me and let me know what you think of the ideas presented in this article and what you'd be interested in learning more about in the future, ok?

David Boeren <akemi@netcom.com>

Questions? Concerns? Comments? Complaints? Mail them to people who care:
Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu>
Joined the staff this week, in alfabetical order:
David Boeren <akemi@netcom.com>, Steven C. Morrell <morrell@math.utah.edu>, Wayne Sheppar
d <wsheppar@st6000.sct.edu>

From news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!howland.reston.ans.net!math.ohio-state.edu!pacific.mps.ohio-state.edu!freenet.columbus.oh.us!magnus.acs.ohio-state.edu!lerc.nasa.gov!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bre Wed Mar 13 11:57:08 1996
Article: 4304 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!howland.reston.ans.net!math.ohio-state.edu!pacific.mps.ohio-state.edu!freenet.columbus.oh.us!magnus.acs.ohio-state.edu!lerc.nasa.gov!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 20
Date: 12 Mar 1996 21:45:13 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 529
Message-ID: <4i4r99$rrr@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu



Issue 20 March 11, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download Pmars at Terry’s web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

Sorry for the delay--what’s new with my irresponsability? Give me a break, I’m just a kid! Kurt Franke is kind enough to provide us with the hint this week. Thanks goes out to everyone who has contributed to Core Warrior.

--M R Bremer

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200

instruction set: ICWS ’94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	45/	32/	23	Grilled Octopus v0.5	David Boeren	158	19
2	44/	35/	21	Stepping Stone	Kurt Franke	152	144
3	39/	31/	30	Tornado 3.0	Beppe	148	604
4	43/	40/	16	quiz	Schitzo	146	1202
5	40/	34/	26	Chameleon	M R Bremer	146	274
6	40/	34/	26	Thermite II	Robert Macrae	145	803
7	36/	28/	36	Barrage	Anton Marsden	144	276
8	42/	41/	17	Frontwards v2	Steven Morrell	143	1055
9	42/	42/	16	C I A	Anders Ivner	143	62
10	44/	45/	11	Memories	Beppe Bezzi	142	196
11	29/	16/	55	Hazy Shade Of Winter	John K W	142	431
12	43/	44/	14	Hipshot V2	J E Long	142	14
13	37/	32/	31	T.N.T.	Maurizio Vittuari	142	528
14	43/	44/	14	Test	J E Long	142	2
15	31/	21/	48	Impfinity v4g1	Planar	141	1002
16	36/	32/	32	Torch t18	P.Kline	140	40
17	39/	38/	23	myConfuser	Paulsson	139	16
18	29/	21/	49	Blizzard	Anton Marsden	137	522
19	29/	22/	49	Gem of the Ocean	P.Kline	136	1
20	25/	14/	61	Evol Cap 6.6	John Wilkinson	135	817
21	41/	47/	12	Wild Card	M R Bremer	135	356
22	34/	33/	34	Jack in the box	Beppe Bezzi	134	1569
23	40/	45/	16	Mirage 1.5	Anton Marsden	134	716
24	22/	11/	67	Q.S.P.	John K W	132	117
25	4/	0/	0	Lithium And Water	John K Wilkinson	12	12

Weekly age: 114
New warriors 8 Turnover/age rate 7%
Average age: 431 (414 last week, 333 the week before)
Average score: 142 (135 last week, 139 the week before)
The top 25 warriors are represented by 15 authors.

These rankings are more current than the What’s New/What’s No More listings. Sorry for the confusion but I had to kill my 200+ pizza messages rather than sift through them.

Paul Kline shattered the monotony when he _reset_ Torch t18! Jack in the Box now is the all time age leader at 1569. Impfinity and Frontwards both have cleared the 1000 mark. Now FOUR programs are over 1K and two more are alrady over 800.

Boeren has refused to relinquish his strangle hold on the top spot. Once Grilled Octopus started dropping, he patched some new code together and voila: Grilled Octopus v0.5. Stepping Stone has been as low as 10th place but usually resides in the top 5. His secret handshake used in this warrior is revealed in the issue’s hint section. Age leader Jack in the box has been residing in the bottom of the pack all week and may soon fall to p-warriors and brainwashing programs.

---

94 - What’s New

#	%W/	%L/	%T	Name	Author	Score	Age
5	42/	40/	18	C I A	Anders Ivner	143	1
25	6/	51/	43	Happy Paper	Christopher Gorski	61	1
20	30/	33/	37	Torch t18	P.Kline	126	1
1	42/	35/	23	Grilled Octopus v0.5	David Boeren	149	1
25	16/	16/	68	Obvious Thief	John K. Lewis	115	1
9	38/	40/	22	myConfuser	Paulsson	137	1
14	40/	44/	16	Hipshot V2	J E Long	135	1
19	29/	22/	49	Gem of the Ocean	P.Kline	136	1

---

94 - What’s No More.

#	%W/	%L/	%T	Name	Author	Score	Age
26	1/	3/	0	test cia	Anders Ivner	2	3
26	1/	2/	0	Clisson	P.Kline	4	18
26	2/	1/	1	C I A	Anders Ivner	7	47

26	29/ 36/ 35	Breeder V3.1	J E Long	123	60
26	3/ 0/ 0	Hipshot	J E Long	10	94
26	30/ 39/ 31	Torch t18	P.Kline	121	1539
26	35/ 47/ 17	S.E.T.I. II	John K W	124	163
26	2/ 2/ 0	Grilled Octopus v0.3	David Boeren	6	130

---

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
22	34/ 33/ 34	Jack in the box	Beppe Bezzi	134	1569
4	43/ 40/ 16	quiz	Schitzo	146	1202
8	42/ 41/ 17	Frontwards v2	Steven Morrell	143	1055
15	31/ 21/ 48	Impfinity v4g1	Planar	141	1002
20	25/ 14/ 61	Evol Cap 6.6	John Wilkinson	135	817
6	40/ 34/ 26	Thermite II	Robert Macrae	145	803
23	40/ 45/ 16	Mirage 1.5	Anton Marsden	134	716
3	39/ 31/ 30	Tornado 3.0	Beppe	148	604
13	37/ 32/ 31	T.N.T.	Maurizio Vittuari	142	528
18	29/ 21/ 49	Blizzard	Anton Marsden	137	522
11	29/ 16/ 55	Hazy Shade Of Winter	John K W	142	431
21	41/ 47/ 12	Wild Card	M R Bremer	135	356
7	36/ 28/ 36	Barrage	Anton Marsden	144	276
5	40/ 34/ 26	Chameleon	M R Bremer	146	274

Ten of these 14 warriors are already in the Hall!

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1569	*	P-warrior
2	Torch t18	P.Kline	1539		Bomber
3	quiz	Schitzo	1202	*	Scanner/ bomber
4	Frontwards v2	Steven Morrell	1055	*	One shot scanner
5	Impfinity v4g1	Planar	1002	*	Stone/ imp
6	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
7	Agony II	Stefan Strack	912		CMP scanner
8	Blue Funk	Steven Morrell	869		Stone/ imp
9	Evol Cap 6.6	John Wilkinson	817	*	Replicator
10	Thermite II	Robert Macrae	803	*	Bomber
11	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
12	Blue Funk 3	Steven Morrell	766		Stone/ imp
13	Night Train	Karl Lewin	755		Replicator
14	Mirage 1.5	Anton Marsden	716	*	Scanner/ bomber
15	HeremScimitar	A.Ivner,P.Kline	666		Bomber
16	La Bomba	Beppe Bezzi	650		Qscan -> replicator
17	myVamp v3.7	Paulsson	643		Vampire
18	Armory - A5	Wilkinson	609		P-warrior
19	juliet and paper	Bremer & Bezzi	607		P-warrior
20	Tornado 3.0	Beppe Bezzi	604	*	Bomber
21	Phq	Maurizio Vittuari	589		Qscan -> replicator
22	Hector 2	Kurt Franke	561		Qscan -> replicator
23	T.N.T.	Maurizio Vittuari	528	*	Bomber
24	Blizzard	Anton Marsden	522	*	Qscan -> replicator
25	Boombastic	Maurizio Vittuari	521		Bomber

Marsden gets yet another active warrior on the Hall of Fame listings.
Blizzard replaces B-Panama X--a stone/replicator--by Steven Morrell.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft

Last challenge: Mon Mar 4 21:42:59 PST 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	49/	31/	20	Test	Ian Oversby	168	29
2	48/	31/	21	Auntie v1.0	Ian Oversby	165	60
3	40/	16/	44	Breeder V3	J E Long	164	75
4	45/	27/	28	Evil Elf V.8	Andy Nevermind	163	64
5	40/	18/	42	NNAA	John K. Lewis	162	25
6	39/	19/	42	Pretentious v0.2	Ian Oversby	160	30
7	30/	11/	59	silkworm v3.0	Brian Haskin	148	76
8	41/	34/	25	Judge Nutmeg	Scott Manley	148	79
9	39/	35/	27	Paralyze v0.1	Ian Oversby	142	59
10	29/	16/	55	AB Scanner 2.9.4	Chris Hodson	142	90
11	40/	40/	19	Maniac v0.3	Ian Oversby	141	53
12	30/	24/	47	Hyakutake C/1996 B2 +	Scott Manley	136	36
13	22/	11/	67	Well Dressed Imp	Robert J. Street	134	5
14	33/	37/	30	Forked Lite Ning 4.074	Ansel Greenwood Serm	130	83
15	31/	34/	35	Pensive v0.3	Ian Oversby	128	2
16	22/	18/	59	RingWorm_v2.7	Calvin Loh	126	66
17	23/	22/	55	XXXOOO v2.0	Joshua Houk	125	41
18	29/	33/	37	Hyakutake Rising	Scott Manley	125	78
19	30/	39/	31	Alien Kiss V1.0	bjoern guenzel	121	27
20	22/	25/	53	Stephanie’s Pajamas v1.2	Robert J. Street	120	14
21	31/	47/	22	Optma Dwarf v4.0	Phoenix	114	24
22	22/	30/	48	Stephanie’s Pajamas v1.3	Robert J. Street	114	1
23	29/	51/	20	GPT 09d	David van Dam	108	13
24	10/	12/	79	ShadowImp	Robert J. Street	107	15
25	23/	42/	36	Pommes-Ketchup V1.33	S. Schroeder	103	23

Ian Oversby has staked out quite a claim on the beginners’ hill with six warriors including the top two rankings. Ian has decided to share one of his warriors with us.

```
;redcode-b
;name Auntie v1.0
;author Ian Oversby
;strategy v0.1  Searching for a good scanner.
;strategy v1.0  Shorter.
;assert 1

< boot deleted >

loop    ADD.F   cons,   scan
scan    CMP.I   -1,     11
        SLT.A   #30,    scan
fin     DJN.B   loop,   <-100
        MOV.I   b1,     }scan
count   DJN.B   -1,     #13
        SUB.A   #13,    scan
        MOV.AB  #13,    count
        JMZ.F   loop,   loop-5
cptr    SPL.B   #b1,    #b2+1
b1      SPL.B   #4,     #b2+2
        MOV.I   *cptr,  >cptr
        JMP.B   -1,     <-10
b2      DAT.F   #4,     #5
cons    DAT.F   #3359,  #3359
```

A quick look indicates a carpet bombing scanner strategy followed by a multi-pass coreclear. While this strategy is successful on the b-hill, it will not even come close to making the ’94 draft hill. Timescape style replicators used by most authors leave lots of decoys in core. A carpet bomber spends too much time attacking them. A better strategy would be to attack with spl/spl/jmp bombs like Memories. Also consider using a .8c scan engine instead of the standard .66c engine.

```
top     add.f step, comp
comp    sne.i X, X+SPREAD
        add.f step, comp
        seq.i @comp, *comp
```

```
        slt
        djn.f top, <STREAM
```

A spiral clear may be needed to kill DieHard style imp/papers. Check out Memories, Harmony, and SETI for examples. Then agressively pspace the scanner with a decent bomber (or replicator) and you should gain a foothold on the ’94 hill. Good luck.

The Hint by KURT FRANKE

How to Handshake

Whether or not it is right, when you challenge the hill, part of your score comes from how well your warrior does against itself. If we are paper and tie every time, that is about 4 points. If we are something very aggressive and (nearly) split wins, that is about 6 points. And if we use a handshake (or we are very, very lucky) we get this:

```
        Program "Stepping Stone" (length 95) by "Kurt Franke"
        (contact address "kurt@protector.lovett.rice.edu"):
        has challenged the ICWS ’94 Draft hill.

        ...

        Program "Stepping Stone" (length 95) by "Kurt Franke"
        (contact address "kurt@protector.lovett.rice.edu"):
        ;strategy Vampire
        Stepping Stone wins: 200
        Ties: 0
```

That is 12 points, 6 more than if I had let Stepping Stone split wins. Sound good? Want to know how? Read on.

When challenging the hill, we fight the other programs two hundred times each. Someone makes the first move in each round. The way this works is the challenger -- that is us -- goes first on the first round, and then it alternates (the defending warrior goes first on the second round, etc).

When we fight ourself, the version that goes first on the first round is the version we get points for. So we want our warrior to realize when it is fighting itself and have the right version win every time.

To recognize when we are fighting ourself, the obvious thing to do is give our warrior a PIN and use pspace. For an introduction to pspace, see Core Warrior #5. PIN’s were not covered in that issue, but they are simple. The acronym stands for P-space Identification Number. If we put this line in our warrior,

```
        PIN     123
```

Then we will share the same pspace as any other warrior that also has a PIN of 123. Note that this is just a pseudo-opcode; it doesn’t count as one of our 100 lines and you cannot find it in core. It is just a message to the simulator.

Now here is the handshake. place1 and place2 are just numbers. One version of our code needs to execute:

```
        stp     #0, #place2     ;; clear the expected flag
        stp     #1, #place1     ;; set the flag for the other version
        ldp     #place2, #0     ;; check if the other version set our flag
```

While the other version simultaneously executes this:

```
        stp     #0, #place1     ;; (notice place1 and place2 are exchanged)
        stp     #1, #place2
        ldp     #place1, #0
```

If the load operations retrieve a 1, we know we are fighting ourself. The only trick is that, when fighting ourself, the two versions are

(almost) identical so how can they be executing different code? Well, there are two things different between the two versions. The first thing is pspace location 0. p[0] is different from the other pspace locations. It returns the result of the last round, and it is *not* shared when you use a PIN. The second difference is that one version is one half-step ahead of the other version.

It isn't obvious what can be done with the second difference, but using the first difference,

```
last    ldp     #0, #0          ;; fetch the result of the last round
        jmz     lost, $last

        stp     #0, #place1
        stp     #1, #place2
        ldp     #place1, #0

        ...

lost    stp     #0, #place2
        stp     #1, #place1
        ldp     #palce2, #0

        ...
```

Now if we lost the last round, we execute the second part, and if we won or tied the last round, we execute the first part. That is the basics of a handshake. The rest is just code to figure out who should win and who should lose the next round once we know we are fighting ourself.

Robert Macrae, who first explained the concept of a handshake to me, solved the problem in a very complicated (but interesting!) way. Look at his warrior Mason for details. Mason keeps track of how many rounds have passed. If it is the first round or the last round was a tie, then there is no difference in p[0] between the two versions and he just runs his normal warrior. Once he gets a win or loss, he tries the handshake and flags whether it worked or not. If the handshake fails (the ldp instruction fetches 0), then Mason flags that he is fighting an enemy. If it worked, then both versions commit suicide.

Commit suicide? Yes. He does that to find out which one moved first on that round. (The one that moved first on that round will die first.) Knowing the result of the suicide round and the round number that the suicide occurred on, the warrior can calculate which version should win the rest of the rounds.

Mason's handshake is lengthy (44 lines). It also has a nasty bug, which was Mason's downfall. The bug is that it only does the handshake once and then relies on values set in pspace after that. So, by brainwash or by some paper making him execute the wrong lines in his code, he can be fooled into thinking he is fighting himself and lose all the rounds:

```
Program "Hector 2" (length 96) by "Kurt Franke"
(contact address "kfranke@rice.edu"):
;strategy qscan -> replicator
Mason 2.0 wins: 0
Hector 2 wins: 187
Ties: 13
```

(Hector enjoyed that score immensely.)

Now let me describe my current handshake (the one in Stepping Stone). My goals were to make sure I can't lose every time, and to reduce the size.

The first goal is easily accomplished. Stepping Stone will run the handshake code (that communicates through shared pspace) every round unless he knows he's fighting an enemy. There is no way the handshake can be fooled, unless my enemy has my PIN and the numbers place1 and place2 used for the handshake. The second goal is accomplished through giving up

the first round against everyone but myself. Let me explain; automatically losing the first round is not as crazy as it sounds. (You hear maniacal laughter in the distance.)

Suppose that on the very first round we have the challenger version (the one we get points for) win. Then on subsequent rounds, all that must be done is this: Run the handshake; if it works, then we are fighting ourself and should have the same version win as won the last round. The trick is to have the right version win on the first round. And my solution is to use the second difference that exists between versions. The version we want to lose is a step behind the one we want to win. Here is the special code for the first round, which should be at the end of the warrior:

```
search  jmz.f   search, {count          ;; find the other copy

count   sne.i   #-100, {count          ;; skip the next line if we are #2
        jmp     $0, {count
        dat     0, 0                   ;; just empty core after the warrior
```

All this is is a backwards scan for the other copy. On every cycle, count is decremented. When we find the other copy, we compare the two counts. If they are different, then that version must be one step behind the other version, and so it kills itself. If the two counts are the same, then we win by waiting for the other version to find us and kill itself. And if we are fighting some other warrior, we surely die.

And that’s all there is to it. Here is my handshake code (21 lines)

```
;redcode-94
;assert 1

;author Kurt Franke
;name Socrates

;strategy Know Thyself
;strategy  Handshake -> wait

wait    jmp     wait                   ;; real tough guy :-)

;; - - - - - - - - - handshake constants - - - - - - - - - - - - - - -

        PIN     1

ENEMYP          equ     1              ;; flag for enemy warrior
WINP            equ     2
LOSEP           equ     3
HWARRIOR        equ     wait           ;; our regular warrior

;; - - - - - - - - - handshake initialize - - - - - - - - - - - - - -

enemy   ldp     #ENEMYP, #0
        jmn     HWARRIOR, $enemy       ;; if flag is set, fight

last    ldp     #0, #0
        sne     #-1, $last             ;; check for first round
        jmp     search                 ;; special routine for first round

;; - - - - - - - - - - - - - try handshake - - - - - - - - - - - - - -

shake   jmz     lost, $last            ;; the actual handshake
won     stp     #0, #LOSEP             ;; reset the expected flag
        stp     #1, #WINP
loser   ldp     #LOSEP, #0             ;; and then check it
        jmz     foe, $loser
        jmp     0                      ;; wait


lost    stp     #0, #WINP              ;; reset the expected flag
        stp     #1, #LOSEP
```

```
winner  ldp     #WINP, #0               ;; and then check it
        jmz     foe, $winner
        dat     $0, $0                  ;; lose again

;; - - - - - - - - - - - flag enemy warrior - - - - - - - - - - - - - -

foe     stp     #1, #ENEMYP
        jmp     HWARRIOR

;; - - - - - - - - - special first round routine - - - - - - - - - - -

;; Determine who moved first without pspace
;;  1st version waits till timeout and second kills itself

search  jmz.f   search, {count          ;; find the other copy

count   sne.i   #-100, {count           ;; skip the next line if we are #2
        jmp     $0, {count

;; - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

        end     enemy
```

Try running it:

```
        protector:~/redcode$ pmars -r 100 socrates.red socrates.red -b
        Socrates by Kurt Franke scores 300
        Socrates by Kurt Franke scores 0
        Results: 100 0 0
```

  Pretty nifty, eh? I'll conclude with two remarks:

  First, it is pretty easy to make all of your warriors handshake with each other to split wins and get more points. However I think only a real weasel would do this. You are on your honor. ;-)

  Second, I can't see any reason (except lack of space) why most of the warriors on the hill wouldn't add a handshake. It adds at least 5 points to the score and only costs two cycles once the enemy flag is set. But I think it would be very boring if everyone started using handshakes. I like variety. So perhaps we should just legislate against PIN numbers on the koth servers. (?)

  I hope you found all of this interesting,

- Kurt Franke
  kurt@protector.lovett.rice.edu

From bezzi@iol.it Mon Mar 18 14:15:03 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA20174; Mon, 18 Mar 96 14:15:03 +0100
Received: from iol-mail.iol.it (root@iol-mail.iol.it [194.20.24.2]) by nez-perce.inria.fr
(8.7.1/8.7.1) with SMTP id OAA01060 for <Damien.Doligez@inria.fr>; Mon, 18 Mar 1996 14:4
3:28 +0100 (MET)
Received: from iol-mail.iol.it ([194.184.149.102]) by iol-mail.iol.it (8.6.11/8.6.11) wit
h SMTP id OAA00267; Mon, 18 Mar 1996 14:40:58 +0100
Date: Mon, 18 Mar 1996 14:40:58 +0100
Message-Id: <199603181340.OAA00267@iol-mail.iol.it>
X-Sender: bezzi@popmail.iol.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
Damien.Doligez@inria.fr (Damien Doligez)
From: Beppe Bezzi <bezzi@iol.it>
Subject: Core Warrior 21
Status: R

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                                ,    .
$$$$$$P'   '                                .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 21 March 18, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download Pmars at Terry's web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

After many month, this now I'm not thrilled checking my mail; good old Jack is fallen, bringing quiz with him soon later, and establishing a new record of lost age in a week. Maybe Torch fall last week has altered the cosmic balance or freed some evil force from the depths of Pizza hill.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.

max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/ %L/ %T	Name	Author	Score	Age
1	43/ 33/ 24	Grilled Octopus v0.5	David Boeren	153	102
2	40/ 33/ 28	Chameleon	M R Bremer	146	357
3	35/ 25/ 40	Barrage	Anton Marsden	146	359
4	40/ 35/ 25	Thermite II	Robert Macrae	146	886
5	42/ 41/ 17	Frontwards v2	Steven Morrell	144	1138
6	43/ 43/ 14	Hipshot v2.1	J E Long	143	79
7	43/ 43/ 14	Memories	Beppe Bezzi	143	279
8	40/ 37/ 23	Stepping Stone	Kurt Franke	143	227
9	42/ 41/ 17	C I A	Anders Ivner	143	145
10	30/ 18/ 52	Impfinity v4g1	Planar	142	1085
11	36/ 31/ 33	Tornado 3.0	Beppe	141	687
12	33/ 28/ 39	Blue Funk 5	Steven Morrell	139	30
13	27/ 16/ 57	Q.S.P.	John K W	139	43
14	38/ 39/ 23	qtest 14	Beppe Bezzi	138	3
15	35/ 32/ 34	Lithium	John K Wilkinson	138	54
16	24/ 10/ 65	Evol Cap 6.6	John Wilkinson	138	900
17	26/ 15/ 58	Hazy Shade Of Winter	John K W	137	514
18	29/ 21/ 51	Blizzard	Anton Marsden	137	605
19	38/ 41/ 21	myConfuser	Paulsson	136	68
20	34/ 33/ 32	Torch t18	P.Kline	136	123
21	35/ 35/ 30	T.N.T.	Maurizio Vittuari	136	611
22	37/ 42/ 21	Naked dancer	Beppe Bezzi	133	1
23	30/ 28/ 42	Clisson	P.Kline	131	6
24	34/ 37/ 29	Test	Anton Marsden	131	2
25	28/ 26/ 47	Paper Test v2a	Ian Oversby	130	13

Weekly age: 83
New warriors 10 Turnover/age rate 12%
Average age: 333 (431 last week, 414 the week before)
Average score: 140 (142 last week, 135 the week before)
The top 25 warriors are represented by 16 authors.

Jack in the box, king of the Hall of fame, has fallen dead. That’s the new of the week, compared with wich even the falls of quiz and Mirage are of secondary importance. The hill is now a lot younger, losing near 100 in average age. The fall of quiz has been impresive, from third to out in less than a week.
Now the oldest warriors are Frontwards v2, who has been at great risk too this week, and Impfinity v4g1.

Hilltop is always kept by Boeren’s Grilled octopus, even if a few warrior have claimed king position for a while, maybe the octopus grasp in beginning to get a bit more feeble.

Ten new warriors are in the hill this week, but only a few test, soon retired, have made it in the top five position, next week we’ll see them showdown with their full strenght.

Pspacers and qscanners hold the top positions, none knows who will prevail in the long run, while bombers are losing power, with Tornado exiting the top five after a long time and the ex king TNT near the hill bottom.

---

94 - What’s New

#	%W/ %L/ %T	Name	Author	Score	Age
6	43/ 44/ 13	Hipshot v2.1	J E Long	141	1
18	37/ 41/ 22	myConfuser	Paulsson	134	1
15	35/ 33/ 32	Lithium	John K Wilkinson	136	1
7	28/ 15/ 57	Q.S.P.	John K W	140	1
14	32/ 28/ 40	Blue Funk 5	Steven Morrell	136	1
25	22/ 24/ 54	Paper Test v2a	Ian Oversby	121	1
16	31/ 29/ 41	Clisson	P.Kline	133	1
15	37/ 39/ 24	qtest 14	Beppe Bezzi	134	1

23	32/ 39/ 30	Test	Anton Marsden	125	1
16	37/ 42/ 21	Naked dancer	Beppe Bezzi	133	1

---

94 - What's No More.

#	%W/ %L/ %T	Name	Author	Score	Age
26	30/ 35/ 35	Jack in the box	Beppe Bezzi	124	1620
26	36/ 47/ 17	quiz	Schitzo	126	1262
26	37/ 49/ 15	Mirage 1.5	Anton Marsden	125	736
26	38/ 51/ 11	Wild Card	M R Bremer	125	398
26	18/ 11/ 71	Q.S.P.	John K W	125	132
26	38/ 50/ 12	Test	J E Long	126	30
26	2/ 2/ 0	myConfuser	Paulsson	5	28
26	2/ 2/ 0	Hipshot V2	J E Long	6	19
26	3/ 0/ 1	Lithium And Water	John K Wilkinson	9	13
26	2/ 1/ 0	Gem of the Ocean	P.Kline	7	2

New record of lost age in a week: 4240 (51% of present hill age) it will be very difficult to surpass this score in future. Previous record 2103 12 - Feb - 96

---

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
5	42/ 41/ 17	Frontwards v2	Steven Morrell	144	1138
10	30/ 18/ 52	Impfinity v4g1	Planar	142	1085
16	24/ 10/ 65	Evol Cap 6.6	John Wilkinson	138	900
4	40/ 35/ 25	Thermite II	Robert Macrae	146	886
11	36/ 31/ 33	Tornado 3.0	Beppe	141	687
21	35/ 35/ 30	T.N.T.	Maurizio Vittuari	136	611
18	29/ 21/ 51	Blizzard	Anton Marsden	137	605
17	26/ 15/ 58	Hazy Shade Of Winter	John K W	137	514
3	35/ 25/ 40	Barrage	Anton Marsden	146	359
2	40/ 33/ 28	Chameleon	M R Bremer	146	357
7	43/ 43/ 14	Memories	Beppe Bezzi	143	279
8	40/ 37/ 23	Stepping Stone	Kurt Franke	143	227

Four out: Jack, quiz, Mirage and Wild Card. Two new entries: Memories and Stepping stone

---

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1620		P-warrior
2	Torch t18	P.Kline	1539		Bomber
3	quiz	Schitzo	1262		Scanner/ bomber
4	Frontwards v2	Steven Morrell	1138	*	One shot scanner
5	Impfinity v4g1	Planar	1085	*	Stone/ imp
6	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
7	Agony II	Stefan Strack	912		CMP scanner
8	Evol Cap 6.6	John Wilkinson	900	*	Imp / stone
9	Thermite II	Robert Macrae	886	*	Qscan -> bomber
10	Blue Funk	Steven Morrell	869		Stone/ imp
11	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
12	Blue Funk 3	Steven Morrell	766		Stone/ imp
13	Night Train	Karl Lewin	755		Replicator
14	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
15	Tornado 3.0	Beppe Bezzi	687	*	Bomber
16	HeremScimitar	A.Ivner,P.Kline	666		Bomber
17	La Bomba	Beppe Bezzi	650		Qscan -> replicator
18	myVamp v3.7	Paulsson	643		Vampire
19	T.N.T.	Maurizio Vittuari	611	*	Bomber
20	Armory - A5	Wilkinson	609		P-warrior
21	Blizzard	Anton Marsden	605	*	Qscan -> replicator
22	juliet and paper	Bremer & Bezzi	607		P-warrior
23	Phq	Maurizio Vittuari	589		Qscan -> replicator
24	Hector 2	Kurt Franke	561		Qscan -> replicator

25 Boombastic Maurizio Vittuari 521 Bomber

Jack in the box, king of te Hall, has stopped his run, but keeps a considerable advantage over his nex living competitors, Frontwards and Impfinity, having quiz too been pushed off the hill. No new entry in the Hall, Hazy shade of winter is very near.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft
Last challenge: Mon, 18 Mar 1996 01:11:13 -0800

#	%W/	%L/	%T	Name	Author	Score	Age
1	47/	14/	38	Jack in the box	Beppe Bezzi	181	1
2	54/	34/	12	GPT 15j	David van Dam	173	2
3	47/	28/	26	ExPensive v0.1	Ian Oversby	165	8
4	41/	20/	39	NNAA	John K. Lewis	162	79
5	39/	19/	42	Hyakutake C/1996 B2 +	Scott Manley	159	90
6	46/	36/	18	Auntie v1.1	Ian Oversby	156	7
7	34/	18/	48	Obvious Thief	John K. Lewis	151	16
8	30/	13/	57	Well Dressed Imp	Robert J. Street	146	59
9	40/	41/	19	Simple Scanner-bomber	Scott Manley	138	11
10	31/	25/	44	Stephanie's Pajamas v1.2	Robert J. Street	137	68
11	28/	19/	53	TieMaster v0.1	Christoph C. Birk	136	47
12	34/	34/	32	Pommes-Ketchup V1.35	S. Schroeder	134	48
13	39/	45/	16	GPT 09f	David van Dam	133	29
14	30/	29/	41	Stephanie's Pajamas v1.3	Robert J. Street	131	55
15	24/	21/	54	XXXOOO v2.0	Joshua Houk	127	95
16	36/	46/	18	GPT 09e	David van Dam	127	37
17	35/	46/	19	C Seagal	jShelton	124	40
18	34/	46/	20	Optma Dwarf v4.0	Phoenix	123	78
19	33/	46/	21	Killer	Ian Oversby	120	4
20	30/	42/	29	Alien Kiss V1.0	bjoern guenzel	118	81
21	32/	48/	20	jmztest	George Eadon	117	54
22	28/	46/	26	Hyakutake Approaches	Scott Manley	111	6
23	8/	7/	85	D'Spiral	Chris Hodson	110	36
24	30/	50/	20	Vampy	Jens Heunemann	110	23
25	31/	62/	7	Elmar Fudd	Brian A. Robbins	99	19

I submitted Jack here to check the level of beginner's hill, to give newcomers a chance to challenge the king of the 94 Hall of fame and to let Jack live a bit more :-) According to scores he's still an hard challenger for beginners, maybe a bit too hard.

The Hint by Beppe Bezzi

How to live longer.

No sex, no wine, no smoke.

Maybe you'll live longer, sure your life will seem longer to you. :-)

Getting serious. Some warriors score very good on the hill but don't live long, while others, even if not scoring that good, live longer, sometimes very long resiting for hundreds of challenges near the bottom to see younger and apparently stronger warriors fall dead before them.

Someone will remember the spectacular fall of SETI, an anti imp scanner by JK Wilkinson, scoring king at the entry, to be pushed off the hill shortly after, or Whitershins Thrice and Porch swing, dominating the hill with great advantage this summer, and disappeared without leaving trace in the hall of fame. Torch and Jack in the box instead never dominated the hill and have

hang a lot in the hill bottom before being pushed off.

What's the secret of the longevity ? the answer is, IMO at least, the flexibility, i.e. the ability of those warriors to perform well not only against the hill as is at the moment of their submission but also as it will be some month later. Obviously none can tell how the hill will be next summer, it's difficult to forecast how the hill will be next month, and none can foreview radical changes like the coming of imp rings or p-space, but something can be done, paying some point now to gain them tomorrow.

Score distribution- You may score your points beating heavily some warriors and losing badly against others or scoring average good against most warriors on hill. First choice may give more points now, but your warrior will die of starvation as soon as your preys are pushed off, while second option will assure you something to eat when the hill changes. When evaluating your scores don't look only at the sum but consider the variance too.

Boot- To boot or not to boot, that's the question, as Paul told in a Push off hint some time ago. We can easily test our warrior with and without boot and see what version performs better. Should it be the no boot version we can sacrify something and boot anyway, maybe tomorrow a wae of quickscanners and one shot scanners, like Frontwards and Porch Swing, will come, and the booting version survive his non booting comrades.

Bombs- You look at the hill, it's full of scanners, well you make a nice fast dat bomber with a fast dat clear and you score very good. In a short time other bombers will come and push the scanners off, a wave of replicators will fill the hole left and you are in serious troubles. If, instead of a dat bomber, you had chosen a slightly less effective incendiary one now you have the strenght to resist.

Brainwashing- Look at the hill last month, but one pspacer, no need to increase your warrior footprint adding a brainwash line to your clear. Now the hill is full of pspacers, if you had added it you were able to resist them much better.

Imp protection- Killing imps requires often specialized clears, that are less effective against standard replicators, but who knows how many imp warriors will come in future, or how many standard silk of course.

Qscans- If your warrior is short and boot away from a decoy it's easy to use a qscan instead of the decoy. You'll gain a lot against all static warriors, but tomorrow warriors will born with a boot routine so your qscan will prove but a waste of time.

The end- If you follow all those hint your warrior will score points against every opponent and miss the hill by little, not only as it's now but also in future; not the best way to enter the Hall of Fame :-)

-Beppe Bezzi <bezzi@iol.it>

Extra extra.

Jack in the box
by Beppe Bezzi

The warrior is well known, having been posted shortly after his appearance on the hill with but a few EQUs changed, but I think Jack deserves a reposting in the newsletter. Here is the original version.

```
;redcode-94
;name Jack in the box
;author Beppe Bezzi
;strategy Marcia Trionfale 1.3 with Tornado
;strategy popping up if confronted by a scanner
;kill Jack
;assert CORESIZE == 8000
org     think                   ;v 09

PIN     1991
```

```
_RES    equ     #0
_STR    equ     #314

step    equ     85
count   equ     533
away    equ     -3750

A0      equ     3488
A1      equ     1860
A2      equ     3740
AA0     equ     3620
AA1     equ     1270
AA2     equ     -350

marcia
        spl     starta, <1000   ;activate body n. 2

        spl     1,      <300    ;\
        spl     1,      <600    ;-\ generate 16
        spl     1,      <500    ;-/ parallel processes
        spl     1,      <400    ;/

silk    spl     @0,     }A0     ;split
        mov.i   }-1,    >-1     ;copy
        mov.i   bomb1,  >123    ;bombing
silk2   spl     @0,     }A1     ;split
        mov.i   }-1,    >-1     ;copy
        mov.i   bomb1,  >1001   ;bombing
        mov.i   bomb ,  }2042   ;A-indirect bombing
        mov.i   {silk2, <silk3  ;copy
silk3   jmp     @0,     >A2     ;jmp new copy
bomb    dat.f   >2667,  >5334   ;anti-imp bomb
bomb1   dat     >1,     }1      ;anti clear bomb

for 12
        dat     0,0
rof

think
res     ldp.ab  _RES,   #0
str     ldp.a   _STR,   str1    ;load strategy in use
        sne.ab  #0,     res     ;check result
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure result
win     stp.ab  str1,   _STR
str1    jmp     @0,     tornado
        dat     0,      marcia


for 12
        dat     0,0
rof

tornado mov     bm,     djmp+away+31
        mov     bd,     djmp+away+32
        mov     *tptr,  @tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        mov     {tptr,  <tptr
        jmp     @tptr
tptr    dat     djmp,   away+djmp

bomber  mov     bd+30,  *stone
        mov     bm+30,  @stone
stone   mov     *step+2,*(2*step)+2
```

```
        add     incr,   stone
jump    djn.b   bomber, #count
incr    spl     #3*step,#3*step
clr     mov     -12,    }bomber+1
djmp    jmp     clr,    <bomber-5
;29 lines
bm      mov     step,   1
bd      dat     #step, #1

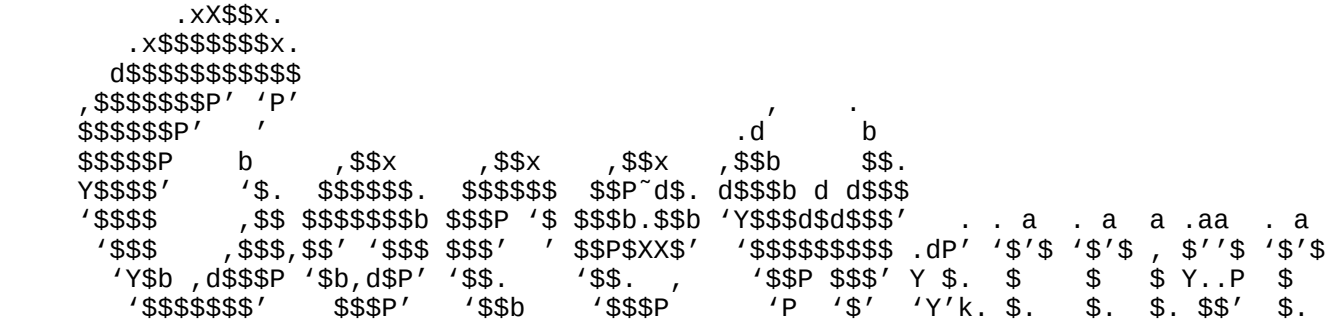
for 12
        dat     0,0
rof
starta
        spl     1,      <300    ;\
        spl     1,      <600    ;-\ generate 16
        spl     1,      <500    ;-/ consecutive processes
        spl     1,      <400    ;/

silka   spl     @0,     }AA0    ;split
        mov.i   }-1,    >-1     ;copy
        mov.i   bomba1, >113    ;bombing
silk2a  spl     @0,     }AA1    ;split
        mov.i   }-1,    >-1     ;copy
        mov.i   bomba,  >1001   ;bombing
        mov.i   bomba1, }2042   ;A-indirect bombing
        mov.i   {silk2a,<silk3a ;copy
silk3a  jmp     @silk3a,>AA2    ;jmp new copy
bomba   dat.f   >2667,  >5334   ;anti-imp bomb
bomba1  dat     >1,     }1      ;anti clear bomb


end
```

Questions? Concerns? Comments? Complaints? Mail them to people who care:
authors: Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu>

From news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!swrinde!elroy.jpl.nasa.gov!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Tue Mar 26 19:44:54 1996
Article: 4541 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!tank.news.pipex.net!pipex!swrinde!elroy.jpl.nasa.gov!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 22
Date: 26 Mar 1996 15:05:27 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 284
Message-ID: <4j913n$k8c@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu



Issue 22 March 25, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download Pmars at Terry's web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

Welcome to the 22nd issue of Core Warrior. We've had a flurry of activity this week. Over half the warriors on the '94 hill are brand spanking new. The past three weeks have brought significant change to hill as long standing veterans have been falling to young upstart pspacers. Enjoy the show.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	44/	35/	21	Grilled Octopus v0.5	David Boeren	154	230
2	45/	41/	14	Naked dancer	Beppe Bezzi	149	48
3	40/	33/	26	prova	Maurizio Vittuari	147	13
4	40/	34/	27	T.N.T.	Maurizio Vittuari	146	739
5	41/	35/	24	Chameleon	M R Bremer	146	485
6	31/	18/	51	Impfinity v4g1	Planar	145	1213
7	42/	40/	18	Stepping Stone	Kurt Franke	145	355
8	36/	29/	36	Blue Funk 5	Steven Morrell	143	158
9	37/	32/	31	Tornado 3.0	Beppe	143	815
10	41/	40/	18	Gem of the Ocean	P.Kline	142	7
11	40/	39/	21	Sloth v0.4	Ian Oversby	142	3
12	30/	18/	52	Hazy Shade II	John K W	141	36
13	33/	26/	41	Barrage	Anton Marsden	141	487
14	26/	11/	63	Evol Cap 6.6	John Wilkinson	141	1028
15	37/	33/	31	A Hard Day’s Night	Maurizio Vittuari	141	16
16	42/	44/	14	Frontwards v2	Steven Morrell	140	1266
17	39/	40/	21	Cynical v0.1	Ian Oversby	139	2
18	32/	25/	44	Hector 3	Kurt Franke	138	18
19	37/	36/	26	Thermite II	Robert Macrae	138	1014
20	43/	49/	8	Memories	Beppe Bezzi	138	407
21	41/	45/	14	Pagan	John K W	136	24
22	35/	33/	32	Clueless v0.4	Ian Oversby	136	1
23	34/	32/	34	Lithium	John K Wilkinson	135	21
24	33/	31/	36	Flurry	Anton Marsden	135	5
25	11/	9/	4	Gem of the Ocean	P.Kline	36	64

Weekly age: 128
New warriors 13 Turnover/age rate 10%
Average age: 350 (333 last week, 431 the week before)
Average score: 142 (140 last week, 142 the week before)
The top 25 warriors are represented by 12 authors.

Boeren is on top once again this issue and has been for most of the week. Only in 6 challenges has another warrior claimed the top spot--Thermite II three times, Hipshot v2.1 once, and Naked Dancer twice. Grilled Octopus reminds me of quiz’s long dominance at the top. Except for the fact the Grilled receives periodic updates.

The past three weeks have purged some of the ancient warriors from the hill. This week Hazy Shade of Winter was _killed_ by JKW at an age of 616. Marsden lost Blizzard at an age of 713. Both will enjoy rankings in the corewar Hall of Fame however. Four warriors are over 1000 now--Impfinity, Frontwards, Evol Cap, and Thermite II.

We’ve seen 14 versions of Naked Dancer this week. Perhaps Bezzi will be satisfied with the number two spot. Gem of the Ocean has also been through several mutations. Will these guys ever be content with anything less than the number one ranking? 8)

Bombers are the dominating strategy at the moment. At least seven of the top ten warriors are bombers or have bombing components. Last week, 130 points would have gained the hill. Not this week. 135 points just for 25th place.

Ian Oversby has made a fairly quick jump to the ’94 draft hill. Sloth v0.4 is his highest ranking warrior at eleventh place.

Only eight warriors declare using pspace in their strategy lines. And the qscanners don’t look all that effective this week.

---

94 - What’s New

#	%W/	%L/	%T	Name	Author	Score	Age
5	39/	40/	21	Gem of the Ocean	P.Kline	139	1
18	37/	43/	20	Naked dancer	Beppe Bezzi	132	1
11	27/	20/	54	Hazy Shade II	John K W	134	1
22	39/	46/	14	Pagan	John K W	132	1
17	34/	33/	33	Lithium	John K Wilkinson	135	1
24	28/	26/	45	Hector 3	Kurt Franke	130	1
14	35/	35/	31	A Hard Day’s Night	Maurizio Vittuari	134	1

8	37/ 36/ 27	prova	Maurizio Vittuari	137	1
6	41/ 41/ 18	Gem of the Ocean	P.Kline	140	1
23	30/ 33/ 38	Flurry	Anton Marsden	127	1
12	38/ 41/ 21	Sloth v0.4	Ian Oversby	135	1
17	37/ 42/ 21	Cynical v0.1	Ian Oversby	132	1
23	31/ 35/ 34	Clueless v0.4	Ian Oversby	128	1

Newer versions of Naked Dancer and Lithium.

---

94 - What's No More.

#	%W/ %L/ %T	Name	Author	Score	Age
26	25/ 27/ 48	Paper Test v2a	Ian Oversby	123	14
26	3/ 1/ 0	Naked dancer	Beppe Bezzi	8	3
26	1/ 0/ 3	Clisson	P.Kline	5	10
26	2/ 1/ 0	qtest 14	Beppe Bezzi	7	22
26	5/ 5/ 2	Test	Anton Marsden	16	22
26	2/ 1/ 2	Lithium	John K Wilkinson	7	84
26	33/ 43/ 24	myConfuser	Paulsson	124	141
26	1/ 0/ 2	Q.S.P.	John K W	6	134
26	3/ 0/ 1	Hazy Shade Of Winter	John K W	9	616
26	25/ 23/ 52	Blizzard	Anton Marsden	128	713
26	37/ 46/ 17	C I A	Anders Ivner	129	255
26	39/ 49/ 12	Hipshot v2.1	J E Long	129	190
26	32/ 35/ 33	Torch t18	P.Kline	128	242

---

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
16	42/ 44/ 14	Frontwards v2	Steven Morrell	140	1266
6	31/ 18/ 51	Impfinity v4g1	Planar	145	1213
14	26/ 11/ 63	Evol Cap 6.6	John Wilkinson	141	1028
19	37/ 36/ 26	Thermite II	Robert Macrae	138	1014
9	37/ 32/ 31	Tornado 3.0	Beppe	143	815
4	40/ 34/ 27	T.N.T.	Maurizio Vittuari	146	739
13	33/ 26/ 41	Barrage	Anton Marsden	141	487
5	41/ 35/ 24	Chameleon	M R Bremer	146	485
20	43/ 49/ 8	Memories	Beppe Bezzi	138	407
7	42/ 40/ 18	Stepping Stone	Kurt Franke	145	355
1	44/ 35/ 21	Grilled Octopus v0.5	David Boeren	154	230

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1620		P-warrior
2	Torch t18	P.Kline	1539		Bomber
3	Frontwards v2	Steven Morrell	1266	*	One shot scanner
4	quiz	Schitzo	1262		Scanner/ bomber
5	Impfinity v4g1	Planar	1213	*	Stone/ imp
6	Evol Cap 6.6	John Wilkinson	1028	*	Imp / stone
7	Thermite II	Robert Macrae	1014	*	Qscan -> bomber
8	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
9	Agony II	Stefan Strack	912		CMP scanner
10	Blue Funk	Steven Morrell	869		Stone/ imp
11	Tornado 3.0	Beppe Bezzi	815	*	Bomber
12	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
13	Blue Funk 3	Steven Morrell	766		Stone/ imp
14	Night Train	Karl Lewin	755		Replicator
15	T.N.T.	Maurizio Vittuari	739	*	Bomber
16	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
17	Blizzard	Anton Marsden	713		Qscan -> replicator
18	HeremScimitar	A.Ivner,P.Kline	666		Bomber
19	La Bomba	Beppe Bezzi	650		Qscan -> replicator
20	myVamp v3.7	Paulsson	643		Vampire
21	Hazy Shade Of Winter	John Wilkinson	616		P-warrior
22	Armory - A5	John Wilkinson	609		P-warrior
23	juliet and paper	Bremer & Bezzi	607		P-warrior
24	Phq	Maurizio Vittuari	589		Qscan -> replicator
25	Hector 2	Kurt Franke	561		Qscan -> replicator

Hazy Shade of Winter enters the hill knocking off Boombastic by Maurizio Vittuari. Blizzard stops climbing settling at 17th place. Remember when it only took an age of 350 to make the hall?

Barrage and Chameleon should both make the hall next week if they survive.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	55/	22/	23	Jack in the box	Beppe Bezzi	188	54
2	47/	16/	37	Vectorfantasy v0.2	basehead	178	12
3	54/	34/	11	Violent Micro v0.2	basehead	174	11
4	54/	40/	6	GPT 15l	David van Dam	168	49
5	52/	41/	7	Goliath 0.3	David van Dam	163	6
6	48/	33/	19	ExPensive v0.1	Ian Oversby	163	61
7	45/	28/	27	Hyakutake Zenith	Scott Manley	162	23
8	45/	29/	26	Obvious Thief.2	John K. Lewis	161	37
9	49/	41/	10	C-Seagal II Test	jShelton	157	50
10	44/	39/	17	Three Core Monty	Andrew Fabbro	149	3
11	45/	46/	9	Uni Charm Password Test #	jShelton	145	22
12	43/	44/	13	Extreme Prejudice	Scott Manley	143	44
13	35/	28/	37	Unknown	John K. Lewis	142	36
14	33/	24/	44	Bag of Tricks	Andy Nevermind	142	19
15	42/	43/	15	GPT 09k	David van Dam	142	42
16	42/	44/	14	Auntie v1.1	Ian Oversby	139	60
17	43/	47/	10	Revision Three	Andy Nevermind	138	46
18	40/	43/	17	Living Let Die	Julian	137	5
19	40/	44/	16	Tonto 3	Steve Bailey	136	21
20	40/	45/	15	Hyakutake Approaches	Scott Manley	135	51
21	39/	45/	15	Hyakutake Perigee	Scott Manley	134	25
22	39/	48/	13	Simple Scanner-bomber	Scott Manley	129	64
23	39/	51/	10	C Seagal	jShelton	128	93
24	32/	51/	17	Vampy	Jens Heunemann	114	2
25	32/	57/	12	testing	Jens Heunemann	107	1

How unfair to inflict Jack in the box on the beginners hill! The '94 draft hill had to tolerate him for a _long_ time. 8)

basehead was briefly seen on the '94 hill. Although his warrior scored well, it was killed by the author. Hmmmmmm. Interesting strategy.

Is anyone on the b-hill in favor of increasing the age limit?

The Hint

Before the '94 draft language, jmz scanners could only find non-zero 'b' operands. Having zero value b-fields in your warrior was a definite advantage. But with the new draft, many more options became available. Scanning instructions can now scan .a .b .ab .ba .x and .i. Few authors bother with zero operand fields anymore, so scanning .b may be just as effective as scanning .i when searching for enemy code. Consider this: TimeScape style replicators contain no zero b-fields (except in the launching code). Wild Card scores 175 against it scanning .i, 173 scanning .b. Of course TimeScape copies have tons of zero a fields. Scanning .a scores a miserable 131. Irongate has one zero a-field and one zero b-field. Scanning .a and .b score around 132 points. Scanning .i scores 145 points. Definite problem. However, this technique works best against classic stones. A stone usually will dec/inc the a or b field thus distracting scanners. By only scanning .a or .b, you have a chance of not finding any dec/inc locations.

Juliet storm modifies a-fields. With a mov #2667, *0 imp added to it, Wild Card scores 118.5 points when scanning .b versus 108.5 points scanning .i.

Submitting my scanner against the hill with different options had significant effects on the individual scores of some programs. Drastic enough I don't want to mention names. But the overall score against the hill tends to balance out. However, if you're having a real problem with a few particular programs, changing your scanning criteria just may be the key.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@iol.it> or Myer R Bremer <bremermr@ecn.purdue.edu>

From bezzi@nemo.it Mon Apr 1 14:00:40 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA17377; Mon, 1 Apr 96 14:00:40 +0200
Received: from nemont.nemo.it (nemont.nemo.it [194.184.149.2]) by nez-perce.inria.fr (8.7
.1/8.7.1) with SMTP id NAA19729 for <Damien.Doligez@inria.fr>; Mon, 1 Apr 1996 13:59:51 +
0200 (MET DST)
Date: Mon, 1 Apr 1996 13:59:51 +0200 (MET DST)
Message-Id: <199604011159.NAA19729@nez-perce.inria.fr>
Received: from mail.nemo.it (194.184.149.102) by nemont.nemo.it (EMWAC SMTPRS 0.50) with
SMTP id <B0000043252@nemont.nemo.it>; Mon, 01 Apr 1996 14:01:35 +0200
X-Sender: bezzi@popmail.iol.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
Damien.Doligez@inria.fr (Damien Doligez)
From: Beppe Bezzi <bezzi@iol.it>
Subject: Core Warrior 23
Status: R

Important notice.

Posting a weekly newsletter with such high quality technical stuff, if an heavy burden for a non professional staff like myer and I are. So we decided to be payed for our work and use the money for a noble extent like paying, during incoming summer holydays, a meeting for the staff that will be kept, to reduce expenses, halfway, in a Caribbean holyday village.

To further read Corewarrior you'll have to subscribe it, and this will cost you but 30 US$ each number, we accept monthly subscription for 100 US$ and yearly for 1000 US$. VISA and American Express welcome.

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  d$$$$$$$$$$$
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Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
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 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 23 April 1, 1996

Greetings.

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

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FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download Pmars at Terry's web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

Greetings to all and good first of April, I hope you enjoyed our little joke. This was a quiet week, but 90 challenges and no important warrior pushed off; even if the turnover has been high most charges have been new versions of existing warriors. Just a bit of relax for the spring, or something burning under the ashes.
Planar's corner is back this week, we hope he will continue working for us. Anyone wanting to pupblish an article or write his own number is welcome.

--Beppe Bezzi

P.S. I changed my mail address; new one is: bezzi@nemo.it
I still have the old one, but it will be checked less often.

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	47/	32/	21	Gem of the Ocean	P.Kline	162	3
2	48/	40/	12	Naked dancer	Beppe Bezzi	156	55
3	41/	34/	25	Thermite II	Robert Macrae	147	1105
4	41/	34/	26	prova	Maurizio Vittuari	147	81
5	41/	35/	24	Chameleon	M R Bremer	147	576
6	41/	37/	22	Grilled Octopus v0.5	David Boeren	146	321
7	34/	25/	41	Barrage	Anton Marsden	144	578
8	43/	41/	16	Stepping Stone	Kurt Franke	144	446
9	43/	43/	14	Frontwards v2	Steven Morrell	143	1357
10	39/	35/	26	T.N.T.	Maurizio Vittuari	143	830
11	37/	32/	31	A Hard Day's Night	Maurizio Vittuari	142	67
12	37/	32/	31	Tornado 3.0	Beppe	142	906
13	36/	30/	35	Flurry	Anton Marsden	142	66
14	27/	15/	58	Hazy Shade II	John K W	140	64
15	41/	42/	17	Wind-up Toy v0.4	Ian Oversby	139	21
16	23/	9/	68	Evol Cap 6.6	John Wilkinson	138	1119
17	43/	49/	8	Memories	Beppe Bezzi	137	498
18	34/	32/	34	Lithium	John K Wilkinson	137	112
19	27/	18/	54	Impfinity v4g1	Planar	137	1304
20	40/	43/	17	Error 0	Planar	136	38
21	38/	41/	20	Sloth v0.4	Ian Oversby	135	94
22	30/	25/	46	Hector 3	Kurt Franke	134	109

23	38/ 42/ 20	myConfuser2.1	Paulsson	134	16
24	32/ 31/ 37	Blue Funk 5	Steven Morrell	134	249
25	29/ 34/ 38	tripod v1.3	Brian Haskin	124	1

Weekly age: 91
New warriors 10 Turnover/age rate 11%
Average age: 401 (350 last week, 333 the week before)
Average score: 141 (142 last week, 142 the week before)
The top 25 warriors are represented by 14 authors; welcome to Ian and Brian

The age of the Octopus seems to be over; Paul Kline, with his new version of Gem of the Ocean, has managed to reach n. 1 spot, the only one making him feel confortable; and this with but 33 submissions this week.
Will now David refurbish the Octopus, submitting v04 to claim again top spot, or let it age toward the hall of fame?

Beppe’s Naked Dancer, and Grilled Octopus, are the only other warrior to have been in top position.

After past weeks carnage, no aged warrior, not even mid aged, left us; all millenaries seem to be in good health, even if Thermite has been for a while in the red zone, under 20th position, to rebounce quickly up.

Planar, after a long silence, has submitted a new warrior. Next week, perhaps, we’ll see in these columns what our archiver is doing.

Bombers and P-spacers are sharing the top positions, while scanners are having bad times and replicator near extinction, with but Barrage an Hector to represent them on the hill.

The scores are very balanced, there are but 13 points beetween n 3 and n. 24, should a new warrior enter in mid hill none will feel safe. Maybe next week we’ll see some movement again

---

94 - What’s New

#	%W/ %L/ %T	Name	Author	Score	Age
7	37/ 36/ 27	prova	Maurizio Vittuari	138	1
15	33/ 33/ 33	A Hard Day’s Night	Maurizio Vittuari	133	1
19	30/ 30/ 40	Flurry	Anton Marsden	130	1
4	25/ 15/ 60	Hazy Shade II	John K W	136	1
10	41/ 44/ 15	Naked dancer	Beppe Bezzi	137	1
20	37/ 45/ 17	Error 0	Planar	129	1
23	36/ 44/ 20	myConfuser2.1	Paulsson	127	1
1	45/ 34/ 21	Gem of the Ocean	P.Kline	156	1
25	27/ 35/ 38	tripod v1.3	Brian Haskin	119	1

New versions of: Gem of the Ocean, Naked dancer, prova, Flurry, A Hard day’s Night, Hazy Shade II.

---

94 - What’s No More.

#	%W/ %L/ %T	Name	Author	Score	Age
26	10/ 12/ 5	Gem of the Ocean	P.Kline	35	66
26	37/ 48/ 15	Pagan	John K W	127	27
26	1/ 1/ 2	Flurry	Anton Marsden	6	13
26	3/ 1/ 0	Gem of the Ocean	P.Kline	9	16
26	2/ 1/ 1	prova	Maurizio Vittuari	6	24
26	2/ 1/ 1	A Hard Day’s Night	Maurizio Vittuari	6	24
26	0/ 0/ 3	Hazy Shade II	John K W	4	64
26	29/ 37/ 34	Clueless v0.4	Ian Oversby	122	34
26	2/ 2/ 0	Naked dancer	Beppe Bezzi	6	85
26	30/ 43/ 27	Spook v0.1	Ian Oversby	116	16
26	3/ 0/ 0	myConfuser2.0	Paulsson	9	42

---

94 - What’s Old

#	%W/ %L/ %T	Name	Author	Score	Age
9	43/ 43/ 14	Frontwards v2	Steven Morrell	143	1357

19	27/ 18/ 54	Impfinity v4g1	Planar	137	1304
16	23/ 9/ 68	Evol Cap 6.6	John Wilkinson	138	1119
3	41/ 34/ 25	Thermite II	Robert Macrae	147	1105
12	37/ 32/ 31	Tornado 3.0	Beppe	142	906
10	39/ 35/ 26	T.N.T.	Maurizio Vittuari	143	830
7	34/ 25/ 41	Barrage	Anton Marsden	144	578
5	41/ 35/ 24	Chameleon	M R Bremer	147	576
17	43/ 49/ 8	Memories	Beppe Bezzi	137	498
8	43/ 41/ 16	Stepping Stone	Kurt Franke	144	446
6	41/ 37/ 22	Grilled Octopus v0.5	David Boeren	146	321
24	32/ 31/ 37	Blue Funk 5	Steven Morrell	134	249

HALL OF FAME
* means the warrior is still running.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1620		P-warrior
2	Torch t18	P.Kline	1539		Bomber
3	Frontwards v2	Steven Morrell	1357	*	One shot scanner
4	Impfinity v4g1	Planar	1304	*	Stone/ imp
5	quiz	Schitzo	1262		Scanner/ bomber
6	Evol Cap 6.6	John Wilkinson	1119	*	Imp / stone
7	Thermite II	Robert Macrae	1105	*	Qscan -> bomber
8	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
9	Agony II	Stefan Strack	912		CMP scanner
10	Tornado 3.0	Beppe Bezzi	906	*	Bomber
11	Blue Funk	Steven Morrell	869		Stone/ imp
12	T.N.T.	Maurizio Vittuari	830	*	Bomber
13	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
14	Blue Funk 3	Steven Morrell	766		Stone/ imp
14	Night Train	Karl Lewin	755		Replicator
16	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
17	Blizzard	Anton Marsden	713		Qscan -> replicator
18	HeremScimitar	A.Ivner,P.Kline	666		Bomber
19	La Bomba	Beppe Bezzi	650		Qscan -> replicator
20	myVamp v3.7	Paulsson	643		Vampire
21	Hazy Shade Of Winter	John Wilkinson	616		P-warrior
22	Armory - A5	John Wilkinson	609		P-warrior
23	juliet and paper	Bremer & Bezzi	607		P-warrior
24	Phq	Maurizio Vittuari	589		Qscan -> replicator
25	Barrage	Anton Marsden	578		Qscan -> replicator

Frontwards and Impfinity are quickly approaching Torch, both passing 1300 milestone; Tornado should enter the over 1000 club next week if, crossing fingers, it survives.
Barrage enters in the last spot, pushing Hector 2 off. Chameleon is scheduled for next week being at 576 age.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/ %L/ %T	Name	Author	Score	Age
1	55/ 34/ 11	Violent Micro v0.2	basehead	177	58
2	45/ 16/ 39	Vectorfantasy v0.2	basehead	173	59
3	48/ 37/ 14	Living Let Die III	Julian	159	3
4	50/ 41/ 9	C-Seagal II Test	jShelton	158	97
5	50/ 42/ 8	GPT 15l	David van Dam	157	96
6	42/ 27/ 31	Obvious Thief.2	John K. Lewis	157	84
7	49/ 41/ 10	Machido	jShelton	157	33
8	48/ 43/ 9	Goliath 0.3	David van Dam	154	53
9	41/ 29/ 30	Hyakutake Zenith	Scott Manley	152	70

10	41/	31/	28	Bag of Tricks II	Andy Nevermind	152	30
11	47/	42/	11	Revision Three	Andy Nevermind	151	93
12	47/	44/	9	GPT 18a	David van Dam	150	14
13	43/	36/	21	Ineffectual	Ian Oversby	149	5
14	43/	41/	16	GPT 09k	David van Dam	145	89
15	44/	47/	8	bloodstone V2.0	bjoern guenzel	142	15
16	42/	44/	14	Extreme Prejudice	Scott Manley	141	91
17	33/	28/	38	AB Scanner 2.9.6	Chris Hodson	138	38
18	40/	47/	13	Optma Dwarf v5.1	Phoenix	133	19
19	36/	40/	23	Three Core Monty	Andrew Fabbro	132	50
20	36/	42/	23	Testing V1.21	bjoern guenzel	130	4
21	29/	30/	41	Unknown	John K. Lewis	127	83
22	35/	53/	12	Optma Dwarf v5.0	Phoenix	118	21
23	27/	62/	11	MissleCommand_v2	harleyQ2	91	2
24	14/	56/	30	djn monster	bjoern guenzel	73	7
25	8/	67/	25	babyQ2	harleyQ2	50	1

Jack in the box is dead of old age today, this means that the beginners hill is aged exactly 100 in last two weeks; don’t worry, you won’t see Jack anymore.

Basehead is dominating the hill with a couple of warriors seen in the pro hill for a while, Julian and jShelton too did the 94 hill for short periods.

Stormking 94x hill standings.

We had some movement in this hill in the past weeks, so we report hill standings.

Hill Specs:

```
          redcode 94x
         coresize: 55440
   max. processes: 55440
         duration: after 500,000 cycles, a tie is declared.
max. entry length: 200
 minimum distance: 200
    rounds fought: 250
  instruction set: ICWS ’94 Draft
```

Last battle concluded at : Mon Mar 25 21:13:40 EST 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	35/	3/	62	Evol Cap 4 X	John Wilkinson	166	19
2	48/	40/	12	Illusion-94/55	Randy Graham	156	1
3	47/	39/	13	Frontwards v2	Steven Morrell	156	49
4	46/	38/	15	Stepping Stone 94x	Kurt Franke	154	5
5	42/	32/	27	Lithium X 8	John K Wilkinson	152	10
6	46/	41/	13	Memories	Beppe Bezzi	151	26
7	43/	38/	18	Derision	M R Bremer	148	36
8	41/	35/	24	BigBoy	Robert Macrae	146	44
9	43/	44/	13	Pagan	John K W	143	4
10	38/	34/	27	Lithium X	John K Wilkinson	142	17
11	39/	35/	26	Tornado 2.0 x	Beppe Bezzi	142	43
12	39/	39/	21	Fire Master Xv1	JS Pulido	140	41
13	31/	26/	44	Hector 2	Kurt Franke	136	39
14	42/	48/	10	S.E.T.I. 4-X	JKW	135	20
15	30/	26/	44	Aleph 1	Jay Han	135	9
16	38/	47/	16	Watcher-h	Kurt Franke	128	38
17	36/	44/	20	impthingX	Kurt Franke	128	3
18	37/	46/	17	Watcher	Kurt Franke	127	42
19	31/	39/	30	Nice Try	M R Bremer	122	48
20	37/	53/	10	Withershins Thrice	P.Kline	120	2

The big hill uses the same redcode as 94 hill. Strategies are a bit different, seems that imps are more powerful and qscan are obviously less dangerous, but there is a lot to discover here.
Tuc has implemented many interesting features, send a mail to koth@stormking.com with body of ’ help ’ (no quotes) to get them.

The Hint
by Beppe Bezzi

A collection of my hints in previous numbers of CW is available at
ftp.csua.berkeley.edu/pub/corewar/documents/bbhints.zip

Wilkinson's beginners benchmark.

J K Wilkinson posted to the newsgroup his beginner's benchmark, a collection of warriors ,good for beginners to test their warriors against. Steve Bailey asked me for some comments on them and here they are.

```
;name  Blue Funk 3
;author Steven Morrell
;strategy  Fixed another in-memory/in-register bug
```

The strategy line doesn't explain a lo about what the warriors does, unless you know Blue Funk and Kline's Emerald, but a little testing can easily show that Blue Funk 3 is a classic stone with a binary launched imp spiral. The most interesting property of the stone is the self modifying bombing pattern; in practice BF3, after completing its modulo 4 bomb run shifts the pattern and repeat it displaced, going to bomb the whole core. To better see it, try running BF3 after changing the 'spl i' line in a dat, so deactivating the spiral.

```
;name Cannonade
;author P.Kline, Paul Kline, pk6811s@acad.drake.edu
;strategy break gates, score points
;strategy stone and gate-busting imp-spiral(s)
```

Cannonade is worth mention mainly for the stone structure, well described by S. Morrell in its book, and for the gate busting imps, descibed in Morrell's manual too. Cannonade relies more on the imps for attack than on the stone, using it, with a wide mod 10 pattern, to kill scanners and provide a core clear. Unfortunaltely, for it, 94 redcode allows forward clears and increment gates, and Cannonade's imps are unable to crash them; it's still a powerful opponent in 88 redcode.

```
;name Fire Storm v1.1
;author W. Mintardjo
;strategy Stone with anti-imp core clear
```

Firestorm is another stone, worth mention as a way to implement a two pass clear in 88 redcode. To see it trace the 'ptr' line and look how the clear pointers self modify.

```
;name Marcia Trionfale 1.3
;author Beppe Bezzi
;strategy attemping a more aggressive behaviour
```

That's the version of Marcia Trionfale I used in last winter tournament, together with Tornado, but using more processes, it's half Jack in the Box. Marcia Trionfale is a very aggressive silk replicator, very good against stone imps like Blue Funk and Juliet storm, but vulnerable to scanners.

```
;name nobody special
;author Mike Nonemacher
;strategy Paper like TimeScape, but with lots more
;strategy core-trashing, anti-imping, etc.
```

nobody special is another silk replicator, relative of Timescape. It's less aggressive than Marcia Trionfale, but more than Timescape. Interesting how the add instruction, together with the bombing mov in the other body, creates a non-carpet bombing.

```
;name Paperone
;author Beppe Bezzi
;strategy Silk replicator
```

Paperone is my first warrior to make 94 hill, it's nothing more than Jippo's Silk Warrior with different constants.

```
;name TimeScape (1.0)
;author J. Pohjalainen
;assert CORESIZE==8000
;strategy I'm stuck with replicators! Here is _The Latest_ one!
;strategy \--------------------------\  ----------------------
;strategy / ts1  spl    @ts1,  }STEP1 /  Phoenix/Cell   warrior
;strategy \      mov.i  }ts1,  >ts1   \  body,  6+ processes to
;strategy / ts2  spl    @ts2,  }STEP2 /  keep That Thing alive,
;strategy \      mov.i  }ts2,  >ts2   \  two  of  them  working
;strategy /      mov.i  {ts2,  <ts3   /  together  with  proper
;strategy \ ts3  jmp    @ts3,  }STEP3 \  constants and you have
;strategy /_____________________________/  found >>--> TimeScape!
;strategy \T I M E   T O   E S C A P E\  ----------------------
;strategy v1.0: added more havoc in above code  (or I hope so!)
```

Timescape is the father of modern replicators. With very few exceptions, all use its structure. For a better discussion on silk replicators see Core Warrior 1 and 3

```
;name Iron Gate
;author Wayne Sheppard
;strategy cmp scanner-SPL/JMP-Gate
```

Iron gate is a classic 88 redcode cmp scanner, using spl 0 /jmp -1 stun bombs. Worth notice are the compact code and the decrement protection. For a better discussion on Iron Gate and cmp scanners see my hint in Core Warrior 19

```
;name Porch Swing
;Author Randy Graham
;strategy Swing with a little wider range.
;strategy Now 80% bomb/scan with djn-stream once-thru
```

Porch Swing is the warrior I saw more dominate; last summer it scored more than 170 pts in the 94 hill, to disappear as soon as people began to take counter measures like boot and use of bombs with b-field of 1. It's a classic example of once through scanner bomber with a deadly multipass clear.

```
;name Rave
;author Stefan Strack
;strategy Carpet-bombing scanner based on Agony and Medusa's
```

Rave is another classic cmp scanner, attacking with a carpet of spl 0. Its relative Agony II, similar but using boot, is one of the longest living warriors in the 94 hill.

```
;name Thermite 1.0
;author Robert Macrae
;strategy  Quick-scan -> incendiary bomber.
```

An example of quick scanner, using vampire attacks, followed by an incendiary bomber. For a discussion on Thermite see Core Warrior 5

```
;name Tornado
;author Beppe Bezzi
;strategy the original one
;strategy Fast 60% c bomber
```

Tornado is the fastest pure bomber appeared till now (the 75% and 80% are mixed scan bombers) It's interesting the use of bombs as pointers for next one. Tornado is discussed in Core Warrior 7
The version in the benchmark never stood in the hill for long, being too vulnerable to paper, but was a good complement for Marcia Trionfale in the p-warrior Jack in the box (that was in the hill for very long :-)
Exercise for the reader: make it self splitting to increase resistance, add a djn stream, a multipass clear and a bit of paper protection; if you can do it without bloating Tornado you'll make the hill with success. Yes, Tornado 3.0

Overall the benchmark is, IMO of course, a little unbalanced. There are too many replicators, and less scanners than in the 94 hill, stone bombers are

outdated, modern bombers are different from Cannonade and Firestorm, a Die Hard style warrior could have found its place as like as a simple pwarrior like Jack or juliet and paper. Anyway we have to thank JKW fo doing the job, the warrior choice is sometimes personal taste, everybody has his preferred enemies, and trades off some overall point just to beat'em :-)

I tested my warriors, and a few other famous guys on the 94 hill, using JKW benchmark; the results:

Warrior	Wilkstones (or whatever you want to call them, score for example :-)
Frontwards v2	170.33
Naked Dancer	168.67
quiz	159.58
Tornado 3.0	156.33
Jack in the box	155.83
Impfinity v4g1	149.41
Memories	146.92
Torch t18	140.33

These are some other results, courtesy of Steve Bayley, other scores have been posted in r.g.c.

The warriors of the benchmark itelf:

Porch Swing	167.9583
Marcia t. 1.3	150.4167
Timescape	149.4167
nobody special	145.75
Blue Funk 3	142.25
Thermite 1.0	139.5
Paperone	138.875
Iron Gate	132.5
Cannonade	123.5417
Rave	120.125
Firestorm	107.5833
Tornado	84.375

And two classics

Mice	87.08334
Dwarf	49.375

Planar's corner

A true story

Last week, I had a great idea for a new strategy. I wrote a first prototype warrior and tried it against my personal benchmark. This is 8 warriors taken from my own Web page, section "Warriors on the hill". They are:

Clisson Lite
Frontwards v2
Impfinity v4g1
Lithium
Memories
Blue Funk 3
Thermite 1.0
Tornado

Some of these are old versions of current hill warriors.

So I ran my benchmark and got something like this:

opponent	Win	Los	Tie	Win	Los	Tie	Win	Los	Tie	Win	Los	Tie	points

```
0ClissonLite    110  85   5 / 116  81   3 /  74 114  12 / 121  73   6 / 161
1Frontwards     115  69  16 / 112  62  26 / 119  63  18 / 121  67  12 / 184
2Impfinity      112  55  33 / 107  43  50 / 116  48  36 / 122  50  28 / 189
3Lithium         80  99  21 / 125  48  27 / 101  62  37 / 111  74  15 / 168
4Memories        74 124   2 /  86 114   0 / 113  82   5 /  85 115   0 / 135
9BlueFunk       121  44  35 /  79  84  37 / 107  65  28 / 113  51  36 / 174
9Thermite        19 167  14 /  22 173   5 /  19 171  10 /  15 176   9 /  32
Tornado..        83  89  28 /  75  89  36 / 103  74  23 / 109  59  32 / 153
self             72  75  53 /  84  66  50 /  78  82  40 /  76  84  40 / 139
```

This looked promising, except for a definite weakness against quick-scanners, so I started working on the constants (and fixed a couple of bugs in the process). A number of hours later, and after more than 1000 battles (at 200 rounds each, this is a lot of computation), I had this:

```
0ClissonLite    125  73   2 / 121  77   2 / 112  87   1 /  34  39 127 / 163
1Frontwards     141  54   5 / 151  43   6 / 133  58   9 / 124  70   6 / 209
2Impfinity      113  53  34 / 141  44  15 / 114  55  31 / 120  43  37 / 197
3Lithium        103  56  41 / 107  63  30 /  94  76  30 /  87  75  38 / 164
4Memories        86 111   3 / 105  89   6 / 122  74   4 / 127  72   1 / 166
5BlueFunk       133  38  29 / 133  34  33 / 133  35  32 / 134  40  26 / 214
6Thermite        63 128   9 /  49 132  19 /  77 108  15 /  51 136  13 /  97
7Tornado.       116  84   0 / 121  79   0 / 136  64   0 / 119  81   0 / 184
self             99  88  13 /  92  89  19 / 130  49  21 /  93  91  16 / 163
```

"Good, I said, that should land me right on top of the hill, with at least 160 points." So I sent my program to the hill and eagerly awaited the results. Here they are:

```
                                          points
name                            %W/ %L/ %T   taken/given
-----
Gem of the Ocean                52/ 38/ 10    166 / 124
Grilled Octopus v0.5            53/ 41/  5    165 / 129
Frontwards v2                   66/ 28/  5    204 /  90
Impfinity v4g1                  80/ 10/  9    249 /  41
Chameleon                       19/ 65/ 15     72 / 212
Barrage                         21/ 57/ 21     86 / 192
Hazy Shade II                   14/ 17/ 68    112 / 119
Naked dancer                    29/ 42/ 28    117 / 154
prova                           32/ 55/ 12    109 / 178
Evol Cap 6.6                     9/ 24/ 66     95 / 138
Blue Funk 5                     64/ 22/ 13    207 /  79
Tornado 3.0                     27/ 53/ 20    101 / 179
myConfuser2.0                   34/ 40/ 25    129 / 145
Memories                        58/ 41/  0    175 / 124
A Hard Day's Night              41/ 48/ 10    135 / 154
T.N.T.                          31/ 64/  4     99 / 196
Sloth v0.4                      37/ 61/  1    114 / 184
Flurry                          15/ 70/ 14     60 / 225
Stepping Stone                  42/ 49/  8    134 / 157
Hector 3                        28/ 52/ 20    104 / 176
Clisson                         16/ 21/ 62    112 / 125
Thermite II                     16/ 70/ 13     61 / 225
Lithium                         39/ 41/ 20    137 / 143
C Seagal II                     37/ 61/  1    114 / 184
Living Let Die v2.6             27/ 66/  6     88 / 205
self                            44/ 44/ 11    143 / 145
```

What the hell ?! This gives me 127 points, 24th position on the hill. Needless to say, I'm not happy with these results. It's time to analyze.

Note that the results are as good as expected against Frontwards, Blue Funk, and Lithium, and even better against Impfinity (can you say "suicide" ?). Note also the good results against Gem of the Ocean and Grilled Octopus. But my warrior fails miserably against a lot of

others.

The problem is described by one word: bias. My test suite is strongly biased. I won't tell you toward what because I don't want you to guess my new strategy.

I think this story show the importance of a good, balanced test suite, and the necessity of live testing (i.e. sending test warriors to the hill), as opposed to off-line testing.

Now I'll go back to the drawing board, but I feel just a little bit depressed. Maybe I can make it work, but it won't be as great as it should be.

-- Planar

From bremermr@ecn.purdue.edu Tue Apr 9 15:09:46 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA16254; Tue, 9 Apr 96 15:09:46 +0200
Received: from cartoon.ecn.purdue.edu (bremermr@cartoon.ecn.purdue.edu [128.46.147.13]) b
y nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id PAA14559 for <Damien.Doligez@inria.fr>; T
ue, 9 Apr 1996 15:08:30 +0200 (MET DST)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
by cartoon.ecn.purdue.edu (8.6.12/3.8davy)
for delivery to "Damien.Doligez@inria.fr"
id IAA27152; Tue, 9 Apr 1996 08:08:44 -0500
Message-Id: <199604091308.IAA27152@cartoon.ecn.purdue.edu>
Date: Tue, 9 Apr 1996 08:08:44 -0500
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: core warrior 24
Status: R

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,     '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 24 April 8, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download Pmars at Terry's web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

Some of you may have received april fool's warrior reports in the mail last week showing your prize warrior getting killed off the hill, courtesy of the staff here at Core Warrior. We can't take all the credit as Thos was a quite willing participant and essential to the little deception. No hard feelings and all in good fun, right? Hope you enjoyed it.

Not quite an average week for the corewar scene. The biggest news: in the tradition of Jippo's Silk Warrior and Boeren's Gilled Octopus, a new name straight from the beginner's hill lands on top of the '94 draft hill. And quite a bit of age fell off the hill in the process.

Also in this issue, a Core Warrior exclusive, source code to Thermite II by Robert Macrae.

--M R Bremer

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	46/	38/	16	Scanny Boy	David van Dam	155	73
2	42/	34/	23	Grilled Octopus v0.5	David Boeren	150	459
3	42/	37/	21	Gem of the Ocean	P.Kline	148	112
4	43/	38/	19	Mirage 2	Anton Marsden	147	9
5	44/	43/	13	Stepping Stone	Kurt Franke	146	56
6	39/	34/	27	prova	Maurizio Vittuari	144	219
7	27/	13/	60	Hazy Shade II	John K W	142	202
8	36/	31/	33	Lithium	John K Wilkinson	141	250
9	39/	36/	25	Thermite II	Robert Macrae	141	1243
10	44/	47/	9	Memories	Beppe Bezzi	141	96
11	29/	18/	53	Impfinity v4g1	Planar	140	1442
12	35/	31/	34	A Hard Day’s Night	Maurizio Vittuari	140	205
13	39/	38/	23	Chameleon	M R Bremer	139	714
14	39/	40/	21	No Prisoners	John K W	138	3
15	37/	36/	27	T.N.T.	Maurizio Vittuari	138	968
16	34/	30/	36	Blue Funk 5	Steven Morrell	138	387
17	35/	34/	31	Tornado 3.0	Beppe	136	1044
18	22/	9/	69	Evol Cap 6.6	John Wilkinson	135	1257
19	31/	26/	44	Barrage	Anton Marsden	135	716
20	39/	43/	18	C I A	Anders Ivner	135	94
21	31/	26/	43	Marcia Trionfale	Beppe Bezzi	135	16
22	32/	30/	38	Flurry	Anton Marsden	135	204
23	35/	36/	29	Eternal Flame	John K W	134	103
24	34/	33/	33	test	P.Kline	134	40
25	31/	31/	38	Hector 4	Kurt Franke	132	1

Weekly age: 138
New warriors 11 Turnover/age rate 8%
Average age: 397 (401 last week, 350 the week before)
Average score: 140 (141 last week, 142 the week before)
The top 25 warriors are represented by 13 authors, JKW with 5, Bezzi, Marsden, Vittuari, each with 3.

In a move that’s not totally new, but even still surprising none the less, a b-hill author lands a warrior on top of the ’94 hill. David van Dam’s GPT series was scattered throughout the beginners’ hill, doing quite well but not spectacularly. However, Scanny Boy has all the right stuff to dominate the ’pro’ hill. In case you haven’t noticed, Scanny Boy is a .5c scanner with a spl/spl/dat coreclear and djn stream. Good job.

Before van Dam burst onto the scene, Gem of the Ocean reigned supreme with scores up to 166 points. Naked Dancer and Grilled Octopus led for a short while, along with venerable Impfinity. However, near the end of the week, it was reigning Scanny Boy with brief outbreaks of Octopus.

Kurt Franke decided to kill Stepping Stone at an age of 529, remove the hand-shake and then resubmit it. Stepping Stone was in 10th place and doing well, but the new version jumped on in 4th place. Anticipating the removal of self fights? Coincidentally, Memories also left the hill at an age of 529. Frontwards v2 also took the off ramp and left the hill at exit 1420. However, it occupies a very prestigious spot in the corewar hall of fame.

Replicators are getting the snot beat out of them. Evol Cap, Barrage, Marcia Trionfale, and Hector 4 are all lurking on the bottom rungs of the hill. Most likely due to the effects of Scanny Boy and Mirage 2.

#	%W/	%L/	%T	Name	Author	Score	Age
25	8/	39/	53	Gem of the Ocean	P.Kline	76	1
16	34/	36/	30	Eternal Flame	John K W	133	1
8	43/	48/	9	Memories	Beppe Bezzi	138	1
22	39/	44/	17	C I A	Anders Ivner	134	1
9	44/	46/	10	Naked dancer	Beppe Bezzi	141	1
1	44/	40/	16	Scanny Boy	David van Dam	148	1
4	43/	43/	14	Stepping Stone	Kurt Franke	143	1
12	30/	25/	45	Marcia Trionfale	Beppe Bezzi	134	1
4	40/	39/	20	Mirage 2	Anton Marsden	141	1
16	36/	43/	21	No Prisoners	John K W	130	1
25	31/	31/	38	Hector 4	Kurt Franke	132	1

New versions of Gem of the Ocean, Memories, Naked Dancer, and Stepping Stone.
CIA is back after a week long absence.

---

94 - What's No More.

#	%W/	%L/	%T	Name	Author	Score	Age
26	3/	1/	0	Naked dancer	Beppe Bezzi	9	56
26	4/	3/	1	Error 0	Planar	14	40
26	2/	2/	0	Gem of the Ocean	P.Kline	6	7
26	25/	34/	40	tripod v1.3	Brian Haskin	117	16
26	39/	52/	9	Memories	Beppe Bezzi	125	529
26	35/	43/	21	Sloth v0.4	Ian Oversby	127	127
26	26/	25/	49	Hector 3	Kurt Franke	127	151
26	37/	46/	17	Wind-up Toy v0.4	Ian Oversby	128	64
26	36/	44/	20	myConfuser2.1	Paulsson	127	63
26	38/	51/	12	Frontwards v2	Steven Morrell	125	1420
26	2/	2/	0	Stepping Stone	Kurt Franke	5	529

Over 3,000 challenges of age disappered from the hill this week.

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
19	27/	18/	54	Impfinity v4g1	Planar	137	1442
16	23/	9/	68	Evol Cap 6.6	John Wilkinson	138	1257
3	41/	34/	25	Thermite II	Robert Macrae	147	1243
12	37/	32/	31	Tornado 3.0	Beppe	142	1044
10	39/	35/	26	T.N.T.	Maurizio Vittuari	143	968
7	34/	25/	41	Barrage	Anton Marsden	144	716
5	41/	35/	24	Chameleon	M R Bremer	147	714
6	41/	37/	22	Grilled Octopus v0.5	David Boeren	146	459
24	32/	31/	37	Blue Funk 5	Steven Morrell	134	387

No one new. Interesting.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1620		P-warrior
2	Torch t18	P.Kline	1539		Bomber
3	Impfinity v4g1	Planar	1442	*	Stone/ imp
4	Frontwards v2	Steven Morrell	1420		One shot scanner
5	quiz	Schitzo	1262		Scanner/ bomber
6	Evol Cap 6.6	John Wilkinson	1257	*	Imp / stone
7	Thermite II	Robert Macrae	1243	*	Qscan -> bomber
8	Tornado 3.0	Beppe Bezzi	1044	*	Bomber
9	T.N.T.	Maurizio Vittuari	968	*	Bomber
10	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
11	Agony II	Stefan Strack	912		CMP scanner
12	Blue Funk	Steven Morrell	869		Stone/ imp
13	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
14	Blue Funk 3	Steven Morrell	766		Stone/ imp
15	Night Train	Karl Lewin	755		Replicator
16	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
17	Barrage	Anton Marsden	716	*	Qscan -> replicator
18	Chameleon	Myer R Bremer	714	*	P-warrior

19	Blizzard	Anton Marsden	713	Qscan -> replicator
20	HeremScimitar	A.Ivner,P.Kline	666	Bomber
21	La Bomba	Beppe Bezzi	650	Qscan -> replicator
22	myVamp v3.7	Paulsson	643	Vampire
23	Hazy Shade Of Winter	John Wilkinson	616	P-warrior
24	Armory - A5	John Wilkinson	609	P-warrior
25	juliet and paper	Bremer & Bezzi	607	P-warrior

Frontwards v2 ends its run up the hall of fame ranks at number 4 clearing the way for Impfinity, the current active age leader. Phq is pushed off by newcomer Chameleon, now in 18th place. Minimum price of admission to the hall rises from 578 to 607. Grilled Octopus would be the next warrior to join the elite, perhaps next week, maybe a bit longer depending on the volume of challenges.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	58/	28/	14	Violent Micro v0.3	basehead	189	2
2	50/	17/	33	Fork v0.2-9p/51b	Christoph C. Birk	182	17
3	45/	12/	43	Vectorfantasy v0.3	basehead	177	14
4	49/	36/	15	Living Let Die III	Julian	162	71
5	50/	38/	12	Anti Imp	bjoern guenzel	161	5
6	44/	27/	30	Bag of Tricks II	Andy Nevermind	161	98
7	50/	42/	8	GPT 21a	David van Dam	158	39
8	38/	19/	43	Toxin v0.6a	Edgar	158	65
9	39/	24/	37	Hyakutake Perihelion	Scott Manley	154	54
10	41/	29/	30	Rabbit v0.2a	Christoph C. Birk	152	20
11	46/	41/	14	look-see	Anonymous	150	47
12	38/	36/	26	Ineffectual	Ian Oversby	141	73
13	43/	45/	11	Optma Dwarf v5.1	Phoenix	141	87
14	43/	47/	11	bloodstone V2.0	bjoern guenzel	139	83
15	40/	42/	17	MegaSnail v1.1	Edgar	138	66
16	26/	22/	53	The Wild Thirteen	bjoern guenzel	129	38
17	40/	52/	8	Optma Dwarf v5.0	Phoenix	128	89
18	35/	43/	22	Badhead V1.0p	bjoern guenzel	127	53
19	36/	48/	17	Antibodies Mk II	Andrew Fabbro	123	24
20	38/	56/	6	beta tiny twist	bjoern guenzel	119	9
21	31/	46/	23	small incident	bjoern guenzel	116	22
22	24/	34/	43	The Wild Mover	bjoern guenzel	114	35
23	9/	55/	37	doofworm	bjoern guenzel	62	3
24	7/	2/	2	test Anti 6	bjoern guenzel	24	7
25	2/	98/	0	Unknown	Anonymous	6	1

basehead has new versions of Violent Micro and Vectorfantasy out. They're not number one and number two this time, but one, three isn't so bad. It's difficult to tell exactly what's on the beginner's hill due to lack of strategy lines. Hello Anonymous. I know who you are. What do you think about having a beginners' hill without any age limits? Maybe some sort of intermediate hill?

The Hint

The entire collection of Core Warrior hints written so far are now are available at ftp.csua.berkeley.edu/pub/corewar/documents/bbhints.zip
---
Sorry. None this week. These things are becoming difficult to think of.

Extra Extra

Paul Kline recently published Gem of the Ocean, with a plea for more open-ness. Considering he was king at the time I consider that a royal command :)

I hadn't published Thermite II because it is really very similar to Thermite 1.0 in concept, and any published QS may suffer from other QS's which have scans tuned to defeat it. To ameliorate this problem I have changed the QS order for this version, but there should be no impact on performance except against other QS. Here are the big changes over Thermite 1.0.

-- Scans Only 60 Locations

The code is slimmer than before, since I only scan 60 locations instead of the 78 required to cover the whole of core. Why? Well... If you are fighting a non-quickscanner, you give up a few wins, but not too many as, by the time the last 20 locations have been scanned, the enemy has had ample time to boot.

If you are fighting a QS, a similar argument applies; the missed wins are minimal because the enemy should already have hit you! OTOH you gain *substantially* from the occasions on which he scans one of the locations left vacant by slimming your code, hence missing you, because you have a 75% chance of a free attack on him while he scans on.

-- Tornado Incendiary Bombing

My old version used a 0.33c vampire to attack once the enemy had been scanned. Using a 0.6c incendiary bomber gives almost as thorough a kill, delivered much faster. The indirect bombing also permits attacking 3 widely-spaced locations with each cycle of the bombing loop. This goes well with my prefered wide coverage of the target area. No matter whether I scan the warrior, a decoy before or a decoy after, there will be bombs landing near the warrior soon.

I use SPL/MOV/JMP incendiary bombs to obtain maximum effect against Silks, to which Brand tends to lose. This does cost me some losses against other QS's armed with DAT bombs in the cases when we find each other at roughly the same time, and I land a stun while he lands a kill. La Bomba, against which I did most of my development, was particularly frustrating to deal with but the 60-location scan helped.

-- Tweaked Brand

Not much different from the other variants. Re-ordering of the main loop gave a small gain against my test suite (as I remember I needed 4000 battles to be sure; I _mean_ small) and the constants have been optimised against Silks, to give maximum run length. Spacing is somewhat compromised, which will hurt against bombers, but (by good fortune) this property helps against anti-bombers which rely on mod-4 patterns. I rather like succeeding because I'm *less* efficient than my opponent's strategy assumes :)

-- Launched Bomber

Why? The version without the launch hit #1 on it's first hill test (hard to beat:) and anyway, after a QS you have removed the most urgent incentive to launch, because any QS has already hit you or been hit; either way, launching won't matter. But... I had a vague feeling that it might not be safe to hang around. One-Shots, perhaps? When I wrote Thermite II Silk/Imps were strong and numerous, and a resurgence of carpet-bombing scanners seemed like one possible future. I decided that, even though I lost some points through the extra length and time taken to start bombing, it would pay in terms of life-expectancy to launch, so the second version is the one I left on the hill.

BTW I'm not overly keen on exhaustive testing of incremental variants on the hill; the benefit is that you develop a good feel for the character of each constituent but (for me) at the cost of losing some of the charm which lies in new ideas or at least new uses for old ones. In any case, if I choose to leave the lesser of two versions on the hill, whats the point >:-?

-- Bug?

John K.W. mailed me with a tiny, suicidal warrior which managed to beat Thermite once in two hundred times. All I can imagine is that, that one time, I somehow scanned his code within its few cycles of life, and that then I crashed as a result. But how?

```
>Program "Thermite II" (length 100) by "Robert Macrae"
>(contact address "ff95@dial.pipex.com"):
>;strategy Same old strategy, but nastier...
>Killing Hazy Shade Of Winter III wins: 1
>Thermite II wins: 199
>Ties: 0
>
>How did I get a win against Thermite?!?!
>Here is an EXACT copy of what I sent to Pizza...
>Thermite would've had to die within 3 cycles! ... :/
>
>;redcode-94
>;name Killing Hazy Shade Of Winter III
>;kill Hazy Shade Of Winter III
>;author John K W
>
>p: ldp.b #0, #0
>jmp <-1
```

Any ideas, anyone :-?

THERMITE II

```
;redcode-94
;name Thermite II
;kill Thermite II
;author Robert Macrae
;assert CORESIZE == 8000
;strategy Same old strategy, but nastier...

; Therm 3.7 had everything I wanted for scan and bomber (Brand 3.3).
; Now check for any surplus cells, clean up logic, shuffle scan
;  -- the tedious stuff.
; *****  REMEMBER  *****  not to publish scan in this order!

; Therm 4.1 tries launching bomber, against oneshots!

org     start

qstep   equ     6                   ; gap between bombs
qrounds equ     8                   ; number of bombing runs
qgap    equ     (qrounds * qstep)   ; Space covered by each bomb-type
qspread equ     (qgap*3)            ; Total coverage

bigst   equ     113
qstart  equ     start+1000
qst     equ     qstart -(4*bigst)

; --------------------------------------------------

qspb    spl     -1,      #qgap+1      ; 3 bombs for QS
qmvb    mov     -qgap,   >-qgap
qjmb    jmp     -qgap,   -2*qgap+qstep
qincr   dat     #qstep,  #qstep       ; step for QS

which   add.b   found,  found2    ; (From Pyramid)
        sne.i   @found, @found2   ; Is it in first two?
          add.ab  #2*bigst, found
        sne.i   qspb-1, @found    ; Is it first or third?
          add.ab  #bigst,found
```

```
        mov     qjmb,   @found
found   seq     qspb-1, *0        ; look qgap back from hit
         sub.ab #qgap/2, found    ; and sub qgap/2 if found.

qplace  add.b   found,  #-qgap/2+qstep+found
        mov.i   qspb,   @qplace   ; Preposition first SPL
        add.ba  found,  qstone
        add.b   found,  qstone    ; Initialise Tornado pointers

qst1    mov     qjmb,    *qstone       ; Tornado bombing engine
        mov     qmvb,    @qstone       ; "to fill enemy with hot
qstone  mov     @3*qgap/2+found, *qgap/2+found
        sub.f   qincr,   qstone        ; Adapted to SPL/MOV/JMP
        djn.b   qst1,    #qrounds      ; and to cover wider range.

launch  mov     cp,      cp+4000
lloop   mov     {launch, <launch
        mov     {launch, <launch
        mov     {launch, <launch
        djn     lloop,   #2
        mov     wipe,    wipe+4000-1
        mov     {-1,     <-1
        mov     sm,      sm+4000+3
found2  jmp     @launch, #bigst+found  ; pointer to second hit

;r edcode-94
;n ame Brand 3.3
;a uthor Robert Macrae
;s trategy Rebadged Torch :)
;s trategy New constants, anti-paper profile.

; 3.2 tried new constants with no trailing MOV and a 2603 runlength;
; 3.3 moves in gate and mvb for extra paper-resistance.

step1    equ   899
step2    equ   902

gate     dat   -100, 200
wipe     dat   -2, #cp-gate+2
; 1 DAT
sp       spl   #step2, step2+1
msm      mov   sm+3, *tgt+2*step1+step2
msp      mov   sp, @msm
in       add   #step1+step2, @msp
tgt      djn.f msm, <4502           ; bombed with spl to start clear
clr      mov   wipe-1, >gate-1
cp       djn.f clr, {gate-1
; 3 DATs
sm       mov   -step2, >-step2      ; mov half of the incendiary

         FOR 11
           dat 0, 0
         ROF

start
s1 for 5
        sne.x   qst+4*bigst*s1, qst+4*bigst*s1+bigst*1
        seq.x   qst+4*bigst*s1+bigst*2, qst+4*bigst*s1+bigst*3
        mov.ab  #qst+4*bigst*s1-found, found
     rof
        jmn  which,   found
s2 for 5
        sne.x   qst+4*bigst*(s2+5), qst+4*bigst*(s2+5)+bigst*1
        seq.x   qst+4*bigst*(s2+5)+bigst*2, qst+4*bigst*(s2+5)+bigst*3
        mov.ab  #qst+4*bigst*(s2+5)-found, found
     rof
        jmn  which,   found
s3 for 5
        sne.x qst+4*bigst*(s3+10), qst+4*bigst*(s3+10)+bigst*1
        seq.x qst+4*bigst*(s3+10)+bigst*2, qst+4*bigst*(s3+10)+bigst*3
```

```
        mov.ab  #qst+4*bigst*(s3+10)-found, found
     rof
        jmn.b   which, found
        jmp     launch, {-500

        end
```

All in all it surprises me that such modest changes lead to such an increase in effectiveness, but then Thermite 1.0 was never intended as more than a first version. It was left on the hill only because I ran out of coding time.

For further explanation of the QS concept, see Corewarrior 5 for the code of Thermite 1.0. Note that Michael Constant and Beppe Bezzi (at least) have strong and somewhat different views on the subject :) So far, Thermite II seems to beat Beppe’s "qtest" warriors handily ;]

Guess I’ll have to write something new now...

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From bezzi@nemo.it Mon Apr 15 23:47:42 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA10485; Mon, 15 Apr 96 23:47:42 +0200
Received: from nemont.nemo.it ([194.184.149.2]) by nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id XAA00298 for <Damien.Doligez@inria.fr>; Mon, 15 Apr 1996 23:46:31 +0200 (MET DST)
Date: Mon, 15 Apr 1996 23:46:31 +0200 (MET DST)
Message-Id: <199604152146.XAA00298@nez-perce.inria.fr>
Received: from mail.nemo.it (194.184.149.104) by nemont.nemo.it (EMWAC SMTPRS 0.50) with SMTP id <B0000160645@nemont.nemo.it>; Mon, 15 Apr 1996 23:48:43 +0200
X-Sender: bezzi@popmail.iol.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
        Damien.Doligez@inria.fr (Damien Doligez)
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 25
Cc: kurt@protector.lovett.rice.edu
Status: R

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 25 April 15, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth   ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth   ;Pizza
http://pauillac.inria.fr/~doligez/corewar/   ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download Pmars at Terry's web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

Not many news from the hill this week, but the fall of the 1200+ old Evol cap, but some interesting code: my Tornado 3.0 and Stepping Stone by Kurt Franke; I hope mant other authors will publish their ones.

There has been some discussion in the newsgroup about self fights, and not one spoke if favor for keeping them. Is there a good reason, apart the historical one, to go on with self fights?

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	47/	33/	20	Mirage 2	Anton Marsden	161	96
2	48/	37/	15	Scanny Boy	David van Dam	158	160
3	44/	33/	23	Thermite II	Robert Macrae	155	1330
4	39/	24/	37	Walk Like An Egyptian	John K W	154	11
5	46/	39/	15	Stepping Stone	Kurt Franke	154	143
6	43/	36/	21	Chameleon	M R Bremer	150	801
7	43/	35/	22	Grilled Octopus v0.5	David Boeren	150	546
8	43/	36/	21	Gem of the Ocean	P.Kline	150	199
9	31/	15/	53	Hazy Shade II	John K W	147	289
10	37/	28/	35	Blue Funk 5	Steven Morrell	147	474
11	34/	21/	45	Impfinity v4g1	Planar	147	1529
12	41/	38/	21	Blanket Party	J E Long	145	54
13	29/	14/	57	EvolCap XI	John Wilkinson	144	39
14	44/	45/	11	Wind-up Toy v0.7	Ian Oversby	143	10
15	36/	28/	36	Barrage	Anton Marsden	143	803
16	39/	36/	25	prova	Maurizio Vittuari	141	306
17	36/	32/	32	Flurry	Anton Marsden	141	291
18	41/	42/	17	Harmony	P.Kline	141	15
19	37/	33/	31	Lithium	John K Wilkinson	141	337
20	37/	34/	29	Tornado 3.0	Beppe	139	1131
21	41/	43/	16	Wind-up Toy v0.6	Ian Oversby	138	23
22	37/	39/	24	T.N.T.	Maurizio Vittuari	134	1055
23	4/	0/	0	Test 3	Ian Oversby	12	2
24	4/	0/	0	Test 4	Ian Oversby	12	1
25	4/	0/	0	testest	M R Bremer	12	3

Weekly age: 87
New warriors 9 Turnover/age rate 10%
Average age: 386 (397 last week, 401 the week before)
Average score: 130 (140 last week, 141 the week before) There are 3 killed warriors on hill bottom.
The top 25 warriors are represented by 14 authors, JKW and Oversby with 4, Marsden, with 3.

After dominating the hill last week, Scanny boy loses king position at the end of this week. There has been a lot of fight for the best spot: Scanny boy, Mirage 2, Impfinity, Thermite, Blue Funk 5, Grilled octopus all have been seen in the top.

Pspacer are losing a bit against standard warriors, maybe all new submissions have some brainwash component to keep’em at bay; perhaps next week we’ll see if this is a new trend or but a fluctuation.

Scanners and qscans are still dominating and replicators are near extiction having lost both Hector and Marcia, only Barrage remains to represent them.

Reading through ;strategy lines I noticed there are a lot of references to previous versions, without telling what the warrior is doing; I know what Blue Funk and Thermite are, as much as most of us, but a beginner maybe puzzled.

---

94 - What’s New

#	%W/	%L/	%T	Name	Author	Score	Age
2	33/	23/	44	Walk Like An Egyptian	John K W	144	1
16	34/	38/	28	Blanket Party	J E Long	131	1
23	22/	10/	69	EvolCap XI	John Wilkinson	134	1
14	44/	45/	11	Wind-up Toy v0.7	Ian Oversby	143	10
I haven’t got this entry							
8	39/	39/	22	Harmony	P.Kline	139	1
18	38/	43/	19	Wind-up Toy v0.6	Ian Oversby	132	1

22	38/ 47/ 15		Test 3	Ian Oversby	130	1
25	21/ 78/ 1		Test 4	Ian Oversby	64	1
16	41/ 47/ 13		testest	M R Bremer	134	1

Two entries in the top ten: Walk like an Egyptian, a pwarrior by JKW, and Harmony by Paul Kline.

---

94 - What's No More.

#	%W/	%L/	%T	Name	Author	Score	Age
26	39/	51/	10	Memories	Beppe Bezzi	126	159
26	32/	38/	31	A Hard Day's Night	Maurizio Vittuari	125	289
26	31/	48/	22	No Prisoners	John K W	114	2
26	21/	14/	65	Evol Cap 6.6	John Wilkinson	129	1299
26	0/	0/	4	Marcia Trionfale	Beppe Bezzi	4	29
26	32/	38/	30	Eternal Flame	John K W	126	128
26	30/	34/	35	test	P.Kline	126	79
26	29/	32/	38	Hector 4	Kurt Franke	126	2
26				C I A	Anders Ivner	???	

I haven't got the message with C I A push off

Another millenary warrior leaves us this week: Evol cap 6.6 by JKW

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
19	27/	18/	54	Impfinity v4g1	Planar	137	1529
3	41/	34/	25	Thermite II	Robert Macrae	147	1330
12	37/	32/	31	Tornado 3.0	Beppe	142	1131
10	39/	35/	26	T.N.T.	Maurizio Vittuari	143	1055
7	34/	25/	41	Barrage	Anton Marsden	144	803
5	41/	35/	24	Chameleon	M R Bremer	147	801
6	41/	37/	22	Grilled Octopus v0.5	David Boeren	146	546
24	32/	31/	37	Blue Funk 5	Steven Morrell	134	474
16	39/	36/	25	prova	Maurizio Vittuari	141	306

T.N.T enters the millenaries club

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1620		P-warrior
2	Torch t18	P.Kline	1539		Bomber
3	Impfinity v4g1	Planar	1529	*	Stone/ imp
4	Frontwards v2	Steven Morrell	1420		One shot scanner
5	Thermite II	Robert Macrae	1330	*	Qscan -> bomber
6	quiz	Schitzo	1262		Scanner/ bomber
7	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
8	Tornado 3.0	Beppe Bezzi	1131	*	Bomber
9	T.N.T.	Maurizio Vittuari	1055	*	Bomber
10	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
11	Agony II	Stefan Strack	912		CMP scanner
12	Blue Funk	Steven Morrell	869		Stone/ imp
13	Barrage	Anton Marsden	803	*	Qscan -> replicator
14	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
15	Chameleon	Myer R Bremer	801	*	P-warrior
16	Blue Funk 3	Steven Morrell	766		Stone/ imp
17	Night Train	Karl Lewin	755		Replicator
18	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
19	Blizzard	Anton Marsden	713		Qscan -> replicator
20	HeremScimitar	A.Ivner,P.Kline	666		Bomber
21	La Bomba	Beppe Bezzi	650		Qscan -> replicator
22	myVamp v3.7	Paulsson	643		Vampire
23	Hazy Shade Of Winter	John Wilkinson	616		P-warrior
24	Armory - A5	John Wilkinson	609		P-warrior
25	juliet and paper	Bremer & Bezzi	607		P-warrior

Evol cap 6.6 end its run at 1299 in 7th position. Impfinity is now very close to Torch and at reach of Jack in the box for the Kothof (King of the

hall of fame)

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Mon Apr 15 06:36:53 PDT 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	47/	16/	37	Vectorfantasy v0.3	basehead	177	51
2	54/	34/	12	Wind-up Toy v0.5	Ian Oversby	174	26
3	48/	24/	29	Fork v0.2-9p/51b	Christoph C. Birk	171	54
4	51/	38/	11	Violent Micro v0.3	basehead	164	39
5	50/	39/	12	C-Seagal II 1.02	jShelton	161	22
6	49/	39/	12	look-see	Anonymous	160	84
7	44/	34/	21	Ripped v0.1	Ian Oversby	154	10
8	40/	26/	34	Pro-Bomber v0.3	David van Dam	154	1
9	45/	42/	12	Gunslinger 2	Julian	148	9
10	37/	28/	34	Hyakutake Perihelion	Scott Manley	146	91
11	39/	35/	26	Rabbit v0.2a	Christoph C. Birk	143	57
12	41/	41/	18	AK-47	Julian	140	14
13	44/	48/	9	Uni Charm Password	jShelton	140	30
14	40/	42/	17	AK-47.1	Julian	138	13
15	39/	41/	20	why? V 0.3	bjoern guenzel	138	2
16	39/	49/	12	Optma Dwarf v5.3	Phoenix	129	37
17	30/	30/	40	Toxin v0.7	Edgar	129	35
18	30/	45/	26	Antibodies Mk II	Andrew Fabbro	115	61
19	30/	46/	24	JuJu 7	Andrew Fabbro	114	18
20	30/	48/	22	Napalm	Iain Hogg	111	33
21	32/	61/	8	Whoops. Didn't mean to se	JKW	102	15
22	9/	4/	2	Anti Imp V1.1	bjoern guenzel	30	34
23	6/	5/	4	smoju 1 (another pun ...)	bjoern guenzel	24	6
24	2/	4/	2	why? V 0.4	bjoern guenzel	7	4
25	1/	1/	2	Pro-Bomber v0.2	David van Dam	5	17

basehead's Vectorfantasy is the leader, followed by Oversby's Wind up toy, whose brother v07 is in the pro hill.,Corewarrior list
Not a lot of movement here this week, but 37 challenges; just a lack of new players or the b-hill is too hard to make?

The Hint
Tornado 3.0 by Beppe Bezzi

As announced here is Tornado 3.0a, exacly as is on the 94 hill, after all the small flaw I was afraid of isn't that easy to spot, after all I spent more time on it than anyone else.

It's a 60%c using, OTOH, tornado engine. Main differences from Jack's version, even if it's perhaps easier to find resemblances, :-) are:
- It's self splitting, for more robustness.
- Uses djn stream for further protection against one shot scanners.
- Has a multipass external clear
- Uses a decoymaker instead of the boot
- Uses a mov {step,1 bomb instead of a simple dat.

Tornado enters clear self hitting with a spl #0 bomb and goes further on bombing, slower, until the the clear starves the bomber, a protection against Clisson, even if Clisson were far from coming at Tornado birth.

The step may look non optimal, but it's the best scoring one I found beetween all 'not too large' mod 5 numbers, apart that I lost my faith in

optimal number when a version of Memories with a step optimal for coresize 55440, an error using Corestep, scored better than any other optimal for coresize 8000 on the 94 hill. Maybe Steven, our optima number theorist, knows the reason.

```
;redcode-94
;name Tornado 3.0
;author Beppe
;assert CORESIZE==8000
;strategy Fast 60% c bomber
;strategy v 3.0a new clear, paper and imp protection
;strategy decoymaker instead of boot
;assert CORESIZE == 8000
;kill Tornado

dms     equ     25
dmd     equ     -2500
step    equ     -45
djnoff  equ     -2205
;---
A       equ     43
B       equ     24

a for 13
        mov     >dmd-dms*a,{dmd-dms*(a+15)
rof
;-break
       JMP.B    bombs,  >2975

for MAXLENGTH-CURLINE-A
        spl     #0,0
rof


gate    dat     -100,   100
        dat     <-10,   <2667           ;anti imp bit
        dat     -4000,   djmp-gate+2
stclr   spl     #-3000,  djmp-gate+2
clear   mov     @djmp,  >gate
        mov     @djmp,  >gate
djmp    djn.b   clear,  {stclr
        dat     0,0
        dat     0,0

for B
        dat     0,0
rof


bombs   spl     #step,  -step           ;hit spl
start1  sub     incr,   @b1
stone   mov     (0*step)+jump,*(1*step)+jump
b2      mov     bombs,  @stone
b1      mov     bombm,  *stone
jump    djn.f   start1, {djnoff         ;hit by spl
        jmp     stclr,  0
incr    dat     >-3*step,>-3*step
last
bombm   mov     {step,   1
```

Extra Extra
Stepping Stone by Kurt Franke

Stepping Stone is the result of ideas I had while writing System Trap.

The main warrior is a 2/3 c vamp/scan in the spirit of myVamp. The pit is

primarily not for stunning, but to notify my program processes have been trapped, to brainwash, and to self destruct. The first line of the pit causes Stepping Stone to jump to the core clear.

The quick scan has an interesting attack. It is a 3/5 c vamp using tornado style bombing. Only one instruction is a jump back to the trap. All the other jmp's go indirectly back to the original one pointing to the trap. This isn't practical for a general attack, but seems to work ok for the qscan attack. The quick scan vamp has its own pit. The first line of the qscan pit, when executed, causes Stepping Stone to go directly to the core clear without booting. Maybe this saves a few rounds where the boot code or vampire have been hit by a dat, I didn't really test. What does seem to be true is adding the quickscan increased my score nearly 10 points. This version scored about 3 or 4 points higher than the handshaking version.

It seems I could eliminate a line by combining the increment value with the add line to get

```
  add.f #-INCR, $INCR
```

and then putting jbomb INCR places forward. I tried this but it didn't work well (don't you hate it when scores don't improve after making what really seems to be an improvement?). I'll look at it again later perhaps. I have made other minor "improvements", but this is the one on the hill. Oh, except I changed the qscan places slightly so you can't murder me by reversing them.

- Kurt

/-----------------

```
;redcode-94
;assert CORESIZE == 8000

;author Kurt Franke
;name Stepping Stone
;kill Stepping Stone

;strategy Quick scan -> Vampire (version 9h)

;components (to help Planar) :
; quickscan, boot, vamp, scan, stun, clear, pspace(brainwash)

;; - - - - - - - - - - - boot parameters - - - - - - - - - - - - - - - -

                                ;; reference address for boot distances
REF             equ     (vamp-3)

                                ;; first define the places things will go
BVAMP           equ     (3+282*10+REF)
BSTEP           equ     (6+295*10+REF)
BJUMP           equ     (1+298*10+REF)
BCLEAR          equ     (4+367*10+REF)
BPIT            equ     (5+67*10+REF)
                ;;       ^
                ;;       +----  don't change this column of numbers
                ;;              they are magic to avoid self-bombing

                                ;; now define constants for use in the code
                                ;; (these are to be used when refering to a
                                ;;  line within that block of code)
CVAMP           equ     (BVAMP-vamp)
CCLEAR          equ     (BCLEAR-dbomb2+space)
CTARGET         equ     (BVAMP-vamp+target)
ADJUST          equ     (CCLEAR-CTARGET)

FIRST           equ     0
INC             equ     110     ;; mod 10 step for mod 5 vamp/scan
COUNT           equ     8*5
```

```
;; - - - - - - - - - - - - the vampire code - - - - - - - - - - - - - - -

vamp    add.f   $vamp+6,        $(BJUMP-CVAMP)  ;; incr will be at vamp+6
        mov.i   @0,             @(BJUMP-CVAMP)
        jmz.a   *target,        *(BJUMP-CVAMP)
        mov.i   @0,             *(BJUMP-CVAMP)  ;; a-field needs to be 0
target  djn     vamp,           #COUNT
        jmp     (CCLEAR-CVAMP)

step    jmp     @0,             BPIT-BSTEP      ;; a-field needs to be 0

jbomb   jmp     @BSTEP-BJUMP-FIRST,     $FIRST  ;; indirect jump to pit

CPTR            equ     (dbomb2-1)

dbomb2  dat     <2667, <2*2667+1
dbomb   dat     <-15, #10
space   spl     #0, #10                         ;; a-field needs to be 0
clear   mov     @cloop, >CPTR
        mov     @cloop, >CPTR
cloop   djn.b   $clear, {space

incr    dat     $-INC,          $INC

pit     mov.a   #ADJUST,        $CTARGET-BPIT
        spl     #0,             $0              ;; a-field needs to be 0
        mov     2,              >1
        stp     #0,             $BCLEAR-BPIT+36

;; - - - - - - - - - - - - - - boot code - - - - - - - - - - - - - - - - -

pboot   mov     $pit+3, BPIT+3
        for     3
          mov   {pboot, <pboot
        rof

cboot   mov     $dbomb2+5, BCLEAR+5
        for     5
          mov   {cboot, <cboot
        rof

        mov     $step, BSTEP

        mov     $jbomb, BJUMP

        mov     $incr, BVAMP+6
vboot   mov     $vamp+5, BVAMP+5
        for     5
          mov   {vboot, <vboot
        rof

        mov     $0, $cboot

        spl     @vboot

        mov     $0, $vboot                      ;; erase important pointers

        dat     $0, $0

;; - - - - - - - - - - - - - - quick scan - - - - - - - - - - - - - - - - -

QINC            equ     6
QCOUNT          equ     7

qjump   jmp     $qpit-found, #0
qstep1  jmp     *QINC, #-2*QINC
qstep2  jmp     *-2*QINC, #-QINC

start       ;'94 scan (from FAQ)
```

```
s1      for 4
          sne.x start+400*(s1+12), start+400*(s1+12)+100
          seq.x start+400*(s1+12)+200, start+400*(s1+12)+300
          mov   #start+400*(s1+12)-found, $found
        rof
        jmn     which, $found

s2      for 4
          sne.x start+400*(s2+6), start+400*(s2+6)+100
          seq.x start+400*(s2+6)+200, start+400*(s2+6)+300
          mov   #start+400*(s2+6)-found-100, $found
        rof
        jmn     which, $found

s3      for 4
          sne.x start+400*(s3+2), start+400*(s3+2)+100
          seq.x start+400*(s3+2)+200, start+400*(s3+2)+300
          mov   #start+400*(s3+2)-found-100, $found
        rof

        jmz     pboot, $found
        add     #100, $found
which   jmz.f   -1, @found
        sub.ba  $found, $qjump
        mov     $qjump, @found
        mov.ba  $found, $found

qloop   sub.f   $qstep1, $found
        mov     $qstep2, @found
        mov     $qstep1, *found
found   mov     $0, @0
        djn     qloop, #QCOUNT
launch  jmp     pboot, #space

qpit    mov.ba  $launch, $launch
qerase  spl     #0, #start
        mov     $10, >qerase
        jmp     BPIT

;; - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

        end     start
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From bremermr@ecn.purdue.edu Tue Apr 23 17:43:55 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA09627; Tue, 23 Apr 96 17:43:55 +0200
Received: from cartoon.ecn.purdue.edu (bremermr@cartoon.ecn.purdue.edu [128.46.147.13]) b
y nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id RAA28242 for <Damien.Doligez@inria.fr>; T
ue, 23 Apr 1996 17:40:44 +0200 (MET DST)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
        by cartoon.ecn.purdue.edu (8.6.12/3.8davy)
        for delivery to "Damien.Doligez@inria.fr"
        id KAA19364; Tue, 23 Apr 1996 10:40:35 -0500
Message-Id: <199604231540.KAA19364@cartoon.ecn.purdue.edu>
Date: Tue, 23 Apr 1996 10:40:35 -0500
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: Core Warrior 26
Status: R

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 26 April 22, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download pMARS at Terry's web page--http://www.infi.net/~wtnewton/corewar/

Greetings.

First thing: We, the authors of Core Warrior (all two of us), would like to support the nomination of Anders Ivner into the Core War Hall of Fame. The father of the imp is much more deserving than I'll ever be. However this is done, let's make it happen.

A slow week, so not a huge amount to report on. But to redeem this issue, Core Warrior has the source code to Grilled Octopus v0.5 by David Boeren. Check it out in Extra Extra. The hint section also delves into the inner workings of effective p-logic.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
        coresize: 8000

```
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	46/ 40/ 14	Solomon v0.3	Ian Oversby	152	33
2	43/ 36/ 21	Mirage 2	Anton Marsden	150	187
3	44/ 40/ 17	Scanny Boy	David van Dam	148	251
4	42/ 36/ 22	The Core Clear	David van Dam	148	10
5	41/ 34/ 25	Thermite II	Robert Macrae	147	1421
6	35/ 24/ 41	Walk Like An Egyptian	John K W	146	102
7	41/ 36/ 23	Chameleon	M R Bremer	145	892
8	43/ 41/ 16	Stepping Stone	Kurt Franke	145	234
9	39/ 36/ 25	Grilled Octopus v0.5	David Boeren	143	637
10	39/ 35/ 26	prova	Maurizio Vittuari	142	397
11	39/ 37/ 24	Blanket Party	J E Long	141	145
12	39/ 38/ 23	Gem of the Ocean	P.Kline	140	290
13	36/ 32/ 32	Lithium	John K Wilkinson	140	428
14	36/ 33/ 31	test	Beppe Bezzi	139	1
15	26/ 13/ 61	Hazy Shade II	John K W	139	380
16	42/ 46/ 12	Wind-up Toy v0.7	Ian Oversby	139	101
17	25/ 11/ 65	EvolCap XI	John Wilkinson	138	130
18	29/ 20/ 51	Impfinity v4g1	Planar	138	1620
19	35/ 33/ 31	Tornado 3.0	Beppe	138	1222
20	33/ 28/ 39	test	Beppe Bezzi	137	2
21	37/ 37/ 26	T.N.T.	Maurizio Vittuari	137	1146
22	32/ 31/ 37	Flurry	Anton Marsden	133	382
23	31/ 31/ 38	Blue Funk 5	Steven Morrell	131	565
24	33/ 38/ 28	test t36b	Beppe Bezzi	129	9
25	26/ 26/ 48	Wtest	P.Kline	126	6

Weekly age: 91
New warriors 6 Turnover/age rate 7%
Average age: 424 (386 last week, 397 the week before)
Average score: 141 (130 last week, 140 the week before)
The top 25 warriors are represented by 14 authors, JKW and Bezzi with 4, Oversby, Marsden, van Dam, Vittuari, and Kline with 2.

Not really that much going on in terms of volume or number of new warriors, but the quality of the new warriors is superb. Solomon v0.3 entered the hill in third, but on the next challenge rose to the top slot, a position it held for 12 challenges. Since then, it's been bouncing all over the hill, but it just so happens to hold the king position as this issue was created. The Core Clear performed a similar feat, rising to the number one ranking at the age of two. It was only for one challenge, but this warrior continues to do well. However, the real Kings this week have been Scanny Boy and Mirage 2.

I'm amazed at the quality of programs the hill is receiving from new authors. Just take a look some of the top ten. Oversby, Marsden, van Dam, Franke, Boeren--all have made the jump from the b-hill in the past few months. And they aren't struggling at the bottom of the hill, but are often challenging the King of the Hill. Of course it is really remarkable to someone like me who still has a bit of core war hero worship for the old days of Kline, Morrell, Mintardjo, Strack, Sieben, Sheppard, et al. Keep up the competition level.

---

94 - What's New

#	%W/ %L/ %T	Name	Author	Score	Age
3	45/ 42/ 13	Solomon v0.3	Ian Oversby	148	1
4	43/ 37/ 20	The Core Clear	David van Dam	148	1
23	32/ 41/ 27	test t36b	Beppe Bezzi	124	1
23	25/ 30/ 45	Wtest	P.Kline	121	1
11	33/ 28/ 39	test	Beppe Bezzi	138	1
13	34/ 34/ 32	test	Beppe Bezzi	135	1

Both Solomon and The Core Clear have seen first place.

---

94 - What's No More.

#	%W/	%L/	%T	Name	Author	Score	Age
26	2/	2/	0	Test 4	Ian Oversby	7	2
26	4/	2/	1	Test 3	Ian Oversby	13	4
26	6/	4/	2	testest	M R Bremer	20	6
26	36/	47/	17	Wind-up Toy v0.6	Ian Oversby	125	48
26	35/	46/	20	Harmony	P.Kline	123	41
26	29/	33/	38	Barrage	Anton Marsden	124	876

Barrage, a qscan -> replicator, was lost this week.

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
18	29/	20/	51	Impfinity v4g1	Planar	138	1620
5	41/	34/	25	Thermite II	Robert Macrae	147	1421
19	35/	33/	31	Tornado 3.0	Beppe	138	1222
21	37/	37/	26	T.N.T.	Maurizio Vittuari	137	1146
7	41/	36/	23	Chameleon	M R Bremer	145	892
9	39/	36/	25	Grilled Octopus v0.5	David Boeren	143	637
23	31/	31/	38	Blue Funk 5	Steven Morrell	131	565
13	36/	32/	32	Lithium	John K Wilkinson	140	428
10	39/	35/	26	prova	Maurizio Vittuari	142	397
22	32/	31/	37	Flurry	Anton Marsden	133	382
15	26/	13/	61	Hazy Shade II	John K W	139	380

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Jack in the box	Beppe Bezzi	1620		P-warrior
1	Impfinity v4g1	Planar	1620	*	Stone/ imp
3	Torch t18	P.Kline	1539		Bomber
4	Thermite II	Robert Macrae	1421	*	Qscan -> bomber
5	Frontwards v2	Steven Morrell	1420		One shot scanner
6	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
7	quiz	Schitzo	1262		Scanner/ bomber
8	Tornado 3.0	Beppe Bezzi	1222	*	Bomber
9	T.N.T.	Maurizio Vittuari	1146	*	Bomber
10	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
11	Agony II	Stefan Strack	912		CMP scanner
12	Chameleon	Myer R Bremer	892	*	P-warrior
13	Barrage	Anton Marsden	876		Qscan -> replicator
14	Blue Funk	Steven Morrell	869		Stone/ imp
15	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
16	Blue Funk 3	Steven Morrell	766		Stone/ imp
17	Night Train	Karl Lewin	755		Replicator
18	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
19	Blizzard	Anton Marsden	713		Qscan -> replicator
20	HeremScimitar	A.Ivner,P.Kline	666		Bomber
21	La Bomba	Beppe Bezzi	650		Qscan -> replicator
22	myVamp v3.7	Paulsson	643		Vampire
23	Grilled Octopus v0.5	David Boeren	637	*	P-warrior
24	Hazy Shade Of Winter	John Wilkinson	616		P-warrior
25	Armory - A5	John Wilkinson	609		P-warrior

Impfinity v4g1 by archive master Damien Doligez is tied for the all time lead of the core war hall of fame. This veteran has been floating in the lower half of the hill and just last challenge, fallen into the 20s. Impfinity has rebounded before, but continued attacks by p-warriors could spell its demise.

New entry Grilled Octopus v0.5 pushes off juliet and paper by Bremer & Bezzi.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000

```
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	62/	29/	9	Violent Micro v0.3	basehead	196	89
2	59/	34/	7	Gunslinger 2	Julian	184	59
3	49/	26/	25	Reluctance	Andy Nevermind	172	19
4	51/	35/	14	C-Seagal II 1.02	jShelton	167	72
5	48/	35/	17	why	bjoern guenzel	162	44
6	50/	39/	11	AK-47	Julian	161	64
7	50/	39/	11	AK-47.1	Julian	160	63
8	47/	36/	16	why rave	bjoern guenzel	159	42
9	43/	30/	27	Toxin II	Edgar	156	9
10	42/	28/	30	Toxin	Edgar	155	10
11	46/	39/	15	x-frog 2	bjoern guenzel	152	13
12	45/	41/	14	frog vamp 2	bjoern guenzel	149	8
13	46/	44/	10	Uni Charm Password	jShelton	149	80
14	44/	48/	8	Optma Dwarf v5.3	Phoenix	140	87
15	37/	41/	22	Bye Bye Badman v1.1	Iain Hogg	133	23
16	38/	43/	19	Forked Lite Ning 4.1	Ansel Greenwood Serm	132	38
17	38/	43/	19	Bloodhound	Andrew Fabbro	132	11
18	32/	40/	28	Killer	Ian Oversby	124	16
19	31/	38/	31	Assassinator	David van Dam	124	6
20	31/	38/	31	Assassinator	David van Dam	124	3
21	34/	46/	20	C Seagal II v 2.0 Test	jShelton	121	18
22	38/	59/	3	lightning	Jens Heunemann	116	24
23	17/	71/	12	Centurion x	Edgar	64	2
24	10/	0/	1	The Core Clear	David van Dam	31	5
25	2/	98/	0	Unknown	Anonymous	6	1

Fifty challenges since last week. basehead still rules the roost, but Oversby and van Dam have leap frogged to the '94 draft hill.

The Hint
Switching Techniques and Brainwash Recovery

When pspace was first implemented on the hills, one of the first switching algorithms was the simple 'switch on loss' or 'switch on tie or loss'.

```
res     ldp.ab  _RESULT, #0
str     ldp.a   _STRATEGY, str1     ;load strategy in use
        sne.ab  #0, res             ;check result
lost    add.a   #1, str1            ;lost change
        mod.a   #X, str1            ;X = number of strategies to switch
win     stp.ab  str1, _STRATEGY
str1    jmp     @0, strat0
        dat     0, strat1
        dat     0, strat2
        . . .
        dat     0, stratX-1
```

The code is short and decisions are made quickly. However it is definitely lacking in sophistication (which you don't always need to be effective). The mod instruction ensures that a valid strategy is chosen even if brain-washed. However, since there is no active wash detection, the strategy chosen is essentially random. The algorithm does average (for a pspace warrior) against non-pspace opponents, but tends to do better against slower p-opponents that take multiple rounds to make decisions. Jack in the box uses this type of p-logic.

To equip this switcher with a decent detection system is simple. One method is to simply load of number into pspace on the first round and check it every remaining round to see if it's been tampered with. You could reset it and run a special anti-wash warrior or stick with the anti-wash warrior for the rest of the battles. This could take a lot of extra p-code. A better method may be this:

```
res     ldp.ab _RESULT, #0
str     ldp.a _STRATEGY, str1   ;load strategy in use

        mod.a #97, str1         ;valid strategies are are all mod 97
        jmn.a washed, str1      ;do 'have been washed' code [then reset?]
        ldp.a _STRATEGY, str1   ;got to be a way to get rid of repeating this

        sne.ab  #0, res         ;check result
lost    add.a   #97, str1       ;lost change
        mod.a   #X, str1        ;X = number of strategies to switch
win     stp.ab  str1, _STRATEGY
str1    jmp     @0, strat0
        dat     0, strat1
        dat     0, strat2
        . . .
        dat     0, stratX-1
```

This is almost exactly the same p-code with the addition of three extra lines of instructions to ensure that all valid strategies are mod 97. A brainwash would have to wash with a multiple of 97 (unfortunately zero is one of them) to escape detection. Of course you special number can vary as long as the mod.a #X instruction yields the proper series to switch your components. I used this type of detection along with a custom scoring system in my warrior 'testestest' which held first place for a challenge and then dropped off the hill a few challenges later. It could have used better components.

```
start   ldp.ab _STRATEGY, check
        jmz.b switch, check     ; washed or first round, just do a switch
check   mod.ab #97, #0000       ; if not multiple of 97, have been washed!
        jmn.b scanner, check    ; washed --> do scanner (can do any plogic)
        ldp.a _RESULT, keeper
        ldp.ab _SCORE, adjust
keeper  jmp @0, adjust+1        ; result == 0 == loss
        jmp 0, adjust           ; result == 1 == win
        jmp 0, adjust+2         ; result == 2 == tie
adjust  add.ab #6, #0           ; win
        add.ab #-2, adjust      ; lose
        add.ab #-1, adjust      ; tie
        ldp.a _STRATEGY, select ; again.  can't seem to save it.
        slt.b adjust, #7000     ; did it go negative?
        jmp switch
return  stp.b adjust, _SCORE
        mod.a #3, select
select  jmp @0, scanner
        jmp 0, stone
        jmp 0, paper
switch  add.a #97, select
        stp.ab select, _STRATEGY
        mov.ab #10, adjust
        jmp return
```

This code creates a 'score' for each strategy starting at 10. For every win the score increases by 3, tie--decrease by 1, loss--decrease by 3. The strategy switches when the score goes negative. When fighting a non-pspace opponent, the logic should quickly find the proper strategy and not deviate from the optimum.

One of the neatest switcher I've seen so far is Kline's Gem of the Ocean. It is very effective while maintaining simplicity. (For a complex, effective switcher see Boeren's Grilled Octopus). It uses an array to determine its next strategy thereby controlling the sequence of warriors. The key here is to select the proper sequence of warriors as well as good componets. Kline provides a lengthy explanation of his choices in the post of Gem.

```
parray    dat 0,choose1         ;table for pswitching
          dat 0,choose3         ;- stay after win
          dat 0,choose1         ;- go to ptie after tie
          dat 0,choose4         ;- move up one after loss
```

```
          dat 0,choose1
          dat 0,choose3
ptie      dat 0,choose2
          dat 0,choose4

presult   ldp.ab #0,#0                  ;pswitch code, nice and short
pselect   ldp.ab #PFLAG,#0
          sne.ab #0,presult             ;advance table selection after a loss   add.ab #1
,pselect
          sne.ab #2,presult             ;go to Sweep after a tie
          mov    #ptie-parray,pselect
          stp.ba pselect,pselect
          mod.ab #presult-parray,pselect
          add.ba pselect,pchoice
pchoice   jmp    @parray,{pselect       ;jump to selection
```

A few things to consider: most programs switch on losses. Keeping the same strategy after a win can be quite dangerous to you. Quick scanners feast on bloated code. Consider switching step sizes or bomb types instead of entire strategies. Often pspacers do not use booted components. There has to be a way to write common boot code that will handle every p-component (most likely in next week's issue). How difficult can it be to write a switcher that creams stand still programs? And one that takes advantage of the stay on win, switch on loss algorithm? And then switches both of those? Let me know when you find out.

Planar's Corner

Mount Olympus

"Mt Olympus" is the name of a little experiment I'm working on. You can check it out at: http://pauillac.inria.fr/~doligez/corewar/olympus/

In real life, Mount Olympus is the biggest mountain of the solar system, 21 km high. It is located on the planet Mars.

In my Web page, Mt Olympus is a hill with room for all warriors.

Of course, I'm not running all the battles. The Web page gives an explanation of how it works. Even then, it'll take a few months before I'm through with all the old warriors. In the meantime, you can climb in my time machine and see which warriors were state of the art back in 1992, and which ones were already outclassed.

-- Planar

Extra Extra
Grilled Octopus by David Boeren

Here's the source code for the version of Grilled Octopus which is currently on the Hill. He no longer terrorizes the Hill like he used to, so I thought it was finally time to let you know how it works. Basically, I use two threshold-switching algorithms (like Clisson) and one switch-on-loss algorithm (like Jack). There is also some very good brainwash detection which will make me permanently switch to a brainwash-handling component. My first component is my best one, it's a 6-instruction self-splitting .5c DAT bomber with a 1-pass (suicidal) DAT coreclear. You can hardly ask for a better anti-scanner component due to the small size, and it does pretty well against other bombers too. It's quick to boot, and hard to see/hit. It's also guaranteed to lose horribly against any paper and any normal imp spiral. If this component fails, then I switch to a 1-shot scanner->coreclear, which is also my anti-brainwash component. Nothing special about it, but it seems to work fairly well vs. papers and some bombers. Finally, if this also fails I end up in a switch-on-loss between my bomber and paper0. I tried other papers, but the only ones that scored better than paper0 were all much larger, and thus unsuitable as components. The switch-on-loss helps me score better against other pspacers, particularly those which are slow to adapt.

The pspace code used here is pretty neat, and fast as well. I have not had much trouble with qscanners, since I'm generally finished booting away in 22 cycles or so. Some components go faster than others, and if I detect brainwash I boot VERY fast due to skipping almost all the thinking.

I don't really know for sure if the re-stepping code for my bomber helps much or not. I may drop the idea in future warriors. It was intended to help me adjust to the step size of my opponent, but results on the Hill were pretty ambiguous.

If you read my earlier article on pspace you'll see that I still use the same methods of erasing my boot pointers, but I have rigged the code so that I only have to erase one location to erase my pspace pointers now.

I've made some improvements since this code, but I was sick of ;killing my programs all the time when they were doing so well and throwing away all my hard-won age. It may interest some to know that if I'd left v0.1 on the Hill it would be #10 in the Hall of fame right now!

For next week, I'll be writing an article on how to make a multi-boot routine that you can use to boot all of your components with only minimal overhead. By using one of these I was able to save 16 instructions, which is enough to add a 4th component.

```
;redcode-94
;name Grilled Octopus v0.5
;author David Boeren
;assert CORESIZE == 8000
;strategy Aggressive P-warrior
;strategy Death awaits you all, with nasty big pointy teeth!
;strategy     v0.1 Initial Release
;strategy     v0.2 More aggressive, wins are better than ties!
;strategy     v0.5 Totally new pspace techniques, upgraded components

step    equ 95
stepb   equ (step*2)
stepz   equ (184*2)                 ; "second chance" step for Fei-Oh
gate    equ (inc-95)

dest0   equ   2200
dest1   equ   3740
dest2   equ  -1278                  ; pmars optimized
range   equ    933                  ; pmars optimized

sid     equ    143                  ; Stage ID
pdata   equ     23                  ; Win/Loss data
Pmod    equ     29

; 5=7859, 7=7801, 8=7772, 10=7685, 13=7598, 16=7511, 20=7385
Pinit   equ   7598                  ; Fei-Oh loss tolerance
Pmorf   equ   7801                  ; Fei-Oh re-stepping tolerance
Pinit2  equ   7772                  ; Paper Shredder loss tolerance

bdist1  equ   (sflag+3317)          ; Fei-Oh boot distance
bdist2  equ   (sflag+3268)          ; Paper Shredder boot distance
bdist3  equ   (sflag+3243)          ; Paper boot distance

        org start
sflag   DAT.F      #sid,   #pdata   ; pspace data pointers
        DAT.F        #0,   +Pinit   ; first round
PRESULT DAT.F        #0,    +Pmod   ; loss
        DAT.F        #0,    -Pmod   ; win
        DAT.F        #0,       #0   ; tie

start   LDP.A        #0,  PRESULT   ; Get results of last round
        SNE.A       #-1,  PRESULT   ; Is it the 1st round?
        STP.A     #1003,    sflag   ;     If so, init stage ID
        LDP.A     sflag,     jtab   ; Load stage ID
        SUB.A     #1003,     jtab   ; Subtract secret number...
```

```
        SLT.AB     jtab,       #3    ; Are we brainwashed?
        JMP.B        @0,   nowash    ;     If so, jump to handler
        LDP.BA    sflag,    PTEST    ; Get the current win/loss counter
jtab    JMP.B        @0,   stage1    ; Jump table to correct component
        DAT.F        #0,   stage2
        DAT.F        #0,   stage3

stage1  ADD.AB    PTEST, *PRESULT    ; Update win/loss counter
        STP.B  *PRESULT,    sflag    ; Store updated counter
        MOD.AB    #Pmod, *PRESULT    ; Check the MOD
        SLT.B  *PRESULT,   #Pmorf    ; See if Fei-Oh is losing...
        MOV.A    #stepz,   loop+1    ;     Try a new step
        JMZ.B    fei_oh, *PRESULT
        STP.A     #1004,    sflag    ; Engage stage 2 pspace algorithm
        STP.AB  #Pinit2,    sflag    ; Reset stage 2 loss counter
                                     ; Too many losses, fall through...
shred
        MOV.I         0,    sflag    ; Safety-net for our pspace stuff
nowash
boot3   MOV.I   clear+1,   bdist2    ; fast boot away tail first
for 7
        MOV.I    {boot3,   <boot3
rof
        ADD.AB       #3,    boot3    ; adjust so we split to "loop"
        SPL.B    @boot3,       #1    ; split to main program
        MOV.I         0,    boot3    ; obliterate boot pointer
                                     ; fall through and die...
ptr     DAT.F       #10,       #5
        DAT.F       #10,       #1
        SPL.B        -1,       #1
scan    ADD.A        #8,      ptr   ; "Ippatsu" one-shot scanner
        JMZ.F      scan,     *ptr
        SPL.B       #10,       #2
clear   MOV.I      @ptr,     }ptr
        DJN.F     clear,    <gate

stage2  ADD.AB    PTEST, *PRESULT    ; Update win/loss counter
        STP.B  *PRESULT,    sflag    ; Store updated counter
        MOD.AB    #Pmod, *PRESULT    ; if flag is not the right mod:
        JMZ.B     shred, *PRESULT
        STP.A     #1005,    sflag    ; Engage stage 3 pspace algorithm
                                     ; Fall through to backup strategy...
pboot
        MOV.I         0,    sflag    ; Safety-net for our pspace stuff
boot2   MOV.I     ibomb,   bdist3    ; fast boot away tail first
for 10
        MOV.I    {boot2,   <boot2
rof
        SPL.B    @boot2,       #1    ; split to main program
        MOV.I         0,    boot2    ; obliterate boot pointer
        DAT.F        #0,       #0    ; die

paper   SPL.B         1,       #0    ;\
        SPL.B         1,       #0    ;-> generate 8 processes
        SPL.B         1,       #0    ;/

silk    SPL.B        @0,   {dest0
        MOV.I       }-1,      >-1
silk1   SPL.B        @0,   <dest1
        MOV.I       }-1,      >-1
        MOV.I     ibomb,   }range
        MOV.I    {silk1,   <silk2
silk2   JMP.B        @0,   >dest2
ibomb   DAT.F     <2667,    <5334

inc     SPL.B        #0,    <gate    ; Fei-Oh v0.6
loop    MOV.I      bomb,    @targ
        ADD.AB   #stepb,     targ
targ    MOV.I      bomb, }stepb-1
        DJN.F      loop,    <gate
```

```
bomb    DAT.F     #step,       >1

; stage 3 is a switch-on-loss module against pspacers and paper/imps

stage3  SNE.A        #0,  PRESULT    ; check result
lost    ADD.A        #1,    PTEST    ; lost change
        MOD.A        #2,    PTEST    ; secure result
win     STP.AB    PTEST,    sflag
PTEST   JMP.B        @0,   fei_oh
        DAT.F         0,    pboot

fei_oh
        MOV.I         0,    sflag    ; Safety-net for our pspace stuff
boot    MOV.I      bomb,   bdist1    ; fast boot away tail first
for 5
        MOV.I     {boot,    <boot
rof
        SPL.B     @boot,       #1    ; split to main program
        MOV.I         0,     boot    ; obliterate boot pointer
                                     ; fall through and die...
        END
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

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Article: 5000 of rec.games.corewar
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From: bezzi@nemo.it (Beppe Bezzi)
Newsgroups: rec.games.corewar
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Organization: Storm King Ind. Inc.
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Originator: corewar-l@stormking.com

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                              ,    .
$$$$$$P'   '                              .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 27 April 29, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download pMARS at:

Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars

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Greetings.

A quiet week on the hill, few challengers and little or no bloodwaste; are the players taking some holydays or just preparing new weapons for next week, nobody can tell it.

In the newsgroup there has been some discussion about a new scoring system for multiwarrior hills, seen the too many ties and the scarcety of strategies. John K. Lewis decided to organize a tournament to see if a reduced process number can bring more variety.

The tournament will use the following set up:

pmars <programs 1-10> -r 100 -p 8 -k

Mail your entries to John <jklewis@ren.us.itd.umich.edu> with a subject of :

- THE BATTLE ROYAL! -

This issue includes a first release of warrior ratings, according to the advanced benchmark. Thanks to Scott Manley that did the job.

- Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	44/	40/	16	Scanny Boy	David van Dam	149	304
2	43/	36/	21	Mirage 2	Anton Marsden	149	240
3	42/	35/	24	Thermite II	Robert Macrae	149	1474
4	45/	42/	13	Solomon v0.3	Ian Oversby	149	86
5	42/	36/	22	Gem of the Ocean	P.Kline	148	343
6	35/	24/	40	Walk Like An Egyptian	John K W	147	32
7	41/	37/	22	Chameleon	M R Bremer	145	945
8	43/	42/	14	Stepping Stone	Kurt Franke	145	287
9	40/	36/	23	Grilled Octopus v0.5	David Boeren	145	690
10	29/	15/	55	Hazy Shade II	John K W	143	433
11	40/	38/	21	The Core Clear V1.2	David van Dam	142	15
12	38/	35/	26	La Bomba 1.3	Beppe Bezzi	141	45
13	31/	20/	49	Impfinity v4g1	Planar	141	1673
14	40/	38/	22	Blanket Party	J E Long	141	198
15	36/	32/	32	Lithium	John K Wilkinson	141	481
16	38/	36/	26	prova	Maurizio Vittuari	141	450
17	36/	32/	32	Flurry	Anton Marsden	140	435
18	36/	33/	31	Tornado 3.0	Beppe	139	1275
19	38/	38/	24	coal 3.1	bjoern guenzel	139	4
20	25/	12/	64	EvolCap XI	John Wilkinson	138	183
21	42/	47/	11	Wind-up Toy v0.7	Ian Oversby	138	154
22	40/	44/	16	Naked dancer	Beppe Bezzi	136	26
23	33/	31/	36	Blue Funk 5	Steven Morrell	135	618
24	36/	38/	26	T.N.T.	Maurizio Vittuari	135	1199
25	31/	33/	35	silkworm v3.2	Brian Haskin	130	1

Weekly age: 53
New warriors 6 Turnover/age rate 11%
Average age: 464 (424 last week, 386 the week before)
Average score: 142 (141 last week, 130 the week before)
The top 25 warriors are represented by 16 authors, JKW with 4, Bezzi 3, Oversby, Marsden, van Dam and Vittuari with 2.

A very quiet week this one, but 53 challenges, no push off and no new warrior in the hilltop, paprt new version of Walk like an Egyptian for just a moment.

Mirage 2 held King position for most time sharing the spot with Solomon, Scanny boy, the Core Clear, Chameleon an Walk like an Egyptian. The scores are very close, we have 5 warrior in one point, 9 in four points and 21th is at but 11 point from the top, this with an entry score of 130 points.

Scanners and pspacers seem to be the winning strategy, even if it's rather difficult to see a tendency in such a situation.

---

94 - What's New

#	%W/	%L/	%T	Name	Author	Score	Age
6	35/	24/	40	Walk Like An Egyptian	John K W	147	32
11	40/	38/	21	The Core Clear V1.2	David van Dam	142	15
12	38/	35/	26	La Bomba 1.3	Beppe Bezzi	141	45
19	38/	38/	24	coal 3.1	bjoern guenzel	139	4
22	40/	44/	16	Naked dancer	Beppe Bezzi	136	26
25	31/	33/	35	silkworm v3.2	Brian Haskin	130	1

---

94 - What's No More.

#	%W/	%L/	%T	Name	Author	Score	Age
26	0/	0/	3	test t36b	Beppe Bezzi	4	10
26	3/	3/	2	test	Beppe Bezzi	11	3
26	5/	4/	3	test	Beppe Bezzi	17	5
26	3/	3/	2	Walk Like An Egyptian	John K W	11	125
26	1/	1/	2	Wtest	P.Kline	4	13
26	4/	0/	0	The Core Clear	David van Dam	11	48

No push offs this week, but a few warriors killed by their authors

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
18	29/	20/	51	Impfinity v4g1	Planar	138	1673
5	41/	34/	25	Thermite II	Robert Macrae	147	1474
19	35/	33/	31	Tornado 3.0	Beppe	138	1275
21	37/	37/	26	T.N.T.	Maurizio Vittuari	137	1199
7	41/	36/	23	Chameleon	M R Bremer	145	945
9	39/	36/	25	Grilled Octopus v0.5	David Boeren	143	690
23	31/	31/	38	Blue Funk 5	Steven Morrell	131	618
13	36/	32/	32	Lithium	John K Wilkinson	140	481
10	39/	35/	26	prova	Maurizio Vittuari	142	450
22	32/	31/	37	Flurry	Anton Marsden	133	435
15	26/	13/	61	Hazy Shade II	John K W	139	433
5	42/	36/	22	Gem of the Ocean	P.Kline	148	343
1	44/	40/	16	Scanny Boy	David van Dam	149	304

Two new entries in the over 300: Gem of the Ocean and Scanny Boy

---

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Impfinity v4g1	Planar	1673	*	Stone/ imp
2	Jack in the box	Beppe Bezzi	1620		P-warrior
3	Torch t18	P.Kline	1539		Bomber
4	Thermite II	Robert Macrae	1474	*	Qscan -> bomber
5	Frontwards v2	Steven Morrell	1420		One shot scanner
6	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
8	Tornado 3.0	Beppe Bezzi	1275	*	Bomber
7	quiz	Schitzo	1262		Scanner/ bomber
9	T.N.T.	Maurizio Vittuari	1199	*	Bomber
10	Chameleon	Myer R Bremer	945	*	P-warrior
11	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
12	Agony II	Stefan Strack	912		CMP scanner
13	Barrage	Anton Marsden	876		Qscan -> replicator
14	Blue Funk	Steven Morrell	869		Stone/ imp
15	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
16	Blue Funk 3	Steven Morrell	766		Stone/ imp
17	Night Train	Karl Lewin	755		Replicator
18	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
19	Blizzard	Anton Marsden	713		Qscan -> replicator
20	Grilled Octopus v0.5	David Boeren	690	*	P-warrior
21	HeremScimitar	A.Ivner,P.Kline	666		Bomber
22	La Bomba	Beppe Bezzi	650		Qscan -> replicator

23	myVamp v3.7	Paulsson	643	Vampire
24	Blue Funk 5	Steven Morrell	618 *	Stone/ imp
25	Hazy Shade Of Winter	John Wilkinson	616	P-warrior

Impfinity v4g1 by Planar is the new leader, and is running toward new frontiers.

New entry Blue Funk 5, BTW Steven, not bad for a beta, and what about even numbered versions, pushes off Armory - A5 by John K. Wilkinson.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft
Last challenge: Tue Apr 30 03:21:24 PDT 1996

#	%W/	%L/	%T	Name	Author	Score	Age
1	60/	29/	12	Violent Micro v0.4	basehead	190	14
2	55/	31/	14	coal 3.2	bjoern guenzel	180	2
3	56/	37/	8	Gunslinger 2	Julian	175	87
4	51/	36/	13	AK-47	Julian	166	92
5	51/	36/	13	AK-47.1	Julian	166	91
6	50/	38/	12	C-Seagal II 1.02	jShelton	162	100
7	50/	38/	13	frogskin 4	bjoern guenzel	161	25
8	48/	38/	14	why	bjoern guenzel	158	72
9	43/	29/	28	Reluctance	Andy Nevermind	157	47
10	44/	33/	23	Toxin III	Edgar	154	8
11	45/	40/	15	x-frog 2	bjoern guenzel	149	41
12	40/	33/	27	Toxin III	Edgar	146	9
13	34/	30/	36	Toxin	Edgar	137	38
14	35/	33/	32	Toxin II	Edgar	137	37
15	41/	47/	12	Bloodhound	Andrew Fabbro	134	39
16	37/	45/	18	Bye Bye Badman v1.1	Iain Hogg	129	51
17	37/	54/	8	SideWinder	Julian	120	24
18	36/	54/	11	Centurion XIV	Edgar	118	10
19	24/	31/	45	waves	bjoern guenzel	116	11
20	30/	46/	24	C Seagal II v 2.0 Test	jShelton	115	46
21	31/	50/	19	Killer	Ian Oversby	112	44
22	30/	49/	21	Forked Lite Ning 4.1	Ansel Greenwood Serm	110	66
23	31/	54/	15	Centurion XIV (mod)	Edgar	108	1
24	34/	62/	4	lightning	Jens Heunemann	105	52
25	29/	59/	13	Metamorphosis v2.0	Mike Ash	99	19

But 28 challenges since last week. basehead, time to play in the pro, isn't it, with new version of Violent Micro, is still the leader. Guenzel put his coal in the 94 and Julian is holding runner up positions

---

The Hint
Multi boot routines
by David Boeren

Welcome back to another week of Core Warrior. This hint is about how to write a multi-boot routine. We all know what a boot routine is, and probably almost all of us use one to escape from qscanners. Pspacers sometimes have a little trouble though. Pspacers really need to boot, since they are big and take some extra time for their thinking. The problem is that if you have a separate 1c boot for each component it gets too big and you have to limit yourself in the number and size of the components you can use. You can use looping (.5c) boots instead, but the speed lost can be dangerous. A multi-boot
is a boot routine that will boot ALL of your components at 1c, so you only need to include one boot routine. This saves a lot of space, when I applied

the multi-boot to Grilled Octopus (with 3 components) I saved 16 instructions.

Let's take a look at my standard boot routine:

```
boot    MOV.I      tail,     3268    ; fast boot away tail first
for 9
        MOV.I     {boot,    <boot
rof
        ADD.AB       #3,     boot    ; adjust so we split to "start"
        SPL.B     @boot,       #1    ; split to main program
        MOV.I         0,     boot    ; obliterate boot pointer
```

Everyone's code looks pretty much the same as this, except that I add the instructions to erase the boot pointer. You can replace the SPL/MOV with just a JMP if you don't need this. Anyway, the key feature is that we boot our component tail-first, and then we have an unrolled loop that uses the pre-decrement addressing to loop over the component.

A successful multiboot should have a similar structure. The simplicity of a for/rof loop for 1c booting is great, and the convenience of only having one instruction holding the boot destination AND the source pointer makes it simple to erase our boot pointer. This should also hint to us that by replacing this instruction we can make the routine boot from a different source. Here is the code I developed for my multi-boot. The reason the first instruction isn't in the for/rof is because pmars wouldn't accept a label right before a for/rof block.

```
mboot   MOV.I     }boot,    >boot    ; Multi-boot routine
for 9
        MOV.I     }boot,    >boot
rof
boot    MOV.I       inc,    bdist    ; fast boot away tail first
boff    SUB.AB       #5,     boot
        SPL.B     @boot,       #1    ; split to main program
        MOV.I         0,     boot    ; obliterate boot pointer
```

You'll note it looks almost the same as before. The key difference is that the instruction that holds the source & dest pointers is LAST rather than first. Our strategy is that we want to jump into the middle of the for/rof block at some point appropriate to the size of the component we're booting, and for this to work the pointers have to be last. You may also note that we now boot head-first, but this is really just a side-effect of having the pointers last. I still use the same SPL/MOV to erase the boot pointer, but you can replace these with a JMP just like in the old code.

Now, when you get ready to boot you have to do a couple things. First, you do a MOV to set the source pointer. Then you do a MOV to set the correct starting point for your component (the SUB line). Finally, you JMP into the middle of the for/rof block to control how many instructions you are booting. Here is an example of the code you would use to set up the multi-boot:

```
shred   MOV.A #ptr-boot,     boot    ; Set component boot pointer
        MOV.A        #4,     boff    ; Adjust for starting offset
        JMP.B   mboot+3,       #1    ; Jump to multi-boot routine
```

You can see that the multi-boot has a maximum of 3 instructions of overhead, but quite often is it less. I would advise having the multi-boot default to your most common component, this component will pay *0* instructions of overhead. The routine will be pre-loaded with the source pointer and the starting offset, so all you need to do is change your labels so that anyplace that jumped to your old boot routine jumps directly into the rof/rof block and that's it. This can be done very easily with an equ:

```
boot_stone  equ   mboot+5
```

Of course, any time you have another component which has the same starting offset within the component, you can save a cycle by not reloading this value. The number of MOV's needed for booting is the same as the size of your largest component. If you arrange your code so that the boot setup for your largest component comes directly before the multi-boot routine you can save

the JMP and fall-through into it, saving another cycle. This can always be done, so consider it a freebie. So, in a typical 3-component pspacer you will have one component with 0 cycles of overhead (default component), one component with no more than 2 cycles of overhead (fall-through to mboot), and one component with up to 3 cycles of overhead. That's a total of 5 cycles, divided by 3 components, means an average of less than 2 cycles per component. This assumes that neither of your other components has the same boot offset as your default, or else you will save even more cycles.

Finally, let's see how you would incorporate this into YOUR code. The multi boot you can copy directly into your code. Replace the SPL/MOV with a JMP if you prefer. Now, each component will have up to 3 lines to set up the boot. Here's how you find the values you need:

```
shred   MOV.A   #A-boot,     boot    ; Set component boot pointer
        MOV.A        #B,     boff    ; Adjust for starting offset
        JMP.B   mboot+C,       #1    ; Jump to multi-boot routine
```

```
A = pointer to the first instruction of your component
B = take the instruction you want to start execution on, how many instructions
    is it from this instruction to the last instruction?
C = sizeof(biggest_component) - sizeof(this_component)
```

Setting up the default component should be easy enough, just follow the example below if you need to.

So what is the total cost and benefits of a multi-boot? The benefit is saving a lot of space, which can be used to add an extra component or just beef up the ones you have now. You could also use the extra space to put in some more complex "brains" for switching. The disadvantages are not too bad in comparison. You have to pay an overhead of 2-3 cycles per component, with one component getting a "free ride" for 0 cycles of overhead. You can only have one boot_distance value to tweak instead of one per component (not usually a big deal). Unless your pspacer is simple and small, you can probably improve it by switching to a multi-boot. It's not free points, but it opens up the opportunity to add more components, better components, more brains, or possibly unrolling some of the loops you are currently using for speed reasons. Hey, maybe you can even add a couple points to your spirals!

Here's an updated version of Grilled Octopus which has been modified to use the multi-boot system. By doing so, I've saved 16 instructions, which could easily be used to add a 4th component.

```
;redcode-94
;name Grilled Octopus v0.7
;author David Boeren
;assert CORESIZE == 8000
;strategy Aggressive P-warrior
;strategy Death awaits you all, with nasty big pointy teeth!
;strategy     v0.1 Initial Release
;strategy     v0.2 More aggressive, wins are better than ties!
;strategy     v0.5 Totally new pspace techniques, upgraded components
;strategy     v0.7 I'm shrinking!  Multi-boot saves 16 instructions.

step    equ 95
stepb   equ (step*2)
stepz   equ (184*2)                 ; "second chance" step for Fei-Oh
gate    equ (inc-95)

dest0   equ   2200
dest1   equ   3740
dest2   equ  -1278                  ; pmars optimized
range   equ    933                  ; pmars optimized

sid     equ    143                  ; Stage ID
pdata   equ     23                  ; Win/Loss data
Pmod    equ     29
```

```
; 5=7859, 7=7801, 8=7772, 10=7685, 13=7598, 16=7511, 20=7385
Pinit   equ   7598                  ; Fei-Oh loss tolerance
Pmorf   equ   7801                  ; Fei-Oh re-stepping tolerance
Pinit2  equ   7772                  ; Paper Shredder loss tolerance

bdist   equ   (sflag+3312)          ; multi-boot distance
fei_oh  equ   mboot+5

        org start
sflag   DAT.F      #sid,   #pdata   ; pspace data pointers
        DAT.F        #0,   +Pinit   ; first round
PRESULT DAT.F        #0,    +Pmod   ; loss
        DAT.F        #0,    -Pmod   ; win
        DAT.F        #0,       #0   ; tie

start   LDP.A        #0,  PRESULT   ; Get results of last round
        SNE.A       #-1,  PRESULT   ; Is it the 1st round?
        STP.A     #1003,    sflag   ;     If so, init stage ID
        LDP.A     sflag,     jtab   ; Load stage ID
        SUB.A     #1003,     jtab   ; Subtract secret number...
        SLT.AB     jtab,       #3   ; Are we brainwashed?
        JMP.B        @0,   nowash   ;     If so, jump to handler
        LDP.BA    sflag,    PTEST   ; Get the current win/loss counter
jtab    JMP.B        @0,   stage1   ; Jump table to correct component
        DAT.F        #0,   stage2
        DAT.F        #0,   stage3

stage1  ADD.AB    PTEST, *PRESULT   ; Update win/loss counter
        STP.B  *PRESULT,    sflag   ; Store updated counter
        MOD.AB    #Pmod, *PRESULT   ; Check the MOD
        SLT.B  *PRESULT,   #Pmorf   ; See if Fei-Oh is losing...
        MOV.A    #stepz,   loop+1   ;     Try a new step
        JMZ.B    fei_oh, *PRESULT
        STP.A     #1004,    sflag   ; Engage stage 2 pspace algorithm
        STP.AB  #Pinit2,    sflag   ; Reset stage 2 loss counter
                                    ; Too many losses, fall through...
nowash
shred   MOV.A #ptr-boot,     boot   ; Set component boot pointer
        MOV.A        #4,     boff   ; Adjust for starting offset
        JMP.B   mboot+3,       #1   ; Jump to multi-boot routine

ptr     DAT.F       #10,       #5
        DAT.F       #10,       #1
        SPL.B        -1,       #1
scan    ADD.A        #8,      ptr   ; "Ippatsu" one-shot scanner
        JMZ.F      scan,     *ptr
        SPL.B       #10,       #2
clear   MOV.I      @ptr,     }ptr
        DJN.F     clear,    <gate

paper   SPL.B         1,       #0   ;\
        SPL.B         1,       #0   ;-> generate 8 processes
        SPL.B         1,       #0   ;/

silk    SPL.B        @0,   {dest0
        MOV.I       }-1,      >-1
silk1   SPL.B        @0,   <dest1
        MOV.I       }-1,      >-1
        MOV.I     ibomb,   }range
        MOV.I    {silk1,   <silk2
silk2   JMP.B        @0,   >dest2
ibomb   DAT.F     <2667,    <5334

inc     SPL.B        #0,    <gate   ; Fei-Oh v0.6
loop    MOV.I      bomb,    @targ
        ADD.AB   #stepb,     targ
targ    MOV.I      bomb, }stepb-1
        DJN.F      loop,    <gate
bomb    DAT.F     #step,       >1
```

```
; stage 3 is a switch-on-loss module against pspacers and paper/imps

stage3  SNE.A        #0,  PRESULT    ; check result
lost    ADD.A        #1,    PTEST    ; lost change
        MOD.A        #2,    PTEST    ; secure result
win     STP.AB    PTEST,    sflag
PTEST   JMP.B        @0,   fei_oh
        DAT.F         0,    pboot

stage2  ADD.AB    PTEST, *PRESULT    ; Update win/loss counter
        STP.B  *PRESULT,    sflag    ; Store updated counter
        MOD.AB    #Pmod, *PRESULT    ; if flag is not the right mod:
        JMZ.B     shred, *PRESULT
        STP.A     #1005,    sflag    ; Engage stage 3 pspace algorithm
                                     ; Fall through to backup strategy...
pboot   MOV.A #paper-boot,   boot    ; Set component boot pointer
        MOV.A        #0,     boff    ; Adjust for starting offset
                                     ; Fall through to multi-boot

mboot   MOV.I     }boot,    >boot    ; Multi-boot routine, default to Fei-Oh
for 9
        MOV.I     }boot,    >boot
rof
boot    MOV.I       inc,    bdist    ; fast boot away tail first
        MOV.I         0,    sflag    ; Safety-net for our pspace stuff
boff    SUB.AB       #5,     boot
        SPL.B     @boot,       #1    ; split to main program
        MOV.I         0,     boot    ; obliterate boot pointer
                                     ; fall through and die...
        END

for (MAXLENGTH-CURLINE)
        DAT.F (clear*23),(ptr*91)    ; big decoy to confuse scanners
rof
        END
```

Advanced Benchmark Scores: Latest Update
by Scott Manley

OK this is a rundown of the Advanced Benchmark scores which I've been compiling
on my web page (http://star.arm.ac.uk/~spm/welcome.html). Looking at some of the ratings (one version of Koolaid scores 5.2) you might think that there are some bugs in the scoring algorithm but the problem appears to be with the warrior's code.

So far I have managed to rate all the warriors which haven't generated any errors in my test script and I'm now working my way through fixing some of those errors. If anyone sees a particular program out of place then please send me a copy and I'll run it again, but my policy is only to stop compiler errors not debug peoples algorithms.

The list presented here is not the exact same as on my web site, I have removed all the factoring and sorting algorithms (Snail Sort is the Champion - scoring 3.2), and of course the script continues with the lates batch of fixed

programs.

The advanced Wilkinson/Bezzi benchmark consists of 13 warriors, each fighting 200 battles against the test candidate.

The test warriors are

* Agony II - Stefan Strack
* Blizzard - Anton Marsden
* Frontwards v2 - Steven Morrell
* C.I.A. - Anders Ivner
* Gem of the Ocean - Paul Kline
* Impfinity v4g1 - Planar

* Jack in the Box - Beppe Bezzi
* Leprechaun on Speed - Anders Ivner
* Lithium - John K Wilkinson
* Memories - Beppe Bezzi
* myVamp v3.7 - Magnus Paulsson
* Quiz - Schitzo
* TimeScape (1.0) - J. Pohjalainen

And the ratings are.....

1. 160.5 T.N.T. - Maurizio Vittuari
2. 158.4 quiz - Schitzo
3. 154.5 Gem of the Ocean - P.Kline
4. 152.4 Armory - A5 - Wilkinson
5. 149.7 Stepping Stone - Kurt Franke
6. 148.1 Wind Up Toy v0.7 - Ian Oversby
7. 146.0 C I A - Anders Ivner
8. 145.7 Tornado 3.0 - Beppe
9. 145.0 myConfuser - Paulsson
10. 144.5 endpoint . - M R Bremer
11. 143.7 Clisson Lite - P.Kline
12. 143.4 Lithium - John K Wilkinson
13. 142.3 Thermite II - Robert Macrae
14. 141.8 Mirage 1.5 - Anton Marsden
15. 141.8 Chameleon - M R Bremer
16. 141.3 No Prisoners - John K W
17. 140.4 seventyfive - Anders Ivner
18. 139.1 Time Lapse v0.8 - David Boeren
19. 138.7 Mason 2.0 - Robert Macrae
20. 138.0 Time Lapse v0.1 - David Boeren
21. 137.5 Wind-up Toy v0.4 - Ian Oversby
22. 137.2 Impfinity v4g1 - Planar
23. 137.0 blister soul - schitzo
24. 136.8 Harmony - P.Kline
25. 135.9 crow - Karl Lewin
26. 135.3 myVamp v3.7 - Paulsson
27. 134.3 anything box - schitzo
28. 134.2 Provascan 2.0d - Beppe Bezzi
29. 134.2 Porch Swing + - anonymous
30. 132.8 theMystery2.0 - Paulsson
31. 132.7 Barrage - Anton Marsden
32. 132.2 Jack in the box - Beppe Bezzi
33. 131.6 Rhino - Beppe Bezzi
34. 131.6 Aeka - T.Hsu
35. 131.4 Persistence - Kurt Franke
36. 131.0 Koolaid II: WoGG v2.2 - David Boeren
37. 130.7 U Test - JKW
38. 130.3 aMixture - Paulsson
39. 129.6 Harmony II - P.Kline
40. 129.5 Memories - Beppe Bezzi
41. 129.4 why - bjoern guenzel
42. 128.9 Impfinity v3e7 - Planar
43. 128.7 El Cheapo Scanner - David Boeren
44. 128.6 La Bomba - Beppe Bezzi
45. 128.2 TimeScape (1.0) - J. Pohjalainen
46. 127.3 Rubber wall - Beppe Bezzi
47. 126.2 SETI - JKW
48. 125.8 Circle of Friends - Randy Graham
49. 125.5 Door Mat v0.1 - K Lewin
50. 125.5 Phq - Maurizio Vittuari
51. 125.4 Agony II - Stefan Strack
52. 125.2 Frontwards - Steven Morrell
53. 124.2 Marcia Trionfale - Beppe Bezzi
54. 123.9 Hector 2 - Kurt Franke
55. 123.7 Taking Trains - Maurizio Vittuari
56. 123.5 Illusion-94/55 - Randy Graham
57. 123.5 Thermite 1.0 - Robert Macrae
58. 123.3 blackTN - P.Kline
59. 123.0 juliet and paper - M R Bremer, B. Bezzi
60. 122.7 Phoenix 1.1 - J.Pohjalainen

 61. 122.5 Insight v1.0 - Brant D. Thomsen
 62. 122.2 Miss Treatment - Derek Ross
 63. 122.1 Mr Dumb - Maurizio Vittuari
 64. 122.0 Paper Towel v0.4 - David Boeren
 65. 122.0 nobody special - Mike Nonemacher
 66. 121.9 Two Pack - John K W
 67. 121.7 Porch Swing - anonymous
 68. 121.7 paper01o - Beppe Bezzi
 69. 121.3 Babbo Natale - Maurizio Vittuari
 70. 121.3 Fire Master v1.5 - JS Pulido
 71. 121.2 Queasy 1.4 - Robert Macrae
 72. 121.1 theMystery1.5 - Paulsson
 73. 121.0 Mr Speculative - Derek Ross
 74. 120.5 myVamp v2.2 - Paulsson
 75. 120.5 Papery - Ian Oversby
 76. 120.3 Marcia Trionfale 1.3 - Beppe Bezzi
 77. 120.1 Stasis - David Moore
 78. 118.7 Not Expecting Too Much - Karl Lewin
 79. 118.6 blah blah blah - M R Bremer
 80. 118.4 tripod v1.5 - Brian Haskin
 81. 118.4 Qwiksand - Wayne Sheppard
 82. 118.3 paris - Kafka
 83. 118.3 TimeScape (0.9) - J. Pohjalainen
 84. 118.2 PacMan v3 - David Moore
 85. 118.1 Mr Hospitable - Derek Ross
 86. 117.9 black & white - Anders Ivner
 87. 117.1 Impfinity v3i - Planar
 88. 116.7 Lucky 3 - Stefan Strack
 89. 116.3 Rave - Stefan Strack
 90. 116.2 Qtest04 - Beppe Bezzi
 91. 115.8 Drowning III - Mike Nonemacher
 92. 115.4 People - Randy Graham
 93. 115.0 Judge Nutmeg - Scott Manley
 94. 114.7 White warrior - Nandor & Stefan
 95. 114.3 Fscan - Jay Han
 96. 114.2 Pretentious v0.2 - Ian Oversby
 97. 113.5 ^C - Steven Morrell
 98. 113.4 Prova_e_Riprova - Maurizio Vittuari
 99. 113.3 test jtm10a - Beppe Bezzi
100. 113.2 Auntie v1.0 - Ian Oversby
101. 112.6 Ripped v0.1 - Ian Oversby
102. 111.5 A Quick Hack - Karl Lewin
103. 111.2 Cthulhu v8 - John K. Wilkinson
104. 110.3 Hint Test v2 - M R Bremer
105. 110.2 Hint Test v6 - M R Bremer
106. 110.1 Hyakutake C/1996 B2 + - Scott Manley
107. 109.4 cproba - nandor sieben
108. 109.1 Phoenix - J. Pohjalainen
109. 108.5 Pensive v0.3 - Ian Oversby
110. 108.3 Paperone - Beppe Bezzi
111. 107.9 Twins - Maurizio Vittuari
112. 107.7 Uvavu II revistited - Scott Manley
113. 106.8 Pyramid v5.5 - Michael Constant
114. 106.8 Paper Eater - David Boeren
115. 106.3 Impfinity v3c11 - Planar
116. 105.1 Vanilla 1.1 - Robert Macrae
117. 104.7 Tom&Jerry - Maurizio Vittuari
118. 104.5 Double Clown v1.1 - P.E.M
119. 104.2 Non Plussed - Randy Graham
120. 102.6 Three Core Monty - Andrew Fabbro
121. 102.5 Hyakutake Rising - Scott Manley
122. 102.5 kwclear - Anders Ivner
123. 101.6 Building Blocks - Randy Graham
124. 101.1 Tornado - Beppe Bezzi
125. 101.0 Imp Hunter - Kurt Franke
126. 100.3 Provascan 2.0 - Beppe Bezzi
127. 99.5 Silk Warrior 1.3 - J.Pohjalainen
128. 99.2 Futility - M R Bremer
129. 98.7 lil’ shears - P.Kline
130. 98.7 myTiny - Paulsson

131. 97.1 Loh_tst_1.3 - Calvin Loh
132. 96.6 QuickFreeze - P.Kline
133. 96.5 worm optima 2 - Campbell Fraser
134. 96.5 Aces - anonymous
135. 96.5 v15 - Steven Morrell
136. 95.1 RED RAIN - Wayne Sheppard
137. 93.3 Strahd the Night Hunter - anonymous
138. 92.6 Hyakutake Engine - Scott Manley
139. 92.5 System Trap - Kurt Franke
140. 92.3 RingWorm_v2.4 - Calvin Loh
141. 92.3 flash - Nandor Sieben
142. 92.1 Pensive v0.1 - Ian Oversby
143. 91.9 Yop La Boum v2.1 - P.E.M & E.C.
144. 91.6 Hint Test v4 - M R Bremer
145. 91.2 Try fitting THIS name into eight characters or less! - Steven Morrell
146. 90.7 Mythicon v1.2 - G. Eadon
147. 89.9 Fahrenheit 0 - Planar
148. 89.8 Cyclone - Scott Manley
149. 89.6 myTest - Paulsson
150. 89.3 Alien Kiss V1.1 - bjoern guenzel
151. 89.3 Sucker’94 - Stefan Strack
152. 89.2 Rand-Man - Randy Graham
153. 89.1 Pyramid v2.0 - Michael Constant
154. 88.2 Mister Neat - Derek Ross
155. 87.9 Antibodies - Andrew Fabbro
156. 86.1 Illusion - Randy Graham
157. 86.1 Mister Bump - Derek Ross
158. 85.9 RingWorm_v1.4 - Calvin Loh
159. 85.7 Pensive v0.2 - Ian Oversby
160. 85.1 P_Banzai_v1.2 - Calvin Loh
161. 85.1 Theme - Michael Constant
162. 84.3 Miss Careworn - Derek Ross
163. 82.3 Impfinity v1 - Planar
164. 82.2 Uvavu V1.01 - Scott Manley
165. 81.5 bunker t3 - P.Kline
166. 81.0 lewis - John Lewis
167. 80.8 impostor - na’ndor sieben
168. 80.4 Random Fire - Bram Cohen
169. 80.0 dead end - nandor sieben
170. 79.1 hit94 - nandor sieben
171. 78.8 dodgem6 - Steve Newman (snewman@cs.stanford.edu)
172. 76.9 Assassin XII - Andy Nevermind
173. 76.6 RedPixel.2 - John Lewis
174. 75.0 living dead - Nandor Sieben (asmqk@asuacad.bitnet)
175. 73.5 Mister Tidy - Derek Ross
176. 73.3 Umbrella - Beppe Bezzi
177. 72.3 QuickFreeze v1.5 - P.Kline
178. 72.2 Le vamp - Matthieu Walraet
179. 71.0 Storm Shelter 5 - John K W
180. 70.7 Forked Lite Ning 4.076 - Ansel Greenwood Sermersheim
181. 70.3 asian flu 1.2 - Simon Hovell
182. 67.0 ProtonDance-X - J.Cisek
183. 66.6 Baby Swing - Randy Graham
184. 64.0 csapda - nandor sieben asmqk@asuacad.bitnet
185. 63.4 2 pt spiral generator - David Moore
186. 63.3 garlic - Stefan Strack
187. 62.8 Vector (3 point, 8 process spiral) - T.Hsu
188. 61.1 Tonto 3 - Steve Bailey
189. 60.7 trident - Anders Ivner
190. 58.7 Specwar - J E Long
191. 58.3 orc - Timothy Echeandia
192. 58.1 Test 3 - Steve Bailey
193. 56.8 2IR - Calvin Loh
194. 56.4 Test 1 887 - Steve Bailey
195. 55.5 DeathWalker - Scott Manley
196. 54.8 ivscan - J.Layland
197. 54.6 Enlightenment II - Scott Manley
198. 53.0 macro - Nandor Sieben
199. 52.6 Enlightenment - Scott Manley

200. 52.6 mutant - brad rembielak
201. 51.9 Eranu v1.02 - Scott Manley
202. 50.1 DeathWalker II - Scott Manley
203. 49.4 Curse - Doug Ratcliffe Jr.
204. 48.8 Spiral 4000 - P.Kline
205. 48.6 Emousseur - Planar
206. 47.2 fork - J.Layland
207. 46.5 Silk - Lifted from Core Warrior # 1
208. 46.5 paratrooper - Vincent Li
209. 45.7 IcicleV2 1.14 - Ansel Greenwood
210. 45.5 paratrooper2 - Vincent Li (vli@atom.mpr.ca)
211. 44.9 ImpClear - bjoern guenzel
212. 43.3 Test 2 872 - Steve Bailey
213. 42.7 Miss Impertinent - Derek Ross
214. 42.2 paratrooper v2.1 - Vincent Li (vli@atom.mpr.ca)
215. 41.6 Blanket - Jon Newman
216. 40.7 CopyKatQ2 - harleyQ2
217. 40.3 multidwarf - Vincent Li (vli@atom.mpr.ca)
218. 39.9 turtle - Pierre Baillargeon
219. 38.5 ROLLER.S - M. PALUDAN
220. 38.0 banzai0.2 - Calvin Loh
221. 36.0 QUARTER - Stefan Haenssgen
222. 35.3 CounterMeasures V4 - Chris Arguin
223. 34.7 glass replicant - Pi Qan
224. 33.8 A-Cluster v2.06 - Iain Hogg
225. 33.0 Ape - Calvin Loh
226. 31.4 scratchers - nandor sieben
227. 31.1 dawG06al - dawG05co and dawG05dn
228. 30.6 csapda2 - Nandor Sieben
229. 28.6 tamper - Mike & John (Michael Nidd)
230. 28.1 dawG06cg - dawG05cu and dawG05db
231. 26.9 windmill - Calvin Loh
232. 23.3 minidwarf - anonymous
233. 22.3 dawG06cl - dawG05bt and dawG05az
234. 21.3 Copy2 - sgb
235. 21.2 Body-Snatcher3 - Calvin Loh
236. 17.7 twoOFaKIND - Paulsson
237. 17.2 spreel - Andy Pierce (ajpierce@med.unc.edu)
238. 16.9 MaxImp - Planar
239. 15.5 Jezebel v2.0 - A. Nevermind
240. 11.0 Eights - Randy Graham
241. 5.2 Koolaid II: The Wrath of Goofy Grape v0.1 - David Boeren
242. 4.5 Quarter II - anonymous
243. 4.0 Sample Bomber - Chris Arguin
244. 1.8 dwarfgun program. - Choon Piaw (piaw@soda.berkeley.edu)
245. 0.7 Points is Points - Karl Lewin
246. 0.2 Basic Mulberry - Ansel G. Sermersheim
247. 0.2 WindMill3 - Calvin Loh
248. 0.0 Loser 2 - Kurt Franke
249. 0.0 loser 1 - Anders Ivner

How about some statistics then, most sports have them, and ours depends on them.

Starting with a simple histogram of the ratings

```
  0-10  XXXXXXXXX
 10-20  XXXXX
 20-30  XXXXXXX
 30-40  XXXXXXXXXXX
 40-50  XXXXXXXXXXXXXXX
 50-60  XXXXXXXXXXXX
 60-70  XXXXXXXXXXX
 70-80  XXXXXXXXXXXX
 80-90  XXXXXXXXXXXXXXXXXXXXXXX
 90-100 XXXXXXXXXXXXXXXXXXX
100-110 XXXXXXXXXXXXXXXXXXX
110-120 XXXXXXXXXXXXXXXXXXXXXXXXXXXX
120-130 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
130-140 XXXXXXXXXXXXXXXXXXX
```

```
140-150 XXXXXXXXXXXXX
150-160 XXX
160+    X
```

The average score works out at 91.95
and the median score is 101.0
The densest scoring region is around 121 with peak density ~7-8 warriors/point
average density being 0.64 warriors/point

% Effectiveness	ratings
100%	160.5
95%	143.4
90%	135.9
85%	130.7
80%	125.5
75%	122.2
70%	120.5
60%	113.2
50%	101.0
40%	89.6
30%	75.0
20%	52.6
10%	33.8
5%	16.9

I'm considering relating the scores to a percentage value which is represented by some standardised mathematical function. Most programs will score less than 100% and the idea is to follow the introduction of new strategies with a more easily managed number, a sort of Corewar inflation index. It will also make it easier to relate a warriors rating to its position in the tables.

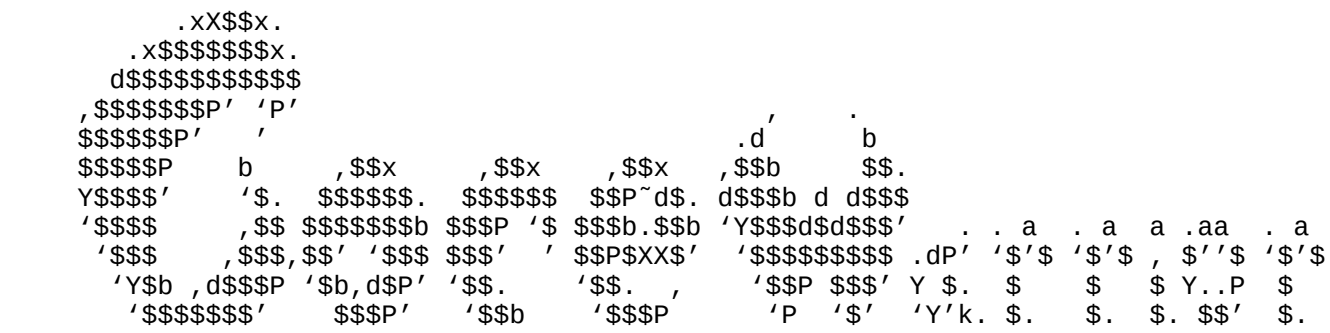
OK that's all for the moment, I've got real work to be done, there are still similar tables for Beginners and combined Beginners/Advanced and of course I'm still fixing a load of warriors so that they won't be rejected. There are a couple of other things related to benchmarks I would like to do, firstly

I'd like to be able to follow the evolution of the warriors on the hill. Secondly I think it would be intersting to follow the development of a couple of newbies from the development of their first programs to becoming King of the
Hill. (Of course it might be more productive if I spent some more time attempting to acieve this goal).

Scott Manley

http://star.arm.ac.uk/~spm/welcome.html

From bremermr@ecn.purdue.edu Mon May 6 22:40:41 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA14779; Mon, 6 May 96 22:40:41 +0200
Received: from cartoon.ecn.purdue.edu (bremermr@[128.46.147.13]) by nez-perce.inria.fr (8
.7.1/8.7.1) with SMTP id WAA01663 for <Damien.Doligez@inria.fr>; Mon, 6 May 1996 22:40:29
+0200 (MET DST)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
by cartoon.ecn.purdue.edu (8.6.12/3.8davy)
for delivery to "Damien.Doligez@inria.fr"
id PAA03752; Mon, 6 May 1996 15:40:24 -0500
Message-Id: <199605062040.PAA03752@cartoon.ecn.purdue.edu>
Date: Mon, 6 May 1996 15:40:24 -0500
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: Core Warrior 28
Status: R



Issue 28 May 6, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars

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Greetings.

There has been much discussion in the newsgroup about the multi-warrior hill. However, maybe the core war community should make some decisions on previous issues first. Should we eliminate self fights? How can we prevent rampart testing from artificially inflating warrior ages? These are two questions I'd like to see decided one way or the other. Maybe an ambitious soul could set up a forms web page that would let players vote yes or no and add comments, then display the results as they arrive. Then undecided players could review each author's vote and opinion, and add their own. Of course the ultimate power of decision lies with Thos and Tuc, but I'm sure they will conform to whatever the community as a whole decides.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	48/	41/	11	Wind-up Toy v1.2c	Ian Oversby	155	4
2	45/	40/	15	Scanny Boy	David van Dam	149	382
3	42/	35/	23	Thermite II	Robert Macrae	149	1552
4	43/	37/	21	The Core Clear V1.3	David van Dam	149	67
5	42/	36/	22	testb1>	Maurizio Vittuari	148	1
6	41/	36/	24	T.N.T. pro	Maurizio Vittuari	145	17
7	40/	36/	24	testb1<<	Maurizio Vittuari	145	2
8	29/	14/	57	Hazy Shade II	John K W	143	511
9	41/	38/	21	Grilled Octopus v0.5	David Boeren	143	768
10	32/	20/	48	Impfinity v4g1	Planar	143	1751
11	43/	43/	14	Stepping Stone	Kurt Franke	143	365
12	39/	35/	27	La Bomba 1.3	Beppe Bezzi	143	123
13	34/	24/	42	Walk Like An Egyptian	John K W	143	110
14	40/	38/	22	Chameleon	M R Bremer	142	1023
15	40/	38/	21	Blanket Party	J E Long	142	276
16	27/	11/	62	EvolCap XI	John Wilkinson	142	261
17	40/	38/	22	Gem of the Ocean	P.Kline	142	421
18	40/	38/	22	Flimsy v0.4a	Ian Oversby	141	65
19	32/	25/	42	test	P.Kline	140	7
20	42/	45/	13	Solomon v0.3	Ian Oversby	139	164
21	39/	40/	21	Test	Anton Marsden	139	8
22	37/	34/	29	Tornado 3.0	Beppe	139	1353
23	40/	41/	20	Mirage 2	Anton Marsden	138	318
24	35/	33/	32	Flurry	Anton Marsden	138	513
25	34/	48/	18	gtest	P.Kline	121	6

Weekly age: 78 (53 last week)
New warriors 9 Turnover/age rate 12%
Average age: 403 (464 last week, 424 the week before)
Average score: 142 (142 last week, 141 the week before)
The top 25 warriors are represented by 13 authors, JKW, Oversby, Vittuari, and Kline all with 3, van Dam, Bezzi, and Marsden with 2.

Newcomers Boeren, than van Dam, and now Oversby decide to take the hill by force as Ian’s Wind-up Toy vXXX has had its share of the top position. But Ian gets a slap on the wrist for having three versions of Flimsy on the hill earlier this week pushing off Morrell’s lone warrior Blue Funk 5. Speaking of push offs, the 94 hill has lost venerable T.N.T. at the grand age of 1204.

Scanny Boy is still strong, often sharing the king position. It usually moves around in the top 3, only rarely dipping below that. Thermite II is also stronger than ever, never falling below tenth place and more often in fifth or so. Other 1000+ warriors have been having troubles--Chameleon bounces around a lot, but is proving to be rather resilient. Tornado, on the other hand, has seen its share of rough times lately, dropping as low as 24th in the rankings.

While Maurizio may be mourning the loss of T.N.T., he has been busy with T.N.T. pro (kind of like the Pentium and the Pentium Pro). The cluster of MV tests surrounding T.N.T. pro suggests some slight variations on the base design.

Mirage 2 has been in both 1st and 25th place this week. When The Core Clear V1.3 was introduced, Mirage fell from 2nd to 11th place. Jumping up or down 9 spots seems common for Marsden’s program lately.

Although there were 78 successful challenges this week, 44 of them were test warriors.

#	%W/ %L/ %T	Name	Author	Score	Age
2	40/ 38/ 22	The Core Clear V1.3	David van Dam	143	1
7	38/ 37/ 26	Flimsy v0.4a	Ian Oversby	139	1
2	40/ 36/ 24	T.N.T. pro	Maurizio Vittuari	144	1
21	38/ 43/ 19	Test	Anton Marsden	134	1
15	31/ 25/ 44	test	P.Kline	138	1
24	33/ 48/ 19	gtest	P.Kline	119	1
1	49/ 41/ 11	Wind-up Toy v1.2c	Ian Oversby	156	1
5	39/ 37/ 24	testb1<<	Maurizio Vittuari	141	1
5	42/ 36/ 22	testb1>	Maurizio Vittuari	148	1

---

94 - What's No More

#	%W/ %L/ %T	Name	Author	Score	Age
26	2/ 2/ 1	coal 3.1	bjoern guenzel	5	5
26	28/ 36/ 35	silkworm v3.2	Brian Haskin	121	4
26	34/ 40/ 25	T.N.T.	Maurizio Vittuari	128	1204
26	29/ 33/ 37	Blue Funk 5	Steven Morrell	125	624
26	2/ 2/ 0	The Core Clear V1.2	David van Dam	6	27
26	1/ 2/ 0	Wind-up Toy v0.7	Ian Oversby	4	174
26	2/ 1/ 1	prova	Maurizio Vittuari	7	475
26	32/ 33/ 35	Lithium	John K Wilkinson	130	523
26	37/ 46/ 17	Naked dancer	Beppe Bezzi	129	72

---

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
13	31/ 21/ 48	Impfinity v4g1	Planar	140	1754
2	42/ 35/ 23	Thermite II	Robert Macrae	149	1555
22	36/ 35/ 29	Tornado 3.0	Beppe	137	1356
7	41/ 38/ 21	Chameleon	M R Bremer	144	1026
8	41/ 38/ 21	Grilled Octopus v0.5	David Boeren	144	771
23	35/ 34/ 32	Flurry	Anton Marsden	135	516
10	29/ 15/ 56	Hazy Shade II	John K W	142	514
20	38/ 40/ 22	Gem of the Ocean	P.Kline	137	424
3	45/ 41/ 15	Scanny Boy	David van Dam	149	385
9	43/ 43/ 14	Stepping Stone	Kurt Franke	143	368
16	40/ 40/ 20	Mirage 2	Anton Marsden	140	321

Two new entries in the over 300: Stepping Stone and Mirage 2

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Impfinity v4g1	Planar	1754	*	Stone/ imp
2	Jack in the box	Beppe Bezzi	1620		P-warrior
3	Thermite II	Robert Macrae	1555	*	Qscan -> bomber
4	Torch t18	P.Kline	1539		Bomber
5	Frontwards v2	Steven Morrell	1420		One shot scanner
6	Tornado 3.0	Beppe Bezzi	1356	*	Bomber
7	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
8	quiz	Schitzo	1262		Scanner/ bomber
9	T.N.T.	Maurizio Vittuari	1204		Bomber
10	Chameleon	Myer R Bremer	1026	*	P-warrior
11	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
12	Agony II	Stefan Strack	912		CMP scanner
13	Barrage	Anton Marsden	876		Qscan -> replicator
14	Blue Funk	Steven Morrell	869		Stone/ imp
15	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
16	Grilled Octopus v0.5	David Boeren	771	*	P-warrior
17	Blue Funk 3	Steven Morrell	766		Stone/ imp
18	Night Train	Karl Lewin	755		Replicator
19	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
20	Blizzard	Anton Marsden	713		Qscan -> replicator
21	HeremScimitar	A.Ivner,P.Kline	666		Bomber
22	La Bomba	Beppe Bezzi	650		Qscan -> replicator
23	myVamp v3.7	Paulsson	643		Vampire
24	Blue Funk 5	Steven Morrell	624		Stone/ imp

25 Hazy Shade Of Winter John Wilkinson 616 P-warrior

No new entries into the hall, but two warrior, T.N.T and Blue Funk 5, were pushed off the hill this week thus locking in their place in the hall of fame. Flurry would be the next warrior to enter currently at 516.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	57/ 30/ 13	Violent Micro v0.4	basehead	183	30
2	52/ 31/ 17	coal 3.22b	bjoern guenzel	173	13
3	52/ 34/ 14	Extreme Prejudice	Scott Manley	171	7
4	44/ 26/ 30	Reluctance	Andy Nevermind	162	63
5	49/ 39/ 12	frogskin 4	bjoern guenzel	159	41
6	48/ 37/ 15	why	bjoern guenzel	159	88
7	42/ 25/ 33	Fork v0.1-10p	Christoph C. Birk	159	10
8	47/ 37/ 16	x-frog 2	bjoern guenzel	158	57
9	47/ 39/ 14	Bloodhound	Andrew Fabbro	155	55
10	45/ 38/ 17	magic ruby 0.1k	bjoern guenzel	151	1
11	42/ 34/ 23	Toxin III	Edgar	151	24
12	41/ 31/ 28	Toxin III	Edgar	150	25
13	37/ 28/ 35	So Long Hyakutake	Scott Manley	147	9
14	34/ 24/ 42	Toxin	Edgar	144	54
15	39/ 41/ 20	bScan test	Iain Hogg	138	8
16	39/ 41/ 20	Bye Bye Badman v1.1	Iain Hogg	136	67
17	30/ 24/ 47	waves	bjoern guenzel	136	27
18	33/ 30/ 37	Toxin II	Edgar	136	53
19	37/ 45/ 18	pScan test	Iain Hogg	130	6
20	33/ 40/ 27	test 0.01	Christoph C. Birk	125	3
21	32/ 39/ 29	C Seagal II v 2.0 Test	jShelton	124	62
22	35/ 51/ 14	Centurion XIV	Edgar	120	26
23	37/ 58/ 5	SideWinder	Julian	116	40
24	31/ 47/ 22	Forked Lite Ning 4.1	Ansel Greenwood Serm	114	82
25	30/ 49/ 21	Killer	Ian Oversby	111	60

Just 16 challenges! And only 28 last week, which is understandable as many universities had semester exams the last few weeks. Some of the new traffic include a couple of warriors by Scott Manley and bjoern guenzel. Both authors, in addition to Christopher Birk, were seen on the 94 hill briefly. Hopefully, everyone who has finished with college for the year will have net access and plenty a free time in the summer to code.

The Hint
The Bomber Killer by M R Bremer

There was a day long ago where paper actually beat stone, even beat stone-imp combos to some extent. Check out these paper scores against classic stones. Both paper are designed to kill bomber-imps. Match Stick is an '88 warrior by c w blue. Silk Warrior is, you got it, where the term 'silk' comes from written by J. Pohjalainen. (He also created the TimeScape replicating engine.)

	juliet storm	ImpsAreMyFriend
Match Stick	35/ 4/61 (166)	54/17/29 (191)
Silk Warrior	35/ 1/64 (169)	64/ 4/32 (224)

Against modern bombers, neither stands a chance.

	T.N.T.	CIA	Thermite 1.0	Torch t18
Match Stick	23/68/ 9 (78)	15/85/ 0 (45)	2/79/19 (25)	9/79/12 (39)

Silk Warrior 28/40/32 (116) 26/49/25 (103) 26/51/23 (101) 18/60/22 (76)

How to deal with these petulent creatures? The bomb dodger of course. Scan for an opponent's bomb, copy yourself around that location and pray that the rest of the bombing pattern falls around you, and voila--the bomb dodger.

Extracting the bomb dodger from Gem of the Ocean gives this:

```
Clisson   sne    {watch1,{watch1      ; Clisson to beat fast bombers
          jmz.f  -1,@(datone+40)
          add.a  #3,watch1
          mov    <watch1,{watch1
          djn    -1,#5
          add.a  #1,watch1
watch1    jmp    -200,qb+5

qb        dat    #1 ,-3               ; Clisson's killer
q1        spl    #0 ,#0
          mov    qb ,<q4
q4        djn    -1 ,#qb
      for 4
          dat    0,0
      rof
datone    dat    1,1
```

Basically, it just scans for the enemy's bomb and centers the 'killer' module on the colored location. Then it clears core. Here are the results taken from the tournament scheduler:

Rank	Name	Author	%W	%L	%T	Score
1	Clisson	~P.Kline	42	51	7	800
2	juliet storm	M R Bremer	95	1	4	289
3	ImpsAreMyFriend	J.Layland	74	8	18	240
4	Thermite 1.0	Robert Macrae	63	35	2	191
5	T.N.T.	Maurizio Vittuari	31	67	2	95
6	Torch t18	P.Kline	31	67	2	95
7	C I A	Anders Ivner	12	75	13	49

As you can see, the imps in the imp-stone combos overwrite Clisson yielding a loss for the dodger. Thermite also does well due to its bombing pattern and Clisson's slow sequential wipe.

How about using a full bomber + coreclear instead? Let's try Blue Funk 3's stone (which is Emerald's stone) in this bomb dodger.

```
step equ 3044
        jmz.f 0, <t
        add.ab #4, t
        mov.i {t, <t
        djn.b -1, #6
        jmp @t
emerald spl #-step,<step
stone   mov >-step,step+1        ;hit
        add emerald,stone
cnt     djn.f  stone,<emerald-50
        dat 0, 0
cc      dat 0, -7                ;hit
t       dat 0, -100
```

As you can see in the scores, this dodger trades its losses to ties when battling the stone-imps. It also scores well against Thermite becuase the pattern is so much better. The only real trade-off lies with Torch t18. The second dodger has five instructions that it needs, with the fifth instruction not adjacent to the main executing loop. Torch t18 often bombs this line and prevents Dodger #2 from getting the win, but overall it is much superior.

Rank	Name	Author	%W	%L	%T	Score
1	Dodger #2	M R Bremer	40	33	27	888

2	juliet storm	M R Bremer	63	10	27	216
3	ImpsAreMyFriend	J.Layland	30	3	67	157
4	Torch t18	P.Kline	37	33	30	141
5	T.N.T.	Maurizio Vittuari	34	51	15	117
6	Thermite 1.0	Robert Macrae	25	65	10	85
7	C I A	Anders Ivner	7	80	13	34

Since dodgers are usually used in p-space warriors, it is very easy to use the bomber as both a dodger and scanner killer. You could even keep the small, slow boot routine.

Things to consider:

A linear scan is easy to do with

```
jmz.f 0, <scan
```

but this code will scan faster (although not pinpoint the bomb as precisely).

```
sne.f <scan, <scan
jmz.f -1, <scan
```

or you cold use it to scan different streams by

```
sne.f <scan1, <scan2
jmz.f <scan1
```

of course you would have to test both stream to see which found the bomb.

Imps are a problem, so how about using an imp killing stone like Imprimis. This stone (while suicidal) runs a decrement stream at 0, 2667, and 2667*2 forward through core. Something like

```
spl #2667, <3044
add -1, 1
mov <1000, 1
djn.f -2, <stream
```

Good luck trying to knock off Impfinity though!

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From bezzi@nemo.it Mon May 13 17:20:03 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA12755; Mon, 13 May 96 17:20:03 +0200
Received: from nemont.nemo.it ([194.184.149.2]) by nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id RAA21814 for <Damien.Doligez@inria.fr>; Mon, 13 May 1996 17:19:06 +0200 (MET DST)
Received: from mail.nemo.it (194.184.149.101) by nemont.nemo.it
 (EMWAC SMTPRS 0.80) with SMTP id <B0000179466@nemont.nemo.it>;
 Mon, 13 May 1996 17:19:48 +0200
Date: Mon, 13 May 1996 17:19:48 +0200
Message-Id: <B0000179466@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
        Damien.Doligez@inria.fr (Damien Doligez)
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 29
Status: R

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                                ,    .
$$$$$$P'   '                                .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 29 May 13, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is still out of service, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars

---

Greetings.

This week the discussion in the newsgroup has been about self fights, most opinions have been against self fights with those arguments:

-self fights disadvantage some warriors unable to kill themselves
-self fight waste machine time
-in a tournament there are no self fights, one fights only his opponents

with those arguments pro:

-removing self fights will unbalance the score, because only with self fights every warriors fights against the same warriors.
-self fight score has little influence and it's important to keep

rules constant

My opinion is known and I won't express it again here, but it's important we discuss the topic, not long ago it seemd everybody was against self fights, in the polite way usual in the newsgroup-

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	47/	37/	16	Scan Man	David van Dam	158	79
2	47/	40/	12	Wind-up Toy v1.2c	Ian Oversby	155	111
3	41/	35/	25	Thermite II	Robert Macrae	146	1659
4	40/	35/	25	T.N.T. pro	Maurizio Vittuari	146	38
5	38/	33/	29	La Bomba 1.3	Beppe Bezzi	144	230
6	41/	37/	22	Blur	Anton Marsden	144	66
7	40/	35/	25	test	Maurizio Vittuari	144	12
8	40/	36/	24	Grilled Octopus v0.5	David Boeren	143	875
9	28/	14/	58	Hazy Shade II	John K W	143	618
10	34/	25/	41	Walk Like An Egyptian	John K W	143	217
11	40/	37/	23	Blanket Party	J E Long	142	383
12	38/	34/	28	Yogi Bear	P.Kline	142	2
13	39/	37/	23	Chameleon	M R Bremer	142	1130
14	42/	43/	15	Stepping Stone	Kurt Franke	142	472
15	40/	38/	23	The Core Clear V1.3	David van Dam	141	174
16	30/	18/	52	test eif	JKW	141	56
17	38/	36/	26	Flimsy v0.4a	Ian Oversby	140	172
18	31/	22/	47	Impfinity v4g1	Planar	139	1858
19	38/	38/	24	Gem of the Ocean	P.Kline	138	528
20	34/	31/	35	Flurry	Anton Marsden	138	620
21	25/	12/	64	EvolCap XI	John Wilkinson	137	368
22	41/	45/	14	Solomon v0.3	Ian Oversby	137	271
23	36/	34/	30	Tornado 3.0	Beppe	137	1460
24	34/	42/	25	stone test 11	Beppe	125	1
25	24/	32/	43	Torch t19	P.Kline	117	3

Weekly age: 107 (78 last week)
New warriors 8 Turnover/age rate 7%
Average age: 456 (403 last week, 464 the week before)
Average score: 141 (142 last week, 142 the week before)
The top 25 warriors are represented by 13 authors: JKW with 4, Oversby, Bezzi, and Kline with 3, van Dam, Vittuari and Marsden with 2.

Van dam replaces Snanny boy, see it in extra extra, with his big brother Scan Man that kees the top from his appearance; Wind up toy and Thermite held second row positions easily while The Core Clear is slipped down a little. Vittuari, after some testing, puts his new version of T.N.T in a good position. La Bomba bounces up, maybe thanks the stone test, some of which successful, made by his author, Beppe Bezzi.

Of the over 1000 veterans Thermite is the more healthy, always in the hilltop; Chameleon has been always seen around tenth position and Impfinity bouncing a little from 15th to 20th. Tornado seems in serious troubles, always near the bottom.

The competition is always fierce, we have less than ten points from the third to the the 23rd, even if the King seems to have a good lead over the runners up.
The hilltop is kept by different kinds of warriors, scanners,

p-spacers, bombers and replicators are having their share of glory.

Paul submitted his new version of Torch, without a little work it's difficult it will rep
eat the success of it's former version

---

94 - What's New

#	%W/	%L/	%T	Name	Author	Score	Age
1	47/	37/	16	Scan Man	David van Dam	158	79
4	40/	35/	25	T.N.T. pro	Maurizio Vittuari	146	38
6	41/	37/	22	Blur	Anton Marsden	144	66
7	40/	35/	25	test	Maurizio Vittuari	144	12
12	38/	34/	28	Yogi Bear	P.Kline	142	2
16	30/	18/	52	test eif	JKW	141	56
24	34/	42/	25	stone test 11	Beppe	125	1
25	24/	32/	43	Torch t19	P.Kline	117	3

Worth notice are Scan Man, new King of the Hill, and TNT pro

---

94 - What's No More

#	%W/	%L/	%T	Name	Author	Score	Age
26	2/	2/	0	gtest	P.Kline	6	7
26	2/	2/	1	testb1<<	Maurizio Vittuari	5	5
26	1/	2/	1	Test	Anton Marsden	5	16
26	7/	7/	2	testb1>	Maurizio Vittuari	22	12
26	1/	2/	0	Scanny Boy	David van Dam	4	399
26	0/	0/	3	test	P.Kline	4	35
26	2/	2/	0	T.N.T. pro	Maurizio Vittuari	5	87
26	34/	44/	22	Mirage 2	Anton Marsden	123	411

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
18	31/	22/	47	Impfinity v4g1	Planar	139	1858
3	41/	35/	25	Thermite II	Robert Macrae	146	1659
23	36/	34/	30	Tornado 3.0	Beppe	137	1460
13	39/	37/	23	Chameleon	M R Bremer	142	1130
8	40/	36/	24	Grilled Octopus v0.5	David Boeren	143	875
20	34/	31/	35	Flurry	Anton Marsden	138	620
9	28/	14/	58	Hazy Shade II	John K W	143	618
19	38/	38/	24	Gem of the Ocean	P.Kline	138	528
14	42/	43/	15	Stepping Stone	Kurt Franke	142	472
11	40/	37/	23	Blanket Party	J E Long	142	383
21	25/	12/	64	EvolCap XI	John Wilkinson	137	368

Two new entries in the over 300: Blanket Party and Evol cao XI, and
one loss Mirage 2

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Impfinity v4g1	Planar	1858	*	Stone/ imp
2	Thermite II	Robert Macrae	1659	*	Qscan -> bomber
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Torch t18	P.Kline	1539		Bomber
5	Tornado 3.0	Beppe Bezzi	1460	*	Bomber
6	Frontwards v2	Steven Morrell	1420		One shot scanner
7	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
8	quiz	Schitzo	1262		Scanner/ bomber
9	T.N.T.	Maurizio Vittuari	1204		Bomber
10	Chameleon	Myer R Bremer	1130	*	P-warrior
11	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
12	Agony II	Stefan Strack	912		CMP scanner
13	Barrage	Anton Marsden	876		Qscan -> replicator
14	Grilled Octopus v0.5	David Boeren	875	*	P-warrior
15	Blue Funk	Steven Morrell	869		Stone/ imp
16	Thermite 1.0	Robert Macrae	802		Qscan -> bomber

17	Blue Funk 3	Steven Morrell	766	Stone/ imp
18	Night Train	Karl Lewin	755	Replicator
19	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
20	Blizzard	Anton Marsden	713	Qscan -> replicator
21	HeremScimitar	A.Ivner,P.Kline	666	Bomber
22	La Bomba	Beppe Bezzi	650	Qscan -> replicator
23	myVamp v3.7	Paulsson	643	Vampire
24	Blue Funk 5	Steven Morrell	624	Stone/ imp
25	Flurry	Anton Marsden	620 *	Qscan -> pwarrior

Imfinity is now at reach of 2000, 142 challenges aren't an impossible task. Thermite II surpasses Jack in second position. None of the living hall of famers has been stopped.
Flurry enters the hall of fame pushing Hazy Shade of Winter off, next scheduled is Hazy shade II at 618

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	60/	28/	12	Violent Micro v0.4	basehead	193	65
2	52/	35/	13	Extreme Prejudice	Scott Manley	168	42
3	47/	27/	26	Reluctance	Andy Nevermind	167	98
4	48/	35/	17	coal 3.22b	bjoern guenzel	161	27
5	50/	39/	10	frogskin 4	bjoern guenzel	161	76
6	42/	25/	32	So Long Hyakutake	Scott Manley	159	44
7	46/	36/	18	mini blue x-torch	bjoern guenzel	155	2
8	41/	26/	33	Fork v0.1-10p	Christoph C. Birk	155	45
9	43/	32/	25	Toxin IV	Edgar	154	23
10	38/	23/	40	Toxin	Edgar	152	89
11	47/	41/	12	x-frog 2	bjoern guenzel	152	92
12	47/	42/	12	Bloodhound	Andrew Fabbro	152	90
13	46/	45/	8	Drill 1.1	Edgar	148	1
14	44/	43/	13	8-Ball 2	Iain Hogg	145	17
15	38/	31/	32	Szyzyg v1.01	Scott Manley	145	11
16	44/	45/	10	Centurion (mod)	Edgar	143	15
17	43/	44/	13	8-Ball	Iain Hogg	143	21
18	43/	47/	10	Centurion	Edgar	140	16
19	34/	35/	32	Szyzyg v1.0	Scott Manley	133	12
20	28/	27/	46	invicta	John K. Lewis	129	6
21	33/	40/	27	test 0.01	Christoph C. Birk	125	38
22	36/	47/	17	Blammo	Edgar	124	4
23	30/	42/	29	C Seagal II v 2.0 Test	jShelton	118	97
24	36/	59/	6	SideWinder	Julian	113	75
25	32/	57/	11	yet another test 0.1	Justin Kao	107	14

Not many challenges, but 35, also this week. Violent Micro is still the leader.

The Hint
Imps

This time I'm speaking of an argument I don't know too much, all old 88 players and our archiver/imp master Planar surely know much more, so I'll try to fly low, ready to hide if (when :-) flames will come.

Most part of what I'm saying is also reported in Steven Morell's manual, if you don't understand something you may check here, and vice versa :-)

Imps are apparently simple warriors, they are made only of a mov statement that crawl relentless in the core trying to overwrite the

opponent and, sometimes, kill it. Once launched an imp spiral, let's suppose an 8 process 3 points mov #0,2667 one, works that way.

```
loc. X          ADG
loc. X+2667     BEH
loc. X+2667*2   CF
```

process A, is the executing one, copies itself in the location where process B is going to execute, then queue itself for execution at location A+1 i.e where process D is queued. Process B does the same, copy to C and queue at E, and so on, spiraling through the core.

When the spiral hits an opponent it begins to execute the mov and two thing may happen: if the enemy has less processes than the spiral it will die, because the spiral is unable to feed it of mov instructions at the rate it executes them, is it has more processes it's a tie. Usually 94 warriors, al least when executing their clear, have many process running, so the attack power of the spiral isn't great, but the main strenght of the spiral is its thoughness.

Consider the spiral above, only two locations are subject to attack: the tail, i.e. the lowest address process, and the process going to be executed, if the spiral is hit in any other location, with any kind of of bomb, it's unaffected because it copies a fresh mov instruction just before executing it, a near perfect self repair. The spiral will die only when its processes are reduced to less than the number of points
Considering that the spiral is usually coupled with a process building comrade, usually a stone, only the tail is vulnerable till the partner is alive.

The speed at which the spiral crawl is a simple function of the number of points and processes:
c * points / process

So the more processes, the slower it will move and the harder will be killing it, the drawback is that it will steal more cycles to its partner.

The tricky part of imps is starting them running, launching it. In practice placing the wanted number of processess in the right core locations to make it run. There are three classic methods: binary, jmp/add and vector launch and two rather new: continual an paper launch.

Binary launch is the faster. I don't know how to do it, but there is a c program, makeimp by Jay Han, that does the job very well. Binary launch has the problem of being very long, an easy prey for qscanners if we are launching but a 16 processes spiral.

Jump add launch is the smaller and the slower. You make as many parallel processes as you need, using spl 1 and mov -1,0 exacly the same way as you do for a replicator, then execute a jmp add sequence to spread them in the core:

```
imp     mov.i   #0,     impsize
impboot
        mov     imp,    imp+impdspl
        spl     1
        spl     1
        spl     1
        spl     1      ;1-1-1-1 = 15 = 16 parallel process
        spl     2
        jmp     imp+impdspl
        add.a   #impsize,-1
        dat     0       ;mandatory dat
```

You need the dat because extra processes generated have to die, the spiral processes have to execute one after the other, recycling them will weaken the imps

The third classic way is vector launch, nearly as fast as binary but much smaller: it comes in two main subspecies, the classic and the smaller one, proposed by Ting Hsu:
We always have to generate as many parallel process as we need.

```
imp     mov.i   #impsize,*0

impboot
        mov     imp,    imp+impdspl
        spl     1,      #0
        spl     1      ,#0
        spl     1      ,#0
        spl     1
;-break
vjmp    djn.a   @vector-1+btaway,#0

a for impproc
        dat     0,      imp+impdspl+impsize*(impproc-a)
rof
vector
        dat     0      ;or any other thing you want, it's just to have a label
The for rof develops in
        dat     0,      imp+impdspl+impsize*15
        dat     0,      imp+impdspl+impsize*14
...
        dat     0,      imp+impdspl+impsize*0
```

There is no need to have a dat after vjmp, this line isn't to be executed, all processes jump away.

vjmp line decrements itself and jump in succession to the addresses in the table.

Hsu's launch is more compact, using also the a-fields of the vector.

```
impboot
        mov     imp,    imp+impdspl
        spl     1
        spl     1
        spl     1       ;8 processes till now, they double in next line

vspl    spl     <0     ,#vector
vjmp    djn.a   @vector,#0

imp     mov.i   #0,impsize
        jmp     imp+impsize*15+impdspl, imp+impsize*14 +impdspl
        jmp     imp+impsize*13+impdspl, imp+impsize*12+impdspl
        jmp     imp+impsize*11+impdspl, imp+impsize*10 +impdspl
        jmp     imp+impsize*9+impdspl,  imp+impsize*8+impdspl
        jmp     imp+impsize*7+impdspl,  imp+impsize*6+impdspl
        jmp     imp+impsize*5+impdspl,  imp+impsize*4 +impdspl
        jmp     imp+impsize*3+impdspl,  imp+impsize*2+impdspl
vector  jmp     imp+impsize+impdspl  ,  imp+impdspl
```

(Exercise for the reader do a for rof loop for the vector table)

It's a bit more tricky, both vspl than vjmp decrements themselves and split or jump to the table addresses.

The speed is exactly the same, Hsu's launch is smaller but more vulnerable because vector table lines are executed so a hit with an incendiary or a vampire fang in the table can be deadly, while a similar hit in the other table causes but a misjump and the death of remaining processes, at worst we lose the spiral but the partner isn't stunned.

Continual launch has been treated very well by Planar in his corner, look at first issues of Corewarrior, I have nothing to add.

Paper launch is a mix beetween imps and replicators; if we launch a paper containing a simple imp launcher, something like

```
        spl 1
        mov -1,0
        spl 1           ;6 processes

silk    spl @0, 1400
        mov }-1,>-1     ;spread new spiral
        spl @0, impstep
        mov }-1,>-1     ;spread new branch of spiral
        spl #0          ;wait
        mov #0,impstep
```

We create many spirals filled of processes, that are very difficult to kill, even if not too much deadly. Those launchers are sometimes used as safety net in pspacers, should losses exceed a stated limit.

Now what you have to do is adding the imps to your favourite stone; how? wait for one of next issues :-)

Extra extra
Scanny boy
by David van Dam

Here’s "Scanny Boy". It’s just a one shot scanner. When found something, the core clear starts right at the spot where something was found.

Just after trying to write some bombers (for a brief moment at the top of the beginners hill) I became interested in scanners. At the same time the Wilkies-ratings came up and I was very interested why "Porch Swing" scored so high. When I studied "Porch Swing" I saw that it went direct in to a core clear when he found something (later when I looked at Frontwards, I saw it look alikes, but I use less instructions).

I thought, lets put together a 0.66c Sne search-engine and a core clear. Wow and that worked very good. Because it goes right to the core clear when found something it’s very effective against papers. Mod 5 bombers are another story, because Scanny Boy also uses mod 5 and 4 out of 5 times it scans between al the bombs and find the nasty bomber. Scanny Boy is just 8 instructions, so the loses against Quick-Scanners are not so great (I think).

I tried to build in some extra attacks, like a gate in the search engine with the Djn. A ">" in the Spl of the Core Clear, which also acts like a gate.

In the beginning I’ve tried to make Scanny Boy better, by using other steps, other distances, other mods (4 & 8), usings a Djn-stream instead of a gate. But nothing realy worked. So at the end I’ve given up and just left it at the hill. It was aging very well at the top.

Some problems of Scanny Boy are:
  hit by a Djn-stream and it’s dead
  the gates of the core clear aren’t effective enough

So when Ian came at the top with his P-warrior "Wind-up Toy v1.2c" with a very big lead, I decided to redesign Scanny Boy. I gave it an anti-bomber style, a Djn-stream protection and made the gate more effective.

The result was Scan Man, which can compete with "Wind-up Toy v1.2c". The version of Scan Man without boot, scores about 165.1 Wilkies and 157.7 Wilbez.

And now enjoy Scanny Boy. If there questions, just send a mail. I hope it won’t influence Scan Man to much, but what the heck. Maybe after Scan Man, Scan Women. Every man has a weak for a women and before you know it, your dead.

Cu at the top

David van Dam (D.vanDam@is.twi.tudelft.nl)

```
-----------
;redcode-94

;name       Scanny Boy
;author     David van Dam

;date       4 april 1996

;strategy   0.66c scanner
;strategy   spl/spl/dat core clear with djn-stream

;strategy   scores 158,0 Wilkies & 151.8 Wilbez (2000 fights)

;assert     CORESIZE == 8000

            org     scanner

disp        equ     4
range       equ     15
step        equ     30
offset      equ     (scanner+disp-range)


scanner     add.f   incr    ,   cnt
cnt         sne     offset  ,   offset+range
            djn.f   scanner ,   -step+1         ;Djn used as gate

incr        spl.f   #-step  ,   >-step          ;>-step used as gate

cc          mov.i   @bombp  ,   }cnt
            djn.f   cc      ,   <cnt

bombp       dat     #8      ,   #1              ;After 2 Spl passes the
            spl     #7      ,   #-85            ; Djn-stream will overwrite
                                                ; the bombp and the @bombp
                                                ; will points to the Dat

        for MAXLENGTH-CURLINE
            dat     0       ,   0
        rof

            end
```

From corewar-l@stormking.com Tue May 21 20:07:55 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA17036; Tue, 21 May 96 20:07:55 +0200
Received: from uu3.psi.com (uu3.psi.com [38.145.250.2]) by nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id UAA20936 for <damien.doligez@inria.fr>; Tue, 21 May 1996 20:07:52 +0200 (MET DST)
Received: by uu3.psi.com (5.65b/4.0.940727-PSI/PSINet) via UUCP;
id AA27473 for ; Tue, 21 May 96 13:08:33 -0400
Received: from (server@localhost [127.0.0.1]) by valhalla.stormking.com (8.6.12/8.6.12) with SMTP id MAA30100; Tue, 21 May 1996 12:56:38 -0400
Date: Tue, 21 May 1996 12:56:38 -0400
Message-Id: <4nsn7e$l2d@mozo.cc.purdue.edu>
Errors-To: tuc@stormking.com
Reply-To: bremermr@cartoon.ecn.purdue.edu
Originator: corewar-l@stormking.com
Sender: corewar-l@stormking.com
Precedence: bulk
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
To: Multiple recipients of list <corewar-l@stormking.com>
Subject: Core Warrior 30
X-Listprocessor-Version: 6.0b -- ListProcessor by Anastasios Kotsikonas
X-Comment: Usenet News "rec.games.corewar"

```
      .xX$$x.
   .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$$P' 'P'                                ,    .
$$$$$$P'   '                                .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 30 May 20, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars

---

Greetings.

Sorry this is late. How many times do I apologize to you guys anyways? Lots of new warriors on the '94 hill, four of them in the top ten. I would love to chat, but busy busy.

PIN numbers? Self-fights? Artificial aging? Should we vote on this stuff?

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	45/	39/	16	Scan Man	David van Dam	151	167
2	33/	19/	47	Rosebud	Beppe	147	81
3	44/	41/	15	Wind-up Toy v1.2c	Ian Oversby	146	199
4	39/	34/	27	Thermite II	Robert Macrae	143	1747
5	38/	33/	30	stoninc	Maurizio	143	1
6	39/	35/	27	T.N.T. pro	Maurizio Vittuari	142	126
7	39/	36/	25	Chameleon	M R Bremer	141	1218
8	39/	36/	25	dummy brain	bjoern guenzel	141	3
9	40/	38/	23	Blur	Anton Marsden	141	154
10	38/	35/	28	Solomon v0.6	Ian Oversby	141	2
11	36/	33/	31	Bomber Boy	David van Dam	140	36
12	30/	21/	48	Impfinity v4g1	Planar	140	1946
13	26/	11/	63	ompega	Steven Morrell	140	8
14	39/	39/	22	The Core Clear V1.3	David van Dam	139	262
15	37/	36/	27	Grilled Octopus v0.5	David Boeren	138	963
16	27/	16/	57	Hazy Shade II	John K W	138	706
17	39/	41/	19	Violent Micro v0.4	basehead	138	12
18	40/	42/	18	Stepping Stone	Kurt Franke	137	560
19	41/	44/	15	Eggbeater	Anton Marsden	137	7
20	31/	26/	42	Whisper v0.1	Ian Oversby	136	10
21	30/	24/	46	blue candle	bjoern guenzel	136	27
22	35/	35/	30	Tornado 3.0	Beppe	135	1548
23	30/	26/	43	Walk Like An Egyptian	John K W	135	305
24	30/	26/	43	test	John K W	134	76
25	32/	29/	39	Flurry	Anton Marsden	134	708

Weekly age: 88 (107 last week, 78 the week before)
New warriors: 11 Turnover/age rate 13%
Average age: 435 (456 last week, 403 the week before)
Average score: 140 (141 last week, 142 the week before)
The top 25 warriors are represented by 14 authors: van Dam, Oversby, Marsden, and JKW with 3, Vittuari, Bezzi, and guenzel with 2.

David van Dam owns the top spot. He has a strangle hold on KoTH that would make Microsoft jealous. As for the rest of the rabble . . . newcomer Rosebud by Bezzi has come on strong, debuting in second place. After falling a bit mid-week, it has managed to return to second place. All the 1000+ guys maintain their usual positions. Tornado was still alive when this snap shot was taken, but--sorry Beppe. Impfinity should cross the 2000 mark by next issue. I remember a version of Sphinx in the old ’88 days that lasted over 2100.

Besides Rosebud, new warriors include Bomber Boy, an incediary bomber, blue candle, a stone/spiral, Violent Micro, strategy unknown, Whisper and ompega, imp heavy warriors, Eggbeater, a scanner, Solomon v0.6, from a long line of pspace warriors, and stoninc, a very successful test (stone?) from Vittuari.

---

94 - What’s New

#	%W/	%L/	%T	Name	Author	Score	Age
2	29/	16/	55	Rosebud	Beppe	142	1
16	29/	27/	44	test	John K W	132	1
13	33/	34/	34	Bomber Boy	David van Dam	132	1
17	26/	23/	51	blue candle	bjoern guenzel	129	1
17	36/	42/	22	Violent Micro v0.4	basehead	129	1
20	29/	27/	44	Whisper v0.1	Ian Oversby	131	1
13	21/	11/	68	ompega	Steven Morrell	131	1
12	39/	45/	16	Eggbeater	Anton Marsden	133	1
6	37/	37/	26	dummy brain	bjoern guenzel	137	1

12	35/ 36/ 29		Solomon v0.6	Ian Oversby	134	1
5	38/ 33/ 30		stoninc	Maurizio	143	1

---

94 - What's No More

#	%W/ %L/ %T	Name	Author	Score	Age
26	21/ 34/ 45	Torch t19	P.Kline	109	4
26	0/ 1/ 2	stone test 11	Beppe	3	4
26	1/ 2/ 1	Yogi Bear	P.Kline	4	7
26	1/ 1/ 2	test eif	JKW	4	69
26	34/ 41/ 25	Gem of the Ocean	P.Kline	128	542
26	34/ 39/ 27	Flimsy v0.4a	Ian Oversby	129	187
26	2/ 0/ 2	test	Maurizio Vittuari	8	35
26	19/ 13/ 68	EvolCap XI	John Wilkinson	125	437
26	31/ 35/ 34	La Bomba 1.3	Beppe Bezzi	126	310
26	34/ 40/ 26	Blanket Party	J E Long	127	465
26	37/ 48/ 15	Solomon v0.3	Ian Oversby	126	354

---

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
12	30/ 21/ 48	Impfinity v4g1	Planar	140	1946
4	39/ 34/ 27	Thermite II	Robert Macrae	143	1747
22	35/ 35/ 30	Tornado 3.0	Beppe	135	1548
7	39/ 36/ 25	Chameleon	M R Bremer	141	1218
15	37/ 36/ 27	Grilled Octopus v0.5	David Boeren	138	963
25	32/ 29/ 39	Flurry	Anton Marsden	134	708
16	27/ 16/ 57	Hazy Shade II	John K W	138	706
18	40/ 42/ 18	Stepping Stone	Kurt Franke	137	560
23	30/ 26/ 43	Walk Like An Egyptian	John K W	135	305

Lost Blanket Party, Evol Cap, and Gem of the Ocean, but added Walk Like An Egyption.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Impfinity v4g1	Planar	1946	*	Stone/ imp
2	Thermite II	Robert Macrae	1747	*	Qscan -> bomber
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1548	*	Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Frontwards v2	Steven Morrell	1420		One shot scanner
7	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
8	quiz	Schitzo	1262		Scanner/ bomber
9	Chameleon	Myer R Bremer	1218	*	P-warrior
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	963	*	P-warrior
12	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
13	Agony II	Stefan Strack	912		CMP scanner
14	Barrage	Anton Marsden	876		Qscan -> replicator
15	Blue Funk	Steven Morrell	869		Stone/ imp
16	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
17	Blue Funk 3	Steven Morrell	766		Stone/ imp
18	Night Train	Karl Lewin	755		Replicator
19	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
20	Blizzard	Anton Marsden	713		Qscan -> replicator
21	Flurry	Anton Marsden	708	*	Qscan -> pwarrior
22	Hazy Shade II	John Wilkinson	706	*	P-warrior
23	HeremScimitar	A.Ivner,P.Kline	666		Bomber
24	La Bomba	Beppe Bezzi	650		Qscan -> replicator
25	myVamp v3.7	Paulsson	643		Vampire

Hazy Shade II by JKW pushes off Blue Funk 5 by Steven Morrell.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000

```
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft

#  %W/ %L/ %T                     Name               Author   Score     Age
 1  51/ 13/ 36                 bxt im4       bjoern guenzel     188      25
 2  52/ 25/ 23                Toxin IVa                Edgar     178      36
 3  48/ 22/ 29            Fork v0.1-10p    Christoph C. Birk     174      82
 4  50/ 27/ 23                Toxin IVb                Edgar     174      23
 5  51/ 29/ 20                scan test       bjoern guenzel     174      21
 6  53/ 34/ 13         Extreme Prejudice         Scott Manley     172      79
 7  52/ 40/  8                   Sapper        Andrew Fabbro     164       1
 8  47/ 32/ 21                 Toxin IV                Edgar     162      60
 9  49/ 37/ 14               coal 3.22b       bjoern guenzel     160      64
10  39/ 26/ 35         So Long Hyakutake         Scott Manley     153      81
11  46/ 45/ 10                  Drill 1.1                Edgar     147      38
12  35/ 31/ 34             Szyzyg v1.01         Scott Manley     138      48
13  40/ 44/ 16         Bloodhound Mk III        Andrew Fabbro     136      31
14  39/ 46/ 15                  8-Ball 2            Iain Hogg     133      54
15  29/ 25/ 46                  invicta        John K. Lewis     133      43
16  33/ 34/ 33               Szyzyg v1.0         Scott Manley     131      49
17  38/ 48/ 14                    8-Ball            Iain Hogg     128      58
18  38/ 56/  6         Hide'n'Seek debug                Edgar     119       7
19  36/ 61/  3                      Slow                Edgar     111      10
20  33/ 58/ 10      yet another test 0.2           Justin Kao     108      20
21  33/ 64/  4           Micro Centurion                Edgar     102      16
22  29/ 59/ 12      yet another test 0.3           Justin Kao      99       9
23   6/  2/  0                   Sapper        Andrew Fabbro      18       2
24   6/  2/  0                   Sapper        Andrew Fabbro      18       3
25   4/  0/  0                test 0.01    Christoph C. Birk      12      75
```

37 challenges. Pathetic. So it goes in the summer I suppose. Violent Micro and basehead are no more, taking up residence on the '94 draft hill. bjoeren guenzel also has a solid position on the pro hill.

The Hint
Killing Imps

Since Bezzi wrote a hint on imps last issue, I thought I'd find some material on how to kill them. This is part of a hint column from Paul Kline's _Push Off_ with some comments added by me (denoted with the >> sign).

On Killing Imps. Oh yes, they can be killed. Here are some of the ways.

1. Gates. Gates. Gates. Say again. Gates. Gates. Gates

Here is the form W. Mintardjo used in Beholder's Eye and Winter Werewolf:

```
    gate       equ example-10
    example    spl 0,<gate
               dat <gate
```

The DAT line can be adapted to hold an increment for bombing/scanning:

```
               dat #-gate,<gate
```

>> Of course the spl line can do the same:
>>
```
>>             spl #-gate, <gate
```
>> Since authors tend to have gates close to the executing code, the values
>> of the increments had to be small numbers. However, the scan/bomb
>> increments can also be spl #-2667-gate, <-2667-gate or spl #-2667*2-gate,
>> <-2667*2-gate. This gives a little more freedom in picking constants, at
>> least against 3 point imps.

An imp cannot pass 'gate' because of the continual decrementing. (Well actually I have seen an imp structure that passes such a gate, but it was a little too delicate to survive normal bombing :-)

>> Paul must have wrote this before he invented Cannonade, a gate crashing
>> imp spiral. By having a non-standard 2668 imp closely followed by a
>> standard 2667 spiral, Cannonade is able to sacrifice one of the mov 0,2668
>> instructions on the gate. When decremented, the instruction turns into a
>> mov 0,2667, perfect for the following spiral. However, with post
>> increment, you could just increment your gate instead of decrementing it.

Here is the form used in the vampires, Sucker and Twilight Pits:

```
    gate       equ example-10
    example    spl 0,<gate
               jmp trap,<gate
               ....
    trap       dat <gate
```

These gates are an end-game strategy. The program does its normal attack, vamping or stunning, then a core-clear which eventually moves the DAT line into place. From then on 'gate' is continuously decremented.

Don't overlook partial gating, which decrements 'gate' on every-other or one-out-of-three. If it is not possible for your program to evolve a perfect gate, you can still pick up wins with a partial. This includes -every- available statement into which you can put a predecrement operand. Got JMP's? Turn them into JMP x,<gate. SPL's the same thing. Strive to create an imp-hostile environment. Your decrementing instruction may be the only one to survive the battle!

Here is a core-clear incorporating a partial gate:

```
    gate       equ example-10
    example    spl 0,<gate+2667
    clear      mov bomb,<gate
               jmp clear,<gate+2667
    bomb       dat <example-1-gate
```

This code is either decrementing gate or gate+2667, which makes a 66% gate against a 3-point imp, or a 50% gate against other sizes.

To harden your 'bomb' against itself being decremented, use the form:

```
    bomb       dat <example-1-gate,<example-1-gate
```

Then if both the SPL and DAT get decremented you are still okay, and also if only the DAT gets decremented.

Here is the form called 'wimps' by B. Thompsen:

```
    wimp       jmp 0,<-10
```

Thompsen starts a couple of these in core, then after core-clearing causes his other code parts to self-destruct, leaving the wimps to kill any remaining imps. Smart!

2. Imp-killing scan increments. These are imp-size specific, so are not quite as effective as gates, but still useful. Normally used against 3-point imps, they work only after some portion of the imp-opponent has been spl-stunned and is therefore running very slowly. The increment is chosen so that it scans location N, then other locations for a while, then location N+2667. Assuming that the imp has not had time to repair N, N+2667, or N+5334, the delay between N and N+2667 can be several hundred cycles.

A scan increment that scanned N+2667 too quickly after N would be a very inefficient one. But there are a number of increments that scan N and N+2667 in less than 1000 scans which are also efficient core-scanning increments. There are even a few that scan N+2667 *and* N+1143 (7-point imps) in less than 1000 scans which are moderately efficient. Of the 2100 numbers that most quickly find opponents of size 13, and scan N+2667 after N in from 300-1000 steps, here are the four smallest:

    59, 81, 83, 107

In order for this to be a successful strategy, scanning must continue for as long as possible, yet still allow time for a core-clear and for the opposing processes to all die.

>> In addition to imp-killing scan increments, there is the imp-killing
>> core clear. Clearing with dat <2667, <2667*2 is often effective. This
>> spiral clear will stun and then kill 3 point and 7 point imps. I believe

```
>> this code was first used in JKW's SETI, but don't quote me on that.
>>
>> ;name spiral spl clear followed by linear dat clear
>>         add.a #382, ptr
>>         mov @-1, {ptr
>> jump    jmp -2, 0
>> half    dat <0-dist,<0-dist-2
>> ptr     spl #2, #3
```

3. Forward bombing and decrementing, two different strategies, but the same principle. Since the imp never repairs its trailing process you can knock them off with a left-to-right bombing run. Depending on the bomb you are using, this can be more-or-less successful. Here is one approach:

```
    example  spl 0,<gate
    loop     add inc,stone
    stone    mov <10,loop
             djn loop,<-20
    inc      dat #2667,#3044
```

This is a mod-4 bomber, which runs three decrementing streams at stone+10, stone+10+2667, and stone+10+5334, which may overtake and kill a 3-point imp. After 25% of core has been tracked, 'stone' will drop a bomb on 'loop', so you need to have something out there (wherever the a-operand is pointing) that moves you into the next phase - could be 'loop' again for that matter.

Another approach would be to watch for imp instructions, pick one up and start bombing from there, using it as the increment.

4. DAT bombing. The best bomb is:

```
    dat <2667,<5334
```

but your chances of killing an imp-spiral with single-bomb DAT's is almost nil, and the bomb is only effective against 3-point imps. Here is an example of using the bomb in paper:

```
    start   spl 1
            spl 1
            mov -1,0              ; < create 7 processes
    p1s     mov p1b,<1000         ; decremented by parent
    p1      mov #7,p1s
            mov <p1s,<p1n         ; create child
    p1n     spl @p1n,-1188        ; start child
            mov p1b,<p1n          ; bomb in sequence with child
            jmz @0,@p1            ; if i'm ok, go again
    p1b     dat <2667,<5334
```

This paper should kill at least 30% of short 3-point imps (spiral length less than 9), but is less effective against longer imps. The advantage of using paper to bomb is that imps can't kill paper. Unfortunately, imps tend to subvert paper processes so the effective bombing rate goes down as the game progresses. However the above paper resists subversion somewhat by bombing ahead of and -2667 ahead of its children to prevent their being overrun by its own 'imped' processes.

```
>> This is an '88 replicator that would get totally annihilated on the '94
>> hill.  Just throw in a TimeScape replicating engine with the linear
>> bombing and--voila--anti-imp paper.
```

5. Self-splitting. Since the imp only kills your program if you have fewer processes than he does, you can create a tie by having more. Then if you are overrun you will follow, not outrun him. This means extra processes at -every- location, including spl-zero lines, since any or all other lines may be dat-bombed and lost during the battle.

6. Very rapid startup. Imps and their co-components can take 40-50 instructions to launch, plus a 'large' startup code. If you come out swinging that's 40-50 instructions for bombing or scanning to your advantage.

```
>> Not so true anymore.  Binary launches are huge, but jmp/add and vector
>> launched spirals have a relatively small footprint.  However, they do take
>> extra time to launch, so a rapid start up (ala quick scan maybe) can be
```

>> effective in more ways than one.

Extra Extra

I ripped this off the newsgroup in case you missed it. Just another thread in the PIN/no PIN argument. Thanks to Nathan Green for his work on this.

David van Dam (D.vanDam@is.twi.tudelft.nl) wrote:
: guenzel@extern.lrz-muenchen.de (Bjoern Guenzel) wrote:

: > I wonder if it is possible to create a 'mega-handshaking': a program
: > which returns a unique win/loss in it's self-fight that allows to
: > calculate the secret number. Then write a second program that easily
: > beats all the others... (only for one month, of course).

But when you have a script file that generates the warrior, it only takes the time to submit 3 warriors to make a new one.

: I think it's not so difficult.

Not too difficult at all.

: You just use the handshake routine to determine the distance between your
: warriors in the self fight (aha, another reason against self fights). The
: the first time you send your warrior to the hill and it can win (distance
: DIV 200) times. The second time you change the program a little bit and you
: win (distance MOD 200) times.

I used div/mod 100, but the idea is the same. You also need to be able to tell which warrior found who first too.

: With these 2 values you can calculate the secret number. It's simple.

: So, who has the time to try it out?

I guess that would be me. :)

After debugging my programs, I determined that pizza's magic -F number was <nah, think I'll keep that little secret... :)> using the method described above. I created two warriors, Cheater and Control. Cheater was designed to SPL carpet the opponents starting position, and then spl/dat clear. Control was exactly the same, except with the wrong numbers. Without the magic numbers, it should do very poorly.

The assult on the veteran hill was not encouraging. As I had feared, the warriors on the veteran hill don't stay in thier starting places long enough to get bombed. :(

Cheater only did well against one warrior, 107/91/2 vs. 7/191/2

The warriors on the beginner's hill did a much better job of sitting still. :)

The Beginner hill:

#	%W/	%L/	%T	Name	Author	Score	Age
11	48/	42/	10	Cheater	Nathan Green	154	2
25	16/	68/	16	Control	Nathan Green	65	1

Against many opponents, Cheater scored ~150 wins, ~50 losses. (I'll give you one guess how many starting locations I was able to cram into 100 instructions.)

Control, however, only managed to push the last killed program off the hill.

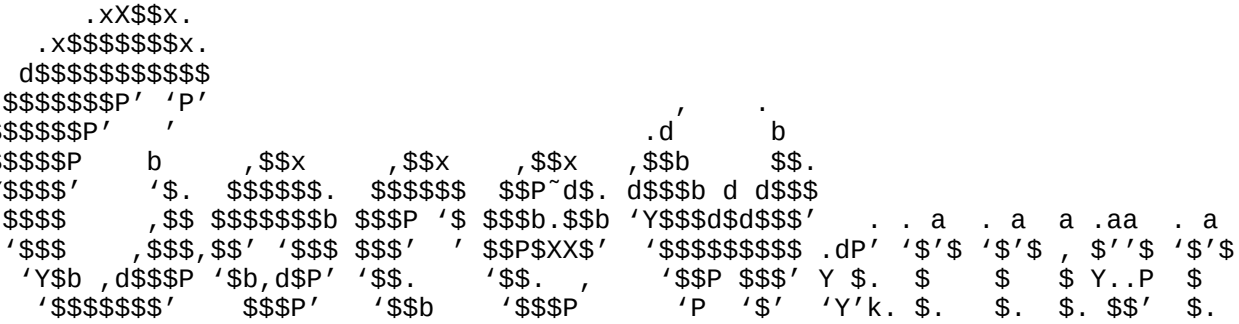
I wonder what kind of wacky warriors would evolve in an experimental hill in which the -F number was known in advance...

--
Nathan Green (ngreen@plains.nodak.edu)

GCS d? s: a21.4>21.5 C+++ UV P>+ L++>+++ E W N++ o++ K+
w---(--) M- V PS PE Y t+ 5 X R tv-(--) b++>+++ DI++>+++ D+
G+>++++ e(*)>+ h!>++ !r !y+ (Version 3.1)

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From bezzi@nemo.it Mon May 27 19:35:35 1996
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 (EMWAC SMTPRS 0.80) with SMTP id <B0000181902@nemont.nemo.it>;
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Date: Mon, 27 May 1996 19:35:36 +0200
Message-Id: <B0000181902@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
        Damien.Doligez@inria.fr (Damien Doligez),
        k.tonn@ic.ac.uk (Karsten Tonn)
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 31
Status: R



Issue 31 May 27, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars

---

Greetings.

Impfinity failed in breaking the 2000 wall, falling very near the goal line, sorry Planar ;-) Now Therrmite is in sight of the red line. Will it reach the magic number or fall prey of new stones and qscan detectors? we'll know that next week.

Ian Oversby had to kill his warrior to avoid flooding his mailbox during vacations.
To have the chance to change ;redcode attribute in quiet could be the solution to avoid such things, and we'll appreciate it; unless, of course, it requires a full rewriting of scripts.

Two warriors in this issue: recently fallen Hall of famer Flurry, by Anton Marsden and Rosebud, by your favourite author.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	48/	41/	11	d-clear	bjoern guenzel	155	5
2	42/	36/	21	Blur	Anton Marsden	148	281
3	35/	23/	42	the historian	bjoern guenzel	148	8
4	44/	40/	16	Scan Man	David van Dam	148	294
5	39/	33/	28	stoninc	Maurizio	146	128
6	43/	42/	15	Violent Micro v0.4	basehead	144	139
7	37/	30/	33	Osseil	John K W	144	34
8	31/	18/	51	Rosebud	Beppe	143	208
9	28/	13/	59	EIF	John K W	143	82
10	43/	43/	15	HopScotch 1.6	Robert Macrae	143	2
11	37/	32/	30	Bomber Boy	David van Dam	142	163
12	32/	22/	46	blue candle	bjoern guenzel	142	122
13	29/	19/	52	Test Paper	Robert Macrae	139	1
14	43/	48/	9	007	David van Dam	138	3
15	37/	37/	26	Thermite II	Robert Macrae	138	1874
16	38/	39/	22	Chameleon	M R Bremer	137	1345
17	37/	38/	26	Yogi Bear	P.Kline	136	25
18	35/	35/	30	Grilled Octopus v0.5	David Boeren	136	1090
19	37/	39/	24	T.N.T. pro	Maurizio Vittuari	135	253
20	38/	40/	22	Unknown	Anonymous	135	7
21	25/	16/	58	Hazy Shade II	John K W	134	833
22	35/	36/	29	Lithium And Water	John K W	133	6
23	39/	45/	16	Stepping Stone	Kurt Franke	133	687
24	23/	14/	63	ompega	Steven Morrell	132	135
25	28/	25/	47	test rtiqe1	Beppe	132	50

Weekly age: 127 (88 last week, 107 the week before)
New warriors: 11 Turnover/age rate 9%
Average age: 311 (435 last week, 456 the week before)
Average score: 140 (141 last week, 141 the week before)
The top 25 warriors are represented by 13 authors: Wilkinson 5 (including one as anonymous) van Dam, Guenzel and Mcrae with 3, Vittuari and Bezzi, with 2.

Impfinity is dead. Shortly before reaching 2000 it's fallen off the hill, losing more than 12 positions in a week; sometimes in the past we spoke of havoc or carnage; this week I have no word to describe what happened. The hill lost 30% of his age, including warriors rated 1, 3 and 6 in the what's old standings, and the standings show all most aged warriors in the lower half. I cannot remember the imp-ring revolution, but I can guess that what's happening now is comparable with that, even if I cannot see the reason of this mass extiction.

After a few week of strong leadership, Scan Man is no more the King; Guenzel's new warrior d-clear is now in the higher spot, with a good lead over Blur, the historian, and previous king Scan Man.
Vittuari's stoninc is the only other warrior to hold its position in the top five.

Apart d- clear a few good warriors have entered the hill: the historian and Oseesil held king position for a while and also EIF was very near te the top. Thermite, TNT pro and Chameleon, lose near ten positions from last week, and the new millenary Grilled Octopus is in the low places of

standings too, 'the new' is advancing and veterans have some troubles to keep pace.

---

94 - What's New

#	%W/	%L/	%T	Name	Author	Score	Age
1	48/	41/	11	d-clear	bjoern guenzel	155	5
3	35/	23/	42	the historian	bjoern guenzel	148	8
7	37/	30/	33	Osseil	John K W	144	34
9	28/	13/	59	EIF	John K W	143	82
10	43/	43/	15	HopScotch 1.6	Robert Macrae	143	2
12	32/	22/	46	blue candle	bjoern guenzel	142	122
13	29/	19/	52	Test Paper	Robert Macrae	139	1
14	43/	48/	9	007	David van Dam	138	3
17	37/	38/	26	Yogi Bear	P.Kline	136	25
20	38/	40/	22	Unknown	Anonymous	135	7
22	35/	36/	29	Lithium And Water	John K W	133	6
25	28/	25/	47	test rtiqe1	Beppe	132	50

---

94 - What's No More

#	%W/	%L/	%T	Name	Author	Score	Age
26	23/	22/	55	Impfinity v4g1	Planar	123	1993
26	31/	38/	30	Tornado 3.0	Beppe	124	1567
26	28/	31/	41	Flurry	Anton Marsden	124	835
26	27/	27/	47	Walk Like An Egyptian	John K W	127	307
26	16/	13/	5	Wind-up Toy v1.2c	Ian Oversby	53	288
26	34/	42/	24	The Core Clear V1.3	David van Dam	127	280
26	1/	1/	2	test	John K W	4	134
26	3/	5/	14	Whisper v0.1	Ian Oversby	25	95
26	0/	1/	3	Solomon v0.6	Ian Oversby	4	72
26	10/	10/	10	Flimsy v0.4a	Ian Oversby	41	66
26	34/	42/	24	dummy brain	bjoern guenzel	127	44
26	0/	1/	3	blue candle	bjoern guenzel	3	28
26	37/	47/	16	Eggbeater	Anton Marsden	127	15

A total age of 5724, yes five thousands seven hundreds twenty four, 30% of hill age, has been pushed off this week I don't think this record will be broken too soon.

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
15	37/	37/	26	Thermite II	Robert Macrae	138	1874
16	38/	39/	22	Chameleon	M R Bremer	137	1345
18	35/	35/	30	Grilled Octopus v0.5	David Boeren	136	1090
21	25/	16/	58	Hazy Shade II	John K W	134	833
23	39/	45/	16	Stepping Stone	Kurt Franke	133	687

Lost Impfinity, Tornado, Flurry and Walk like an Egyptian. No new entries. Grilled Octopus enters the 'over 1000' club. All veterans are in the lower half of standings.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Impfinity v4g1	Planar	1993		Stone/ imp
2	Thermite II	Robert Macrae	1874	*	Qscan -> bomber
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Frontwards v2	Steven Morrell	1420		One shot scanner
7	Chameleon	Myer R Bremer	1345	*	P-warrior
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1090	*	P-warrior
12	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner

13	Agony II	Stefan Strack	912		CMP scanner
14	Barrage	Anton Marsden	876		Qscan -> replicator
15	Blue Funk	Steven Morrell	869		Stone/ imp
16	Flurry	Anton Marsden	835		Qscan -> pwarrior
17	Hazy Shade II	John Wilkinson	833	*	P-warrior
18	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
19	Blue Funk 3	Steven Morrell	766		Stone/ imp
20	Night Train	Karl Lewin	755		Replicator
21	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
22	Blizzard	Anton Marsden	713		Qscan -> replicator
23	Stepping Stone	Kurt Franke	687	*	Qscan -> Vampire
24	HeremScimitar	A.Ivner,P.Kline	666		Bomber
25	La Bomba	Beppe Bezzi	650		Qscan -> replicator

Stepping Stone by Kurt Franke pushes off Paulsson’s myVamp.
Thermite II is viewing the 2000 borderline, Tornado stops its run in fourth place, there are but five living warriors in the HoF, no new warrior is scheduled to enter soon in the hall.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	57/	31/	12	Violent Micro v0.4b	basehead	184	28
2	54/	32/	14	Sapper	Andrew Fabbro	176	2
3	50/	30/	20	scan test	bjoern guenzel	170	56
4	49/	33/	17	coal 3.22b	bjoern guenzel	166	99
5	45/	29/	26	Toxin IVa	Edgar	161	71
6	49/	36/	15	radar.b	John K. Lewis	161	25
7	46/	31/	23	Trebuchet	Andrew Fabbro	161	9
8	44/	30/	26	Toxin IVb	Edgar	157	58
9	41/	25/	34	Fork v0.1-10p (f)	Christoph C. Birk	156	12
10	44/	33/	23	Extremely Prejudiced	Scott Manley	154	3
11	45/	40/	15	8-Ball 2	Iain Hogg	149	89
12	47/	45/	8	Drill 1.1	Edgar	149	73
13	42/	36/	22	Toxin IV	Edgar	148	95
14	43/	39/	18	Bloodhound Mk III	Andrew Fabbro	147	66
15	43/	42/	15	8-Ball	Iain Hogg	144	93
16	41/	39/	20	pipy-2	Edgar	143	18
17	41/	41/	18	pipy-1	Edgar	141	19
18	33/	32/	35	Szyzyg v1.01	Scott Manley	135	83
19	41/	50/	9	Micro Centurion (mod)	Edgar	131	30
20	31/	35/	34	Szyzyg v1.0	Scott Manley	127	84
21	22/	29/	48	invicta	John K. Lewis	116	78
22	26/	39/	36	Hunter V 0.7 beta	O.Fechner	113	1
23	34/	55/	11	Hide’n’Seek debug	Edgar	113	42
24	25/	39/	36	Hunter V 0.5 beta	O.Fechner	111	5
25	24/	48/	28	bomberQ2	harleyQ2	99	6

Low traffic also this week, but 35 challenges. Basehead new Violent micro, a version of which is 6th in the pro hill leads, followed by Fabbro’s Sapper.

The Hint
Rosebud by Beppe Bezzi

Few weeks ago I had a sort of feeling that there were something wrong in the hill; no replicators, very many scanners, complex bombers and pspacers. Having never made a stone before, I call ’stones’ but the four five lines bombers with almost everything inside the main loop, Torch and Tornado are ’bombers’ not stones, for me, I decided to try coding one, and results have been very good.

Five liners are, IMO perhaps the most difficult warriors to make; being rather slow they have to be very small and make the maximal use of decrements and the stream to increase attack power.
Stones gains most of their points against comples scanners and bombers, having a much better size /speed ratio, the main enemies for them are replicators, obviously, and one shot scanners, because of he small footprint and the fact that dat 0,0 bombs and decrements aren't very effective against them. Another problem is inserting a core clear to get rid of self splitting bombers once disabled.

There is little to invent here, so having to start from something I started from my favourite, Blue Funk, a warrior I like a lot for his elegance, and using the same structure I built my warrior.

The stone part is the same of BF, with one more leading spl 0 and a different mod 5 step. The extra spl is needed because I use an heavier spiral and because I don't want my stone slowed if imps are stunned.

```
clr     spl     #0,     0
split   spl     #-step, <step
stone   mov     >-step, step+1
        add     split,  stone
cnt     djn.f   stone,  <djnoff
stptr   dat     0,0
        dat     0,0
cc      dat     0,      #stone-4
```

To better see how Rosebud works use this simple macro, after tracing 'ston'e line:

```
st01= @go~if (a!=0 && a!=5)~!~l pc-5,pc+5
```

it stops when the warrior is executing a mov >0, xx or a mov >cc, xx

The basic is that when we execute a mov >0, xx line we copy xx over itself and we begin executing another bombing with the pattern shifted one forward, the cc line is needed because we have to avoid self bombing when executing the mov >5, yy that after some time cause self destruction. All the merit of that goes to Steven Morrell, I only fitted his idea in my warrior.

Worth notice is the use of the stream; djnoff and the decrement of split line both point the same cell, so the stream is interrupted; this has some advantages: A- can more easily trigger a cmp scan. B- covers a wider area in the same time -C last but not least, can decrement a warrior without triggering his decrement detector, usually a
jmz.b loop, #0

When everything goes well, Rosebud will bomb its djn pointer a bit before the stream reaches itself, restarting it from the beginning and can complete two full bombings of core before self decrementing and self destructing; self destruction comes very late in the round, with but 3000 cycles to do.

The imp spiral is a 16 process, jump add launch. The launcher is immediatly booted away not to give Thermite a free lunch, and uses mov #2667, *0 imps.

Further improvements I planned are: moving spiral placement to avoid losing that many processes during my bombing (I lose 4) and adding something, don't know yet what, to kill enemy spirals once my stone killed the partner warrior. Anyway I'm rather satified of my nice little thing, even if a bit surprised of how well it does.

```
;redcode-94
;name  Rosebud
;author Beppe
;strategy a nice little thing
;strategy and a bunch of imps
;assert CORESIZE == 8000
;kill Rosebud

step    equ     -845
```

```
djnoff  equ     split+step
impsize equ     2667
impdspl equ     away+impsize+impsize/3+impaway

impaway equ     1000    ;more or less   :-)
away    equ     4000    ;more or less   :-)

org     boot

boot
        spl     impboot
        mov     cc,     @stptr1
for 5
        mov     {stptr, {stptr1
rof
        spl     *stptr1,<4000
stptr1  mul.f   #split+away,#split+away+2

x       dat     0,0
        dat     0,0
start
clr     spl     #0,     0
split   spl     #-step, <step
stone   mov     >-step, step+1
        add     split,  stone
cnt     djn.f   stone,  <djnoff
stptr   dat     0,0
        dat     0,0
cc      dat     0,      #x
for MAXLENGTH-CURLINE-23
        spl     #stptr,impptr
rof
impboot
a for 8
        mov     <impptr,{impptr
rof
impptr  jmp     vector+impaway,vector
imp     mov.i   #impsize,*0
        mov     imp-impaway,imp+impdspl
        spl     1,<1000
        spl     1,<1100
        spl     1,<1200
        spl     1,<1300
        spl     2,1400
        jmp     imp+impdspl
        add.a   #impsize,-1
;-break
vector
        dat     0,0
for MAXLENGTH-CURLINE
        dat     0,0
rof
end
```

Extra Extra
Flurry by Anton Marsden.

Flurry is a warrior I put together in about 15 minutes. I don’t like it. But it seems to have done well on the Hill. Surprisingly, it remained in the lower half of the Hill for most of it’s life. As the strategy line says, it’s a QScan followed by either CIA (intelligent bomber) or Barrage (brainwashing paper).

The QScan bombs a wide area and takes far too much time. Using very simple "logic", CIA or Barrage is executed. The "logic" uses only PSpace location 0, ie. you can’t brainwash it.

Here’s Flurry:

```
;redcode-94
;name Flurry
;author Anton Marsden
;strategy QS -> Barrage | CIA
;assert CORESIZE==8000
;kill Flurry

ORG start

STEP  equ   3119
A  equ   (c-1)
SPYOFF   equ   STEP*1400

eye   equ   (A-SPYOFF)
spy   equ   (A+SPYOFF)

gate:
spy0: dat.f  >-SPYOFF,>-SPYOFF
      dat.f  $-1,$15
cb    spl.ab #-2,$15
      dat.f  $0,$0
      dat.f  $0,$0
s     spl.a  #spy0,>4000
loop  add.f  $c,@2
ip    mov.i  @1,@spy
      mov.i  @0,*spy
      jmz.b  $loop,$eye
c     spl.b  #STEP,>-STEP
      mov.i  @2,>gate
      mov.i  @1,>gate
b0    djn.b  $c+1,{cb

FOR 19
      dat.f  $0,$0
ROF

start:
q FOR 4
      sne.i  $s+400*q,$s+400*q+100
      seq.i  $s+400*q+200,$s+400*q+300
      mov.ab #s+400*q-f,$f
ROF
      jmn.b  @0,$f

q FOR 4
      sne.i  $s+400*(q+8),$s+400*(q+8)+100
      seq.i  $s+400*(q+8)+200,$s+400*(q+8)+300
      mov.ab #s+400*(q+8)-f,$f
ROF
      jmn.b  @0,$f

q FOR 4
      sne.i  $s+400*(q+4),$s+400*(q+4)+100
      seq.i  $s+400*(q+4)+200,$s+400*(q+4)+300
      mov.ab #s+400*(q+4)-f-100,$f
ROF

      jmz.b  $sw,$f
      add.ab #100,$f
f:    sne.i  $d,$0
      djn.b  $-2,#4
      mov.i  $b,@f
      mov.ba @1,$f
      add.f  $inc,$f
      mov.i  *1,@f
      mov.i  $b,*f
      djn.b  $-3,#12

ptr:  spl.a  *1,>2*2667
```

```
      mov.i  *s,$spy
      mov.i  $1,$-1
b:
inc:  dat.f  >8,>-8

sw:   ldp.ab #0,#0
      jmz.f  $ptr,<sw

ASTEP EQU 3510; mod-10
BSTEP EQU 2365; mod-5
CSTEP EQU 3315; mod-5

p:    spl.b  $1,>2000
      spl.b  $1,>4000
      spl.b  $1,>6000

s1:   spl.b  @s1,}ASTEP
      mov.i  }s1,>s1
s2:   spl.b  @s2,}BSTEP
      mov.i  }s2,>s2
      mov.i  {s2,<s3
s3:   jmp.b  @s3,>CSTEP
      dat.f  >1,}1
      dat.f  }1,>1
      stp.b  >0,#1
jump: jmp.b  $-1,$1
d:
END
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From bremermr@ecn.purdue.edu Mon Jun 3 21:02:13 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA12977; Mon, 3 Jun 96 21:02:13 +0200
Received: from cartoon.ecn.purdue.edu (cartoon.ecn.purdue.edu [128.46.147.13]) by nez-per
ce.inria.fr (8.7.1/8.7.1) with ESMTP id VAA08575 for <Damien.Doligez@inria.fr>; Mon, 3 Ju
n 1996 21:02:07 +0200 (MET DST)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
by cartoon.ecn.purdue.edu (8.7.5/3.8.1davy)
for delivery to "Damien.Doligez@inria.fr"
id OAA03201; Mon, 3 Jun 1996 14:01:50 -0500 (EST)
Message-Id: <199606031901.OAA03201@cartoon.ecn.purdue.edu>
Date: Mon, 3 Jun 1996 14:01:50 -0500 (EST)
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: CW 32
Status: R

```
      .xX$$x.
   .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 32 June 3, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars

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Greetings.

Not much action on either hill this week so there is little to report, but big changes are coming to a pizza hill near you. Thos has proposed two upgrades to the hill script: 1) eliminate self fights and 2) include the 'test' option. While the merit of self fights may still be discussed, the addition of the 'test' option will be welcome by everyone. Not only will it increase hill throughput by reducing full 25 challenge test warriors, but this feature should eliminate some of the artificial aging. Other much wanted options mentioned in the newsgroup include:

-- consolidated e-mail with all warrior results
-- updates on your warriors' score against all current warriors
-- ability to change the ;redcode line to control e-mail from the hill
-- ability to modify the ;strategy lines

These are not demands, merely wishful suggestions to two individuals--Thos

and Tuc--who donate some of their time and effort to making core war a much more enjoyable game.

Having trouble picking that magic constant? Want to know how to most efficiently cover core? Read Stefan Strack's short tutorial on MOPT, the multiple constant optimizer. Also in this issue, Paul Kline discusses how to deal with all those nasty imp/ stones that have invaded the hill lately. Look for it in this week's hint.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	42/	37/	21	Twister	Beppe Bezzi	147	31
2	41/	38/	22	Blur	Anton Marsden	144	323
3	37/	31/	32	Osseil	John K W	144	76
4	35/	26/	40	the historian	bjoern guenzel	144	50
5	42/	41/	17	Yogi	P.Kline	143	2
6	34/	26/	40	Scotch Broth 1.0	Robert Macrae	143	40
7	38/	34/	28	stoninc	Maurizio	142	170
8	43/	47/	10	d-clear II	bjoern guenzel	139	8
9	39/	39/	22	Chameleon	M R Bremer	139	1387
10	38/	38/	24	T.N.T. pro	Maurizio Vittuari	139	295
11	37/	37/	25	Thermite II	Robert Macrae	137	1916
12	27/	17/	56	Hazy Shade II	John K W	137	875
13	40/	43/	17	Scan Man	David van Dam	137	336
14	40/	45/	15	HopScotch 1.6	Robert Macrae	136	44
15	35/	35/	30	Bomber Boy	David van Dam	134	205
16	28/	22/	49	Rosebud	Beppe	134	250
17	39/	45/	16	Stepping Stone	Kurt Franke	134	729
18	40/	48/	12	test P	P.Kline	133	1
19	35/	37/	28	Grilled Octopus v0.5	David Boeren	133	1132
20	29/	26/	45	blue candle	bjoern guenzel	132	164
21	38/	45/	16	Violent Micro v0.4	basehead	132	181
22	22/	15/	63	ompega	Steven Morrell	130	177
23	23/	18/	59	EIF	John K W	127	124
24	22/	22/	56	Wicked	John K W	122	12
25	30/	52/	18	Test	Steven Morrell	109	3

Weekly age: 42 (127 last week, 88 the week before)
New warriors: 7 Turnover/age rate 17%
Average age: 341 (311 last week, 435 the week before)
Average score: 136 (140 last week, 141 the week before)
The top 25 warriors are represented by 13 authors: Wilkinson with 4, guenzel and Macrae with 3, and Bezzi, Morrell, Kline, Vittuari, and van Dam with 2.

Only 42 successful challenges!

d-clear reigned early in the week, until Bezzi submitted his newest version of Twister, which utilizes a qscan before the Tornado type bomber. Kline shortens Yogi Bear to Yogi, changes some plogic, and voila, a top five warrior. EIF, Rosebud, blue candle, and Violent Micro have all dropped in the standings while veterans Thermite II and Chameleon manage to gain a few spots. Blur and Osseil have remained relatively stable, neither one dropping out of the top ten. One time king Scan Man has been everywhere from number 2 to number 21. Hopefully there will be some more action next week or when the new hill scripts get finished and authors take their vengence on specific warriors.

#	%W/ %L/ %T	Name	Author	Score	Age
21	28/ 29/ 43	Scotch Broth 1.0	Robert Macrae	128	1
1	42/ 38/ 20	Twister	Beppe Bezzi	146	1
23	22/ 19/ 59	Wicked	John K W	125	1
2	45/ 44/ 11	d-clear II	bjoern guenzel	145	1
25	31/ 51/ 18	Test	Steven Morrell	111	1
3	42/ 42/ 17	Yogi	P.Kline	142	1
18	40/ 48/ 12	test P	P.Kline	133	1

Twister has been near the top spot ever since it was submitted. d-clear started off strong, but is now in the 8th slot. Yogi is still young and most likely has a lot more testing to go before Paul is satisfied with him.

---

94 - What's No More

#	%W/ %L/ %T	Name	Author	Score	Age
26	1/ 0/ 3	007	David van Dam	5	4
26	0/ 0/ 3	Test Paper	Robert Macrae	4	4
26	2/ 1/ 2	test rtiqe1	Beppe	6	57
26	1/ 1/ 1	Yogi Bear	P.Kline	5	35
26	2/ 1/ 2	d-clear	bjoern guenzel	7	29
26	1/ 0/ 3	Lithium And Water	John K W	5	24
26	0/ 47/ 53	Unknown	Anonymous	53	2

Most of these were killed by their authors.

---

94 - What's Old

#	%W/ %L/ %T	Name	Author	Score	Age
11	37/ 37/ 25	Thermite II	Robert Macrae	137	1916
9	39/ 39/ 22	Chameleon	M R Bremer	139	1387
19	35/ 37/ 28	Grilled Octopus v0.5	David Boeren	133	1132
12	27/ 17/ 56	Hazy Shade II	John K W	137	875
17	39/ 45/ 16	Stepping Stone	Kurt Franke	134	729
13	40/ 43/ 17	Scan Man	David van Dam	137	336
2	41/ 38/ 22	Blur	Anton Marsden	144	323

Scan Man and Blur are beginning to show some age, but have a long way to go before they become eligible for the Hall of Fame.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Impfinity v4g1	Planar	1993		Stone/ imp
2	Thermite II	Robert Macrae	1916	*	Qscan -> bomber
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Frontwards v2	Steven Morrell	1420		One shot scanner
7	Chameleon	Myer R Bremer	1387	*	P-warrior
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1132	*	P-warrior
12	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
13	Agony II	Stefan Strack	912		CMP scanner
14	Barrage	Anton Marsden	876		Qscan -> replicator
17	Hazy Shade II	John Wilkinson	875	*	P-warrior
15	Blue Funk	Steven Morrell	869		Stone/ imp
16	Flurry	Anton Marsden	835		Qscan -> pwarrior
18	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
19	Blue Funk 3	Steven Morrell	766		Stone/ imp
20	Night Train	Karl Lewin	755		Replicator
21	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
23	Stepping Stone	Kurt Franke	729	*	Qscan -> Vampire
22	Blizzard	Anton Marsden	713		Qscan -> replicator
24	HeremScimitar	A.Ivner,P.Kline	666		Bomber
25	La Bomba	Beppe Bezzi	650		Qscan -> replicator

Thermite II continues its trek towards the top of the Hall of Fame standings and the 2000 mark. Hazy Shade II advances two places and Stepping Stone moves up one spot. The next warrior that could enter the hall is van Dam's Scan Man, but it is still a long ways away at an age of 323.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	61/	28/	11	Violent Micro v0.4b	basehead	194	51
2	58/	30/	12	Sapper	Andrew Fabbro	185	25
3	51/	31/	18	Mace	Edgar	170	19
4	49/	31/	21	scan test	bjoern guenzel	167	79
5	47/	31/	22	Toxin IVa	Edgar	162	94
6	49/	36/	15	radar.b	John K. Lewis	162	48
7	46/	32/	22	Trebuchet	Andrew Fabbro	160	32
8	43/	26/	31	Hunter V 0.8	O.Fechner	159	21
9	45/	31/	24	Toxin IVb	Edgar	158	81
10	50/	41/	9	Drill 1.2	Edgar	158	23
11	50/	43/	8	Drill 1.1	Edgar	157	96
12	47/	40/	12	Rusty.2	John Lewis	154	4
13	44/	34/	22	Extremely Prejudiced	Scott Manley	153	26
14	40/	33/	27	Fork v0.1-13p (i)	Christoph C. Birk	147	6
15	41/	43/	16	Bloodhound Mk III	Andrew Fabbro	139	89
16	39/	44/	17	testvss2	Iain Hogg	133	16
17	38/	44/	18	Yet Another Try 1a	Justin Kao	133	2
18	41/	50/	9	Micro Centurion (mod)	Edgar	132	53
19	37/	45/	18	testvss	Iain Hogg	128	17
20	25/	40/	35	Hunter V 0.5 beta	O.Fechner	111	28
21	24/	39/	36	Mutant Strain	John K. Lewis	109	5
22	30/	59/	10	gundam	John K. Lewis	101	3
23	26/	62/	12	Roundup	Jeff Hafner	90	1
24	20/	55/	25	bomberQ2	harleyQ2	84	29
25	23/	66/	11	Test1	Oscar Strawczynski	80	9

Only 23 successful challenges! Of course it is summer vacation for most colleges. John K. Lewis has increased his presence on the hill with some new warriors. O.Fechner seems to have brought Hunter out of beta and is enjoying some success in the top ten.

The Hint
by Paul Kline

Beppe and others seem to be taking the 94 Hill over with those strong, fast stone-imp warriors. So it's time for an antidote :-)

Now, there are many ways to kill stones including paper, dodgers, faster stones, and sometimes big slow imps. One principle that works well is numbers. A single stand-still program is at a disadvantage against an opponent running at multiple locations. Kill one part and the others just run faster. Even a pair of bombers running at half-speed will prove very tough on the stone.

I was working on this concept for a couple of days with some success and just about to submit something to the Hill for a trial when lo-and-behold Bjoern Guenzel published the perfect component for this purpose -> d-clear.

My concept (not a new one) was to start a pair of core-clears running at a separation of 4000. The stone would probably cripple one of them but the other might last long enough to get him. And even with rough implementation

it worked pretty well. After the stone is wiped, any imps advance to the forward-clear pointer and are killed as well.

I just have to say something about Bjoern's innovative use of the djn.f to drive his forward clear. Many of us had tried the forward decrement in a program or two, but it has mostly been abandoned for that purpose. Unfortunately when the decrement hits it's own pointer it stops - the pointer is both incremented and decremented in the same instruction so there is no more progress, making it less destructive than a backward decrement. Bjoern on the other hand saw this as a feature and used it to drive a forward core clear at 100% of c, alternately bombing and decrementing core multiple times until the whole thing has been dat-wiped. If the clear-pointer is hit by dat it skips the clear code as usual. But if the decrement hits the pointer it leaves it at zero until the dat is written there - wonderful!

Wanting to see how d-clear worked against my own pair of programs, I ran a trial. Yikes! d-clear won about 60% of the rounds, what magic is he using??? A close inspection shows that d-clear starts his bombing run halfway around core from himself, meaning that the first of my components he kills is the one nearest to killing him. Then a race to catch the other part, but since he is running at 100% of c and mine only at 66% he stands an excellent chance of killing that one too.

Replacing my two components with d-clear -like code gave enormous improvement and good results against the stone-imps. Here are some examples:

Rosebud	101/37
EIF	128/31
d-clear	191/18
blue candle	91/65
impfinity	117/35 (almost 60%!)
Ompega	58/50
the historian	77/91 (my best score against him)

On the other hand:

Twister	57/124
Blur	25/164
TestBB	71/116
Thermite	61/113
Hazy Shade	47/125

So you can see that it is vulnerable to papers and any kind of stun-bomb or continuous scanning program, which after all are designed to kill multi-location programs. A good p-component?

So here is the code for test P, renamed 'P-clear' for publication:

```
;redcode-94
;name P-clear
;kill P-clear
;author P.Kline
;assert CORESIZE == 8000
;strategy pair of forward dat-wipers based on Guenzel's d-clear
;strategy outnumber stones and forward-wipe imps

paGate    equ    Pair-7

slPair    mov    #-3950,paGate+1300-7  ; initialize wipe pointers
          mov    #-3950,paGate+5302-7
          spl    1                     ; use multiple processes
          spl    1
          mov    -1,0
          mov    <paBoot1,{paBoot1     ; boot 'em up
          mov    <paBoot2,{paBoot2
paBoot1   spl    Pair+1300,Pair+7
paBoot2   jmp    Pair+5302,Pair+7

Pair      spl    #0     ,<paGate-2667
          mov    paBomb ,{paGate       ; slow backward clear for redundancy
```

```
          mov    paBomb ,>paGate       ; fast forward clear
          djn.f  -1     ,>paGate
          dat    0,0
paBomb    dat    0,15

          end    slPair
```

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Extra Extra
by Stefan Strack

A brief mopt tutorial

Mopt, short for _M_ultiple constant _opt_imizer, is a program that simulates a core warrior in order to find an optimal combination of bombing or scanning constants. First of all, what is an optimal constant? An optimal constant is a bomb/scan increment that covers core evenly, such that gaps between adjacent bombed or scanned locations shrink at similar rates. For example, a bomb increment of 4 is fairly bad, because it bisects core unevenly, leaving one small and one huge gap. There are a number of programs, e.g. Jay Han's CoreStep and Nandor Sieben's Optima, that find _single_ optimal constants by analytical and iterative methods. These programs work well for simple warriors like A.K. Dewdney's Dwarf. However, most modern warriors are more complicated, dropping several bombs or scanning several locations in each loop. Consider for example the scan loop of a prototypical, SPL-carpet bombing CMP-scanner:

```
scan    sub.f  incr,comp
comp    cmp.i  FIRST,FIRST-CDIST        ;larger number is A
        slt.a  #len,comp                ;compare to A-number
        djn.f  scan,<FIRST-DJNOFF       ;decrement A- and B-number
        ....
incr    dat.f  <-IVAL,<-IVAL
```

the line at 'comp' scans two locations, CDIST apart, and is incremented by IVAL every time trough the loop. Obviously, the effectiveness of the scan depends on chosing an optimal combination of CDIST and IVAL; this is where Mopt comes into play. You can think of this scan pattern as consisting of two parallel, single increment scans. The first starts scanning at location FIRST and increments in IVAL steps; the second starts scanning at location FIRST-CDIST and also increments in IVAL steps. As a shorthand, we can use the notation (FIRST,IVAL),(FIRST-CDIST,IVAL) to describe this scan pattern. Since core is cyclical, the value of FIRST is unimportant, and only the absolute value of CDIST matters. The pattern therefore simplifies to (0,IVAL),(CDIST,IVAL); CDIST is the "offset" of the second pattern. With this, we're ready to start up Mopt, first, to give us a score for a single combination of (increment,offset) values (0,42),(12,42):

```
Coresize: 8000
Increment value or generator #1: 42  (the offset of pattern 1 is implicitely 0)
Offset value or generator #2: 12
Increment value or generator #2: 42
Offset value or generator #3: <Enter>
```

Mopt stops prompting for input of (offset,increment) pairs when you input an empty line and produces:

```
42    12    42     -> 35.187500
```

The higher the value, the better the (offset,increment) combination. This is not terribly useful, however; you want Mopt to _find_ an optimal (offset,increment) combination. To do this, you substitute a "value" with a "generator", which outputs a range of values. In our example, let's try different values for CDIST, the scan offset, in the range of 10 to 15 (shorter would be inefficient, longer would take too long to SPL-carpet). In our notation: (0,42),([10..15],42). The generator to accomplish this is:

```
    a=10,a<=15,a=a+1
```

This looks remarkably like the for loop syntax of the C-language; "a=10" initializes variable a to 10, "a<=15" is the condition that has to be satisfied for the loop to continue, and "a=a+1" increments the loop variable and generates the values for optimization. Mopt uses the pMARS expression evaluator, so you can use all its logical and arithmetic operators, as well as assigment and 26 single letter variables. Variables are "global", i.e. they retain their values between generators. We're now ready to start up Mopt again:

```
Coresize: 8000
Increment value or generator #1: 42
Offset value or generator #2: a=10,a<=15,a=a+1
Increment value or generator #2: 42
Offset value or generator #3: <Enter>

The best:
42    12    42     -> 35.187500
42    14    42     -> 34.975875
42    11    42     -> 34.431000
42    13    42     -> 34.361125
42    15    42     -> 34.007750
42    10    42     -> 33.761125
```

So, a scan offset of 12 is best, followed by 14, 11, a.s.o.. Now that we have the basics, we can let Mopt optimize _both_ scan increment and offset. We'll pick a mod-2 pattern in the range 22 through 98:

```
    b=22,b<99,b=b+2
```

Note that this generator will also produce mod-4, mod-6, .. numbers, which we have to weed out later.

```
Coresize: 8000
Increment value or generator #1: b=22,b<99,b=b+2
Offset value or generator #2: a=10,a<=15,a=a+1
Increment value or generator #2: b
Offset value or generator #3: <Enter>

The best:
28    14    28     -> 44.714625
26    14    26     -> 44.443625
34    14    34     -> 42.757750
26    13    26     -> 42.690000
98    14    98     -> 42.347875
28    15    28     -> 42.242250
78    14    78     -> 42.231125
...
```

(Side note: If you're now wondering why Rave uses a 42,12 scan instead of the more optimal 28,14 pattern: 42,12 turns out to be a better imp-killer).

Another example:

```
    spl #A,#-B
    add -1,1
    mov <2,<2
    jmp -2
```

The bomb pattern is (0,A),(0,-B) and we're trying to find optimal mod-5 values for A and B:

```
Coresize: 8000
Increment value or generator #1: a=5,a<200,b=b+5
Offset value or generator #2: 0
Increment value or generator #2: b=-5,b>-200,b=b-5
Offset value or generator #3: <Enter>

The best:
```

```
155   0     -155   -> 83.736000
155   0     -185   -> 79.708125
185   0     -155   -> 79.704375
155   0     -195   -> 79.425250
195   0     -155   -> 79.420875
155   0     -165   -> 78.837750
165   0     -155   -> 78.834625
...
```

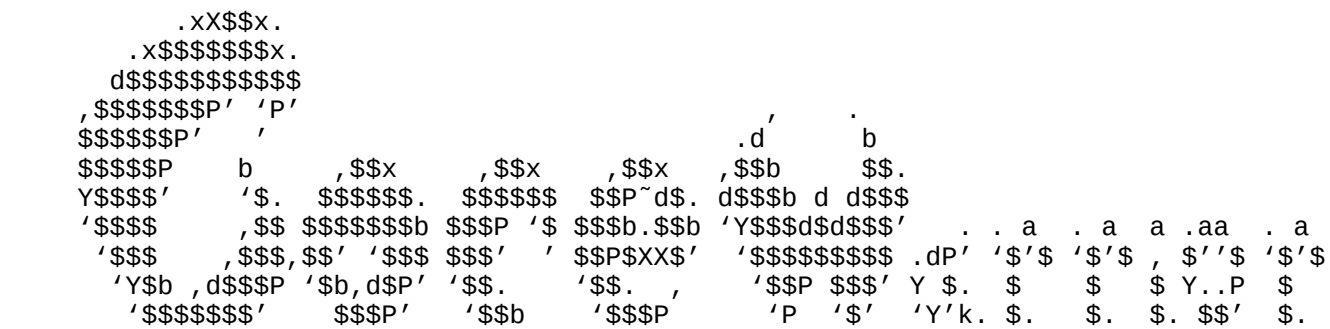
Now that you understand how to translate your warrior’s bombing/scanning loop into the (offset,increment) notation, Mopt should be a snap to use.

Mopt is part of the ptools10.zip archive, and comes as portable C-source and DOS executable. To compile it yourself, you also need eval.c and the header files of the pMARS source distribution. The URL is:
http://www.stormking.com/~koth/pmars.html

Plans for the next version of Mopt include the ability to specify a "maximum target size". In the current version, this is hardwired to 200, the MAXLENGTH of the 94x hills.

-Stefan Strack (stst@idnsun.gpct.vanderbilt.edu)

From bezzi@nemo.it Tue Jun 11 19:25:44 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA15321; Tue, 11 Jun 96 19:25:44 +0200
Received: from nemont.nemo.it (nemont.nemo.it [194.184.149.2]) by nez-perce.inria.fr (8.7
.1/8.7.1) with SMTP id TAA10923 for <Damien.Doligez@inria.fr>; Tue, 11 Jun 1996 19:25:08
+0200 (MET DST)
Received: from mail.nemo.it (194.184.149.102) by nemont.nemo.it
 (EMWAC SMTPRS 0.80) with SMTP id <B0000184177@nemont.nemo.it>;
 Tue, 11 Jun 1996 19:25:19 +0200
Message-Id: <B0000184177@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
Date: Tue, 11 Jun 1996 19:20:13 +0200
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
        Damien.Doligez@inria.fr (Damien Doligez),
        k.tonn@ic.ac.uk (Karsten Tonn), pan0178@comune.bologna.it (MV),
        guenzel@extern.lrz-muenchen.de
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 33
Status: R



Issue 33 June 10, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

Another week-end without the hill because of a power outage during the week end Thos was unaware of. Now the hill is down again for maintenance, we all hope it will reopen soon. Considering what we pay for it, we have nothing to complain. :-)

Two new warriors in this issue: the historian by Bjoern Guenzel and Vittuari’s stoninc. Both authors have added some interesting comments.

A few other changes have been suggested; the most interesting is a sort of priority scheduling in the holding pen, so as who submits many warriors at once will have the others queued after a single submission of another player coming later. A good thing, even if one should not submit many warriors at once, waiting at least for the results of first one

Last minute. A new enhanced version of Mopt is available as part of ptools11.zip at:
http://www.stormking.com/~koth/pmars.html
Thanks Stefan

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	43/	36/	22	Twister	Beppe Bezzi	149	78
2	42/	37/	21	Armory II	John K W	147	23
3	35/	23/	41	Jack in the box II	Beppe Bezzi	147	3
4	36/	26/	38	the historian	bjoern guenzel	145	97
5	41/	39/	20	test	John K W	144	10
6	39/	35/	25	T.N.T. pro	Maurizio Vittuari	144	342
7	43/	43/	15	Stepping Stone	Kurt Franke	143	776
8	31/	20/	49	Atom Smasher	Anton Marsden	143	34
9	37/	32/	30	test	Maurizio	142	22
10	38/	35/	27	Thermite II	Robert Macrae	142	1963
11	37/	33/	29	stoninc	Maurizio	142	217
12	43/	44/	14	HopScotch 1.6	Robert Macrae	141	91
13	40/	39/	21	justice II	bjoern guenzel	141	9
14	36/	34/	30	Test bb v1.36.boot	David van Dam	139	1
15	29/	20/	51	Rosebud	Beppe	139	297
16	39/	39/	22	Blur	Anton Marsden	138	370
17	31/	24/	45	blue candle	bjoern guenzel	138	211
18	35/	33/	31	Thalamus mod	Edgar	137	25
19	27/	16/	57	Hazy Shade II	John K W	137	922
20	41/	45/	14	Yogi	P.Kline	137	49
21	41/	45/	14	Scan Man	David van Dam	136	383
22	31/	26/	43	Scotch Broth 1.0	Robert Macrae	135	87
23	34/	32/	34	Manfred v0.1	Ian Oversby	135	24
24	36/	39/	25	Chameleon	M R Bremer	133	1434
25	25/	18/	57	EIF	John K W	133	171

Weekly age: 47 (42 last week, 127 the week before)
New warriors: 9 Turnover/age rate 19%
Average age: 306 (341 last week, 311 the week before)
Average score: 140 (136 last week, 140 the week before)
The top 25 warriors are represented by 12 authors: Wilkinson with 4, guenzel, Bezzi, Vittuari and Macrae with 3, and Marsden and van Dam with 2.

Few challenges also this week because of a power outage during the week end Thos was unaware of. Everything is normal now.

Twister has been king for near all the week. The only other warriors reaching the top spot are the old Jack in the box, yes the old one and the new version of Armory.

Few challenges i said, but a very high turnover, allowing 9 new warriors to enter the hill, pushing off an age of 1967, the hill is getting younger and

younger every week.

Two ex kings have been pushed off this week: a veteran like Grilled Octopus, and the king of two weeks ago, d-clear II, that experimented one of the most abrupt falls in the king's hystory.

New entries include some interesting warriors, the quality has been very high this week. Worth noting are Marsden Atom Smasher and two new versions of old veterans: Armory II and Jack in the box II. Considering that verion 2 usually live longer than first, maybe we'll see them for long.

The veterans. Thermite hovered around 10th 15th spot, showing a good health that should allow it to reach 2000 age. Hazy Shade and Chameleon were near the bottom for most of the time, the Octopus is out and Stepping Stone is having a new youth after some hard times.

---

94 - What's New

#	%W/	%L/	%T	Name	Author	Score	Age
2	42/	37/	21	Armory II	John K W	147	23
3	35/	23/	41	Jack in the box II	Beppe Bezzi	147	3
5	41/	39/	20	test	John K W	144	10
8	31/	20/	49	Atom Smasher	Anton Marsden	143	34
9	37/	32/	30	test	Maurizio	142	22
13	40/	39/	21	justice II	bjoern guenzel	141	9
14	36/	34/	30	Test bb v1.36.boot	David van Dam	139	1
18	35/	33/	31	Thalamus mod	Edgar	137	25
20	41/	45/	14	Yogi	P.Kline	137	49
22	31/	26/	43	Scotch Broth 1.0	Robert Macrae	135	87
23	34/	32/	34	Manfred v0.1	Ian Oversby	135	24

---

94 - What's No More

#	%W/	%L/	%T	Name	Author	Score	Age
26	30/	51/	19	Test	Steven Morrell	108	4
26	20/	19/	61	Wicked	John K W	122	14
26	36/	53/	11	test P	P.Kline	120	4
26	36/	49/	15	Violent Micro v0.4	basehead	123	199
26	32/	38/	31	Grilled Octopus v0.5	David Boeren	125	1154
26	20/	15/	65	ompega	Steven Morrell	125	203
26	2/	1/	1	Osseil	John K W	6	103
26	38/	54/	7	d-clear II	bjoern guenzel	122	41
26	32/	37/	31	Bomber Boy	David van Dam	127	245

Another 1000 old warrior, Boeren's Grilled Octopus, leave the hill setting at 11th place in the Hall of Fame.

---

94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
11	37/	37/	25	Thermite II	Robert Macrae	137	1963
9	39/	39/	22	Chameleon	M R Bremer	139	1434
12	27/	17/	56	Hazy Shade II	John K W	137	922
17	39/	45/	16	Stepping Stone	Kurt Franke	134	776
13	40/	43/	17	Scan Man	David van Dam	137	383
2	41/	38/	22	Blur	Anton Marsden	144	370
6	39/	35/	25	T.N.T. pro	Maurizio Vittuari	144	342

A new entry, TNT pro, with Rosebud very near. The hall of fame is still very far.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Impfinity v4g1	Planar	1993	Stone/ imp
2	Thermite II	Robert Macrae	1963 *	Qscan -> bomber
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber

5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1434	*	P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
13	Hazy Shade II	John Wilkinson	922	*	P-warrior
14	Agony II	Stefan Strack	912		CMP scanner
15	Barrage	Anton Marsden	876		Qscan -> replicator
16	Blue Funk	Steven Morrell	869		Stone/ imp
17	Flurry	Anton Marsden	835		Qscan -> pwarrior
18	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
19	Stepping Stone	Kurt Franke	776	*	Qscan -> Vampire
20	Blue Funk 3	Steven Morrell	766		Stone/ imp
21	Night Train	Karl Lewin	755		Replicator
22	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
23	Blizzard	Anton Marsden	713		Qscan -> replicator
24	HeremScimitar	A.Ivner,P.Kline	666		Bomber
25	La Bomba	Beppe Bezzi	650		Qscan -> replicator

Thermite II is now very near the top and the 2000 milestone. Chameleon surpasses Frontwards, Grilled Octopus settles in 11th spot, Hazy Shade II and Stepping Stone moves up a little.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	57/ 26/ 17	Mace	Edgar	189	49
2	59/ 32/ 9	Thalamus	Edgar	187	29
3	49/ 20/ 32	Hunter V 0.9	O.Fechner	178	30
4	56/ 36/ 9	Thalamus	Edgar	175	5
5	55/ 36/ 9	Violent Micro v0.4b	basehead	175	81
6	50/ 25/ 25	Fork v0.1-13p (i)	Christoph C. Birk	175	36
7	48/ 23/ 29	Hunter V 0.8	O.Fechner	172	51
8	51/ 43/ 6	Not Very Pretty 2.0	Ross Morgan-Linial	158	3
9	50/ 44/ 6	Not Very Pretty 2.1	Ross Morgan-Linial	157	2
10	50/ 45/ 5	Snail	Edgar	155	27
11	46/ 41/ 13	Yet Another Try 1i	Justin Kao	152	1
12	46/ 44/ 10	Yet Another Try 1.0b	Justin Kao	149	14
13	47/ 46/ 7	Sapper	Andrew Fabbro	148	55
14	43/ 49/ 8	Not Very Pretty	Ross Morgan-Linial	138	22
15	40/ 43/ 17	Extremely Prejudiced	Scott Manley	137	56
16	44/ 52/ 3	Congo 1.0b	Ross Morgan-Linial	136	10
17	43/ 49/ 8	Not Very Pretty 1.3	Ross Morgan-Linial	136	15
18	42/ 53/ 5	Switch Hitter 0.1t	Ross Morgan-Linial	132	6
19	37/ 43/ 20	1,000lb weight	Ross Morgan-Linial	131	24
20	38/ 45/ 18	Trebuchet	Andrew Fabbro	131	62
21	40/ 50/ 10	radar.b	John K. Lewis	129	78
22	37/ 46/ 18	1,000lb weight (X version	Ross Morgan-Linial	128	21
23	41/ 54/ 5	Micro Centurion (mod)	Edgar	128	83
24	38/ 52/ 11	Yet Another Try 1a	Justin Kao	124	32
25	35/ 49/ 16	C-Scan 1.0	Ross Morgan-Linial	121	8

30 challenges this week. Basehead’s Violent Micro loses the head to Edgar’s Mace and Thalamus

---

The Hint
by M. Vittuari

To boot or not to boot...this is the problem!

During my experiments with bombers, I have seen that a good bombing loop isn’t enough to make a good warrior.
"Static" warriors often have to choose between some common solution as:
- decoy-maker section
- booting section
- qscan section (+boot)
A good qscan means more wins but a little more losses (at the opposite side we have imps!), booting is useful against "smart" enemies like (q)scanners, but it pays something against "dumb" ones like stones/bombers, a decoy-maker may be sometimes a good trade-off.
A decoy-maker is able to trash the core very quickly and also it can reach and damage the enemy.
I tried lots of different decoy-makers, but the basic thing is to optimize the costants (step, distance, size, etc.): changing just a value sometimes produces very unexpected results!
In my tests I have tried to implement both boot and decoy-maker (!), the result is a warrior maybe too "unbalanced", expecially for the oversized dimension of the decoy-maker itself (this makes me to fall an easy prey to some quickscanners).
I should try many more tests, but at the moment pizza is down for maintenance and in these days I’m a bit busy...
Anyway stoninc is a working (beta) test of this.
For the bomber I have used (without permission! Robert_can_you_forgive_me?;-) the good Brand 3.3, belonging to R. MacRae, and used also in Thermite II: it is interesting to see that even if at the moment the difference between Thermite (who use a qscan) and stoninc is very little, some days ago stoninc had 6 points more than his older brother.
Another interesting section is the brainwashing pit used to reach the 100 instructions, this makes me gain some additional point (sometimes even imps like to execute it! ;-)

So here’s the code, with my promise to Robert to delete it very soon ;-)

```
;redcode-94
;name stoninc
;author Maurizio
;assert CORESIZE==8000
;strategy decoy test

DIST    equ     4200

decA    equ     (start+DIST-2500)
dAUX    equ     201
decAA   equ     (start+DIST+750)


;       *  *  *   P I T   *  *  *

;any silk-like warrior here is welcome! ;-)

pit     spl     16*2,   <pit-50
i for   16
        stp     #0,     #(-3*i*i)
        spl     -2,     <-1
rof
        jmp     -1,     <pit-50
i for   15
        stp     #0,     #(-3*i*i+1)
        spl     -2,     <-1
rof
        jmp     -1,     <pit-50


;       * * *  D E C O Y - M A K E R  +  B O O T  * * *

;the goal is trash A and B field, and try to damage the enemy
```

```
decoy1
b for   6
        mov     <decA+1-dAUX*(decoy1+1),{decA-dAUX*decoy1
rof

decoy2
b for   6
        mov     <decAA+1-dAUX*(decoy2+1),{decAA-dAUX*decoy2
rof

boot
a for   7
        mov     {bptr1, <bptr1
rof
        mov     wipe,   {bptr2
        mov     gate,   {bptr2
        mov     sm,     <bptr2
        spl     @bptr1, <4763


bptr1   div.x   #cp+1,  #DIST
bptr2   div.x   #DIST-9,#DIST+3


;       *  *  *   B O M B E R   *  *  *

;Brand 3.3
;by Robert MacRae

STEP1   equ     899
STEP2   equ     902

gate    dat   -100,     200
wipe    dat     -2,     #cp-gate+2
;       1 DAT
start   spl     #STEP2, STEP2+1
msm     mov     sm+3,   *(tgt+2*STEP1+STEP2)
msp     mov     start,  @msm
in      add     #STEP1+STEP2,@msp
tgt     djn.f   msm,    <4502
clr     mov     wipe-1, >gate-1
cp      djn.f   clr,    {gate-1
;       3 DAT
sm      mov     -STEP2, >-STEP2

end     decoy1
```

Extra Extra
the historian
by Bjoern Guenzel

The historian is my first and so far only successful p-spacer. I have already posted the components blue candle and self justice, so there is only the brain left to talk about.
In my first p-spacer, which was a permanent switch on loss, I faced the problem that often the score I kept was increased by a few wins in the beginning, and therefore wouldn’t fall below the critical value quickly enough, if suddenly the first component started losing. To address this problem, in the historian I decided to reset the score every 9 challenges, that is the brain decides whether to switch or switch not only every 9 challenges, based on the results of these 9 challenges. I think the idea is not new... It works fine, but I have not really compared it to other mechanisms. Perhaps a nice idea is the quick way I update my p-space cells every round, storing two values in one p-cell (number of rounds and number of losses). That is for the newbies, I guess the experienced players are using stuff like this already.
In the beginning I experimented with building scores for the active component, having different switching conditions for each component. That was because I thought the imp-stone was more likely to tie than

to win, and I hoped to gain some more wins by doing so. That variant was exactly as fast as the current used, only a table with the minimum score for each strategy was needed. I think this should allow for a very precise tuning of the brain. In my experiments only counting losses worked best, but I later discovered that while I was testing the other variant, there had been a small bug in the brain :-(Perhaps I'll try it again in my next warrior. It would be like

```
strategy        dat min_score_strat1,0 ;load strategy here
                dat min_score_strat2,0
                    ...

                slt #actual_score,@strategy
                switch or not switch...
```

with giving eg 1 point for ties, 3 for wins (I think it is easy to understand). I think when I tried this, I had the wrong preconditions as well, as I thought a win is 2 points, a tie 1 point at the current scoring system (instead of 3/1), so perhaps I really should give it another try...

The multi-boot version (about 75 visible instructions) scored a bit better against Thermite and Scan Man (and perhaps others I don't remember) than with seperate boots (about 98 instructions), although it takes two more cycles to boot. Perhaps it is a good compromise between having not enough decoy and the likelihood of being discovered too early.

I have no brainwash protection, mostly because I am not sure which component I should switch to. At the moment it is fairly random. A version that would permanently switch to stone-imp after brainwash scored worse :-(I tried making p_init a high value, eg 7000, which means that after brainwashing the brain would probably not switch anymore. Since I assumed it would most likely be washed with something != 0, it would then switch permanently to stone-imp (I had a jmn instead of a jmz then). This really improved my scores against Flurry really good (I think from something like 50/15 to 20/20, I am not sure), but against others it scored worse. Surprisingly against warriors not supposed to be brainwashing, like T.N.T. pro or Scan Man. I may not speculate more, that is up to Maurizio :-) I only conclude that for every p-spacer it is very likely to be brainwashed at least once during 200 battles against any opponent (eg by being hit with a spl in an early stage), so it better should be not too vulnerable against that (for example the historian resets it's brain rather quickly, so occasional brainwashs won't hurt too bad).
BTW, I think brainwashing paper is very unlikely to be met, Flurry might be about the only way to do it? That is because paper will most likely come as a p-component, and how would you protect a brainwashing paper from washing itself? (If anybody has an idea, I'd be very interested to hear).
Enough talk. I hope the historian has become a dreaded opponent for the one or other, and that it will remain like that for a while :-) (Some are already beating it :-( ).

Enjoy Core War, and good luck in climbing the hill (don't be too hard to the historian, so that I finally can get some time for my studys...:)

Bjoern

P.S.: I changed the p-cell numbers and boot distance, just for safety...

```
;redcode-94 verbose
;name the historian
;author bjoern guenzel
;strategy p-space l3 s9 inv
;strategy switch stone with stone/spiral
;release 25.5.96
;assert CORESIZE==8000
;kill historian
```

```
;constants for self justice
jstep           equ 3315
jcptr           equ (jsplit-3)
jshift          equ stshift     ;boot distance

;constants for blue x-torch
stshift         equ (-2222)     ;boot distance
gate            equ hit+5001
clptr           equ (steps-3)
sign            equ (-1)
step4           equ (3364)
step            equ (sign*step4)
magic           equ (1000)

;constants for spiral launch
istep           equ 2667
spshift         equ (ptr+stshift+imagic) ;magic boot distance
imagic          equ (4875-1451+11+14)

;constants for brain
samplesize      equ 9           ;switch every 9 rounds
critical        equ 3           ;if losses > critical
p_track         equ 321         ;loss + rounds count
p_strategy      equ 456         ;active strategy
p_init          equ 0           ;don't know what is better
p_factor        equ 20          ;against brainwashing?

; ********* brain *********

;table for track update

                dat p_init+samplesize*p_factor+critical+2,0      ;first round
p_table         dat p_factor+1,0 ;loss -> add one to loss count
                dat p_factor+0,0         ;tie  -> only update round count
                dat p_factor+0,0         ;win  -> only update round count

p_ptr           dat #p_strategy,#p_track        ;p-space pointers

;make new decision

p_switch        sub.ab #p_init+(samplesize)*p_factor,p_set ;make readable
                slt.ab #(critical+1),p_set ;if more than 3 losses, switch
                jmp p_stay,>3000        ;don't change strategy

                seq.ab #0,p_decide      ;change strategy
                mov.a #0,p_new          ;!0 = strategy 1
p_new           stp.a #1,p_ptr          ;0 = strategy 2

                ldp.ab p_ptr,p_decide   ;reload strategy
p_stay          stp.ab #p_init+1,p_ptr          ;reset track
                jmp p_erase,>2000

;start here

start           ldp.ab #0,p_table       ;load results of previous fight
p_set           ldp.b p_ptr,#0          ;load track
                add.ab @p_table,p_set ;update track
p_decide        ldp.ab p_ptr,#0         ;load strategy

                slt.b p_set,#p_init+(samplesize)*p_factor ;if 9 rounds, new decision
                jmp p_switch,>1000

                stp.b p_set,p_ptr

p_erase         mov.i #0,p_ptr          ;erase p-ptrs

                jmz.b strategy2,p_decide

;boot strategy 1: self justice (anti-clear stone)
```

```
                mov.f #0,bsource        ;init boot pointer
                mov.a #booptr+stshift-30+jstep,booptr

                mov.i jsplit,*booptr     ;crucial spl
                mov.i {bsource,<booptr
stlaunch z for 8                        ;jump here to boot blue torch
                mov.i {bsource,<booptr
rof
                spl @booptr
                mov.i #0,booptr
                dat >2001,>3002

;boot strategy 2: blue candle (0.75c stone + spiral)

strategy2       spl stlaunch,>2001      ;start here
for 8
                mov.i <bsource,{booptr
rof
                spl @booptr,>4003       ;put a second processes into stone!
booptr          jmp spshift,stshift     ;start spiral


; ************* blue torch ************

steps           spl #2*step,>-step      ;doubles as bomb
loop            add.x steps,ptr
ptr             mov.i >ptr+magic*step,@hit+step
                mov.i steps,@ptr
hit             djn.f loop, <gate       ;bombed with spl
                mov.i bomb,>clptr
                djn.f -1,{clptr
bomb            dat #-1,<bomb-clptr+2   ;bomb for clear

; ************ binspiral *************

                spl #-1000,>2000        ;bombed after 15 process
                spl 4,>-1               ;spiral has been created
                spl 2,}j3
j1              jmp imp-1,}0
j2              jmp imp+istep-1,}0
                nop }j1,}j2
j3              jmp imp+2*istep-1,}0
imp             mov.i #istep,istep

; ********* self justice *********
; 0.5c bomber with anti-clear bombs (inspired by Beppe Bezzi)
; spl must be booted to jhit+jstep

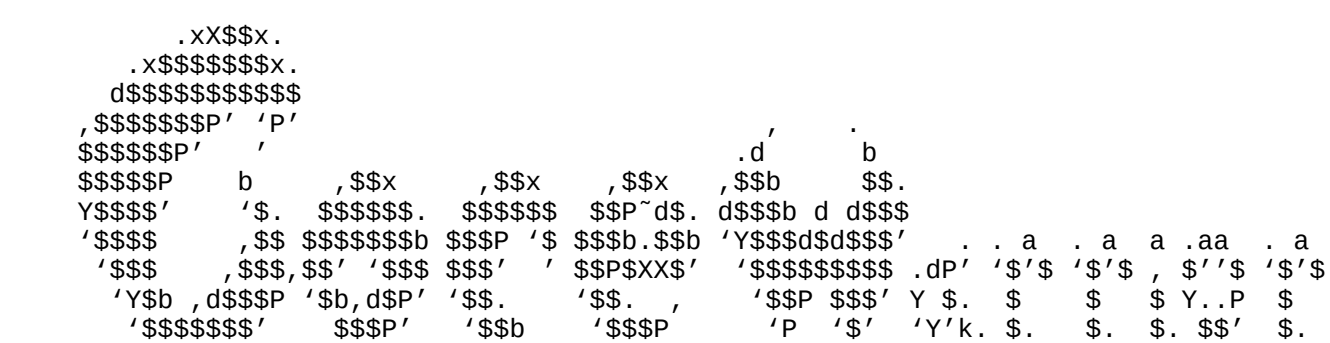
jsplit          spl #0,>2660
jptr            mov.i jbomb,*jhit+3*jstep
                mov.i jbomb,@jptr
jhit            add.ab #2*jstep,jptr
                djn.f jptr,<-5000
                mov.i jcb,>jcptr
                djn.f -1,{jcptr
jcb             dat #-1,<jcb-jcptr+20
jbomb           mov.i jstep,1

bsource         dat bomb+1,imp+1        ;bootptr, default boot blue candle

for MAXLENGTH-CURLINE
                dat 0,0
rof

                end start
```

From corewar-l@stormking.com Thu Jun 20 04:18:21 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA17176; Thu, 20 Jun 96 04:18:21 +0200
Received: from uu3.psi.com (uu3.psi.com [38.145.250.2]) by concorde.inria.fr (8.7.1/8.7.1
) with SMTP id EAA20817 for <damien.doligez@inria.fr>; Thu, 20 Jun 1996 04:18:20 +0200 (M
ET DST)
Received: by uu3.psi.com (5.65b/4.0.940727-PSI/PSINet) via UUCP;
id AA16932 for ; Wed, 19 Jun 96 20:18:13 -0400
Received: from (server@localhost [127.0.0.1]) by valhalla.stormking.com (8.6.12/8.6.12)
with SMTP id UAA24891; Wed, 19 Jun 1996 20:06:49 -0400
Date: Wed, 19 Jun 1996 20:06:49 -0400
Message-Id: <4q9jhp$h4l@mozo.cc.purdue.edu>
Errors-To: tuc@stormking.com
Reply-To: bremermr@cartoon.ecn.purdue.edu
Originator: corewar-l@stormking.com
Sender: corewar-l@stormking.com
Precedence: bulk
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
To: Multiple recipients of list <corewar-l@stormking.com>
Subject: Core Warrior 34
X-Listprocessor-Version: 6.0b -- ListProcessor by Anastasios Kotsikonas
X-Comment: Usenet News "rec.games.corewar"



Issue 34 June 17, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

Hopefully all the changes to the pizza hill are complete. I know I should mail Thos and find out for sure, but I’m supremely lazy. If the berkeley archive site is still down, you may want to try the German archive at iraun1.ira.uka.de (129.13.10.90) in the /pub/x11/corewars directory. The site contains core war simulators for various platforms. There are a few other files, but it’s not near as complete as the berkeley site.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W/	%L/	%T	Name	Author	Score	Age
1	35/	25/	40	Jack in the box II	Beppe Bezzi	144	48
2	40/	37/	23	Jo Clark II	Ian Oversby	144	49
3	42/	42/	16	myVamp5.0	Paulsson	143	52
4	39/	37/	24	Twister	Beppe Bezzi	142	145
5	39/	39/	22	jupiter crash	bjoern guenzel	140	7
6	29/	21/	51	Rosebud	Beppe	137	364
7	40/	43/	17	Stepping Stone	Kurt Franke	136	843
8	35/	36/	29	Thermite II	Robert Macrae	134	2030
9	40/	45/	16	HopScotch 1.6	Robert Macrae	134	158
10	35/	36/	29	T.N.T. pro	Maurizio Vittuari	134	409
11	31/	28/	41	the historian	bjoern guenzel	133	164
12	30/	27/	43	test 1	bjoern guenzel	133	24
13	23/	13/	64	ompega	Steven Morrell	132	42
14	35/	39/	26	Versatility 1.2	Ross Morgan-Linial	131	1
15	32/	34/	33	Thalamus mod	Edgar	131	92
16	33/	35/	32	test	Maurizio	130	89
17	28/	27/	45	Armory II	John K W	130	54
18	33/	36/	32	stoninc	Maurizio	130	284
19	35/	41/	24	Blur	Anton Marsden	130	437
20	35/	40/	25	Versatility 1.0	Ross Morgan-Linial	129	11
21	34/	40/	26	Scimitar 2	P.Kline	129	15
22	28/	27/	46	blue candle	bjoern guenzel	129	278
23	32/	35/	33	Test bb v1.41	David van Dam	128	37
24	26/	25/	49	Atom Smasher	Anton Marsden	128	101
25	23/	19/	58	Hazy Shade II	John K W	126	989

Weekly age: 67 (47 last week, 42 the week before)
New warriors: 11 Turnover/age rate 16%
Average age: 269 (306 last week, 341 the week before)
Average score: 133 (140 last week, 136 the week before)
The top 25 warriors are represented by 14 authors: guenzel with 4, Bezzi, and Vittuari with 3, JKW, Macrae, Marsden, and newcomer Morgan-Linial with 2.

King Report: the top spot predominantly belonged to Bezzi or Oversby. Bezzi's Twister or Jack in the box II has been vying with Oversby's Manfred and Jo Clark. Paulsson was actually able to slip by for three challenges and claim the top spot with myVamp 5.0. Good to see you back.

Other famailar faces appearing on the hill include an updated version of Scimitar by Paul Kline and Armory II by JKW. The first Armory was introduced when pspace was still young and lasted over 600 challenges, which at the time propelled it far into the hall of fame. Now, 650 is the minimum price of admission for 25th place.

One time king Scan Man was pushed off the hill this week, leading van Dam to try out a new test series. Unfortunately, none of the tests have yet to lead him to the top of the hill.

guenzel has been busy with his own tests, trying out versions of blue torch, jupiter crash, and justice. He now has more warriors on the hill than anyone.

Replicators have been in short supply for a few weeks, but Jack and Versatility have increased the amount of paper products on the hill. Armory probably has one stashed in there somewhere too. Perhaps this will stop the run up in 'imp heavy' warriors.

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94 - What's New

#	%W/	%L/	%T	Name	Author	Score	Age
7	29/	24/	47	Armory II	John K W	133	1
3	35/	24/	40	Jack in the box II	Beppe Bezzi	146	1
2	42/	36/	22	Jo Clark II	Ian Oversby	149	1
14	36/	41/	23	jupiter crash v6	bjoern guenzel	131	1
5	40/	43/	17	myVamp5.0	Paulsson	138	1
18	21/	12/	67	ompega	Steven Morrell	129	1
11	34/	38/	28	Scimitar 2	P.Kline	131	1
7	30/	26/	44	test 1	bjoern guenzel	135	1
24	32/	36/	32	Test bb v1.41	David van Dam	127	1
12	34/	38/	28	Versatility 1.0	Ross Morgan-Linial	130	1
14	35/	39/	26	Versatility 1.2	Ross Morgan-Linial	131	1

JKW and Bezzi are still testing versions of well known pspace veterans Armory and Jack in the box.

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94 - What's No More

#	%W/	%L/	%T	Name	Author	Score	Age
26	26/	28/	46	Scotch Broth 1.0	Robert Macrae	125	125
26	36/	49/	15	Scan Man	David van Dam	124	412
26	1/	1/	2	Jack in the box II	Beppe Bezzi	5	19
26	1/	2/	1	justice II	bjoern guenzel	5	30
26	33/	41/	26	Chameleon	M R Bremer	125	1437
26	22/	18/	60	EIF	John K W	126	172
26	1/	1/	2	Armory II	John K W	5	55
26	31/	35/	34	Manfred v0.1	Ian Oversby	126	29
26	1/	1/	1	Test bb v1.36.boot	David van Dam	5	5
26	26/	26/	48	test	John K W	126	7
26	37/	50/	14	Yogi	P.Kline	123	96

Another 1000+ warrior departs the hill this week, dear-to-me Chameleon, a pspaced scanner/bobmer-imp. With the recent loss of Impfinity, Grilled Octopus, and Chameleon, the hill is much younger these days.

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94 - What's Old

#	%W/	%L/	%T	Name	Author	Score	Age
8	35/	36/	29	Thermite II	Robert Macrae	134	2030
25	23/	19/	58	Hazy Shade II	John K W	126	989
7	40/	43/	17	Stepping Stone	Kurt Franke	136	843
19	35/	41/	24	Blur	Anton Marsden	130	437
10	35/	36/	29	T.N.T. pro	Maurizio Vittuari	134	409
6	29/	21/	51	Rosebud	Beppe	137	364

Rosebud joins ranks as Scan Man departs.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2030 *	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	989 *	P-warrior
13	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
14	Agony II	Stefan Strack	912	CMP scanner
15	Barrage	Anton Marsden	876	Qscan -> replicator
16	Blue Funk	Steven Morrell	869	Stone/ imp

17	Stepping Stone	Kurt Franke	843 *	Qscan -> Vampire
18	Flurry	Anton Marsden	835	Qscan -> pwarrior
19	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
20	Blue Funk 3	Steven Morrell	766	Stone/ imp
21	Night Train	Karl Lewin	755	Replicator
22	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
23	Blizzard	Anton Marsden	713	Qscan -> replicator
24	HeremScimitar	A.Ivner,P.Kline	666	Bomber
25	La Bomba	Beppe Bezzi	650	Qscan -> replicator

Everyone active moves up at least a spot. Thermite breaks the 2000 barrier and is showing little sign of slowing. Thermite's long life can be attributed to its qscan which has dealt with the pspace uprising quite effectively, and its versatile incendiary bombing. Chameleon is pushed off just after passing Frontwards v2. There are no other warriors even close to making the hall.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	54/ 32/ 13	Thalamus	Edgar	177	59
2	51/ 29/ 21	Versatility 1.2	Ross Morgan-Linial	173	2
3	50/ 29/ 20	Mace	Edgar	171	79
4	53/ 36/ 11	Saboteur v0.3p	shar	169	9
5	50/ 39/ 11	Thalamus	Edgar	160	35
6	38/ 24/ 37	Avenger I	Oliver Fechner	153	6
7	38/ 25/ 37	Hunter V 0.9	O.Fechner	152	60
8	40/ 28/ 31	Fork v0.1-13p (i)	Christoph C. Birk	152	66
9	38/ 29/ 34	Hunter V 0.8	O.Fechner	146	81
10	42/ 41/ 17	Yet Another Try 1i	Justin Kao	144	31
11	44/ 44/ 12	Sapper	Andrew Fabbro	143	85
12	43/ 43/ 14	3-clear 0.6	Ilmari Karonen	143	10
13	44/ 46/ 9	Not Very Pretty 2.0	Ross Morgan-Linial	142	33
14	42/ 43/ 16	Yet Another Try 1.0b	Justin Kao	141	44
15	39/ 47/ 14	hyper 1.0	Ross	131	7
16	35/ 40/ 25	3-clear 0.5	I. Karonen	131	24
17	37/ 44/ 19	Trebuchet	Andrew Fabbro	130	92
18	39/ 49/ 12	Switch Hitter 0.3t	Ross Morgan-Linial	130	14
19	23/ 20/ 57	Nematode v1.0b	Jonathan Stott	125	1
20	38/ 53/ 9	Snail	Edgar	124	57
21	33/ 43/ 24	Borzoi	shar	123	25
22	32/ 44/ 24	1,000lb weight	Ross Morgan-Linial	121	54
23	34/ 47/ 20	Extremely Prejudiced	Scott Manley	121	86
24	36/ 56/ 8	Congo 1.0b	Ross Morgan-Linial	117	40
25	33/ 53/ 14	Not Very Pretty	Ross Morgan-Linial	113	52

The top two authors have respectable showings on the '94 draft hill. shar is a new author that shows much promise with Saboteur holding 4th place.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!uwm.edu!rutgers!news.columbia.edu!news.new-york.net!news.stormking.com!bezzi@nemo.it Tue Jun 25 10:48:33 1996
Article: 5502 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!uwm.edu!rutgers!news.columbia.edu!news.new-york.net!news.stormking.com!bezzi@nemo.it
From: Beppe Bezzi <bezzi@nemo.it>
Newsgroups: rec.games.corewar
Subject: Core Warrior 35
Date: 24 Jun 1996 21:25:22 -0400
Organization: Storm King Ind. Inc.
Lines: 493
Sender: server@news.stormking.com
Distribution: world
Message-ID: <B0000186343@nemont.nemo.it>
Reply-To: bezzi@nemo.it
NNTP-Posting-Host: valhalla.stormking.com
Originator: corewar-l@stormking.com
X-Mailer: Windows Eudora Light Version 1.5.2

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   .x$$$$$$$x.
  d$$$$$$$$$$$
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   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 35 June 24, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

Pizza hill changes are going to be implemented, Thos is at work and new feature will soon be available, mail your comments, proposals and bug finds to <sd@ecst.csuchico.edu>

J.K. Lewis and Andrew Fabbro have opened a new hill on their server. Presently they run a limited process hill with all other stats like 94 hill, you can play and help them testing sending your warriors to: <koth@wastedyouth.us.itd.umich.edu> with a ;redcode-94lp header. The hill implements many features, to get more info send a mail with a subject of 'help' (no quotation marks) to the above address.

I hope the hill masters will agree for a common syntax of commands, having a

different one in every server is sure confusing.

--Beppe Bezzi

New Pizza features

- Remove self fights on all hills that use pspace.

- Add the "test" command to decrease artificial aging of the hill. I think the best (and easiest) way to do this would be as an argument to the ";redcode" command like "quiet" and "verbose" are now. ";redcode test" would challenge all the warriors on the hill (only 100 times?), but the results would be discarded. This way you could see how your changes affect your performance against all the warriors on the hill, but you get the results back twice as fast.

- Add the ";password" command, to make it harder to forge ";kill" commands.

- Make ";name" commands mandatory, and make blank ";kill" commands illegal.

- Add the ";url" and ";show" commands for web access. ";url" is pretty much self explanatory, but ";show" will be used to customize how much info on your warrior you want to make public. "[no]source" and "[no]score" are two possible arguments to add.

- Add the ";change [warrior name]" command to allow you to change info in your warrior without having to kill it and resubmit it. If you wanted to make it "quiet" while you go on vacation, or change the ";url", just send one piece of mail with ";change" in it. This would do a substring match like ";kill", and any other commands in the mail would be changed in the warrior. Does this make sense?

Any other ideas, or comments on the above proposals?

Thos

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	41/	41/	14	Goldfinch	P.Kline	137	1
2	37/	36/	23	Yogi Bear	P.Kline	134	3
3	31/	26/	39	Jack in the box II	Beppe Bezzi	133	156
4	35/	35/	26	Jo Clark II	Ian Oversby	132	157
5	20/	5/	71	The Avalanche	John Wilkinson	131	22
6	35/	36/	25	Twister	Beppe Bezzi	131	253
7	27/	20/	50	Rosebud	Beppe	130	472
8	30/	28/	38	test jb21	Beppe Bezzi	129	4
9	21/	10/	65	ompega	Steven Morrell	129	150
10	35/	39/	22	Blur 2	Anton Marsden	128	5
11	37/	42/	17	myVamp5.1	Paulsson	128	49
12	25/	18/	53	rhodium v1.3	Martin M. Pedersen	128	24
13	34/	37/	26	T.N.T. pro	Maurizio Vittuari	127	517
14	37/	44/	15	HopScotch 1.6	Robert Macrae	126	266
15	26/	23/	48	blue candle	bjoern guenzel	126	386
16	32/	35/	29	Thermite II	Robert Macrae	125	2138
17	36/	44/	16	Stepping Stone	Kurt Franke	124	951
18	31/	35/	30	Scotch Broth 1.2	Robert Macrae	124	48

19	27/	27/	42	the historian	bjoern guenzel	124	272
20	30/	33/	34	Thalamus mod	Edgar	123	200
21	32/	37/	27	Goliath	David van Dam	123	19
22	30/	35/	31	test	Maurizio	123	197
23	22/	17/	58	Hazy Shade II	John K W	123	1097
24	30/	34/	32	* Satura *	bjoern guenzel	122	10
25	31/	37/	29	test E	P.Kline	121	7

Weekly age: 108 (67 last week, 47 the week before)
New warriors: 11 Turnover/age rate 10%
Average age: 296 (269 last week, 306 the week before)
Average score: 127 (133 last week, 140 the week before)
The top 25 warriors are represented by 14 authors: Bezzi with 4, guenzel, Macrae and Kline with 3, Vittuari and JKW with 2.

A burst of activity on the hill, after some quiet weeks this one we had more than 100 challenges.

King Report: Jack in the box held king position for the first days, then come some rumble, with many warriors alternating at the top, until Paul Kline set thing in his favourite manner, placing strongly his new pspacer Goldfinch with a good lead over the second, his other pspacer Yogi bear.

Blur was pushed off but a new version toke its place, in a very good position, adding to the number of ’versions number two’; presently there are five plus TNT pro that can be considered a version two itself too. All but Jo Clark are childrens of successful warriors.

Replicator are back and holding the hill in fifth and twelfth position, with JKW Avalanche and rhodium by the newcomer Petersen. The coming of paper caused the fall of some bombers holding top positions last weeks.

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94 - What’s New

#	%W/	%L/	%T	Name	Author	Score	Age
1	41/	41/	14	Goldfinch	P.Kline	137	1
2	37/	36/	23	Yogi Bear	P.Kline	134	3
5	20/	5/	71	The Avalanche	John Wilkinson	131	22
8	30/	28/	38	test jb21	Beppe Bezzi	129	4
10	35/	39/	22	Blur 2	Anton Marsden	128	5
11	37/	42/	17	myVamp5.1	Paulsson	128	49
12	25/	18/	53	rhodium v1.3	Martin M. Pedersen	128	24
18	31/	35/	30	Scotch Broth 1.2	Robert Macrae	124	48
21	32/	37/	27	Goliath	David van Dam	123	19
24	30/	34/	32	* Satura *	bjoern guenzel	122	10
25	31/	37/	29	test E	P.Kline	121	7

Many new interesting warriors did the hill this week, half of the top ten scorers are new.

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94 - What’s No More

#	%W/	%L/	%T	Name	Author	Score	Age
26	1/	1/	2	Armory II	John K W	5	55
26	1/	1/	2	test 1	bjoern guenzel	5	28
26	2/	1/	1	Versatility 1.0	Ross Morgan-Linial	7	18
26	32/	38/	31	stoninc	Maurizio	126	301
26	2/	1/	0	Scimitar 2	P.Kline	7	35
26	2/	1/	1	jupiter crash	bjoern guenzel	6	30
26	34/	43/	23	Blur	Anton Marsden	124	463
26	1/	1/	1	myVamp5.0	Paulsson	5	108
26	1/	1/	1	Test bb v1.41	David van Dam	5	106
26	21/	23/	56	Atom Smasher	Anton Marsden	120	172
26	32/	41/	27	Versatility 1.2	Ross Morgan-Linial	123	105

Marsden’s Blur is the the oldest warrior pushed off; it has been quickly replaced by a new, more effective, version.

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94 - What’s Old

#	%W/ %L/ %T	Name	Author	Score	Age
16	32/ 35/ 29	Thermite II	Robert Macrae	125	2138
22	22/ 17/ 58	Hazy Shade II	John K W	123	1097
17	36/ 44/ 16	Stepping Stone	Kurt Franke	124	951
13	34/ 37/ 26	T.N.T. pro	Maurizio Vittuari	127	517
8	27/ 20/ 50	Rosebud	Beppe	130	472
15	26/ 23/ 48	blue candle	bjoern guenzel	126	386

Blur is no more, blue candle enters. Hazy shade II enters the over 1000 group.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2138	*	Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1097	*	P-warrior
13	Stepping Stone	Kurt Franke	951	*	Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	Flurry	Anton Marsden	835		Qscan -> pwarrior
19	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
20	Blue Funk 3	Steven Morrell	766		Stone/ imp
21	Night Train	Karl Lewin	755		Replicator
22	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
23	Blizzard	Anton Marsden	713		Qscan -> replicator
24	HeremScimitar	A.Ivner,P.Kline	666		Bomber
25	La Bomba	Beppe Bezzi	650		Qscan -> replicator

Thermite passes the 2100 and is still in good health even if dropping a bit, Hazy shade resists and passes the 1000 milestone. Stepping stone gains some positions and is now near 1000 age.
But three living warriors are in the hall, compared to the seven of last month; perhaps scores are setting, after the increment for the introduction of five more spots, and making the hall is getting harder.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W/ %L/ %T	Name	Author	Score	Age
1	45/ 28/ 23	Versatility 1.2	Ross Morgan-Linial	158	14
2	48/ 36/ 12	Thalamus	Edgar	156	71
3	46/ 37/ 13	Saboteur v0.3p	shar	152	21
4	43/ 31/ 23	Mace	Edgar	151	91
5	43/ 41/ 12	Thalamus	Edgar	141	47
6	28/ 14/ 55	test-paper	Martin M. Pedersen	138	10
7	40/ 41/ 15	hyper 1.0	Ross	135	19
8	41/ 42/ 13	Sapper	Andrew Fabbro	135	97
9	26/ 13/ 57	rhodium v1.3	Martin M. Pedersen	135	6
10	31/ 24/ 41	Fork v0.1-13p (i)	Christoph C. Birk	135	78
11	40/ 43/ 13	3-clear 0.6	Ilmari Karonen	133	22

12	28/ 22/ 46	Cannon Fodder	I. Karonen	130	1
13	40/ 46/ 11	Not Very Pretty 2.0	Ross Morgan-Linial	130	45
14	28/ 24/ 43	Hunter V 0.9	O.Fechner	129	72
15	16/ 4/ 76	Nematode v1.2b	Jonathan Stott	125	2
16	33/ 38/ 24	test	Justin Kao	124	11
17	25/ 22/ 49	Avenger I	Oliver Fechner	124	18
18	31/ 40/ 25	3-clear 0.5	I. Karonen	118	36
19	28/ 37/ 30	Yet Another Try 1i	Justin Kao	116	43
20	33/ 49/ 14	Switch Hitter 0.3t	Ross Morgan-Linial	114	26
21	24/ 30/ 43	Hunter V 0.8	O.Fechner	114	93
22	29/ 41/ 26	Yet Another Try 1.0b	Justin Kao	114	56
23	30/ 43/ 23	Extremely Prejudiced	Scott Manley	112	98
24	27/ 41/ 28	1,000lb weight	Ross Morgan-Linial	109	66
25	25/ 37/ 34	rhodium	Martin M. Pedersen	108	8

But 12 challenges, little is changed. The top authors are the same even if they exchanged the king position

---

The hint
A new p-switcher
by Paul Kline

A colorful variety of p-switching mechanisms are sprouting this Spring, and it would be nice if someone would round them all up for comparison. Also nice if people would POST a few :-)

A simple, fast switch-on-loss routine for two p-components might look like this:

```
pflag     equ    (somenumber.lt.500)
pGold     ldp.ab #0,#0               ; get results of last battle
          ldp.a  #pflag  ,pGold      ; retrieve attempted strategy
          add.a  #1      ,@pGold     ; if a loss, increment strategy
          mod.a  #2      ,pGold      ; safeguard against brainwashing
          stp.ab pGold   ,#pflag     ; store current strategy
          jmz.a  select1 ,pGold      ; select strategy 1
          jmp    select2             ; select strategy 2
```

(The last jmp is unnecessary if strategy 2 immediately follows)

A powerful adaptation of the routine can be made with no extra instructions. By increasing the MOD number we have an assymetric switcher, by which the second strategy is selected more often than the first. This can be very helpful in pairing up a strong all-purpose warrior like Torch, with a special-purpose warrior like Clisson. Like many fast programs with spl-dat clears, Torch is vulnerable to a stone, which is in turn highly vulnerable to Clisson. Using an assymetric switcher to select Torch most frequently gives the best results against a variety of opponents, and the infrequent Clission strategy breaks up a protracted series of stone attacks.

This is the switcher used by Goldfinch which pairs a one-shot scanner w/multipass clear, with Clisson’s dodger.

Paul Kline
pk6811s@acad.drake.edu

Extra Extra
Twister
by Beppe Bezzi

Tornado is, beetween my warriors,one my favourites and, being a very flexible bombing engine, I like a lot to tweak and improve it, testing new bombs and variations. When Tornado 3.0, that had a success beyond my expectations, was near the bottom of the hill, a long time indeed :-), I tried to fix some problems that caused its fall and I coded v 3.3 that’s the one included in Twister. Jack uses a slightly different version but you can fit this one in the old Jack, using but one paper module, and results won’t differ too much from those on the hill (let me something to publish next

week :-)
The bombs are common dat <1,{1 deadly against clears and slowing djn stream users, intermixed with one spl #xx to allow self bombing to enter the core clear.
Worth noting are the pattern, not exacly mod 5 but slightly translated, such way it's more difficult for a one shot scanner to slip through my bombs without noticing them, and the djn protection, jmz.b start,#0 stolen from Torch.

The qscan is rather similar to the one in Stepping Stone, being only a bit slower overall even if with a better bomb distribution. I coded it from the warrior I sent to J K Lewis tournament, a thing that proved deadly, I won 13 rounds alone, but too weak. It's a 50%c vamp engine dropping one far jump to the pit and two near jumps through and to the far jump in a six instructions loop, something like that:

```
jn   jmp     *qqstep,  qqstep                          ;jump near
jf   jmp     -bombn+pit-(3*qqstep)-qdisp,-qqstep       ;jump far

jn ..[qqstep cells].. jn .. [qqstep cells] .. jf
```

The first jn jumps to jf using a-field of the second jn, the other jumps go to the pit.
The pit is a standard self destructing, brainwashing pit.

```
;redcode-94
;name Twister
;author Beppe Bezzi
;strategy qscan -> Tornado bomber
;assert CORESIZE == 8000
;kill Twister

step    equ     -45
away    equ     4000+2  ;mod 5 +2
gate1   equ     (gate-4)

org     startq


qstep   equ     6
qrounds equ     8
qdisp   equ     -qstep*(qrounds*3/2-1)-60
qqstep  equ     qstep*qrounds
bigst   equ     100                     ;or something more :-)
qstart  equ     startq+145
qst     equ     qstart -(4*bigst)

pstep   equ     40
spacer  equ     4
cldst   equ     (bclr-bgate+spacer+5)


pit     spl     4
pit1    mov     -3,     <1300
        spl     pit1
        spl     pit1
        stp.b   #0,     @pit1
        jmp     pit1

;----Qscan

;don't ever think it's the right qscan pattern :-)

startq
s3 for 4
        sne.i   qst+4*bigst*(s3+0), qst+4*bigst*(s3+0)+bigst*1
        seq.i   qst+4*bigst*(s3+0)+bigst*2, qst+4*bigst*(s3+0)+bigst*3
        mov.ab  #qst+4*bigst*(s3+0)-found, found
     rof
        jmn.b   which,  found
```

```
s2 for 4
        sne.i   qst+4*bigst*(s2+5), qst+4*bigst*(s2+5)+bigst*1
        seq.i   qst+4*bigst*(s2+5)+bigst*2, qst+4*bigst*(s2+5)+bigst*3
        mov.ab  #qst+4*bigst*(s2+5)-found, found
     rof
        jmn.b   which,  found
s1 for 4
        sne.i   qst+4*bigst*(s1+10), qst+4*bigst*(s1+10)+bigst*1
        seq.i   qst+4*bigst*(s1+10)+bigst*2, qst+4*bigst*(s1+10)+bigst*3
        mov.ab  #qst+4*bigst*(s1+10)-found, found
     rof
        jmn  which,   found

which
found   jmz.b   boot,   #0      ;Pyramid decoding
        add.b   found,  pt2
        sne.i   @found, @pt2
        add.ab  #(bigst*2),found
        sne.i   -100,   @found
        add.ab  #bigst, found
qattack                             ;found.b punta il bersaglio
        mov     bombm,  @found    ;dat bomb found position

        add.ba  found,  qstone    ;\
        add.b   found,  qstone    ; >setup vamp pointers
        sub.ba  found,  bombf     ;/

;---vamp attack ---

qb1      mov     bombn,  *qstone
qb2      mov     bombf,  @qstone
qstone   mov     (1*qqstep)+bombn+qdisp,@(3*qqstep)+bombn+qdisp
qstart1  sub     qincr,   @qb1
        add.a   qincr,   bombf
qjump   djn.b   qb1,    #qrounds
        jmp     boot

bombn   jmp     *qqstep,  qqstep
qincr   dat     >-1*qstep,>-1*qstep

bombf   jmp     -bombn+pit-(3*qqstep)-qdisp,-qqstep

for 5
        dat     0,0
rof

;--- Tornado

start
boot

        mov     gate,   }pt2
        mov     gate,   *pt2
        mov     last,   <pt1
        spl     1,      1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1

go      djn.b   @pt1,   #2      ;start Tornado
        mov     gate,   <pt1
pt1     div.f   #last,#last+1+away
pt2     div.f   #gate+away-5,#bigst+found

        dat     -25,    last-gate1+5
warr
gate
        dat     -25,    last-gate1+15
```

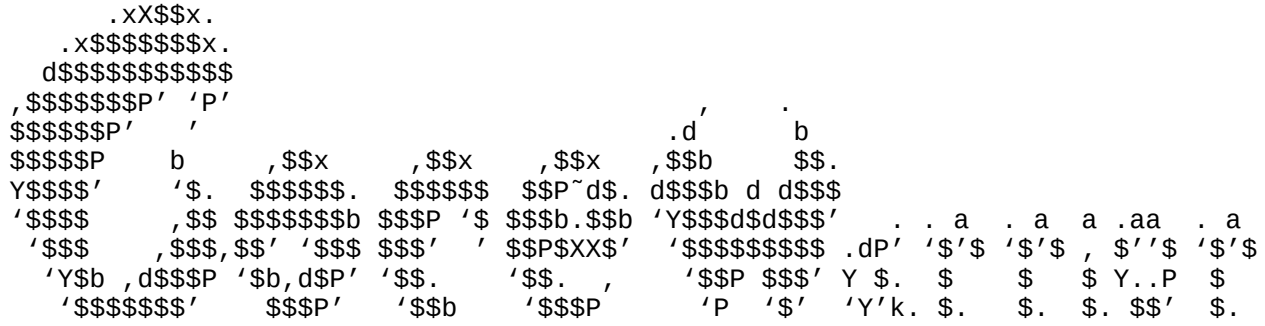
```
bombs   spl     #(step+1),  -step           ;hit spl
start1  sub     incr,   @b1
stone   mov     (0*step)+jump,*(1*step)+jump
b2      mov     bombs,  @stone
b1      mov     bombm,  *stone
jump    jmz.b   start1, #0          ;hit by spl
clr     mov     @djmp,  >gate1
        mov     @djmp,  >gate1
djmp    djn.b   clr,    {bombs
incr    dat     >-3*step,>-3*step
last

bombm   dat     <1,     {1

shift   dat     #40,    #40
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

From bremermr@ecn.purdue.edu Wed Jul 3 00:13:29 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA02326; Wed, 3 Jul 96 00:13:29 +0200
Received: from cartoon.ecn.purdue.edu (cartoon.ecn.purdue.edu [128.46.147.13]) by nez-per
ce.inria.fr (8.7.1/8.7.1) with ESMTP id AAA11100 for <Damien.Doligez@inria.fr>; Wed, 3 Ju
l 1996 00:13:20 +0200 (MET DST)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
        by cartoon.ecn.purdue.edu (8.7.5/3.8.1davy)
        for delivery to "Damien.Doligez@inria.fr"
        id RAA22646; Tue, 2 Jul 1996 17:13:11 -0500 (EST)
Message-Id: <199607022213.RAA22646@cartoon.ecn.purdue.edu>
Date: Tue, 2 Jul 1996 17:13:11 -0500 (EST)
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: Core Warrior 36
Status: R



Issue 36 July 1, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar fpt site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

At least some of the hill changes have been implemented at Pizza. Check out all the spiffy decimals on the hill reports for greater precision. Apologies to our European players who prefer commas. It will definitely take some getting used to. If you have any comments or requests for new features, mail them to Thos at <sd@ecst.csuchico.edu>. In case you missed them, I have kept the ’New Pizza Features’ seen in the last issue.

Personally, I was hoping the ;test option could be used to fight individual warriors in addition to challenging the entire hill. Otherwise, I fully support all the changes proposed.

Just a reminder that the ’limited process hill’ is open. Send your warriors to <koth@wastedyouth.us.itd.umich.edu> with a ;redcode-94lp header. To get more information, send an e-mail with a subject line of ’help’ (no quotation)

marks to the above address. Thanks to J K Lewis and Andrew Fabbro for their work on the new hill.

Next week, we will have a very special issue brought to you by Anton Marsden. Check out some of his work in this week's hint.

Before anyone yells at me, I just noticed that the hill reports Bezzi has been feeding me are _very_ out of order my apologies for any confusion. It's not Beppe's fault. I need to get back on the hill soon.

--M R Bremer

New Pizza features

- Remove self fights on all hills that use pspace.

- Add the "test" command to decrease artificial aging of the hill. I think the best (and easiest) way to do this would be as an argument to the ";redcode" command like "quiet" and "verbose" are now. ";redcode test" would challenge all the warriors on the hill (only 100 times?), but the results would be discarded. This way you could see how your changes affect your performance against all the warriors on the hill, but you get the results back twice as fast.

- Add the ";password" command, to make it harder to forge ";kill" commands.

- Make ";name" commands mandatory, and make blank ";kill" commands illegal.

- Add the ";url" and ";show" commands for web access. ";url" is pretty much self explanatory, but ";show" will be used to customize how much info on your warrior you want to make public. "[no]source" and "[no]score" are two possible arguments to add.

- Add the ";change [warrior name]" command to allow you to change info in your warrior without having to kill it and resubmit it. If you wanted to make it "quiet" while you go on vacation, or change the ";url", just send one piece of mail with ";change" in it. This would do a substring match like ";kill", and any other commands in the mail would be changed in the warrior. Does this make sense?

Any other ideas, or comments on the above proposals?

Thos

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	42.8/	39.9/	17.3	Blur 2	Anton Marsden	145.7	2
2	41.7/	41.8/	16.5	myVamp5.3	Paulsson	141.5	11
3	37.6/	34.3/	28.1	Goliath	David van Dam	140.9	3
4	38.8/	38.0/	23.3	Yogi Bear	P.Kline	139.5	59
5	40.4/	43.9/	15.7	Goldfinch	P.Kline	137.0	4
6	37.4/	39.4/	23.2	Twister	Beppe Bezzi	135.5	309
7	36.0/	37.3/	26.7	T.N.T. pro	Maurizio Vittuari	134.8	573
8	36.0/	37.5/	26.5	test	Anonymous	134.6	20
9	35.8/	37.9/	26.3	Thermite II	Robert Macrae	133.6	2194
10	26.7/	20.1/	53.2	blue flame c2	bjoern guenzel	133.3	23
11	32.0/	31.2/	36.8	Simple v0.3	Ian Oversby	132.9	14

12	34.2/ 35.7/ 30.1	Jo Clark II	Ian Oversby	132.8	213
13	30.0/ 27.2/ 42.8	Jack in the box II	Beppe Bezzi	132.8	212
14	29.1/ 26.8/ 44.1	Armory II	John K W	131.3	48
15	29.1/ 27.1/ 43.8	the historian	bjoern guenzel	131.1	328
16	38.7/ 46.3/ 15.0	Stepping Stone	Kurt Franke	131.1	1007
17	19.1/ 7.2/ 73.7	The Avalanche	John Wilkinson	131.0	78
18	27.6/ 24.6/ 47.9	blue candle	bjoern guenzel	130.6	442
19	25.5/ 20.6/ 53.9	Rosebud	Beppe	130.5	528
20	32.7/ 35.5/ 31.8	test	Maurizio	130.0	253
21	29.3/ 29.3/ 41.3	Pulp v0.1	Ian Oversby	129.3	12
22	22.4/ 16.0/ 61.6	test	Maurizio Vittuari	128.7	7
23	36.7/ 46.1/ 17.2	HopScotch 1.6	Robert Macrae	127.3	322
24	19.4/ 11.7/ 68.9	ompega	Steven Morrell	127.1	206
25	35.0/ 44.8/ 20.2	Yet 3c	Justin Kao	125.1	1

Weekly age: 56 (108 last week, 67 the week before)
New warriors: 11 Turnover/age rate 20%
Average age: 275 (296 last week, 269 the week before)
Average score: 133 (127 last week, 133 the week before)
The top 25 warriors are represented by 13 authors: Vittuari, Bezzi, guenzel, and Oversby with 3 (hogs), and Kline, Macrae, and JKW with 2.

King Report: Blur 2 has had a commanding hold on the hill, but there were a few surprises this week. Miro by Ivner popped up into first place on its second submission, and just as quickly, he killed it from the hill. Interesting strategy. blue flame by guenzel also appeared briefly in the king position. blue flame c2 is already out, but at the less prestigious position of 10th place. Kline had both Goldfinch and Yogi Bear on top at times, but that's no real surprise there. I would hazard a guess that Kline has had more different warriors on top of the '94 hill than any current author on the hill. I could be wrong though . . .

Speaking of Kline: his test retinA was seen on the hill tying over 80% when paired with mirrored imps. One reason I find replicators so frustrating is that they can't win massively against any other warrior. I believe Evol Cap used separate bombers to help gain some wins. However, as a p-component, papers do take losses and turn them into ties.

Heavy pspacer Armory II and Goliath are doing well. Goliath did have Scan Man, Bomber Boy, and a move bomber in it, but a test with Goliath's brain and three basic warriors called 'Paper, Scissors, and Stone' actually scored a bit higher when it was submitted aginst the hill.

There are lots of pspacers and imp heavy programs on the hill. If you want to make it on, you could utilize a quick scan (but not as effective with the new qscan detection system) or be extremely imp hostile.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
7	27.2/ 20.0/ 52.7	blue flame c2	bjoern guenzel	134.4	1
8	36.7/ 38.4/ 25.0	test	Anonymous	134.9	1
13	25.8/ 22.2/ 52.0	Armory II	John K W	129.3	1
1	41.7/ 40.6/ 17.7	Blur 2	Anton Marsden	142.7	1
3	41.7/ 42.6/ 15.6	Goldfinch	P.Kline	140.8	1
4	37.0/ 34.9/ 28.1	Goliath	David van Dam	139.2	1
4	41.7/ 41.7/ 16.7	myVamp5.3	Paulsson	141.7	1
24	28.6/ 29.9/ 41.5	Pulp v0.1	Ian Oversby	127.4	1
16	30.8/ 29.6/ 39.6	Simple v0.3	Ian Oversby	132.1	1
22	22.0/ 15.1/ 62.9	test	Maurizio Vittuari	129.0	1
25	35.0/ 44.8/ 20.2	Yet 3c	Justin Kao	125.1	1

Half of the top ten warriors are, again, new submissions. Although most are slight tweaks on old versions.

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	31.2/ 35.4/ 33.5	* Satura *	bjoern guenzel	127.0	12
26	22.2/ 17.7/ 60.3	Hazy Shade II	John K W	126.8	1102

26	1.6/	2.0/	0.4	Blur 2	Anton Marsden	5.0	6
26	2.1/	1.7/	0.1	Goldfinch	P.Kline	6.4	11
26	1.3/	1.6/	1.0	Goliath	David van Dam	4.9	43
26	1.2/	1.2/	1.6	myVamp5.1	Paulsson	5.0	53
26	31.0/	35.0/	34.2	Thalamus mod	Edgar	127.0	203
26	2.0/	1.1/	4.6	rhodium v1.3	Martin M. Pedersen	10.6	64
26	29.8/	37.9/	32.3	Scotch Broth 1.2	Robert Macrae	121.8	98
26	0.3/	0.7/	2.9	test E	P.Kline	3.8	19
26	0.2/	0.2/	3.6	test jb21	Beppe Bezzi	4.1	15

Hazy Shade II is dead. JKW is in mourning, evidenced by his Armory submissions . . .

A challenger has arrived on the ICWS ’94 Draft hill! Vital statistics:
Program "Armory II" (length 100) by "John K W"
(contact address "jwilkinson@mail.utexas.edu"):
;strategy Alas, poor Hazy, I knew thee well...

The loss of Edgar’s Thalamus mod pushed him completely off the hill. Hopefully he will have a new one on the ’94 hill soon.

---

94 - What’s Old

#	%W /	%L /	%T	Name	Author	Score	Age
9	35.8/	37.9/	26.3	Thermite II	Robert Macrae	133.6	2194
16	38.7/	46.3/	15.0	Stepping Stone	Kurt Franke	131.1	1007
7	36.0/	37.3/	26.7	T.N.T. pro	Maurizio Vittuari	134.8	573
19	25.5/	20.6/	53.9	Rosebud	Beppe	130.5	528
18	27.6/	24.6/	47.9	blue candle	bjoern guenzel	130.6	442
15	29.1/	27.1/	43.8	the historian	bjoern guenzel	131.1	328
23	36.7/	46.1/	17.2	HopScotch 1.6	Robert Macrae	127.3	322
6	37.4/	39.4/	23.2	Twister	Beppe Bezzi	135.5	309

Stepping Stone breaks the 1000 mark, the first vampire to do so.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2194	*	Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1007	*	Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	Flurry	Anton Marsden	835		Qscan -> pwarrior
19	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
20	Blue Funk 3	Steven Morrell	766		Stone/ imp
21	Night Train	Karl Lewin	755		Replicator
22	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
23	Blizzard	Anton Marsden	713		Qscan -> replicator
24	HeremScimitar	A.Ivner,P.Kline	666		Bomber
25	La Bomba	Beppe Bezzi	650		Qscan -> replicator

Thermite II continues on, yaddah, yaddah--the thing is like the Energizer Bunny. Qscan detectors are a definite threat though and someone has a anti-qscan qscan, whatever that is. But Thermite seems to be holding it’s own, even with the wave of new blood entering the hill.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	52.4/	29.1/	18.5	Versatility 1.2	Ross Morgan-Linial	175.7	58
2	53.9/	33.3/	12.8	Syzygy 1.0	Philip Kendall	174.5	43
3	53.6/	34.2/	12.2	Saboteur 0.4k	shar	173.0	1
4	52.7/	34.3/	13.0	Yet 3c	Justin Kao	171.0	39
5	49.6/	35.3/	15.1	Phoenix Alpha	Andy Nevermind	163.9	44
6	51.0/	38.8/	10.2	Saboteur v0.3p	shar	163.3	65
7	50.8/	39.3/	10.0	Thalamus	Edgar	162.2	91
8	48.8/	36.1/	15.1	Sandwich Bags	Andy Nevermind	161.4	32
9	46.2/	43.2/	10.6	3-clear 0.6	Ilmari Karonen	149.1	66
10	45.6/	44.2/	10.2	Not Very Pretty 2.0	Ross Morgan-Linial	147.1	89
11	45.1/	43.6/	11.3	Yet 3a	Justin Kao	146.6	40
12	41.6/	37.5/	20.9	Antivenin	Ross	145.7	31
13	40.3/	37.9/	21.8	test	Justin Kao	142.8	55
14	43.5/	44.2/	12.2	Switch Hitter 0.3t	Ross Morgan-Linial	142.8	70
15	34.4/	26.4/	39.2	Cannon Fodder	I. Karonen	142.3	45
16	31.6/	20.9/	47.5	Ties, Ties, Ties!+	Ross	142.2	10
17	25.4/	9.5/	65.1	Nematode v1.3c	Jonathan Stott	141.3	25
18	41.0/	41.0/	18.0	3-clear 0.5	I. Karonen	141.0	80
19	42.3/	46.2/	11.5	hyper 1.0	Ross	138.5	63
20	28.8/	20.0/	51.2	Ties, Ties, Ties!	Ross	137.7	28
21	30.8/	27.3/	41.9	Avenger I	Oliver Fechner	134.2	62
22	32.2/	42.4/	25.4	Utility Knife	Robert J. Street	122.1	2
23	19.8/	60.4/	19.8	WarHawk	Robert J. Street	79.1	7
24	23.1/	70.8/	6.2	Kevorkian	Robert J. Street	75.4	5
25	3.8/	0.0/	0.0	12345678901234567890123	Anonymous	11.5	17

Versatility is still on top. With strong components from '94 hill warriors, this code should live up to its name.

Syzygy 1.0 is a scan/spl carpet to spl/dat clear. Is the scan one shot or repetitive. Check out this week's hint. Blur utilizes a scan/carpet --> spl/dat clear.

Lots of pspace and core clear warriors. Make sure you check out the latest and greatest core clear innovation. d-clear by guenzel is a dat/djn clear wiping at 1.0c. It makes a great p-component, especially if you can get it a spl clear tacked onto it without increasing the length (I'm trying).

The Hint

I suppose this should be an Extra Extra and not a Hint, but if I had any good hints, I would be on the hill right now.

The Mirage/Blur Scanner Series
by Anton Marsden

Mirage 1.5 was my first successful warrior. It was a 33% scanner with continuous 33% carpet in the scanning loop. It did quite well against imp-type warriors and papers but was thrashed by bombers. I wrote several similar warriors similar to Mirage 1.5 and didn't want to publish them immediately - I was still experimenting. But now I'm quite happy with my latest version and have decided to release them all now, including the Hill version. I haven't included the booting code and decoy but they're nothing special. If there's enough demand for the full versions I'll post them in the newsgroup at a later date.

Mirage 2 was based on the same technique as Mirage 1.5 but used a SEQ scan.

Here is Mirage 2:

```
;redcode-94
;name Mirage 2
;author Anton Marsden
;strategy Faster version, boot and decoy, no pspace
;assert CORESIZE==8000
;kill Mirage 2

ORG scan
step EQU 3024; mod-16

ptr:  dat.f  >0,$step
      dat.f  >0,$btm-ptr+3
cc:   spl.a  #1,$btm-ptr+4
top:  mov.i  $cc,>ptr
scan: seq.i  $2*step+8,$2*step
      mov.b  $scan,$ptr
a:    add.f  $inc,$scan
      jmn.b  $top,$scan
inc:  spl.a  #step,>step
      mov.i  @1,>ptr
btm:  djn.b  $-1,{cc
```

This warrior had several weaknesses, the major one being that it was only a mod-8 scan. I knew that mod-5 was achievable (and also mod-4) but had the disadvantage that the locations scanned would be only 5 apart (not exactly optimal!).

As Mirage 2 slowly made its way off the Hill I was wrote a mod-5 version and named it Blur (two versions is enough for me!):

```
;redcode-94
;name Blur
;author Anton Marsden
;assert CORESIZE==8000
;strategy 0.5c scan, 0.25c carpet -> SPL/DAT core clear
;strategy Mirage 2 with a better step and some other changes.
;strategy This product is PSpace Free :-)
;kill Blur

ptr:  dat.f  $0,$step+5
      dat.f  $0,$0
      dat.f  $0,$0
      dat.f  >0,#btm-ptr+3
cc:   spl.i  #0,#btm-ptr+3     ; DJN stream protection
top:  mov.i  $cc,>ptr          ; Putting this line here enhances protection
scan: seq.i  $2*step,}2*step+5 ; A-indirect ensures B field is attacked with
      mov.b  $scan,$ptr        ; no delay. Also leaves decoy for scanners
a:    add.f  $inc,$scan
      jmn.a  $top,$scan        ; Falls through when all locations scanned
inc:  spl.a  #step,>step
      mov.i  @1,>ptr
btm:  djn.b  $inc+1,{cc
```

The A-indirect scan improved Blur’s score against bombers but left "bombs" in core that a decent dodger could take advantage of.

One of the things I had discovered about all these scanners was that if the mod step in the scan was sufficiently good (ie. enough scans were done) then there was no need for a SPL/DAT core clear against non-imp warriors. Then I found the perfect clear for Blur - DAT/DJN (dclear?). I added this to Blur and made a few more adjustments and came up with Blur 2:

```
;redcode-94
;name Blur 2
;author Anton Marsden
;assert CORESIZE==8000
;strategy 0.5c scan, 0.25c SPL carpet -> DAT/DJN clear
;strategy Final version (for a while)
```

```
;kill Blur

ORG scan
step EQU 70; mod-10
gate EQU top

ptr:  mov.i  $inc+1,>step ; New DJN protection... better than a SPL?
top:  mov.i  $inc,>ptr    ;                      Or worse?
scan: seq.i  $2*step+5,$2*step
chg:  mov.b  $scan,@top
a:    add.f  $inc,$scan
      djn.b  $top,#800
inc:  spl.i  #step,#step
      mov.i  $clr,>gate
btm:  djn.f  $-1,>gate
clr:  dat.f  <1,#clr-gate+2
```

Note on booting: The decoy and boot code was aligned such that Blur didn't attack it's old code at all.

There are many variations on the basic engine I have tried and probably a few that I haven't. Can you improve on it?

Things to try:
- different gap, eg. seq.i $2*step+15,$2*step, mod-5 scan
- different (ptr-scan) offsets
- psuedo mod-1 scan using A/B indirect scanning, eg.

```
   top:  mov.i  $BOMB,>ptr ; bomb should probably be spl #0,0
   scan: seq.F  $2*step,}2*step+5 ; could also try seq.f >2*step,}2*step+5
         mov.b  $scan,$ptr
   a:    add.f  $inc,$scan
         djn.b  $top,#0
   inc:  spl.i  #step,#step
         mov.i  $clr-10,>gate; A field incremented 10 times in 8000 loops
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>

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Article: 5572 of rec.games.corewar
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From: Anton Marsden <amarsden@news.comp.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 37
Date: Sun, 7 Jul 1996 19:24:26 +1200
Organization: Victoria University of Wellington, New Zealand.
Lines: 616
Message-ID: <Pine.SOL.3.91.960707192316.1274A-100000@regent.comp.vuw.ac.nz>
NNTP-Posting-Host: regent.comp.vuw.ac.nz
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
X-Sender: amarsden@regent.comp.vuw.ac.nz

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                              ,    .
$$$$$P'   '                              .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
  '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 37 July 8, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at:
http://www.stormking.com/~koth ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

Some interesting activity on the hill this week including the fall of Thermite II and Stepping Stone. In this issue we find out why Q^2 Miro is doing so well and JKW discusses mirrored imps.

This is the first Core Warrior issue I've compiled and there's bound to be a few mistakes somewhere so not too many flames please :-)

Reminder: the 'limited process hill' is open. Send your warriors to <koth@wastedyouth.us.itd.umich.edu> with a ;redcode-94lp header. To get more information, send an e-mail with a subject line of 'help' (no quotation) marks to the above address.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	48.1/	38.3/	13.6	Blur 2	Anton Marsden	157.9	33
2	49.0/	42.2/	8.8	Q^2 Miro	Anders Ivner	155.8	31
3	45.4/	37.8/	16.8	myVamp5.3	Paulsson	152.9	102
4	42.6/	35.3/	22.0	Yogi Bear	P.Kline	149.9	150
5	29.6/	10.2/	60.2	Return Of The Jedimp	John K W	148.9	22
6	41.7/	34.5/	23.8	Paper, Scissors and Stone	David van Dam	148.9	74
7	44.4/	40.3/	15.3	Goldfinch	P.Kline	148.4	95
8	37.0/	26.7/	36.2	Simple v0.4	Ian Oversby	147.3	42
9	35.9/	24.9/	39.2	Armory II	John K W	146.8	85
10	42.0/	38.7/	19.2	Twister	Beppe Bezzi	145.3	400
11	40.5/	35.9/	23.6	Goliath	David van Dam	145.1	94
12	35.4/	26.5/	38.1	Pulp v0.2	Ian Oversby	144.2	41
13	40.2/	36.6/	23.2	T.N.T. pro	Maurizio Vittuari	143.8	664
14	34.1/	25.4/	40.5	Jack in the box II	Beppe Bezzi	142.8	303
15	34.2/	27.5/	38.2	the historian	bjoern guenzel	140.9	419
16	43.5/	46.8/	9.7	test me2	Beppe Bezzi	140.2	26
17	42.4/	44.7/	12.9	test A	P.Kline	140.0	2
18	29.0/	18.5/	52.5	Rosebud	Beppe	139.6	619
19	38.1/	37.2/	24.7	Scimitar 2	P.Kline	139.0	12
20	31.2/	24.9/	43.8	blue candle	bjoern guenzel	137.6	533
21	25.3/	13.6/	61.1	ompega	Steven Morrell	136.9	61
22	35.3/	37.0/	27.7	Versatility 1.5	Ross Morgan-Linial	133.6	19
23	33.6/	33.6/	32.8	Simple v0.3	Ian Oversby	133.5	105
24	37.0/	48.2/	14.8	pavement v0.14	bjoern guenzel	125.9	5
25	11.6/	43.3/	45.2	Jam Sponge	Dave Newton	79.8	1

Weekly age: 90 (56 last week, 108 the week before)
New warriors: 14 Turnover/age rate 16%
Average age: 158 (275 last week, 296 the week before)
Average score: 141 (133 last week, 127 the week before)
The top 25 warriors are represented by 13 authors: Bezzi, Kline with 4, Guenzel, Oversby with 3, and van Dam, JKW with 2.

King Report: Blur 2 was on top for the majority of the challenges this week. But towards the end of the week Q^2 Miro by Ivner started to dominate. This is not surprising - Ivner has developed a very good qscan (see Extra Extra for the details). JKW's new warrior Return Of The Jedimp also had a few moments of glory (as John hastened to mention in the newsgroup).

A huge loss of age this week (approximately 2925 points)! Thermite II finally kicks the bucket (will we see a Thermite III soon?), as does Stepping Stone making T.N.T pro the oldest warrior on the Hill.

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
13	25.8/	22.2/	52.0	Armory II	John K W	129.3	1
4	36.5/	36.0/	27.5	Paper, Scissors and Stone	David van Dam	136.9	1
18	21.4/	13.3/	65.2	ompega	Steven Morrell	129.6	1
7	30.0/	24.1/	45.9	Simple v0.4	Ian Oversby	135.8	1
6	31.6/	25.3/	43.1	Pulp v0.2	Ian Oversby	137.9	1
1	42.9/	39.5/	17.6	Blur 2	Anton Marsden	146.2	1
1	44.6/	44.5/	10.9	Q^2 Miro	Anders Ivner	144.7	1
20	39.5/	49.6/	10.9	test me2	Beppe Bezzi	129.4	1
1	25.2/	9.5/	65.2	Return Of The Jedimp	John K W	141.0	1
24	30.2/	38.9/	30.9	Versatility 1.5	Ross Morgan-Linial	121.4	1

15	34.9/	37.8/	27.3	Scimitar 2	P.Kline	132.0	1
24	34.1/	50.9/	15.0	pavement v0.14	bjoern guenzel	117.3	1
14	42.6/	45.6/	11.8	test A	P.Kline	139.7	1
25	8.8/	44.2/	47.0	Jam Sponge	Dave Newton	73.5	1

6 of the 14 new warriors entered the Hill in the top 10.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	1.0/	1.2/	1.6	Armory II	John K W	4.7	55
26	18.5/	12.4/	69.1	ompega	Steven Morrell	124.6	225
26	0.0/	0.1/	3.8	test	Maurizio Vittuari	3.8	33
26	36.1/	47.5/	16.4	HopScotch 1.6	Robert Macrae	124.7	363
26	35.7/	47.0/	17.2	Stepping Stone	Kurt Franke	124.4	1049
26	1.3/	1.4/	1.1	Pulp v0.2	Ian Oversby	5.1	19
26	29.7/	35.6/	34.7	Jo Clark II	Ian Oversby	123.8	266
26	28.9/	35.1/	36.0	test	Maurizio	122.7	307
26	1.6/	1.6/	0.7	Blur 2	Anton Marsden	5.4	30
26	3.2/	4.2/	0.3	Q^2 Miro	Anders Ivner	9.9	24
26	16.2/	8.7/	75.1	The Avalanche	John Wilkinson	123.8	142
26	32.7/	41.5/	25.8	Thermite II	Robert Macrae	123.8	2262
26	0.8/	0.5/	6.5	Return Of The Jedimp	John K W	8.7	15
26	1.2/	1.3/	1.3	Hint Test	Anton Marsden	4.8	14
26	2.0/	1.2/	0.7	Torch t18	P.Kline	6.7	30
26	2.6/	0.5/	0.8	blue flame c1/10	bjoern guenzel	8.5	48

Thermite II and Stepping Stone Cease To Exist as do a few warriors over the age of 200. Lots of ;killing went on this week.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
13	40.2/	36.6/	23.2	T.N.T. pro	Maurizio Vittuari	143.8	664
18	29.0/	18.5/	52.5	Rosebud	Beppe	139.6	619
20	31.2/	24.9/	43.8	blue candle	bjoern guenzel	137.6	533
15	34.2/	27.5/	38.2	the historian	bjoern guenzel	140.9	419
10	42.0/	38.7/	19.2	Twister	Beppe Bezzi	145.3	400
14	34.1/	25.4/	40.5	Jack in the box II	Beppe Bezzi	142.8	303

Jack in the box II pops into the 300 club.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
15	Agony II	Stefan Strack	912	CMP scanner
16	Barrage	Anton Marsden	876	Qscan -> replicator
17	Blue Funk	Steven Morrell	869	Stone/ imp
18	Flurry	Anton Marsden	835	Qscan -> pwarrior
19	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
20	Blue Funk 3	Steven Morrell	766	Stone/ imp
21	Night Train	Karl Lewin	755	Replicator
22	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
23	Blizzard	Anton Marsden	713	Qscan -> replicator
24	HeremScimitar	A.Ivner,P.Kline	666	Bomber

25 T.N.T. pro Maurizio Vittuari 664 * Bomber

LaBomba by Beppe Bezzi was kicked off this week by T.N.T. pro, now the only active warrior in the HoF (with Rosebud not far behind). Thermite II has a comfortable hold on 1st place even if it has stopped growing older and Stepping Stone settles for 13th place.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	50.3/	28.8/	20.9	Versatility 1.2	Ross Morgan-Linial	171.7	85
2	51.8/	31.9/	16.4	Syzygy 1.0	Philip Kendall	171.6	70
3	51.3/	32.5/	16.2	Yet 3c	Justin Kao	170.2	66
4	48.3/	33.0/	18.7	Phoenix Alpha	Andy Nevermind	163.6	71
5	48.9/	35.7/	15.4	Saboteur v0.4k	shar	162.2	27
6	45.3/	34.0/	20.7	Sandwich Bags	Andy Nevermind	156.6	59
7	42.0/	30.9/	27.0	Inferno 1.0	Philip Kendall	153.1	9
8	44.2/	39.8/	16.0	Yet 3a	Justin Kao	148.6	67
9	42.4/	39.3/	18.3	3-clear 0.6	Ilmari Karonen	145.5	93
10	40.2/	35.8/	24.0	Antivenin	Ross	144.7	58
11	38.1/	32.0/	29.9	(-: :-)	Ross	144.3	19
12	31.5/	21.5/	47.0	Ties, Ties, Ties! (+2)	Ross	141.5	21
13	41.2/	41.8/	17.0	hyper 1.0	Ross	140.6	90
14	37.9/	36.4/	25.7	test	Justin Kao	139.4	82
15	39.8/	44.9/	15.3	Switch Hitter 0.3t	Ross Morgan-Linial	134.8	97
16	20.2/	7.8/	72.0	Nematode v1.3e	Jonathan Stott	132.8	26
17	27.7/	27.9/	44.4	Cannon Fodder	I. Karonen	127.5	72
18	18.6/	10.3/	71.1	Nematode v1.3c	Jonathan Stott	126.8	52
19	22.7/	21.2/	56.1	Wasps 1.3	Ross	124.1	20
20	25.4/	26.8/	47.8	Avenger I	Oliver Fechner	124.0	89
21	30.2/	38.2/	31.6	Utility Knife	Robert J. Street	122.2	29
22	24.6/	33.1/	42.4	Fork 4/13	Christoph C. Birk	116.0	13
23	19.4/	25.2/	55.4	Mama's Boy	Robert J. Street	113.6	12
24	10.5/	64.2/	25.4	D-Scan	Ross	56.8	1
25	3.8/	0.0/	0.0	Yet Another stupid pun...	Justin Kao	11.5	4

Versatility is still on top. The top three warriors appear to be in a class of their own.

I noticed there are quite a few pspacers on the Hill at the moment. I believe that the best way to learn to code well is to concentrate on one type of warrior and see how much you can improve it... you may not make it to the top of the Hill but you will certainly come to understand the game a bit better. You don't have to take my advice :-)

The Hint
Quick Scanners
by Anton Marsden

Quick scanners (qscanners) have become a common ingredient in many modern warriors (mainly bombers and papers) recently. However, the qscans used are all very similar in structure and performance. In this article I will be discussing a "new" method of attack for qscans. If you are unfamiliar with the classic qscans check out Core Warrior #7 for a good tutorial (by Robert Macrae). It may also be helpful to take a look at Thermite II (CW 24) or Twister (CW 35).

In a standard qscan about 16 locations are scanned (in 8 cycles) and then a JMN check is made to see if anything was found:

```
s3 for 4
  sne.i   qst+4*bigst*(s3+0), qst+4*bigst*(s3+0)+bigst*1
  seq.i   qst+4*bigst*(s3+0)+bigst*2, qst+4*bigst*(s3+0)+bigst*3
  mov.ab  #qst+4*bigst*(s3+0)-found, found
    rof
  jmn.b   which,  found
```

The code required for this setup is very small and this is probably the reason it became a very popular qscan method. But it’s inefficient because of the huge delay between finding a location and bombing the location. This means that booting warriors are likely to escape the bombs as are most pspacers.

To remedy this, I started experimenting with this type of scan:

```
  seq.i   qst+4*bigst, qst+4*bigst+bigst*1
  jmp     kill1
  seq.i   qst+4*bigst+bigst*2, qst+4*bigst+bigst*3
  jmp     kill2

kill1:
  ; find correct location
  ; bomb it
  ; jump to boot routine
kill2: ; similar to kill1
```

It works, but requires a large amount of code for every scanned location. There are many possible variations on this "engine". The trick is to find a nice compromise between size and speed. Here is one of the better qscans I have written:

```
offset EQU (start+1000)
COUNT EQU 6

start:
N FOR COUNT
scan&N:
    seq.i  offset+400*N,offset+400*N+100
    jmp    kill&N+1
    seq.i  offset+400*N+200,offset+400*N+300
    jmp    kill&N

ROF
    jmp    boot

GAP EQU 15
REP EQU 6

datb:   dat  GAP,-GAP
dat200: dat  200,200
dat100: dat  100,100


N FOR COUNT
kill&N: add.f  dat200,pos&N
      sne.i  datz,*pos&N
      add.f  dat100,pos&N
hit&N:  mov.i  datb,*pos&N
pos&N:  mov.i  offset+400*N,offset+400*N+GAP/2
      add.f  datb,pos&N
      djn.b  hit&N,#REP
      jmp    boot
ROF
```

Anders Ivner has also contributed to this issue with his qscan (Q^2) which has a slightly slower response time than mine but uses a _lot_ less instructions.

Testing QScan Performance

QScans can be hard to test well so here are some tips on how to test your own qscans:

- Replace all warrior code with NOP instructions and a JMP to the first NOP instruction. This technique can be adapted to work with fragmented (non-sequential) code as well (using JMPs). This way all your booted code will be executed and you'll die if you warrior was hit by a DAT bomb (this is a Good Thing for testing purposes).

- pmars -r 8000 -c 100 (8000 rounds, 100 cycles maximum)
This will give you a good idea of how your qscan will perform. Note that booting warriors will be the toughest to kill followed by pspacers then qscanners.

- Without actually testing your qscan you can describe its performance by noting the cycle numbers at which it will actually attack a scanned location. For example, a standard qscan similar to the one in Twister will roughly attack in the 14th cycle (for any of 12 locations) and then in the 23rd cycle and so forth. The qscan in this article will attack in these cycles: 4,5,6,6,7,7,...,14,14,15,15,16,17. Most opponents are very vulnerable in the early cycles of the battle so attacking as early as possible has its advantages.

I submitted a warrior to the '94 Hill called Hint Test which was Twister (Tornado) with the qscan replaced by an earlier, slower version of the qscan above. Here are some of the results:

Hint Test vs. Twister: 111/68/21
Hint Test vs. Thermite II: 103/59/38

#	%W /	%L /	%T	Name	Author	Score	Age
...							
7	37.1/	38.1/	24.8	Hint Test	Anton Marsden	136.2	1
...							
23	34.8/	42.7/	22.6	Twister	Beppe Bezzi	126.8	373

As you can see, qscan response can have a major effect on your score.

Extra Extra
Q^2
by Anders Ivner

[Editor note: Anders wrote a good intro and I decided not to edit it even though it repeats some of what is said in the hint.]

In a standard quickscan there is a delay between when something (presumably the enemy) is found and when the quickscan actually reacts. To shorten this time tests are generally inserted (say) every fifth qscan block.

Q^2 instead uses the inc/decrementing abilities of the JMP instruction to react immediately when something is found. This allows it to attack the enemy on average five cycles earlier than a standard qscan, time that may be important to catch it in its booting phase.

An example to illustrate what I mean:

```
  sne
  seq
  jmp   attack,  attack
  sne
  seq
  jmp   attack,  {attack
  sne
  seq
  jmp   attack,  }attack
  sne
  seq
  jmp   attack,  >attack
  sne
```

```
  seq
  jmp   attack,  <attack
  sne
  seq
  djn.f attack,  attack
```

With four different inc/decrement modes and djn.f there is a total of six different ways for the jump to tell the attacking code where something was found.

Next, let’s look at how this information is decoded. Two entries from a table containing the qscan step (in various multiplicities) are added to calculate the correct position:

```
    dat   1*QS, 4*QS+QBASE-found
tab   dat   0*QS, 0*QS+QBASE-found
    dat   2*QS, 3*QS+QBASE-found

attack   add.ab   tab,  tab
found    mov.b    @attack, #0
```

That’s about it. A further half a cycle (on average) can be optimized away, but this makes the code harder to follow, and is left as an exercise. :-)
[Editor note: I can do better! This is also left as an exercise. :-)]

Finally, here’s some code to show you what this might look like.

/Anders
(The pmars preprocessor certainly is awesome!)

```
;redcode-94
;name Q^2
;author Anders Ivner
;strategy Qscan with shorter reaction time.
;assert (CORESIZE == 8000)

QBASE equ   (tab+100)
QS1   equ   (100)
QS2   equ   (3*QS1)
QS3   equ   (6*QS2)

QP01  equ   (0*QS2)
QP02  equ   (1*QS2)
QP03  equ   (2*QS2)
QP04  equ   (3*QS2)
QP05  equ   (4*QS2)
QP06  equ   (5*QS2)

HOP01 equ   jmp
SIG01 equ   a01
HOP02 equ   jmp
SIG02 equ   {a01
HOP03 equ   jmp
SIG03 equ   }a01
HOP04 equ   jmp
SIG04 equ   >a01
HOP05 equ   jmp
SIG05 equ   <a01
HOP06 equ   djn.f
SIG06 equ   a01

  org   qq

qq
j  for   3
i  for   6
  sne   QBASE+QP&i+0*QS3+(j-1)*QS1,   QBASE+QP&i+1*QS3+(j-1)*QS1
  seq   QBASE+QP&i+2*QS3+(j-1)*QS1,   QBASE+QP&i+3*QS3+(j-1)*QS1
  HOP&i a&j,  SIG&i
  rof
```

```
  rof
  jmp   boot     ;nothing found

  dat   1*QS2,   4*QS2+QBASE-found
tab   dat   0*QS2,   0*QS2+QBASE-found
  dat   2*QS2,   3*QS2+QBASE-found

a03   add   #QS1, @a01
a02   add   #QS1, @a01
a01   add.ab   tab,  tab
found mov.b @a01, #0
  add.ba   found,   test1
test1 sne   QS3+found,@found
  add   #QS3*2,  found
  sne   -100, @found
  add   #QS3, found

  end
```

Extra Extra Extra
Mirrored Imps
by John K. Wilkinson

Justin Kao didn’t realize just what he was getting in to when he asked me what a mirrored imp was... ;->

Okay, here’s a good place to start, the mirror imp launch from Two Pack. I’ll try to explain the idea a little more. First, note the initial weakness inherent to the mirror imp. The line "mov imp, imp2" is necessary because a mirrored imp spiral requires TWO imp instructions intact in the core in order for it to survive.

```
-------------
imp_sz  equ     4001
imp2    equ     imp+4000

start mov     imp,    imp2
      spl     1
      spl     1
      spl     1
      spl     1
      spl     2
      jmp     @vector,{0
      jmp     *vector,{0

for 15
      jmp     imp2+imp_sz*vector,  imp+imp_sz*vector
rof
vector  jmp     imp2,           imp
imp     mov.i   #11, imp_sz
-------------
```

This is a two-point mirrored imp. If you run it, you’ll see that there are two lines of executing processes 4000 spaces apart.

Since 4001 is NOT an imp number, the executing imp process is not always updated immediately before it’s own execution. This makes mirror imps more vulnerable to traditional attack.

Ok, lets look at an example. Say that we’re watching a 2-process, 2-point mirrored imp spiral. Two Pack simply launches a 32 process, 2point imp, but we’ll deal with a 2-process one for simplicity.

```
[100]  mov.i   #11, 4001
[4100] mov.i   #11, 4001
[101]  mov.i   #11, 4001
[4101] mov.i   #11, 4001
[102]  mov.i   #11, 4001
[4102] mov.i   #11, 4001
```

Here are the executing processes, with the locations they execute in brackets. You'll note that while all the intructions on the "top" half of the mirror are executed immediately after being updated, those on the bottom half (4100, 4101, 4102) are updated three steps before they are executed. Hence, the weakness to traditional attack.

However, it does have one clear advantage. When you go up against a warrior which uses a 'spiral clear' like that used in SETI or Memories, a two-point imp will not be cleared away with the assurance that a 3 or 7 point imp would be. Also, any warrior which attempts to "decode" the impstep, and use that to wipe imps away will get the number 4001, which will only wipe away half of the imp.

Next advantage? Let's imagine a warrior has a 100% ">" gate at 4101...

```
[100]  mov.i   #11, 4001
[4100] mov.i   #11, 4001
[101]  mov.i   #11, 4001
[4101] mov.i   #11, 4004    ;got inc'd 3 times, totally screwing us up
[102]  dat     0,   0       ;lost half the imp! :_(
[4102] mov.i   #11, 4001    ;But hark!  THIS location already had an imp
                            on it, because the imp was unaffected at the
                            time the process at 101 was executed.
```

Therefore, if we're lucky enough to have 4103 be an exectuable instruction, we have busted the gate, and saved our ass from a sure loss. After that, we can only pray that whatever part of our opponent's code we're executing doesn't go suicide on us. :-)

The second problem is an inherent consequence of the first difficulty. That is, when you only have two imp points, and two of them need to be intact in order to survive, a single stun attack AUTOMATICALLY will be at least somewhat effective.

The solution to these two problems? Well, Paul Kline came up with the idea for the 6-point mirrored imp. In fact, any imp_number+4000 will work as a mirrored imp step size. In addition to the most important advantage of not putting all your eggs(imps:) in two baskets, the 6-point imp gives a second advantage to the mirroring idea: increased resistance to gates.

Here's a code snipet from the six-point imp warrior I was working on. It's jmp/add launched, which helps a great deal against certain scanners and bombers.

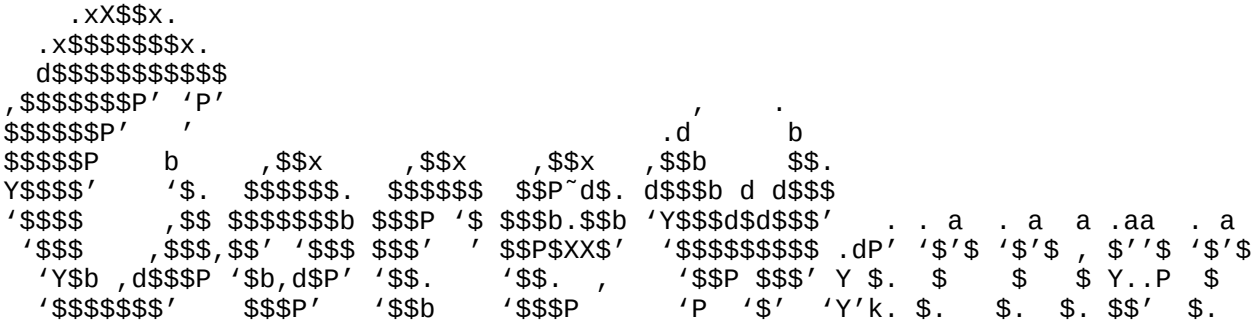
```
-------------
imp_sz  equ     (2667+4000)
imp     equ     (impin+2000)
imp2    equ     (imp+4000)

start   mov     impin,  imp
      mov     imp,    imp2
      spl     1
      spl     1
      spl     1
      spl     adder-1
      spl     2
      jmp     *vector, 0
      jmp     @vector, 0
      jmp     1
adder   add.f   inc,    vector
inc     dat     imp_sz, imp_sz
vector  jmp     imp2,   imp
impin   mov.i   #11, imp_sz
-------------
```

Now, I'll leave it up to you to see why it is that the greater-than-two-point variety of mirrored spiral performs a little better against gates. However, I must confess that mirrored imps' ability to perform in battle alone doesn't justify my interest in them. Mirrored imps only have _significant_ advantages against scanners with a spiral clears and warriors with those special mirror-vulnerable gates, so use them with care. ;-)

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@comp.vuw.ac.nz>

From bezzi@nemo.it Mon Jul 15 15:49:44 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA17515; Mon, 15 Jul 96 15:49:44 +0200
Received: from nemont.nemo.it ([194.184.149.2]) by nez-perce.inria.fr (8.7.1/8.7.1) with
SMTP id PAA01862 for <Damien.Doligez@inria.fr>; Mon, 15 Jul 1996 15:49:28 +0200 (MET DST)
Received: from mail.nemo.it (194.184.149.102) by nemont.nemo.it
 (EMWAC SMTPRS 0.80) with SMTP id <B0000189413@nemont.nemo.it>;
 Mon, 15 Jul 1996 15:37:17 +0200
Message-Id: <B0000189413@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
Date: Mon, 15 Jul 1996 15:34:41 +0200
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
        Damien.Doligez@inria.fr (Damien Doligez),
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        amarsden@st-james.comp.vuw.ac.nz
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Subject: Core Warrior 38
Status: R



Issue 38 July 15, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

Summer brings some news in the hills; last year was pmars 08 with pspace, this year we have our beloved hill maintainer working hard at hill format.

Thos, Pizza lord, is working at many small changes in formatting and new sintax, last new has been the automatic calculation of scores averages, thank you from the Core Warrior staff.

Tuc, Stormking boss, completed his planned phase 1 and changed the address of his web page, now frame based and very cool, and hills, moving them on a

faster server.
New addresses are:

web page: http://www.koth.org/
hills: koth@koth.org

With the new server I think that the 94x (big) hill can have answer in a much shorter time and so get some more traffic.
Stormking new web page implements many interesting features, give a look at it, it's worth the time.

You are encouraged to send them your opinions, suggestions, congratulations and flames; they need our feedback.

This week I had a few problem submitting a warrior to the limited processes hill because of a bug; now the bug has been fixed, thank to Andrew work, so you can submit your warriors to <koth@wastedyouth.us.itd.umich.edu> with a ;redcode-94lp header.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS '94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	43.1/ 34.6/ 22.3	Probe	Anton Marsden	151.6	30
2	31.3/ 10.9/ 57.8	Return Of The Jedimp	John K W	151.6	18
3	45.9/ 40.5/ 13.5	Mist	P.Kline	151.3	3
4	46.7/ 42.7/ 10.7	Q^2 Miro	Anders Ivner	150.7	80
5	36.9/ 26.2/ 36.9	Simple v0.4	Ian Oversby	147.6	126
6	43.7/ 41.0/ 15.4	Blur 2	Anton Marsden	146.3	29
7	34.6/ 25.6/ 39.8	Pulp v0.2	Ian Oversby	143.7	125
8	42.7/ 42.0/ 15.3	myVamp5.4	Paulsson	143.5	78
9	39.7/ 36.4/ 23.9	Dura v0.1	Ian Oversby	143.0	59
10	39.6/ 37.0/ 23.4	Yogi Bear	P.Kline	142.2	234
11	31.8/ 23.6/ 44.6	Armory II	John K W	140.0	169
12	40.7/ 41.4/ 17.8	Harmony	P.Kline	140.0	2
13	30.5/ 21.5/ 48.0	Rosebud	Beppe	139.4	703
14	33.2/ 27.2/ 39.5	Jack in the box II	Beppe Bezzi	139.2	387
15	31.0/ 23.3/ 45.8	blue flame c1/10	bjoern guenzel	138.6	14
16	37.9/ 37.9/ 24.2	Paper, Scissors and Stone	David van Dam	137.8	158
17	40.2/ 43.3/ 16.5	Goldfinch	P.Kline	137.0	179
18	37.5/ 38.4/ 24.0	T.N.T. pro	Maurizio Vittuari	136.6	748
19	25.6/ 14.9/ 59.4	ompega	Steven Morrell	136.3	145
20	36.8/ 38.0/ 25.2	airBag	Paulsson	135.6	71
21	38.0/ 40.8/ 21.2	Twister	Beppe Bezzi	135.2	484
22	37.4/ 39.9/ 22.7	Goliath	David van Dam	134.9	178
23	36.3/ 38.7/ 25.0	Scimitar 2	P.Kline	133.9	96
24	31.8/ 31.1/ 37.1	the historian	bjoern guenzel	132.5	503
25	27.8/ 23.6/ 48.7	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	132.0	1

Weekly age: 84 (90 last week, 56 the week before)
New warriors: 11 Turnover/age rate 13%
Average age: 184 (158 last week, 275 the week before)
Average score: 141 (141 last week, 133 the week before)
The top 25 warriors are represented by 12 authors: Kline with 5; Bezzi, and Oversby with 3; Marsden, Guenzel, van Dam, JKW and Paulsson with 2.

King Report: Q^2 Miro dominated the begiining of the week until come Probe then and Return of Jedimp that kept the lead until last challenge. All those warriors use the advanced qscan architecture explained in the last CW hint.

Other good warriors entering in the first spots are myVamp 5.4, see Extra extra for details, and Mist a scanner based on Blur, both reaching second spot. The hill is still changing quickly and all veteran are suffering, confined in the lower half; expecially true for Twister and the historian, often seen in the red alert zone.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
2	47.7/ 41.8/ 10.5	Q^2 Miro	Anders Ivner	153.6	1
2	44.2/ 39.6/ 16.2	myVamp5.4	Paulsson	148.9	1
7	39.0/ 36.9/ 24.0	airBag	Paulsson	141.1	1
6	40.0/ 37.6/ 22.4	Dura v0.1	Ian Oversby	142.4	1
1	31.0/ 10.3/ 58.7	Return Of The Jedimp	John K W	151.7	1
2	45.6/ 41.7/ 12.8	Mist	P.Kline	149.4	1
2	43.8/ 36.5/ 19.8	Probe	Anton Marsden	151.1	1
8	41.5/ 43.2/ 15.3	Blur 2	Anton Marsden	139.8	1
17	31.3/ 24.4/ 44.3	blue flame c1/10	bjoern guenzel	138.2	1
19	36.1/ 40.8/ 23.1	earthquake v0.1	Bjoern & Ian	131.3	1
25	31.2/ 35.7/ 33.0	Test F	Ian Oversby	126.7	1

A lot of high quality new warriors entered the high spots of the 94 hill.

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	1.7/ 1.9/ 0.2	Q^2 Miro	Anders Ivner	5.4	32
26	7.8/ 46.8/ 45.3	Jam Sponge	Dave Newton	68.9	7
26	1.2/ 1.3/ 1.3	myVamp5.3	Paulsson	4.9	109
26	35.9/ 49.6/ 14.5	pavement v0.14	bjoern guenzel	122.2	13
26	2.6/ 2.2/ 2.8	Simple v0.3	Ian Oversby	10.7	116
26	1.6/ 2.0/ 0.2	Blur 2	Anton Marsden	5.2	48
26	0.6/ 1.3/ 1.9	test me2	Beppe Bezzi	3.7	42
26	31.2/ 39.2/ 29.6	Versatility 1.5	Ross Morgan-Linial	123.3	41
26	2.2/ 1.5/ 0.1	test A	P.Kline	6.7	29
26	27.6/ 29.0/ 43.5	blue candle	bjoern guenzel	126.1	574
26	0.3/ 0.9/ 2.9	Return Of The Jedimp	John K W	3.7	71

Guenzel's blue camdle is the oldest warrior pushed off this week, and the only one worth mention, being others killed by their author or very young.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
18	37.5/ 38.4/ 24.0	T.N.T. pro	Maurizio Vittuari	136.6	748
13	30.5/ 21.5/ 48.0	Rosebud	Beppe	139.4	703
24	31.8/ 31.1/ 37.1	the historian	bjoern guenzel	132.5	503
21	38.0/ 40.8/ 21.2	Twister	Beppe Bezzi	135.2	484
14	33.2/ 27.2/ 39.5	Jack in the box II	Beppe Bezzi	139.2	387

No new entries and a loss: blue candle.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner

15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	Flurry	Anton Marsden	835		Qscan -> pwarrior
19	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
20	Blue Funk 3	Steven Morrell	766		Stone/ imp
21	Night Train	Karl Lewin	755		Replicator
22	T.N.T. pro	Maurizio Vittuari	748	*	Bomber
23	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
24	Blizzard	Anton Marsden	713		Qscan -> replicator
25	Rosebud	Beppe	703	*	Stone/ imp

Rosebud enters the Hall, pushing HeremScimitar off; T.N.T. pro begins climbing the standings. No new warrior is near entering being the historian still far from the threshold, now at more than 700 age.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	63.3/ 19.5/ 17.3	Yet 4b	Justin Kao	207.0	36
2	56.3/ 25.3/ 18.4	Sandwich Bags	Andy Nevermind	187.4	99
3	53.5/ 21.6/ 24.9	Versatility 1.5	Ross Morgan-Linial	185.3	26
4	55.2/ 26.2/ 18.6	Velveeta Shift-F	shar	184.2	34
5	50.6/ 19.0/ 30.4	(-: :-)	Ross	182.2	59
6	53.5/ 27.2/ 19.3	Saboteur v0.4k	shar	179.9	67
7	46.4/ 26.5/ 27.1	Inferno 1.0	Philip Kendall	166.3	49
8	43.6/ 27.9/ 28.5	Antivenin	Ross	159.2	98
9	31.3/ 12.7/ 55.9	Ties, Ties, Ties! (+2)	Ross	150.0	61
10	31.3/ 25.7/ 43.0	Utility Knife	Robert J. Street	137.0	69
11	23.8/ 10.7/ 65.5	Wasps 1.3	Ross	137.0	60
12	23.3/ 12.6/ 64.1	Ties and Wasps	Ross	133.9	13
13	23.8/ 14.9/ 61.3	more testing	Anonymous	132.8	20
14	20.1/ 8.6/ 71.2	Nematode v1.4b	Jonathan Stott	131.6	33
15	22.4/ 20.2/ 57.4	Fork 4/13	Christoph C. Birk	124.5	53
16	18.7/ 29.6/ 51.8	Handy Man	Robert J. Street	107.7	27
17	17.6/ 36.7/ 45.7	silken stomp	harleyQ2	98.6	9
18	6.9/ 16.8/ 76.3	Impy Stalker II	Edgar	96.9	15
19	9.3/ 24.3/ 66.3	silkbombQ2	harleyQ2	94.4	32
20	8.0/ 22.2/ 69.8	Mama's Boy	Robert J. Street	93.7	14
21	13.5/ 38.9/ 47.7	b3	harleyQ2	88.0	1
22	13.2/ 38.8/ 47.9	silken train	harleyQ2	87.6	2
23	6.7/ 36.4/ 56.9	b	harleyQ2	77.1	8
24	19.3/ 7.4/ 9.3	Centurion 2.01	Edgar	67.3	19
25	10.6/ 54.5/ 34.9	b2	harleyQ2	66.6	3

The three leaders of last week died for old age. Kao is new King with a good lead over the others even if it proved unable to stay on the 94 hill.

The Hint
Bomb dodgers
by Ian Oversby

Since the advent of P-space it has been possible to write components, specifically to beat certain warrior classes. For example, that small stone which would have been no use before as it loses really badly to papers and imps can be very good against bombers and scanners. One component, which was designed specifically to beat a certain class of warriors is the bomb dodger.

The bomb dodger is based on a very simple principle: A bomber usually produces many bombs in a regular pattern and only bombs each location once before

entering the core-clear. Therefore, if we scan for the bombs, we are far more likely to find a bomb, before that bomb finds us. Then, we can place a small component over the bomb where we are safe from attack. Here is the dodger from Wind-up Toy v0.4.

```
spt     equ     (dodge-130)

safe    DAT.F   $0,     $0

...     ...     ...     ...

dodge   JMN.F   dboot,  safe    ; monitor for one-shots
        JMZ.F   dodge,  <spt    ; 0.5c scan for bombs
dboot   ADD.AB  #3,     spt
        MOV.I   dptr+4, <spt
        MOV.I   dptr+3, <spt
        MOV.I   dptr+2, <spt
        MOV.I   dptr+1, <spt
        MOV.I   dptr,   <spt
        JMP.B   @spt
dptr    SPL.B   #0,     <-10
dloop   MOV.I   lline,  {dptr
        MOV.I   lline,  {dptr
        JMP.B   dloop,  <-13
lline   DAT.F   <-12,   <-11
```

The implementation is not very efficient but it basically scans backwards for bombs and then places a 66%c DAT clear over the bomb. The copying is done at light speed which is fairly pointless as we have already spent many cycles looking for a bomb. The additional few cycles to do 0.5c copy are not important but the larger code size makes it more likely for a bomb to hit us before we find a bomb. The location we are copied to looks like this:

```
Code:                   SPL     MOV     MOV     JMP     DAT

Core locations:          .       .       X       .       .
```

Where X is the found bomb.

The reason it scans backwards and clears backwards is that most bombers clear forwards and if we start clearing first, unless the bomber is clearing faster than we are, we are guaranteed to clear it away first. Also, most one-shots attack forwards so when we discover a one-shot attack, the fairly random value of spt will be behind the one-shot's clear and safe from attack.

If I remember correctly, this scores quite well against most bombers and one-shots like Derision and Frontwards but doesn't do very well against anything with imps in it despite setting up a perfect gate after the clear. It also has problems with stones which I'll explain later.

The problem with imps is that when the stones accompanying the imps is cleared away, the imps advance at increased speed. Now there is a race between the clear finishing and the imps reaching the clear. Against a light imp-spiral, we often lose. Also, imps are often paired with classic stones which dodgers have difficulty with.

The problem with classic stones is that they use (mostly) invisible DAT bombs and decrements. There are two possibilities: The DATs hit the same locations as the decrements, or they don't. If they do, then when we are placed over the decrement, we are usually bombed anyway and the clear becomes 33% of c. If it is offset then the other code could be bombed, the worst case being the first MOV as we are then a sitting duck. I haven't found a suitable solution to this problem.

So, to summarize the problems with this dodger:

1) It has problems with imps
2) The copying routine is wasteful
3) Classic stones (usually paired with imps) are often damaging
4) It is not effective against double stones with irregular bombing patterns

like Impfinity and Ompega (?) or single bombers with irregular patterns like Thermite.

The solution to the first two problems is easy. D-clear is very good against imps (Thank you Bjoern) and slimming the copying routine is no problem. Using D-clear also reduces problem 3 as being faster, we are more likely to find the stone before it bombs us again. Here is the bomb dodger from Dura.

```
spt     equ     (scan+130)

scan    JMZ.F   scan,   >spt    ; linear bomb-scan
        SUB.AB  #2,     spt     ; 2 seems to be good
cloop   MOV.I   >bptr,  >spt
        DJN.B   cloop,  #5
        SUB.AB  #3,     spt
bptr    JMP.B   @spt,   #gat

gat     DAT.F   #0,     #5
bomb    DAT.F   #0,     #5
        SPL.B   #0,     >gat+2667
dloop   MOV.I   bomb,   >gat
dlt     DJN.F   dloop,  >gat
```

The location that this is copied over looks like this:

```
Code:                   DAT     DAT     SPL     MOV     DJN

Core locations:          .       X       .       .       .
```

Why this is better than any other pattern, I don't know. I tried placing the SPL and the MOV over the X, all with worse results. Other differences between this and the old dodger are, this does not monitor for one-shots attacks. Then, the bomb that I find is closer to the enemy bomber.

We now no longer have a problem with imps, even Rosebud with MOV #2667, *0 style imps seems to succumb. This also scored very well against Thermite, I believe the reason is that the clear is functioning so fast, we hit Thermite before another bomb lands near us. Also, there are only three vulnerable locations for the bomb to land. If the gate is overwritten, we merely start clearing from somewhere else. This dodger, when submitted on its own actually got to number 8! However, that was when there was no paper on the hill. It no longer stands a chance on its own.

Finally, here is a complete warrior including the dodger. An earlier version reached number 1 when the hill was a little more receptive to the dodger. I'm not sure how it would do now. The p-space brain is also very susceptible to brainwashing with 0.

```
;redcode-94
;name Manfred v0.3
;author Ian Oversby
;strategy P-Spacer
;strategy v0.1  Imps/Imp gates/...
;strategy v0.2  Stronger gate
;strategy v0.3  Updated components
;kill Manfred
;assert 1

org str

plc     equ     5               ; Not really

dval    equ     800
spt     equ     (last+300)

gate1   equ     (stone-3)
impstep equ     2667
sval    equ     1900
```

```
;;-------------------------------------------------------------

str     LDP.A   #plc,   pval    ;load wins/losses
        ADD.A   pval,   check
        MOD.A   #13,    check
        JMN.A   boot,   check   ;permanent switch

res     LDP.AB  #0,     #0
sec     SNE.AB  #0,     res     ;check for loss
lost    ADD.A   #13,    pval
        SNE.AB  #1,     res     ;check for win
won     SUB.A   #13,    pval
        STP.AB  pval,   #plc
jump    JMP.B   dboot,  <-100

pval    DAT.F   $0,     $0
check   DAT.F   $7904,  $0      ; 13 / 8

;;---------------------- Dodger , 11 lines ------------------------

for 15
        DAT.F   $0,     $0
rof

dboot   MOV.I   {dptr,  <dptr
for 10
        MOV.I   {dptr,  <dptr
rof
        SPL.B   @dptr,  <-300
        MOV.I   pval,   dptr
dptr    DAT.F   #dl+1,  #dval

scan    JMZ.F   scan,   >spt    ; linear bomb-scan
        SUB.AB  #2,     spt     ; Try 2, 3 and 4
cloop   MOV.I   >bptr,  >spt
        DJN.B   cloop,  #5
        SUB.AB  #3,     spt
bptr    JMP.B   @spt,   #gat

gat     DAT.F   #0,     #5
bomb    DAT.F   >2667,  #5
        SPL.B   #0,     >gat+2667
dloop   MOV.I   bomb,   >gat    ; anti-imping dirty core-clear
dl      DJN.F   dloop,  >gat    ; Thank you Bjoern.

;;---------- Simple v0.2a with 16 process, point spiral -----------

for 20
        DAT.F   $0,     $0
rof

mimp    SPL.B   1,      <-500   ; 16 process 3 point imp
        SPL.B   1,      {-500   ; and decoy-maker :-)
        SPL.B   1,      <-500
        SPL.B   1,      <-500

        SPL.B   2,      {-500
        JMP.B   imp
        ADD.A   #impstep, -1
die     DAT.F   $0,     $0
imp     MOV.I   #-5,    impstep

boot    MOV.I   {sptr,  <sptr
for 6
        MOV.I   {sptr,  <sptr
rof
        SPL.B   @sptr,  <-300
        MOV.I   die,    sptr
        JMP.B   mimp,   <-300
sptr    DAT.F   gate+1, sval
```

```
stone   SPL.B   #95,    >-95
        SPL.B   #0,     >gate1-hit
loop    MOV.I   {0+95,  2-95
        ADD.F   stone,  loop
hit     DJN.F   loop,   <1900
last    MOV.I   gate,   }gate1
gate    DAT.F   gate-gate1+2,   >gate1

end
```

Further work:

I wanted to alter it so I placed a multi-pass clear over the bomb. This, I hoped, would give me wins against Ompega and Impfinity style imp/stones. So far, I have been unable to get it to work.

Extra Extra
myVamp 5.4
by Magnus Paulsson

Hi there, thought I should publish myVamp 5.4 now that it has been on (I mean near, that fu..ing Blur and Miro!) top for a while, and when I'm at it, I might as well write a lot of rubbish :-)

myVamp 3.7's engine was like this:

```
fang    jmp             *trap,0
next    add.f   step,fang
                mov.i   @0,@fang
                jmz.a   next,*fang
                mov.i   fang,*fang
                mov.x   *fang,*fang
                jmp             next
```

It also had a spl/spl/dat coreclear and boot.

When I had optimized 3.7 I thought that there wasen't anything more to improve, how wrong I was! After a while I learned a much better coreclear that was a lot better and faster while still as small :

```
ptr             dat.f   0,0
                dat             -20,20
                dat             -20,20
cclear  spl             #-20,20
                mov.i   @bmbp,>ptr
                mov.i   @bmbp,>ptr
                djn.b   -2,{cclear
```

I tried to get this coreclear into myVamp 4.? several times but the result was always worse than 3.7, very anoying....

Then came Stepping Stone by K.Franke which improved myVamp removing the unnessesary "mov.x *fang,*fang" (egg on my face, having a line of code that isn't realy needed!) and now Stepping Stone is the leader (competitive thinking, can't stand that someone else wrote a better vampire, but I will get past SteppingStone in the hall of fame this authum (Praing for it at least)).

Then came d-clear (my first favorite on the naming, the second is: the clear that is VERY god against imps and stones and scanners but VERY bad against papers, tctiVgaiasasbVbap?) and that was that thing that got me started with myVamp5.0. I'm sure that everyone playing (? ARE WE PLAYING ?) Corewar has some inferior complex against some of the wariors, my favorite complex is Torcht18 which beats myVamp3.7, this brings me to the second improvement in myVamp5.0, the ability to take a hit of a spl bomb (YES, myVamp now beats Torch!!), this give 4-5 points against my test series (se below)!

```
fang            jmp             *trap+st,-st
```

```
check           dat.f   0,0                             ;*******
                dat.f   0,0
ptr             dat.f   0,100
                dat.f   0,0
                dat.f   0,0
                jmp             cclear
next            add.f   step,fang               ;The engine from SteppingStone
start           mov.i   @0,>fang
                jmz.a   next,*fang
                mov.i   <check,*fang    ;*******
stop            jmn.b   next,>check             ;*******
step            spl             #st,-st-1               ;d-clear
cclear          mov.i   bmb,>ptr
                djn.f   cclear,>ptr
```

Look at the lines marked with *******, normal operation is timed to work like normal, if there is a hit with a spl bomb the timing will be off and the d-clear will be executed. There is some thought put into the engine and clear that makes the d-clear execute if a djn stream overruns the code.

The above warior(?) "drops like a stone" against paper, because of the d-clear. This made me put in a spl/spl/dat clear that is only run when myVamp has catched something. This increases the score against papers and lowers it against stones. Then I had some trouble with one-shot scanners and I added a decoy maker since there is a lot of code to boot. I still don't lose to q-scans but my luck might run out ...

To test my wariors I've written the ugglies unix script ever (I'll mail it to anyone who wants a realy god laugh) that runs 100 battles against the 17 wariors below.

Armory-A5	Impfinityv4g1	SteppingStone	Twister	
Chameleon	Jackinthebox	T.N.T..tx	YogiBear	thehistorian
Frontwardsv2	NightTrain	ThermiteII	bluecandle	
GemOfTheOcean	Rosebud	Torcht18	stoninc	

```
myVamp 5.4              :       154.5
Stepping stone  :       145
myVamp3.7               :       133
```

And finaly after all the talk about how good I am here is myVamp5.4: (If you did understand any of the above congratulations, I reread it and it's not very pretty with a lot of weird () comments).

-Magnus Paulsson

****

```
;redcode-94
;name myVamp5.4
;author Paulsson
;strategy 5.0, Chasing SteppingStone
;strategy 5.1, Spl/Spl/Dat CoreClear
;strategy 5.2 small changes, + some points...
;strategy 5.3&4 Decoy, small changes
;strategy July, 1996
;kill myVamp
;for Planar, vamp,scan,coreclear,decoy(?)
st              equ             912
org decoy
trap            jmp     pit,#0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
```

```
fang            jmp     *trap+st,-st    ;hit
check           dat.f   0,0
                dat.f   0,0
ptr             dat.f   0,100
                dat.f   -20,0
                dat.f   0,0
                jmp     cclear
next            add.f   step,fang
start           mov.i   @0,>fang                ;scan
                jmz.a   next,*fang
                mov.i   <check,*fang
stop            jmn.b   next,>check
step            spl     #st,-st-1
cclear          mov.i   bmb,>ptr
                djn.f   cclear,>ptr
                dat.f   0,0
                dat.f   0,0                             ;hit
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,0
                dat.f   0,18
bmb             dat.f   0,18

for 32
                dat.f   0,0
rof

ptr2            dat.f   0,20
                dat.f   0,20            ;hit
                dat.f   -10,20
                dat.f   -10,20
cclear2         spl     #4000,20
                mov.i   @2,>ptr2
                mov.i   @1,>ptr2
                djn.b   -2,{cclear2
                dat.f   0,0
                dat.f   0,0
stop2           jmp     cclear2-stop,stop

offsA           equ    (start-4000)
offsB           equ    (start-2005)
stepD           equ    127

decoy           mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                mov    <offsA+decoy*stepD,{offsB+decoy*stepD
                jmp     start

pit             mov.i   stop2,@stop2
                spl     #0,0
for 10
                spl     #0,0
rof
```

From bremermr@ecn.purdue.edu Tue Jul 23 23:31:12 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
        id AA19157; Tue, 23 Jul 96 23:31:12 +0200
Received: from cartoon.ecn.purdue.edu (cartoon.ecn.purdue.edu [128.46.147.13]) by nez-per
ce.inria.fr (8.7.1/8.7.1) with ESMTP id XAA01709 for <Damien.Doligez@inria.fr>; Tue, 23 J
ul 1996 23:30:58 +0200 (MET DST)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
        by cartoon.ecn.purdue.edu (8.7.5/3.8.1davy)
        for delivery to "Damien.Doligez@inria.fr"
        id QAA16938; Tue, 23 Jul 1996 16:30:22 -0500 (EST)
Message-Id: <199607232130.QAA16938@cartoon.ecn.purdue.edu>
Date: Tue, 23 Jul 1996 16:30:22 -0500 (EST)
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: core warrior 39
Status: R

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
  '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 39 July 22, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/   ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth   ;Pizza
http://pauillac.inria.fr/~doligez/corewar/   ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

The '94 draft hill is quiet this week, as Pizza was (is?) down. My mail is currently bouncing off the server. Hopefully the problems will be fixed soon and service restored. All the Stormking hills are open and with noticeably faster response times. You can satisfy your corewar craving there. Enjoy.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100

minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	39.6/	25.6/	34.8	Simple v0.4b	Ian Oversby	153.7	12
2	29.3/	13.1/	57.6	Return Of The Jedimp	John K W	145.4	49
3	41.2/	37.8/	21.0	Probe	Anton Marsden	144.7	61
4	33.2/	23.7/	43.1	Armory II	John K W	142.8	200
5	43.4/	45.8/	10.8	Q^2 Miro	Anders Ivner	141.1	111
6	39.4/	38.7/	21.9	Yogi Bear	P.Kline	140.1	265
7	41.4/	42.8/	15.8	Goldfinch	P.Kline	140.1	2
8	41.5/	43.2/	15.4	Mist	P.Kline	139.8	1
9	41.6/	43.6/	14.8	Blur 2	Anton Marsden	139.7	60
10	33.1/	28.1/	38.8	Pulp v0.2	Ian Oversby	138.2	156
11	40.7/	43.6/	15.7	myVamp5.4	Paulsson	137.7	109
12	40.1/	43.4/	16.5	Earthquake v0.2	Bjoern & Ian	136.8	18
13	30.6/	24.4/	45.0	Rosebud	Beppe	136.7	734
14	37.8/	39.4/	22.8	T.N.T. pro	Maurizio Vittuari	136.2	779
15	26.4/	17.0/	56.6	ompega	Steven Morrell	135.8	176
16	37.1/	39.3/	23.6	Dura v0.1	Ian Oversby	135.0	90
17	29.9/	26.9/	43.2	blue flame c1/10	bjoern guenzel	133.0	45
18	31.5/	30.8/	37.7	Jack in the box II	Beppe Bezzi	132.1	418
19	36.2/	40.7/	23.2	Paper, Scissors and Stone	David van Dam	131.6	189
20	36.8/	43.3/	19.9	Twister	Beppe Bezzi	130.3	515
21	35.4/	40.9/	23.7	airBag	Paulsson	129.9	102
22	31.7/	33.4/	34.9	the historian	bjoern guenzel	129.9	534
23	35.2/	40.7/	24.1	Scimitar 2	P.Kline	129.7	127
24	36.9/	46.2/	16.9	Harmony	P.Kline	127.5	26
25	37.3/	49.4/	13.3	test mef2	Beppe Bezzi	125.2	9

Weekly age: 31 (84 last week, 90 the week before)
New warriors: 6 Turnover/age rate 19%
Average age: 191 (184 last week, 158 the week before)
Average score: 137 (141 last week, 141 the week before)
The top 25 warriors are represented by 11 authors: Kline with 5; Bezzi, and Oversby with 4; Guenzel with 3; JKW, Marsden, and Paulsson with 2.

King Report: The top 3 warriors have all been vying for the top slot, but Ian’s new Simple version 0.4b is slightly more effective than the previous version giving Oversby a commanding 8 point lead over second place. Other warriors seen on the top of the hill include Mist (quite a few times) and Q^2 Miro and Blur 2 (once each).

Most of the veterans are in the middle of the pack. Twister and the historian have not recovered and are in danger of being pushed off. Armory gets a nice boost since last week moving up to the 4th position.

Question of the day: Is Macrae going to put a Q^2 scan on Thermite and take up space on the hill for months to come? Or has someone already beat him to it?

---

94 - What’s New

#	%W /	%L /	%T	Name	Author	Score	Age
6	42.1/	42.3/	15.6	Goldfinch	P.Kline	141.9	1
8	41.5/	43.2/	15.4	Mist	P.Kline	139.8	1
1	36.4/	26.0/	37.5	Simple v0.4b	Ian Oversby	146.8	1
18	38.9/	44.1/	16.9	Harmony	P.Kline	133.7	1
25	38.0/	49.9/	12.1	test mef2	Beppe Bezzi	126.1	1
13	41.4/	42.2/	16.4	Earthquake v0.2	Bjoern & Ian	140.6	1

Goldfinch was hanging around in the middle of the pack until Paul decided to replace it. The new warrior is holding its place well in the top ten.

---

94 - What’s No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	1.8/	2.1/	0.0	Goldfinch	P.Kline	5.5	206

26	1.3/	1.5/	1.2	Harmony	P.Kline	5.1	8
26	1.6/	1.7/	0.7	Mist	P.Kline	5.4	30
26	1.2/	1.3/	1.6	Simple v0.4	Ian Oversby	5.1	146
26	24.0/	23.7/	52.3	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	124.4	2
26	33.5/	42.4/	24.1	Goliath	David van Dam	124.7	181

Kline revamps three of his warriors while Oversby updates sometime-king Simple. The only real loss is van Dam’s Goliath.

---

94 - What’s Old

#	%W /	%L /	%T	Name	Author	Score	Age
14	37.8/	39.4/	22.8	T.N.T. pro	Maurizio Vittuari	136.2	779
13	30.6/	24.4/	45.0	Rosebud	Beppe	136.7	734
22	31.7/	33.4/	34.9	the historian	bjoern guenzel	129.9	534
20	36.8/	43.3/	19.9	Twister	Beppe Bezzi	130.3	515
18	31.5/	30.8/	37.7	Jack in the box II	Beppe Bezzi	132.1	418

No new entries. No losses.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	Flurry	Anton Marsden	835		Qscan -> pwarrior
19	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
20	T.N.T. pro	Maurizio Vittuari	779	*	Bomber
21	Blue Funk 3	Steven Morrell	766		Stone/ imp
22	Night Train	Karl Lewin	755		Replicator
23	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
24	Rosebud	Beppe	734	*	Stone/ imp
25	Blizzard	Anton Marsden	713		Qscan -> replicator

T.N.T. pro moves up two spots while Rosebud climbs to 24th position.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	58.3/	20.9/	20.8	Yet 4b	Justin Kao	195.8	48
2	45.5/	16.5/	38.0	(-: :-)	Ross	174.6	71
3	49.6/	29.0/	21.5	Velveeta Shift-F	shar	170.1	46
4	45.4/	23.2/	31.4	Versatility 1.5	Ross Morgan-Linial	167.6	38
5	46.1/	26.2/	27.7	Saboteur v0.4k	shar	165.9	79

6	40.3/ 27.8/ 31.9	Inferno 1.0	Philip Kendall	152.8	61
7	29.5/ 11.0/ 59.5	Microsoft v1.0	Justin Kao	148.0	4
8	22.7/ 10.7/ 66.7	Ties, Ties, Ties! (+2)	Ross	134.6	73
9	26.2/ 23.2/ 50.6	Utility Knife	Robert J. Street	129.2	81
10	19.8/ 13.8/ 66.4	HAL 204	Justin Kao	125.7	1
11	14.0/ 8.5/ 77.6	Wasps 1.3	Ross	119.5	72
12	15.0/ 10.8/ 74.2	more testing	Anonymous	119.2	32
13	11.9/ 6.9/ 81.2	Nematode v1.4e	Jonathan Stott	116.8	12
14	13.2/ 9.6/ 77.3	Ties and Wasps	Ross	116.7	25
15	11.5/ 7.0/ 81.4	Nematode v1.4b	Jonathan Stott	116.0	45
16	16.0/ 16.9/ 67.1	Fork 4/13	Christoph C. Birk	115.1	65
17	11.6/ 27.7/ 60.8	Handy Man	Robert J. Street	95.5	39
18	2.5/ 16.9/ 80.5	Mama's Boy	Robert J. Street	88.2	26
19	11.3/ 35.2/ 53.6	silken stomp	harleyQ2	87.4	21
20	3.5/ 19.8/ 76.6	silkbombQ2	harleyQ2	87.3	44
21	3.3/ 21.4/ 75.2	Snail	Edgar	85.2	10
22	10.1/ 36.8/ 53.1	silken train	harleyQ2	83.4	14
23	6.4/ 38.6/ 55.0	b3	harleyQ2	74.1	13
24	3.8/ 33.8/ 62.4	b	harleyQ2	73.7	20
25	3.2/ 33.8/ 63.0	abc.i	harleyQ2	72.6	2

I see a lot of familiar names on the beginner's hill. Is Kao implying the Microsoft programs are really just big viruses with his warrior Microsoft v1.0 or is he predicting Gates and Co. will dominate KotH as the do the desktop? (-: :-), very cute.

The Hint

In a weak attempt to gain a foothold on the hill, I thought I would develop a new type of p-brain (pea-brain as it turns out). I usually use the basic switch on loss or tie p-logic like Chameleon's.

```
res     ldp.ab  _RES,   #0
str     ldp.a   _STR,   str1    ;load strategy in use
        seq.ab  #1,     res     ;check result
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure result
win     stp.ab  str1,   _STR
str1    jmp     @0,     strat1
        dat     0,      strat2
```

The p-logic is quick and doesn't self destruct when brainwashed. Quickness is especially important now with the new Q^2 quickscans flooding the hill. The downside is no matter what _effective_ strategy you are using, a spurious loss will switch you to a less effective one. It may take even another loss to return to the optimal strategy if you are switching more than one component. To combat this phenomena, I developed a switch on two consecutive tie/loss combinations. Strategies will only change on a loss loss, tie loss, loss tie, or tie tie.

A loss or tie will advance the table pointer contained in _STRAT. If the _STRAT pointer is 0 or 2, that strategy will get its 'second chance'. If the index is 1 or 3, strategies will switch. A win should reset the pointer to either 0 or 3 depending on what strategy is currently in use. I do this by taking the index modulo 2 and subtracting the result from the current index.

```
_RES EQU #0
_STRAT EQU #1

result  ldp.ab _RES, wlt
strat   ldp.a _STRAT, choice
wlt     sne.ab #1, #0
        jmp win                 ; win has occured
        add.a #1, choice        ; loss or tie has occured
        mod.a #4, choice
        stp.a choice, _STRAT
choice  jmp @0, strat1          ; _STRAT = 0, choose strat1
        nop 0, strat1           ; _STRAT = 1, choose strat1
        nop 0, strat2           ; _STRAT = 2, choose strat2
        nop 0, strat2           ; _STRAT = 3, choose strat2
```

```
win     mov.ab choice, #0       ; reset index becuase of win
        mod.ab #2, win
        sub.ba win, choice
        jmp choice-1

strat1  jmp 0
strat2  jmp 0
```

All in all, the brain is much bigger (8 vs. 15) and a bit slower. But I thought it had the smarts necessary to defeat non-pspace programs quite handily. However this wasn't the case. When switching the components in Chameleon (mod 5 bomber and .66c scanner), the new logic performed similarly or worse! The optimal strategy would win for awhile, but the occasional loss tie combination would cause it to switch. The secondary strategy (being a somewhat general purpose strategy) would not switch out as fast due to the new switching rules. This seemed to balance the extra wins gained. I believe the p-logic would be much more effective if the secondary strategy is very specialized against one type of program and losses quickly against everything else. But don't take my word for it. Use your nifty cut and paste and try a few components.

Extra Extra
by Beppe Bezzi

Here is Jack in the box II, there is nothing really innovative in it.
The bomber is in practice the same published in Twister, there is a little variation in the bomb pattern, but nothing worth mention.
The replicator is a part of that in the old Jack, just booted away to have a faster reaction time against qscanners, even if not fast enough against Q^2 (It would need a lighter paper)
The switcher is exacltly the same of old Jack, no need to change it being safe and brainwash resistant.

Overall I don't expect it to live much longer than old version, even if nobody knows :-)

```
;redcode-94
;name Jack in the box II
;author Beppe Bezzi
;kill Jack
;strategy Same old strategy, improved components
;strategy p-switching Tornado and silk

;assert CORESIZE == 8000
org     think                   ;v 2.03

PIN     3371

_RES    equ     #0
_STR    equ     #1              ;more or less 500 :-)

step    equ     -45
DIST
away    equ     4000            ;more or less 3900 :-)
gate1   equ     (gate-4)

A0      equ     3488
A1      equ     1860
A2      equ     3740

marcia

        spl     1,      <300    ;\
        spl     1,      <400    ;-\ generate 15
        spl     1,      <500    ;-/ parallel processes
        mov     -1,     0       ;/

        mov     <bootslk,{bootslk
bootslk spl     4000,   silk+15       ;more or less 4000
```

```
silk    spl     @0,     }A0     ;split
        mov.i   }-1,    >-1     ;copy
        mov.i   bomb1,  >123    ;bombing
silk2   spl     @0,     }A1     ;split
        mov.i   }-1,    >-1     ;copy
        mov.i   bomb1,  >1001   ;bombing
        mov.i   bomb ,  }2042   ;A-indirect bombing
        mov.i   {silk2, <silk3  ;copy
silk3   jmp     @0,     >A2     ;jmp new copy
bomb    dat.f   >2667,  >5334   ;anti-imp bomb
bomb1   dat     >1,     }1      ;anti clear bomb

for 12
        dat     0,0
rof

think
res     ldp.ab  _RES,   #0
str     ldp.a   _STR,   str1    ;load strategy in use
        sne.ab  #0,     res     ;check result
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure result
win     stp.ab  str1,   _STR
str1    jmp     @0,     tornado
        dat     0,      marcia


for 12
        dat     0,0
rof

tornado
        mov     gate,   }pt2
        mov     gate,   *pt2
        mov     last,   <pt1
        spl     1,      1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1
        mov     {pt1,   <pt1

go      djn.b   @pt1,   #2      ;start Tornado
        mov     gate,   <pt1


pt1     div.f   #last,  #last+1+away
pt2     div.f   #gate+away-5,#1


;--- Tornado 3.8
for MAXLENGTH-CURLINE-14
        dat     0,0
rof

start

        dat     -25,    last-gate1+5
warr
gate
        dat     -25,    last-gate1+15
bombs   spl     #(step+1),  -step           ;hit spl
start1  sub     incr,   @b1
stone   mov     (0*step)+jump+1,*(1*step)+jump
b2      mov     bombs,  @stone
b1      mov     bombm,  *stone
jump    jmz.b   start1, #0          ;hit by spl
clr     mov     @djmp,  >gate1
        mov     @djmp,  >gate1
djmp    djn.b   clr,    {bombs
```

```
incr    dat     >-3*step,>-3*step
last
bombm   dat     <1,     {1


end
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@comp.vuw.ac.nz>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.reston.ans.net!nntp.coast.net!news.kei.com!newsfeed.internetmci.com!in3.uu.net!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden Mon Jul 29 17:13:23 1996
Article: 5689 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.reston.ans.net!nntp.coast.net!news.kei.com!newsfeed.internetmci.com!in3.uu.net!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@news.comp.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 40
Date: Mon, 29 Jul 1996 21:07:24 +1200
Organization: Victoria University of Wellington, New Zealand.
Lines: 499
Message-ID: <Pine.SOL.3.91.960729210653.16303A-100000@regent.comp.vuw.ac.nz>
NNTP-Posting-Host: regent.comp.vuw.ac.nz
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
X-Sender: amarsden@regent.comp.vuw.ac.nz

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d      b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
  '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 40 July 29, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Greetings.

Not much action this week - only 7 challenges (there were actually more but the Hill was reset for some reason). There were quite a few challenges in the weekend though so not everyone's asleep.

This issue contains a hint list and Probe.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000

max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	38.4/ 24.0/ 37.6	Simple v0.4b	Ian Oversby	152.8	19
2	45.6/ 39.4/ 15.0	Blur 2	Anton Marsden	151.7	67
3	46.3/ 43.0/ 10.7	Q^2 Miro	Anders Ivner	149.5	118
4	42.3/ 36.4/ 21.3	Probe	Anton Marsden	148.3	68
5	43.9/ 40.0/ 16.1	Goldfinch	P.Kline	147.9	9
6	44.2/ 41.9/ 14.0	Mist	P.Kline	146.5	8
7	28.7/ 12.0/ 59.3	Return Of The Jedimp	John K W	145.5	56
8	42.7/ 42.4/ 15.0	myVamp5.4	Paulsson	143.0	116
9	33.0/ 23.2/ 43.9	Armory II	John K W	142.8	207
10	33.8/ 25.7/ 40.5	Pulp v0.2	Ian Oversby	141.9	163
11	41.8/ 42.2/ 16.1	Earthquake v0.2	Bjoern & Ian	141.3	25
12	39.5/ 37.7/ 22.9	Yogi Bear	P.Kline	141.3	272
13	41.4/ 42.0/ 16.7	Harmony	P.Kline	140.7	33
14	38.9/ 37.5/ 23.6	Dura v0.1	Ian Oversby	140.4	97
15	38.6/ 38.0/ 23.4	T.N.T. pro	Maurizio Vittuari	139.3	786
16	30.9/ 23.1/ 46.0	blue flame c1/10	bjoern guenzel	138.7	52
17	30.2/ 22.1/ 47.7	Rosebud	Beppe	138.3	741
18	32.9/ 27.6/ 39.6	Jack in the box II	Beppe Bezzi	138.2	425
19	38.2/ 39.2/ 22.6	Paper, Scissors and Stone	David van Dam	137.3	196
20	25.9/ 15.3/ 58.8	ompega	Steven Morrell	136.4	183
21	30.8/ 25.5/ 43.6	Forked Lightning 2.0	Philip Kendall	136.2	1
22	36.4/ 38.4/ 25.2	airBag	Paulsson	134.4	109
23	37.5/ 42.0/ 20.6	Twister	Beppe Bezzi	133.0	522
24	36.1/ 39.5/ 24.4	Scimitar 2	P.Kline	132.8	134
25	29.1/ 29.4/ 41.5	unrequited love	kafka	128.9	2

Weekly age: 7 (31 last week, 84 the week before)
New warriors: 2 Turnover/age rate 29%
Average age: 176 (191 last week, 184 the week before)
Average score: 141 (137 last week, 141 the week before)
The top 25 warriors are represented by 13 authors: Kline with 5; Oversby with 4; Bezzi with 3; Guenzel, JKW, Marsden, and Paulsson with 2.

King Report: Simple v0.4b and Blur 2 were both on top this week.
Kendall makes an appearance on the ’94 Hill and kafka’s warrior will soon disappear. The only significant loss was the historian. What more can I say? This week wasn’t very exciting.

---

94 - What’s New

#	%W / %L / %T	Name	Author	Score	Age
25	27.4/ 30.3/ 42.3	unrequited love	kafka	124.5	1
16	29.9/ 26.2/ 43.9	Forked Lightning 2.0	Philip Kendall	133.7	1

---

94 - What’s No More

#	%W / %L / %T	Name	Author	Score	Age
26	37.6/ 49.8/ 12.5	test mef2	Beppe Bezzi	125.4	10
26	1.6/ 1.6/ 0.8	Nephrite	John K W	5.6	2
26	1.8/ 2.1/ 0.0	Nephrite	John K W	5.5	2
26	29.4/ 35.7/ 34.9	the historian	bjoern guenzel	123.1	538
26	36.1/ 53.8/ 10.1	dodger component	M R Bremer	118.5	2
26	0.4/ 0.5/ 3.1	unrequited love	kafka	4.2	2
26	36.9/ 50.8/ 12.4	pavement lb0.1+400	bjoern guenzel	123.0	5

the historian departs.

---

94 - What’s Old

#	%W / %L / %T	Name	Author	Score	Age
15	38.6/ 38.0/ 23.4	T.N.T. pro	Maurizio Vittuari	139.3	786
17	30.2/ 22.1/ 47.7	Rosebud	Beppe	138.3	741

```
23  37.5/ 42.0/ 20.6                  Twister          Beppe Bezzi 133.0  522
18  32.9/ 27.6/ 39.6        Jack in the box II         Beppe Bezzi 138.2  425

No new entries, one loss.
```

```
HALL OF FAME
* means the warrior is still active.

Pos    Name                   Author          Age     Strategy
 1  Thermite II            Robert Macrae     2262    Qscan -> bomber
 2  Impfinity v4g1         Planar            1993    Stone/ imp
 3  Jack in the box        Beppe Bezzi       1620    P-warrior
 4  Tornado 3.0            Beppe Bezzi       1567    Bomber
 5  Torch t18              P.Kline           1539    Bomber
 6  Chameleon              Myer R Bremer     1437    P-warrior
 7  Frontwards v2          Steven Morrell    1420    One shot scanner
 8  Evol Cap 6.6           John Wilkinson    1299    Imp / stone
 9  quiz                   Schitzo           1262    Scanner/ bomber
10  T.N.T.                 Maurizio Vittuari 1204    Bomber
11  Grilled Octopus v0.5   David Boeren      1154    P-warrior
12  Hazy Shade II          John Wilkinson    1102    P-warrior
13  Stepping Stone         Kurt Franke       1049    Qscan -> Vampire
14  Iron Gate 1.5          Wayne Sheppard     926    CMP scanner
15  Agony II               Stefan Strack      912    CMP scanner
16  Barrage                Anton Marsden      876    Qscan -> replicator
17  Blue Funk              Steven Morrell     869    Stone/ imp
18  Flurry                 Anton Marsden      835    Qscan -> pwarrior
19  Thermite 1.0           Robert Macrae      802    Qscan -> bomber
20  T.N.T. pro             Maurizio Vittuari  786 *  Bomber
21  Blue Funk 3            Steven Morrell     766    Stone/ imp
22  Night Train            Karl Lewin         755    Replicator
23  Rosebud                Beppe              741 *  Stone/ imp
24  Mirage 1.5             Anton Marsden      736    Scanner/ bomber
25  Blizzard               Anton Marsden      713    Qscan -> replicator

Rosebud moves up a slot.
```

```
Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
   coresize: 8000
  max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    maximum age: At age 100, warriors are retired.
   rounds fought: 200
  instruction set: ICWS '94 Draft

 #   %W /  %L /  %T                      Name              Author Score  Age
 1  59.4/ 23.3/ 17.3                   Yet 4b          Justin Kao 195.6   54
 2  51.4/ 26.4/ 22.2                 Ick v1.5          Justin Kao 176.4    3
 3  51.2/ 26.6/ 22.2                 Ick v1.5          Justin Kao 175.8    4
 4  51.6/ 28.2/ 20.3          Velveeta Shift-F               shar 175.0   52
 5  45.9/ 20.7/ 33.4                 (-:  :-)               Ross 171.2   77
 6  47.3/ 28.6/ 24.1            Saboteur v0.4k               shar 166.0   85
 7  45.4/ 24.9/ 29.7           Versatility 1.5  Ross Morgan-Linial 165.8   44
 8  42.4/ 28.0/ 29.6               Inferno 1.0      Philip Kendall 156.7   67
 9  31.9/ 14.0/ 54.2            Microsoft v1.0          Justin Kao 149.8   10
10  25.8/ 14.2/ 60.0    Ties, Ties, Ties! (+2)               Ross 137.4   79
11  22.0/ 11.5/ 66.5         Ties and Wasps -s  Ross Morgan-Linial 132.6    1
12  23.2/ 14.2/ 62.6            Ties and Wasps               Ross 132.2    2
13  20.2/ 10.2/ 69.7                 Wasps 1.3               Ross 130.2   78
14  26.5/ 28.1/ 45.4             Utility Knife    Robert J. Street 124.9   87
15  16.8/ 10.7/ 72.5            Nematode v1.4b      Jonathan Stott 122.9   51
16  16.5/ 10.6/ 72.9            Nematode v1.4e      Jonathan Stott 122.3   18
17  18.7/ 15.7/ 65.7              more testing           Anonymous 121.7   38
18  18.1/ 19.9/ 62.0                 Fork 4/13   Christoph C. Birk 116.2   71
19  15.3/ 38.2/ 46.4              silken stomp            harleyQ2  92.5   27
20   6.5/ 22.6/ 70.8                Mama's Boy    Robert J. Street  90.4   32
```

21	12.3/ 34.5/ 53.3	Handy Man	Robert J. Street	90.1	45
22	7.8/ 25.8/ 66.4	silkbombQ2	harleyQ2	89.7	50
23	5.9/ 28.5/ 65.5	Snail	Edgar	83.4	16
24	10.6/ 38.3/ 51.1	b3	harleyQ2	82.9	19
25	11.5/ 40.4/ 48.1	silken train	harleyQ2	82.5	20

Top 25 Averages:
27.4/ 23.4/ 49.3 131.4 41

An average of 49% draws on this Hill indicates there are a lot of papers/imps on it which explains why Yet 4b (qscan -> core clear) is doing so well. A one shot scanner could also obtain a good ranking.

The Hint List (001-040)

This list was created so that people could easily find what they wanted (and more) without reading every issue of CW. It may be incomplete in parts but does contain most hints/warriors/articles.

001. Replicators (part 1): basic silk
[Paperone by Beppe Bezzi]

002. Improving beginner warriors: code compression
[Mutagen by Scott Manley]

003. Replicators (part 2): timescape silk, optimising constants (cdb)
[paper01o by Beppe Bezzi]

004. Mutagen improved again (improved scanner)
Scanners: JMZ, CMP
[Iron Gate by Wayne Sheppard]
[Agony II by Stefan Strack]
Continuously launching imp spirals

005. PSpace basics, brainwashing
[juliet and paper by Myer Bremer/Beppe Bezzi]
[Thermite 1.0 by Robert Macrae]
[Phq by Maurizio Vittuari]

006. Bombers
[Blue Funk 3 by Steven Morrell]
[juliet storm by Myer Bremer]
Mutagen improved yet again (pspaced with small bomber)
Continuously launching imp spirals

007. Bombers: bomb types
[Ike v.21 by Paul Kilroy]
Continuously launching imp spirals
[Impfinity v3i by Planar]
QScans: where to scan, what order to scan, how to attack, area to attack

008. Imp steps
Vampires
[myVamp v3.7 by Magnus Paulsson]

009. Improving beginner warriors
[Provascan by Beppe Bezzi]
[La Bomba by Beppe Bezzi]
[A5 by John Wilkinson]
CDB tutorial (part 1)

010. Improving beginner warriors: (no) boot, anti-imp clears
CDB tutorial (part 2)

011. Bombing/scanning steps
[Impfinity v4g1 by Planar]

012. Scanning
[Taking Names by Paul Kline]

[seventyfive by Anders Ivner]
[Porch Swing by Randy Graham]
CDB tutorial (part 3)

013. Anti-imp clears

014. Old warriors vs. current warriors
CDB tutorial (part 4)

015. Self bombing -> clear

016. Defence: self splitting, adding imps, boot and decoy, active decoys, PSpace, DJN defence.

017. Spiral clears, 100% C DJN stream
CDB tutorial (part 5)

018. Bomb effectiveness: SPL, SSJ, S..S, SPL -1, SPL/MOV, etc.

019. Scanners
[Memories by Beppe Bezzi]

020. Handshaking

021. How to live longer: score distribution, boot, bombs, brainwashing, imp protection, QScans
[Jack in the box by Beppe Bezzi]

022. JMZ scans: A/B/I

023. Wilkinson’s beginner’s benchmark (warrior review)

024. [Thermite II by Robert Macrae]

025. [Tornado 3.0 by Beppe Bezzi]
[Stepping Stone by Kurt Franke]

026. Switching techniques and brainwash recovery
[Grilled Octopus v0.5 by David Boeren]

027. Multi boot routines
[Grilled Octopus v0.7 by David Boeren]
Advanced benchmark scores

028. Bomber killers

029. Imps (launching)
[Scanny Boy by David van Dam]

030. Imp killing
-F numbers

031. [Rosebud by Beppe Bezzi]
[Flurry by Anton Marsden]

032. [P-clear by Paul Kline]
mopt tutorial

033. Decoy makers
[stoninc by Maurizio Vittuari]

034.

035. A new p-switcher
[Twister by Beppe Bezzi]

036. Mirage/Blur scanner series

037. QScans: fast response
[Q^2 by Anders Ivner]

Mirrored imps

038. Bomb dodgers
[Manfred v0.3 by Ian Oversby]
[myVamp 5.4 by Magnus Paulsson]

039. A new p-brain
[Jack in the Box II by Beppe Bezzi]

040. THIS HINT LIST
[Probe by Anton Marsden]

Extra Extra
Probe
by Anton Marsden

Probe is a fast response QScan similar to Q^2 followed by the Tornado bomber. It took me a while to put the QScan together but then I just grabbed Tornado from Twister, made a few modifications, named it, and it was complete.

```
;redcode-94
;name Probe
;author Anton Marsden
;strategy QScan -> Tornado
;assert CORESIZE==8000
;kill Probe

ORG start

QB EQU (start+400)
QS EQU 200
QD EQU 100
COUNT EQU 6

GAP EQU 15
REP EQU 6

         dat    10*QS, 2*QS ; can get 21 values from this table
table:   dat     4*QS, 1*QS ; and can also use the initial value
         dat    23*QS, 3*QS ; of fnd
qbomb:   jmp    -200,GAP
qinc:    dat    GAP,-GAP

tab:     add.a  table,table
slow:    add.ab @tab,fnd
fast:    add.b  *tab,@slow
which:   sne.i  datz,@fnd
         add.ab #QD,fnd

         mov.i  qbomb,@fnd
fnd:     mov.i  -GAP/2,@QB
         add.ba fnd,fnd
         mov.i  qbomb,*fnd
         add.f  qinc,fnd
         mov.i  qbomb,@fnd
         djn.b  -3,#REP
         jmp    boot,}-300

start:
         seq.i  QB+QS*0,QB+QS*0+QD
         jmp    which,}QS*13 ; qinc+GAP

         seq.i  QB+QS*1,QB+QS*1+QD
         jmp    fast,}QB+QS*1+QD/2
         seq.i  QB+QS*2,QB+QS*2+QD
         jmp    fast,{tab
         seq.i  QB+QS*3,QB+QS*3+QD
         jmp    fast,}tab

         seq.i  QB+QS*13,QB+QS*13+QD
```

```
         jmp    fast,{fast

         seq.i  QB+QS*4,QB+QS*4+QD
         jmp    >fast,}QB+QS*4+QD/2
         seq.i  QB+QS*5,QB+QS*5+QD
         jmp    slow,}QB+QS*5+QD/2
         seq.i  QB+QS*6,QB+QS*6+QD
         jmp    slow,{tab
         seq.i  QB+QS*7,QB+QS*7+QD
         jmp    slow,}tab

         seq.i  QB+QS*10,QB+QS*10+QD
         jmp    >fast,<tab
         seq.i  QB+QS*11,QB+QS*11+QD
         jmp    slow,<tab
         seq.i  QB+QS*12,QB+QS*12+QD
         djn.f  slow,tab

         seq.i  QB+QS*23,QB+QS*23+QD
         jmp    >fast,>tab
         seq.i  QB+QS*24,QB+QS*24+QD
         jmp    slow,>tab

         seq.i  QB+QS*17,QB+QS*17+QD
         jmp    slow,{fast

         seq.i  QB+QS*8,QB+QS*8+QD
         jmp    <fast,}QB+QS*8+QD/2
         seq.i  QB+QS*9,QB+QS*9+QD
         jmp    tab,}QB+QS*9+QD/2

         seq.i  QB+QS*15,QB+QS*15+QD
         jmp    tab,<tab
         seq.i  QB+QS*16,QB+QS*16+QD
         jmp    tab,{tab
         seq.i  QB+QS*20,QB+QS*20+QD
         djn.f  <fast,tab
         seq.i  QB+QS*21,QB+QS*21+QD
         jmp    tab,{fast
         seq.i  QB+QS*22,QB+QS*22+QD
         djn.f  tab,tab
         seq.i  QB+QS*27,QB+QS*27+QD
         jmp    <fast,>tab
         seq.i  QB+QS*28,QB+QS*28+QD
         jmp    tab,>tab

         seq.i  QB+QS*30,QB+QS*30+QD
         jmp    tab,}tab

; TORNADO BOMBER

step    equ     -45
away    equ     4000 ; not really
gate1   equ     (gate-4)

boot
   mov     gate,   }pt2
   mov     gate,   *pt2
pt1 mov    last,   <pt2
   spl     1,      1
   mov     {pt1,   <pt2
   mov     {pt1,   <pt2
   mov     {pt1,   <pt2
   mov     {pt1,   <pt2
   mov     {pt1,   <pt2

go      djn.b   @pt2,   #2      ;start Tornado
   mov     gate,   <pt2
pt2     div.f   #gate+away-5,#last+1+away
   dat     -25,    last-gate1+5
```

```
warr
gate
   dat     -25,    last-gate1+15
bombs   spl     #(step+1),  -step           ;hit spl
start1  sub     incr,   @b1
stone   mov     (0*step)+jump,*(1*step)+jump
b2      mov     bombs,  @stone
b1      mov     bombm,  *stone
jump    jmz.b   start1, #0          ;hit by spl
clr     mov     @djmp,  >gate1
   mov     @djmp,  >gate1
djmp    djn.b   clr,    {bombs
incr    dat     >-3*step,>-3*step
last

bombm   dat     <1,     {1
      dat 0,0
datz: dat 0,0
FOR 5
      dat 0,0
ROF
END
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@comp.vuw.ac.nz>

From bezzi@nemo.it Tue Aug 6 16:42:50 1996
Received: by couchey.inria.fr (5.57/Ultrix3.0-C)
id AA03569; Tue, 6 Aug 96 16:42:50 +0200
Received: from nemont.nemo.it ([194.184.149.2]) by nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id QAA26417 for <Damien.Doligez@inria.fr>; Tue, 6 Aug 1996 16:42:38 +0200 (MET DST)
Received: from async4.nemo.it (194.184.149.104) by nemont.nemo.it
(EMWAC SMTPRS 0.80) with SMTP id <B0000192309@nemont.nemo.it>;
Tue, 06 Aug 1996 16:42:02 +0200
Message-Id: <B0000192309@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
Date: Tue, 06 Aug 1996 16:39:32 +0200
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
Damien.Doligez@inria.fr (Damien Doligez),
guenzel@extern.lrz-muenchen.de, amarsden@st-james.comp.vuw.ac.nz
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 41
Status: R

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
  '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 41 August 5, 1996

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pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

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If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of my hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Greetings.

Another very quiet week; summer, Olympic games and Pizza down for the week end are the main causes. Thos implemented the test option to challenge the hill without aging it. From now on aging will become harder and harder

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	37.0/ 20.6/ 42.4	unrequited love	kafka	153.5	13
2	44.0/ 35.9/ 20.2	Probe	Anton Marsden	152.0	93
3	46.8/ 42.6/ 10.6	Q^2 Miro	Anders Ivner	151.0	143
4	37.7/ 24.8/ 37.5	Simple v0.4b	Ian Oversby	150.7	44
5	43.8/ 39.7/ 16.5	Goldfinch	P.Kline	147.9	34
6	44.1/ 40.6/ 15.3	Blur 2	Anton Marsden	147.6	92
7	28.9/ 12.6/ 58.5	Return Of The Jedimp	John K W	145.2	81
8	40.7/ 36.8/ 22.5	T.N.T. pro	Maurizio Vittuari	144.6	811
9	43.0/ 41.6/ 15.4	Earthquake v0.2	Bjoern & Ian	144.4	50
10	43.0/ 41.9/ 15.1	myVamp5.4	Paulsson	144.1	141
11	43.5/ 43.1/ 13.4	Mist	P.Kline	143.8	33
12	40.7/ 37.8/ 21.4	Test	Anton Marsden	143.7	3
13	41.8/ 41.1/ 17.1	Harmony	P.Kline	142.5	58
14	31.8/ 21.6/ 46.5	Rosebud	Beppe	142.0	766
15	27.7/ 14.2/ 58.1	ompega	Steven Morrell	141.2	208
16	39.0/ 38.8/ 22.2	Yogi Bear	P.Kline	139.2	297
17	32.9/ 29.2/ 37.9	Pulp v0.2	Ian Oversby	136.6	188
18	29.3/ 22.4/ 48.3	Armory II	John K W	136.2	232
19	38.3/ 40.6/ 21.1	Paper, Scissors and Stone	David van Dam	136.1	221
20	39.7/ 43.5/ 16.8	Test Sc	Ian Oversby	135.8	1
21	38.7/ 41.9/ 19.5	Twister	Beppe Bezzi	135.5	547
22	31.0/ 30.8/ 38.1	Jack in the box II	Beppe Bezzi	131.3	450
23	26.9/ 24.5/ 48.5	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	129.4	10
24	28.3/ 29.2/ 42.5	Forked Lightning 2.0	Philip Kendall	127.3	26
25	4.0/ 0.0/ 0.0	Dura v0.1	Ian Oversby	12.0	122

Weekly age: 26 (7 last week, 31 the week before)
New warriors: 4 Turnover/age rate 15%
Average age: 186 (176 last week, 191 the week before)
Average score: 137 (141 last week, 137 the week before)
The top 25 warriors are represented by 13 authors: Oversby with 5(5.5 :-);
Kline with 4; Bezzi and Marsden with 3; JKW with 2.

King Report: Blur 2 at the beginning, then Simple until Kafka showed down
with unrequited love. Few challenges this week too.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
1	34.3/ 17.8/ 47.9	unrequited love	kafka	150.7	1
6	39.8/ 38.0/ 22.2	Test	Anton Marsden	141.7	1
19	38.7/ 43.8/ 17.5	Test Sc	Ian Oversby	133.6	1
24	22.4/ 22.3/ 55.2	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	122.5	1

A new King: unrequited love.

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	25.3/ 29.5/ 45.2	unrequited love	kafka	121.1	3
26	32.3/ 42.2/ 25.5	Scimitar 2	P.Kline	122.5	139
26	29.5/ 41.6/ 28.9	airBag	Paulsson	117.3	126
26	2.5/ 0.3/ 1.2	blue flame c1/10	bjoern guenzel	8.7	72

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
8	40.7/ 36.8/ 22.5	T.N.T. pro	Maurizio Vittuari	144.6	811
14	31.8/ 21.6/ 46.5	Rosebud	Beppe	142.0	766

21	38.7/ 41.9/ 19.5	Twister	Beppe Bezzi	135.5	547
22	31.0/ 30.8/ 38.1	Jack in the box II	Beppe Bezzi	131.3	450

Nothing new from the front.
Yogi Bear is very near, TNT is in good shape, Twister and Jack are suffering.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
15	Agony II	Stefan Strack	912	CMP scanner
16	Barrage	Anton Marsden	876	Qscan -> replicator
17	Blue Funk	Steven Morrell	869	Stone/ imp
18	Flurry	Anton Marsden	835	Qscan -> pwarrior
19	T.N.T. pro	Maurizio Vittuari	811 *	Bomber
20	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
21	Blue Funk 3	Steven Morrell	766	Stone/ imp
21	Rosebud	Beppe	766*	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

T.N.T. pro climbs a slot and Rosebud two, pairing Blue Funk 3.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	53.7/ 24.2/ 22.0	Yet 4b	Justin Kao	183.2	80
2	50.8/ 23.6/ 25.6	Versatility 1.5	Ross Morgan-Linial	178.0	70
3	51.2/ 25.6/ 23.2	Ick v1.5	Justin Kao	176.8	26
4	52.9/ 31.3/ 15.8	T-1 w/decoy	Ross	174.5	7
5	48.6/ 29.4/ 22.0	Velveeta Shift-F	shar	167.9	78
6	46.6/ 36.1/ 17.3	T-1	Ross	157.2	15
7	39.1/ 26.9/ 34.0	Inferno 1.0	Philip Kendall	151.3	93
8	41.4/ 33.1/ 25.4	Vampirism 1.2	Philip Kendall	149.8	1
9	37.1/ 28.8/ 34.1	(-: :-)	Ross	145.4	3
10	36.6/ 31.0/ 32.3	TIE Fighter	Ross	142.2	2
11	28.8/ 19.6/ 51.6	Microsoft v1.0	Justin Kao	138.0	36
12	27.0/ 18.3/ 54.7	Ties, Ties, Ties! (+3)	Ross	135.6	16
13	32.6/ 31.5/ 36.0	Together 0.3	Ilmari Karonen	133.6	4
14	21.0/ 16.4/ 62.7	more testing	Anonymous	125.6	64
15	19.4/ 13.6/ 67.0	Nematode v1.4b	Jonathan Stott	125.2	77
16	17.0/ 13.7/ 69.3	Nematode v1.4e	Jonathan Stott	120.2	44
17	19.9/ 31.5/ 48.6	Fork 4/13	Christoph C. Birk	108.2	97
18	9.5/ 30.1/ 60.4	silkstomp v2.i	harleyQ2	88.8	12
19	5.8/ 26.2/ 68.0	Ties Engine	Ross	85.4	5
20	8.4/ 32.6/ 59.1	Mama’s Boy	Robert J. Street	84.2	58

21	8.5/	50.4/	41.1	Kill Wasps	Ross	66.5	6
22	10.3/	4.0/	13.6	Ties and Wasps -s	Ross Morgan-Linial	44.7	27
23	9.9/	7.1/	3.0	Together 0.2	Ilmari Karonen	32.7	13
24	9.9/	7.2/	2.9	Together	Ilmari Karonen	32.6	21
25	6.8/	3.5/	1.7	TIE Fighter B	Ross	22.0	19

26 challenges; Yet is always King.

The Hint

Sorry no hint this issue.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@comp.vuw.ac.nz>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.erols.net!newsfeed.internetmci.com!news.sgi.com!enews.sgi.com!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Tue Sep 10 11:19:36 1996
Article: 5899 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.erols.net!newsfeed.internetmci.com!news.sgi.com!enews.sgi.com!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 42
Date: 9 Sep 1996 18:11:07 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 227
Message-ID: <511mjr$hn8@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
  '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 42 September 9, 1996

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FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

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Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Greetings.

The pizza hills are back and so are we. Sorry for the short vacation, but there just wasn't much to report on in the last few weeks. The new 'test' option is seeing heavy use. There are disagreements whether tests results should be included in the standard output reporting option. Personally, I would like the option of not receiving test results. Also, the 'testing' will greatly reduce artificial hill aging (wasn't that the point?), and along with it--entries into the Hall of Fame. Is there something we should do about this? Perhaps the most important question about the 'test' option is whether it is safe or not. Should test warriors be allowed to ;kill a warrior on the hill?

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

#	%W /	%L /	%T	Name	Author	Score	Age
1	38.6/	20.4/	41.0	unrequited love	kafka	156.7	22
2	43.3/	36.7/	20.0	Probe	Anton Marsden	150.0	102
3	46.5/	43.6/	9.9	Q^2 Miro	Anders Ivner	149.4	152
4	37.4/	25.7/	36.9	Simple v0.4b	Ian Oversby	149.2	53
5	39.5/	31.0/	29.5	Flimsy v0.5a	Ian Oversby	147.9	1
6	43.4/	41.5/	15.1	Blur 2	Anton Marsden	145.4	101
7	29.6/	13.8/	56.6	Return Of The Jedimp	John K W	145.3	90
8	32.8/	20.4/	46.8	Rosebud	Beppe	145.1	775
9	42.6/	40.8/	16.6	Goldfinch	P.Kline	144.4	43
10	37.0/	29.9/	33.1	September	Beppe	144.0	4
11	40.3/	38.1/	21.6	mrb-test	m r bremer	142.5	8
12	39.7/	37.3/	23.0	Yogi Bear	P.Kline	142.0	306
13	40.0/	38.7/	21.2	Test	Anton Marsden	141.3	12
14	36.0/	31.0/	33.0	Falcon v0.3	Ian Oversby	141.1	7
15	39.5/	38.2/	22.2	T.N.T. pro	Maurizio Vittuari	140.9	820
16	41.4/	43.1/	15.5	Earthquake v0.2	Bjoern & Ian	139.7	59
17	41.4/	43.7/	14.9	myVamp5.4	Paulsson	139.1	150
18	26.5/	14.0/	59.5	ompega	Steven Morrell	138.9	217
19	41.5/	46.0/	12.5	Mist	P.Kline	137.0	42
20	28.4/	21.3/	50.3	Armory II	John K W	135.5	241
21	40.0/	44.7/	15.3	Harmony	P.Kline	135.2	67
22	32.7/	31.7/	35.6	Jack in the box II	Beppe Bezzi	133.7	459
23	29.5/	25.6/	44.9	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	133.5	2
24	38.3/	43.5/	18.2	Twister	Beppe Bezzi	133.2	556
25	36.3/	41.6/	22.1	Paper, Scissors and Stone	David van Dam	131.0	230

Top 25 Averages:

	37.7/	33.7/	28.6			141.7	180

Weekly age: 9 in a month! (26 last issue, 7 the week before)
New warriors: 5 Turnover/age rate 56% (will be higher with 'test' option)
Average age: 180 (186 last issue, 176 the week before)
Average score: 142 (137 last issue, 141 the week before)
The top 25 warriors are represented by 14 authors: Beppe and Kline with 4; Oversby with 3 and 1/2; Marsden with 3; and JKW with 2.

Four of the top five warriors use quick scans, most likely the new Q^2 scans. urequited love might use one too, but it is not mentioned in the ;strategy lines. Return of the Jedimp and mrb-test are also using the Q^2 quick scan.

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
5	39.5/	31.0/	29.5	Flimsy v0.5a	Ian Oversby	147.9	1
10	37.0/	29.9/	33.1	September	Beppe	144.0	4
11	40.3/	38.1/	21.6	mrb-test	m r bremer	142.5	8
14	36.0/	31.0/	33.0	Falcon v0.3	Ian Oversby	141.1	7
23	29.5/	25.6/	44.9	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	133.5	2

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	4.0/	0.0/	0.0	Dura v0.1	Ian Oversby	12.0	122
26	25.6/	30.5/	44.0	Forked Lightning 2.0	Philip Kendall	120.7	29
26	36.1/	47.1/	16.8	Test Sc	Ian Oversby	125.2	5
26	1.3/	1.3/	1.4	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	5.3	17

26	2.0/	1.6/	0.5	Pulp v0.2	Ian Oversby	6.3	197

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
8	40.7/	36.8/	22.5	T.N.T. pro	Maurizio Vittuari	144.6	820
14	31.8/	21.6/	46.5	Rosebud	Beppe	142.0	775
21	38.7/	41.9/	19.5	Twister	Beppe Bezzi	135.5	556
22	31.0/	30.8/	38.1	Jack in the box II	Beppe Bezzi	131.3	459
12	39.7/	37.3/	23.0	Yogi Bear	P.Kline	142.0	306

Yogi Bear joins the list. Twister and Jack could be pushed off very soon!

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	Flurry	Anton Marsden	835		Qscan -> pwarrior
19	T.N.T. pro	Maurizio Vittuari	820	*	Bomber
20	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
21	Rosebud	Beppe Bezzi	775	*	Stone/ imp
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

Good luck assulting this hill with the new 'test' option.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft

The current Beginner hill:

#	%W /	%L /	%T	Name	Author	Score	Age
1	55.3/	24.1/	20.6	Tsunami v0.3	Ian Oversby	186.5	18
2	53.5/	23.3/	23.1	Versatility 1.5	Ross Morgan-Linial	183.7	91
3	52.5/	27.4/	20.1	T-1 w/decoy	Ross	177.7	28
4	46.0/	24.3/	29.7	Ick v1.5	Justin Kao	167.6	47
5	49.1/	31.1/	19.7	T-1	Ross	167.1	36
6	39.1/	22.3/	38.6	(-: :-)	Ross	155.9	24
7	38.9/	24.2/	36.9	TIE Fighter	Ross	153.6	23
8	42.5/	32.7/	24.8	Velveeta Shift-G	shar	152.3	14
9	29.1/	15.3/	55.7	Ties, Ties, Ties! (+3)	Ross	142.9	37
10	35.8/	34.1/	30.1	Vampirism 1.2	Philip Kendall	137.5	16
11	32.1/	27.1/	40.8	Together 0.3	Ilmari Karonen	137.1	25

12	25.5/ 16.7/ 57.8	Papyrus 6	Justin Kao	134.4	6
13	26.1/ 18.3/ 55.6	Microsoft v1.0	Justin Kao	133.8	57
14	20.0/ 10.3/ 69.7	Nematode v1.4b	Jonathan Stott	129.7	98
15	16.9/ 9.7/ 73.4	Nematode v1.4e	Jonathan Stott	124.1	65
16	19.2/ 18.4/ 62.4	CCCP	harleyQ2	120.1	5
17	15.7/ 12.3/ 72.0	SIN	harleyQ2	119.2	3
18	17.0/ 21.5/ 61.5	Bronze Dragonflies 0.1	Ross	112.5	4
19	10.1/ 8.2/ 81.7	si	harleyQ2	112.1	15
20	25.1/ 51.0/ 23.9	Gravel 2	Justin Kao	99.1	1
21	20.2/ 44.1/ 35.6	bump	harleyQ2	96.3	9
22	8.6/ 21.0/ 70.4	super-imp	harleyQ2	96.1	7
23	7.5/ 19.9/ 72.6	Ties Engine	Ross	95.0	26
24	9.5/ 24.2/ 66.3	silkstomp v2.i	harleyQ2	94.8	33
25	5.3/ 38.9/ 55.7	Imp++	Justin Kao	71.8	2

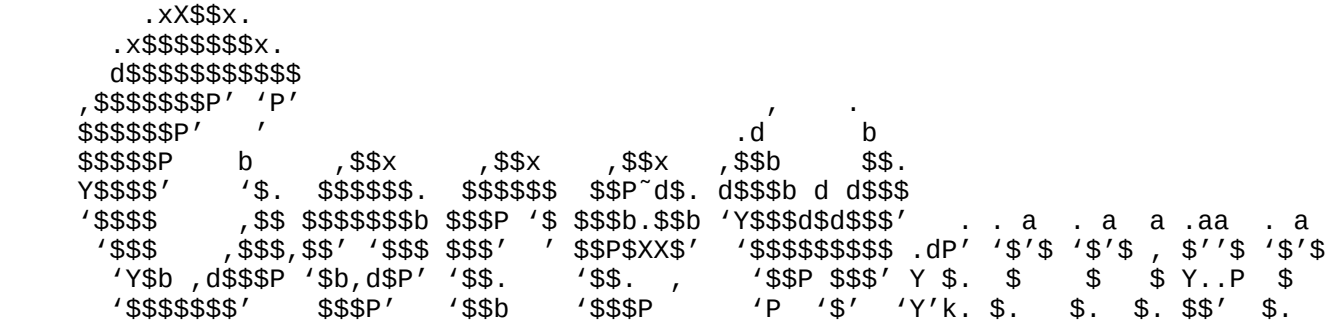
Twenty-one challenges. Tsunami is new and sits atop the heap. But is Ian playing fair when he has over three warriors to his name on the ’94 draft hill? Bad boy. Ross Morgan-Linial is trying out some super-imp program on the draft hill, but it has yet to claim a solid rank. He is well represented on the b-hill with 7 warriors.

The Hint

Sorry no hint this issue. I probably won’t have any hints until I start actively playing again. Maybe when I get my class schedule under control . .

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu> or Anton Marsden <amarsden@comp.vuw.ac.nz>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!uwm.edu!spool.mu.edu!munnari.OZ.AU
!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden Mon Sep 16 14:08:55 1996
Article: 5973 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!uwm.edu!spool.mu.edu!munnari.OZ.A
U!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@comp.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 43
Date: Mon, 16 Sep 1996 22:11:02 +1200
Organization: NetLink Wellington, New Zealand.
Lines: 302
Message-ID: <Pine.SOL.3.91.960916221013.28366D-100000@regent.comp.vuw.ac.nz>
NNTP-Posting-Host: regent.comp.vuw.ac.nz
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII



Issue 43 September 16, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

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Greetings.

There has been a lot of discussion recently in r.g.c about new opcodes and new standards. Here is what Scott Manley wrote:

>My main point was that we really need a group of people who are willing to
>promote Corewar, principally by proposing, testing and approving rule changes
>and thereby maintainig a consistent set of standards.
>
>The most important function of such a group would be to ensure there was a
>framework within which these changes can be evaluated. Take the example of
>Pspace, this was a neat idea which was implemented by the programmers of the
>simulators and therefore has become accepted as part of the standard. But does
>anyone actually know whether PSpace is part of the '94 standard? It's not even

>in the FAQ (actually this might have changed, forgive me if I'm wrong) yet the
>main hills ('94 draft and Beginner) both support it. If a simulator appears
>and claims to be '94 compatable does it have to implement Pspace.
>
>If a governing body was set up it's main task would be to maintain the
>standards, old and new (and make sure that they are available). Anybody
>interested in testing new ideas could work with this commitee, a working group
>of interested people could be set up, but it would be entirely voluntary if
>nobody has time to program experimaental extensions we couldn't expect members
>to drop their work and go around hacking source code just because there's been
>a new proposal. Again it's a case of management if all proposals are
>maintained on record then there is always the possibilty of returning to an
>idea when time permits. Also of course any tests which have been carried out
>in the past will also be maintained on record.
>
>So what we really need at the moment is a lot of discussion of the idea, is
>there a real need for such management. I certainly think so.
>
>And of course if such a group was to be set up it would need volunteers, a
>constitution and most importantly the general approval of the corewar
>community.

I also think such a group is needed. However, who is going to create it? I am willing to collect a list of names of those who are interested in being a part of the core of this group. It would also be good if you could give me some details in what areas you would like to contribute, eg. writing code, writing documentation, writing newsletters/articles, developing standards, promoting the game, vote taking, management of tasks, etc. And if you can write code, which languages can you code in? The more details there are, the easier it will be to allocate tasks.

One of the problems with creating groups like this is that nothing will ever get done unless someone takes the initiative. A list of volunteers is a good start. I will post this list (assuming I get any volunteers) in a week or so or include it in the next CW.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	39.2/ 21.7/ 39.1	unrequited love	kafka	156.6	30
2	32.1/ 11.6/ 56.3	Return Of The Jedimp	John K W	152.7	98
3	43.3/ 37.5/ 19.2	Probe	Anton Marsden	149.1	110
4	44.1/ 39.4/ 16.5	Goldfinch	P.Kline	148.8	51
5	45.8/ 45.3/ 8.9	Q^2 Miro	Anders Ivner	146.3	160
6	36.6/ 27.5/ 35.9	Simple v0.4b	Ian Oversby	145.7	61
7	38.7/ 33.9/ 27.4	Flimsy v0.5a	Ian Oversby	143.6	4
8	31.9/ 20.4/ 47.7	Rosebud	Beppe	143.3	783
9	40.4/ 39.0/ 20.6	mrb-test	m r bremer	141.8	16
10	42.4/ 43.3/ 14.3	Blur 2	Anton Marsden	141.6	109
11	39.8/ 38.6/ 21.6	Instant Wolf 3.4	Edgar	141.0	8
12	35.6/ 30.5/ 33.9	September	Beppe	140.7	12
13	25.9/ 12.2/ 61.8	ompega	Steven Morrell	139.7	225
14	34.9/ 30.3/ 34.8	Jack in the box II	Beppe Bezzi	139.4	467
15	34.8/ 30.3/ 35.0	Falcon v0.3	Ian Oversby	139.3	15
16	38.6/ 39.2/ 22.2	T.N.T. pro	Maurizio Vittuari	138.0	828
17	41.2/ 44.6/ 14.2	myVamp5.4	Paulsson	137.9	158
18	37.7/ 38.6/ 23.7	Yogi Bear	P.Kline	136.8	314
19	40.3/ 45.0/ 14.8	Earthquake v0.2	Bjoern & Ian	135.6	67

20	39.7/ 44.0/ 16.3	Violent Micro v0.4d	basehead	135.4	3
21	37.8/ 40.9/ 21.3	Test	Anton Marsden	134.6	20
22	38.2/ 43.4/ 18.4	BackFromVacation	Edgar	133.0	2
23	26.0/ 19.8/ 54.2	Armory II	John K W	132.3	249
24	37.6/ 44.1/ 18.2	Twister	Beppe Bezzi	131.2	564
25	4.0/ 0.0/ 0.0	Atom Smasher 2	Anton Marsden	12.0	1

Top 25 Averages:

36.3/ 32.8/ 27.1			135.8	174

Weekly age: 9 (9 last issue, 26 the month before)
New warriors: 5 Turnover/age rate 56% (will be higher with 'test' option)
Average age: 174 (180 last issue, 186 the week before)
Average score: 136 (142 last issue, 137 the week before)
The top 25 warriors are represented by several authors :-) Sorry, I don't have the patience to fill in the details this week.

Q^2 scans are still dominating the most of the top positions on the hill.

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94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
6	39.3/ 37.7/ 22.9	Instant Wolf 3.4	Edgar	140.9	1
4	37.3/ 33.5/ 29.2	Flimsy v0.5a	Ian Oversby	141.2	1
22	37.2/ 45.8/ 16.9	Violent Micro v0.4d	basehead	128.7	1
17	38.5/ 43.1/ 18.3	BackFromVacation	Edgar	133.9	1
1	39.6/ 24.2/ 36.2	Atom Smasher 2	Anton Marsden	155.0	1

Edgar is back from vacation! Atom Smasher 2 made a brief appearance but was killed for some reason :-) Just out of interest, it was just an imp/stone with a Q^2 scan. These Q^2 scans seem effective enough to upset pspace logic sometimes.

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94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	2.0/ 1.6/ 0.5	Pulp v0.2	Ian Oversby	6.3	197
26	33.8/ 43.4/ 22.8	Paper, Scissors and Stone	David van Dam	124.2	231
26	1.6/ 2.2/ 0.2	Flimsy v0.5	Ian Oversby	5.1	2
26	1.8/ 1.8/ 0.4	Flimsy v0.5a	Ian Oversby	5.7	2
26	27.1/ 26.6/ 46.3	Ties, Ties, Ties! (+3)	Ross Morgan-Linial	127.5	8
26	36.8/ 47.8/ 15.3	Harmony	P.Kline	125.9	74
26	36.9/ 51.2/ 11.9	Mist	P.Kline	122.6	50

Lots of killed warriors this week. van Dam's only surviving warrior slips off the hill.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
16	38.6/ 39.2/ 22.2	T.N.T. pro	Maurizio Vittuari	138.0	828
8	31.9/ 20.4/ 47.7	Rosebud	Beppe	143.3	783
24	37.6/ 44.1/ 18.2	Twister	Beppe Bezzi	131.2	564
14	34.9/ 30.3/ 34.8	Jack in the box II	Beppe Bezzi	139.4	467
18	37.7/ 38.6/ 23.7	Yogi Bear	P.Kline	136.8	314

It'll be a long ride to the top because of the 'test' option. Maybe a new HOF should be started.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner

8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	Flurry	Anton Marsden	835		Qscan -> pwarrior
19	T.N.T. pro	Maurizio Vittuari	828	*	Bomber
20	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
21	Rosebud	Beppe Bezzi	783	*	Stone/ imp
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

No new entries, no positional changes.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
   coresize: 8000
  max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    maximum age: At age 100, warriors are retired.
   rounds fought: 200
  instruction set: ICWS ’94 Draft
```

The current Beginner hill:

#	%W / %L / %T	Name	Author	Score	Age
1	46.9/ 32.3/ 20.8	Ick v1.5	Justin Kao	161.4	70
2	46.8/ 36.5/ 16.7	Violent Micro v0.4d	basehead	157.1	12
3	42.8/ 30.3/ 26.8	Versatility 1.6	Ross	155.3	10
4	46.5/ 38.0/ 15.4	Tsunami v0.3	Ian Oversby	155.1	41
5	45.0/ 37.8/ 17.2	Heretic 1.0	Philip Kendall	152.1	23
6	35.0/ 22.2/ 42.8	Gravel 7	Justin Kao	147.8	18
7	35.6/ 25.1/ 39.3	Microsoft v1.0	Justin Kao	146.2	80
8	35.5/ 25.4/ 39.1	Papyrus 6	Justin Kao	145.5	29
9	41.9/ 38.9/ 19.2	Velveeta Shift-G	shar	144.9	37
10	41.3/ 38.4/ 20.3	BloodSucker 1.0	Philip Kendall	144.1	22
11	38.0/ 33.3/ 28.7	Black v0.1	Justin Kao	142.6	13
12	37.8/ 33.7/ 28.5	Inferno 2.1	Philip Kendall	141.9	4
13	39.6/ 39.2/ 21.2	Vampirism 1.4	Philip Kendall	140.0	16
14	37.1/ 35.5/ 27.4	(-: :-)	Ross	138.7	47
15	30.8/ 23.3/ 45.9	Ties, Ties, Ties! (+3)	Ross	138.3	60
16	41.1/ 45.9/ 13.1	T-1 w/decoy	Ross	136.2	51
17	39.7/ 48.3/ 11.9	Syzygy 1.1	Philip Kendall	131.2	21
18	33.1/ 37.7/ 29.2	TIE Fighter	Ross	128.5	46
19	38.0/ 48.2/ 13.8	T-1	Ross	127.7	59
20	34.5/ 41.7/ 23.9	Together 0.4	Ilmari Karonen	127.3	1
21	19.6/ 15.8/ 64.5	Nematode v1.4e	Jonathan Stott	123.4	88
22	30.1/ 42.2/ 27.7	Together 0.3	Ilmari Karonen	118.0	48
23	26.7/ 39.6/ 33.7	Dwarf3012c	Rainer Unsinn	113.8	2
24	28.5/ 44.4/ 27.1	Neverending Brutality 2.0	Franz	112.6	5
25	29.8/ 47.1/ 23.1	Neverending Brutality	Franz	112.4	7

Top 25 Averages:

36.9/ 36.0/ 27.1	137.7	32

PSpacers seem to be dominating. Nice to see some keen players throwing everything but the kitchen sink at this hill :-)

The Hint
Quick Scanners
by Anton Marsden

This hint is for the more "developed" players. If you would like to find out more about the best qscanners around, check out some of the older issues of CW (37 and 40 in particular).

QScans are great if you want to use them as a front-end for a paper/bomber but they are not as effective when coupled with scanners, the reason being that the scanner will detect the qscan code and attempt to neutralise it. It's not so bad if your scanner just drops one or two bombs on the scanned position but usually you want to drop a carpet of bombs. There are several ways this could be dealt with: either modify the scanner or modify the qscanner. Modifying the qscanner is probably the best option.

If you have a mod-4/8 scanner with small distance between scanned locations, eg. SEQ pos,pos+12 you can align the qscan such that it is invisible to your scanner:

```
SEQ 100,200
JMP fnd
SEQ 300,400
JMP *-2     ; scanned
SEQ 500,600
JMP fnd
SEQ 700,800
JMP *-2     ; scanned
...
```

For a mod-5/10 scanner, try using a combination of SNE/SEQ and SEQ in your qscan. In some cases it won't be necessary to hide the qscan from the scanner completely, but the more that's hidden the better.

This is just an idea - I haven't tried it yet. It will be more difficult to implement than the above code suggests... but good luck :-)

From bezzi@nemo.it Mon Sep 23 11:40:55 1996
Received: from nez-perce.inria.fr (nez-perce.inria.fr [192.93.2.78]) by tobago.inria.fr (8.6.10/8.6.6) with ESMTP id LAA13897 for <doligez@tobago.inria.fr>; Mon, 23 Sep 1996 11:40:37 +0200
Received: from nemont.nemo.it ([194.184.149.2]) by nez-perce.inria.fr (8.7.1/8.7.1) with SMTP id LAA05576 for <Damien.Doligez@inria.fr>; Mon, 23 Sep 1996 11:40:05 +0200 (MET DST)
Received: from async1.nemo.it (194.184.149.101) by nemont.nemo.it
(EMWAC SMTPRS 0.81) with SMTP id <B0000201239@nemont.nemo.it>;
Mon, 23 Sep 1996 11:39:05 +0200
Message-ID: <B0000201239@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
Date: Mon, 23 Sep 1996 11:35:33 +0200
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
Damien.Doligez@inria.fr (Damien Doligez),
guenzel@extern.lrz-muenchen.de, amarsden@st-james.comp.vuw.ac.nz
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 44
Status: RO

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
  '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 44 September 23, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Greetings.

After a forced break in late summer, due to Pizza maintenance, the 94 hill has gone back to his standard level of activity; don't be fouled by the small number of new warriors, more than 50 test that would have made the hill have been submitted. The test option proved in fat very popular even if there are a few drawbacks; one is that the aging of warriors cannot be ompared with that of past ones being now far more difficult. The second is

that opponent don't have chanes to challenge a warrior under test, as Paul Kline pointed out, until it's released in offiial form. Last, as I experimented, a test warrior can score very different once it's released, this because test works on but 100 fights and the real fight on 200, and I'm not very lucky having lost more than 10 points :-(

Steven Morrell volunteered to recalculate the hall of fame removing unnatural aging from the scores one we agree on a method to do it. The better one seems to disount aging if the pushed off warrior has an score under a treshold; I proposed 125 but Planar told me that some warriors, Impfinity to tell one, have been pushed off with lower scores. Having to set one, to allow Steven start his work, what about 120.

Another hot topic in the newsgrou is if there is a need of a central organization, to take the place of the near dead ICWS, or if we can go on without it. The discussion is still hot.

For those loving the old 88 redcode standard; it's worth noting that the 88 hill, available at koth@koth.org (Stormking), has a new leader with an incredible 17 pts lead. Congratulations to David Moore for his Racer X.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	40.3/ 19.0/ 40.7	Gigolo	Core Warrior staff	161.6	1
2	38.8/ 20.2/ 41.0	unrequited love	kafka	157.3	45
3	42.8/ 32.0/ 25.2	CC Paper	Franz	153.5	4
4	42.1/ 32.0/ 25.9	Frogz	Franz	152.2	5
5	31.5/ 14.8/ 53.7	Return Of The Jedimp	John K W	148.2	113
6	44.1/ 40.6/ 15.3	Blur 2	Anton Marsden	147.6	124
7	42.8/ 40.2/ 17.0	Goldfinch	P.Kline	145.3	66
8	42.4/ 39.4/ 18.2	Probe	Anton Marsden	145.3	125
9	31.5/ 19.7/ 48.8	Rosebud	Beppe	143.2	798
10	35.9/ 28.6/ 35.6	Simple v0.4b	Ian Oversby	143.2	76
11	38.7/ 35.3/ 26.1	Flimsy v0.5c	Ian Oversby	142.1	6
12	43.4/ 47.2/ 9.4	Q^2 Miro	Anders Ivner	139.6	175
13	30.0/ 20.5/ 49.6	Impish v0.1	Ian Oversby	139.4	2
14	39.3/ 39.3/ 21.4	mrb-test	m r bremer	139.4	31
15	39.1/ 40.2/ 20.7	Test	Anton Marsden	138.1	35
16	25.1/ 12.6/ 62.3	ompega	Steven Morrell	137.6	240
17	33.8/ 30.3/ 35.9	Jack in the box II	Beppe Bezzi	137.2	482
18	33.8/ 30.7/ 35.5	Falcon v0.3	Ian Oversby	136.9	30
19	38.3/ 40.3/ 21.4	Instant Wolf 3.4	Edgar	136.4	8
20	37.8/ 39.8/ 22.4	Inferno 2.4	Philip Kendall	135.9	3
21	36.1/ 39.0/ 24.9	T.N.T. pro	Maurizio Vittuari	133.2	843
22	39.6/ 46.2/ 14.2	Earthquake v0.2	Bjoern & Ian	132.9	82
23	38.3/ 45.3/ 16.3	myVamp5.5	Paulsson	131.3	15
24	35.7/ 40.7/ 23.6	Yogi Bear	P.Kline	130.8	329
25	36.7/ 44.0/ 19.3	BackFromVacation	Edgar	129.5	17

Weekly age: 15 (9 last issue, 9 the month before) more than 50 test
New warriors: 8 Turnover/age rate 53%
Average age: 146 (174 last issue, 180 the week before)
Average score: 142 (136 last issue, 142 the week before)
The top 25 warriors are represented by several authors :-) Sorry, I don't have the patience to fill in the details this week.

Lots of new warriors in the top position. Bezzi made many test during the week, some of which scored very high, to shodown with the new King, Gigolo, a cooperative warrior made with the others of Core Warrior staff. Don't ask him why after scoring 12 points over the second his warrior setted with but three unless you want to learn some new Italian words :-)
Kafka's unrequited love loses top position after two weeks of domain, but remains near the top. Franz puts two warriors in top ranks, both using the qscan->silk combination; perhaps replicators are back vith vengeance.
Q^2 scans are dominating the hill at expense of pspacers.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
1	37.2/ 19.8/ 43.0	Gigolo	Core Warrior staff	154.5	1
2	42.8/ 31.4/ 25.8	Frogz	Franz	154.3	1
4	41.5/ 32.9/ 25.5	CC Paper	Franz	150.1	1
5	39.3/ 35.2/ 25.5	Flimsy v0.5c	Ian Oversby	143.3	1
8	38.9/ 39.3/ 21.8	Instant Wolf 3.4	Edgar	138.5	1
13	27.4/ 21.5/ 51.1	Impish v0.1	Ian Oversby	133.3	1
17	36.6/ 41.0/ 22.4	Inferno 2.4	Philip Kendall	132.1	1
17	37.9/ 45.4/ 16.7	myVamp5.5	Paulsson	130.5	1

Revolution in the first spots, we have a new 1st, 3rd and 4th.

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	35.3/ 45.6/ 19.1	Twister	Beppe Bezzi	125.0	575
26	23.6/ 21.1/ 55.3	Armory II	John K W	126.0	257
26	1.5/ 1.7/ 0.8	myVamp5.4	Paulsson	5.4	159
26	0.2/ 1.0/ 2.8	September	Beppe	3.4	21
26	36.1/ 46.9/ 17.0	Violent Micro v0.4d	basehead	125.2	16
26	1.8/ 1.8/ 0.4	Instant Wolf 3.4	Edgar	5.9	15
26	1.6/ 2.1/ 0.3	Flimsy v0.5a	Ian Oversby	5.2	14
26	4.0/ 2.5/ 1.5	Atom Smasher 2	Anton Marsden	13.5	3

Twister leaves us at the age of 575 and Armory at 257; all other are very young or killed by the author.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
21	36.1/ 39.0/ 24.9	T.N.T. pro	Maurizio Vittuari	133.2	843
9	31.5/ 19.7/ 48.8	Rosebud	Beppe	143.2	798
17	33.8/ 30.3/ 35.9	Jack in the box II	Beppe Bezzi	137.2	482
24	35.7/ 40.7/ 23.6	Yogi Bear	P.Kline	130.8	329
16	25.1/ 12.6/ 62.3	ompega	Steven Morrell	137.6	240

Rosebud keeps his position while T.N.T. pro and Yogi lose some spots and Jack a few. Seen the sarcity of veterans I decided to include them starting at 200 age.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner

15	Agony II	Stefan Strack	912		CMP scanner
16	Barrage	Anton Marsden	876		Qscan -> replicator
17	Blue Funk	Steven Morrell	869		Stone/ imp
18	T.N.T. pro	Maurizio Vittuari	843	*	Bomber
19	Flurry	Anton Marsden	835		Qscan -> pwarrior
20	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
21	Rosebud	Beppe Bezzi	798	*	Stone/ imp
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

T.N.T. pro gains a spot; no new entries and we won’t have for long being next scheduled at more than 200 distance.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

The current Beginner hill:

#	%W / %L / %T	Name	Author	Score	Age
1	54.6/ 34.4/ 11.0	Throw Rug	J E Long	174.8	30
2	55.2/ 36.1/ 8.7	Tsunami v0.3	Ian Oversby	174.3	73
3	53.4/ 35.2/ 11.4	Violent Micro v0.4d	basehead	171.6	44
4	48.9/ 33.3/ 17.8	Heretic 1.0	Philip Kendall	164.6	55
5	44.8/ 31.8/ 23.3	Versatility 1.6	Ross	157.8	42
6	44.8/ 33.2/ 22.0	Inferno 2.3	Philip Kendall	156.5	31
7	46.3/ 37.8/ 15.9	Velveeta Shift-I	shar	154.7	6
8	48.7/ 42.8/ 8.5	Hawk 1.0	Philip Kendall	154.7	27
9	39.5/ 25.6/ 34.9	Gravel 7	Justin Kao	153.5	50
10	44.7/ 38.8/ 16.6	BloodSucker 1.0	Philip Kendall	150.6	54
11	37.3/ 25.9/ 36.8	Ties, Ties, Ties! (+3)	Ross	148.7	92
12	44.5/ 40.9/ 14.6	Neverending Brutality 7	Franz	148.1	21
13	42.3/ 36.7/ 21.0	Black v0.1	Justin Kao	147.9	45
14	37.6/ 28.2/ 34.1	Papyrus 6	Justin Kao	147.0	61
15	41.9/ 38.7/ 19.4	Vampirism 1.4	Philip Kendall	145.0	48
16	41.1/ 37.3/ 21.5	RSB	harleyQ2	144.9	15
17	44.6/ 46.3/ 9.1	T-1 w/decoy	Ross	143.0	83
18	43.9/ 46.4/ 9.6	T-1	Ross	141.4	91
19	39.9/ 39.2/ 20.9	(-: :-)	Ross	140.5	79
20	38.7/ 38.7/ 22.6	TIE Fighter	Ross	138.8	78
21	33.9/ 35.5/ 30.6	Frog	Franz	132.4	8
22	40.0/ 52.1/ 8.0	Syzygy 1.2	Philip Kendall	127.9	29
23	32.2/ 38.5/ 29.4	Hammermill v2.4	Matt Lewinski	125.9	2
24	34.8/ 53.4/ 11.9	jmztest2	George Eadon	116.1	3
25	4.0/ 0.0/ 0.0	Epithelioma	Matt Lewinski	12.0	1

Ick died of old age. The scanner Throw rug is the new leader

The Hint
Killing imps
by Beppe Bezzi

Imp stones are proliferating in the 94 hill, sometimes with a qscan sometimes not. Against the qscan the only defence is booting away as fast as you can, little else to say. Against stones, apart being a replicator, one have to be resistant against decrements/increments and djn streams, I’ll speak of that in future. Against imps the best defence is a good gate.

94 standard allows combining the gate with a forward running coreclear, but there are a few different ways to do that, what’s the best ?

I ran a few test pitting the more common gate clears against some different imp spirals; the spirals are all 3 points, 8 processes, binary launched and differ but in the imp instruction:

```
Spiral #0,2667          mov.i   #0,     2667
Spiral #1,2667          mov.i   #1,     2667
Spiral #-1,2667         mov.i   #-1,    2667
Spiral #2667,*0         mov.i   #2667,  *0
```

One can think that the first three will behave in the same way, but that's not true as we'll see. The last one is a different kind that's getting more and more popular; it's the a-driven imp, used by Die Hard and now by Rosebud.

Now the clears. All those clears can easily be fitted inside your favourite bomber or scanner.

```
;name   gate c-c1

gate1   equ     (gate-5)
        org     start
for 10
        dat 0,0
rof
        dat     -5,   100
gate    dat     -5,   jump-gate1+5
        spl     #-5,  jump-gate1+5
for 10
        dat     0,0             ;the warrior goes here
rof
start   spl     #-10,#10
        mov     @jump,>gate1
jump    djn     start+1,{gate+1
```

That's the clear used by Torch 18 and Thermite 2, just to say two successful warriors, it's a two pass spl/dat clear, switching to dat one its djn stream deremens the b-field of 'jump' line.
Here is how it scored:

Rank	Name	Author	%W	%L	%T	Score
1	gate c-c1	Anonymous	85	1	14	1074
2	Spiral #2667,*0	Anonymous	1	45	54	57
3	Spiral #0,2667	Anonymous	1	98	1	4
4	Spiral #1,2667	Anonymous	1	98	1	4
5	Spiral #-1,2667	Anonymous	1	98	1	4

You can see it's very effective against mov #xx,2667 imps, when the imp hits the gate the attack is transferred to the next branch of the spiral, but scores less than 50% wins against a-driven imps.

```
;name   gate c-c2
;assert 1
gate1   equ     (gate-5)
        org     start
for 10
        dat 0,0
rof
        dat     -5,   100
gate    dat     -5,   jump-gate1+5
        spl     #-5,  jump-gate1+5
for 10
        dat     0,0
rof
start   spl     #-10,#10
        mov     @jump,>gate1
        mov     @jump,>gate1
jump    djn     start+1,{gate+1
```

This clear is the same of gate c-c1 but has one more mov line. This makes the clear more vulnerable against bombs, but improves our performances

against both silk and imps. Tornado 3.0 used this clear.

Rank	Name	Author	%W	%L	%T	Score
1	gate c-c2	Anonymous	92	1	8	1128
2	Spiral #2667,*0	Anonymous	1	69	30	33
3	Spiral #0,2667	Anonymous	1	99	0	3
4	Spiral #1,2667	Anonymous	1	99	0	3
5	Spiral #-1,2667	Anonymous	1	99	0	3

As you can notice the a-driven imp has less chances to slip through the gate.

```
;name   gate c-ca
;assert 1
gate1   equ     (gate-5)
        org     start
for 10
        dat 0,0
rof
        dat     100
gate    dat     jump-gate1+5,-5
        spl     #jump-gate1+5,-5
for 10
        dat     0,0
rof
start   spl     #-10,#10
        mov     @jump,}gate1
jump    djn     start+1,<gate+1
```

This is the same clear of c-c1, but it’s driven by the a-field of the gate line. Frontwards used this clear.

Rank	Name	Author	%W	%L	%T	Score
1	gate c-ca	Anonymous	41	4	56	711
2	Spiral #-1,2667	Anonymous	8	14	78	102
3	Spiral #1,2667	Anonymous	5	18	77	92
4	Spiral #0,2667	Anonymous	1	33	66	69
5	Spiral #2667,*0	Anonymous	1	98	1	4

It’s very effective against a-driven imps but much less against classic ones, expecially against mov.i #-1,2667 because the gate copies an imp instruction to attack the imp itself, and this has, obviously, no effect.

```
;name stargate
;assert 1

org stun

gate    dat     stun,kill+10
for 10
        dat     0,0
rof

stun    spl     #kill-gate,kill-gate+10
        mov     *gate,>gate
        djn.f   -1,{gate-kill-15
kill    dat     kill-gate,kill-gate+10
```

This one is a less used clear, MyVamp 3.7 used it. It’s main advantage is that it allows the use on djn.f, better against replicators.
I named it stargate because of the mov *gate,>gate line.

Rank	Name	Author	%W	%L	%T	Score
1	stargate	Anonymous	37	1	63	691
2	Spiral #0,2667	Anonymous	1	4	95	98
3	Spiral #-1,2667	Anonymous	1	4	95	98
4	Spiral #2667,*0	Anonymous	1	40	59	62

5	Spiral #1,2667	Anonymous	0	99	1	1

As you an see it’s near unable to kill spirals with an a field of zero or small negative.

The last clear we discuss is Bjorn Guenzel’s d-clear

```
;redcode-94
;name d-clear
;author bjoern guenzel
;strategy clear (no scanning)
;assert CORESIZE==8000
;release 23.5.96
;kill d-clear

shift           equ -3000

ptr             dat >0,4000
                dat 0,0
start           spl #0,>ptr
                mov.i bomb,>ptr
                djn.f -1,>ptr
bomb            dat >2667,bomb-ptr+3
bsource         dat 0,0
boot z for 6
                mov.i {bsource,<bootptr
rof
bootptr         spl start+shift,bsource+shift
                mov.i #0,-1
                dat 0,0

z for MAXLENGTH-CURLINE
                spl #z*100,z*101
rof


                end boot
```

Rank	Name	Author	%W	%L	%T	Score
1	d-clear	bjoern guenzel	92	1	8	1129
2	Spiral #0,2667	Anonymous	1	90	9	12
3	Spiral #1,2667	Anonymous	1	90	9	12
4	Spiral #-1,2667	Anonymous	1	90	9	12
5	Spiral #2667,*0	Anonymous	0	96	4	4

As you can see it’s equally good against all imp species. Results may be a little distorted because I didn’t remove the boot, but not too much.

Before everyone chooses d-clear as the best one, give a look at those results; unless you have some stunning power in your warrior you’ll fall prey of every replicator.

Rank	Name	Author	%W	%L	%T	Score
1	TimeScape (1.0)	J. Pohjalainen	44	21	35	833
2	gate c-c2	Anonymous	38	15	47	161
3	stargate	Anonymous	35	35	30	135
4	gate c-c1	Anonymous	23	40	37	106
5	gate c-ca	Anonymous	11	38	51	84
6	d-clear	bjoern guenzel	0	92	8	8

From news-rocq.inria.fr!jussieu.fr!rain.fr!news.sprintlink.net!news-dc-9.sprintlink.net!news.sprintlink.net!news-peer.sprintlink.net!nntp-hub2.barrnet.net!venus.sun.com!ames!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Tue Oct 1 11:06:12 1996
Article: 6104 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!rain.fr!news.sprintlink.net!news-dc-9.sprintlink.net!news.sprintlink.net!news-peer.sprintlink.net!nntp-hub2.barrnet.net!venus.sun.com!ames!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr
From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 45
Date: 1 Oct 1996 01:17:45 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 287
Message-ID: <52prfp$840@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 45 September 30, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Greetings.

A good week for corewar. There were over a 100 challenges for the the '94 draft hill, testing and otherwise. Looks like weekly ages of under 20 are going to be pretty standard. It's going to be monumentally difficult to enter the hall of fame. Bezzi mentioned last issue that Steven Morrell was offering to recalculate the HOF by eliminating artificial aging, but we need to specify exactly how to do this. Since I haven't seen much discussion on this in the newsgroup, maybe Morrell should use his best judgement and present us with the 'new' hall of fame. There will probably be lots of discussion as soon as one of us sees our warrior drop ten places! Speak now or forever hold your peace (piece?).

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	37.4/ 19.4/ 43.2	Gigolo	Core Warrior staff	155.5	14
2	42.6/ 34.1/ 23.2	Damage Incorporated	Anton Marsden	151.1	1
3	35.5/ 21.1/ 43.4	unrequited love	kafka	149.8	58
4	40.5/ 31.8/ 27.6	CC Paper 2	Franz	149.2	13
5	42.1/ 39.6/ 18.3	Blur 2	Anton Marsden	144.6	137
6	31.4/ 18.6/ 50.0	Rosebud	Beppe	144.1	811
7	40.3/ 38.6/ 21.1	Probe	Anton Marsden	142.1	138
8	40.4/ 39.6/ 20.0	Goldfinch	P.Kline	141.2	79
9	36.9/ 33.2/ 29.9	Frogz	Franz	140.5	18
10	26.7/ 14.5/ 58.8	Return Of The Jedimp	John K W	138.8	126
11	25.7/ 12.9/ 61.3	ompega	Steven Morrell	138.5	253
12	41.7/ 45.8/ 12.5	Q^2 Miro	Anders Ivner	137.7	188
13	29.2/ 20.7/ 50.2	Impish v0.1	Ian Oversby	137.7	15
14	32.7/ 28.1/ 39.2	Simple v0.4b	Ian Oversby	137.4	89
15	37.6/ 38.5/ 23.9	Test	Anton Marsden	136.7	48
16	25.0/ 13.4/ 61.7	Implication v0.3	Ian Oversby	136.6	6
17	32.1/ 29.1/ 38.8	Falcon v0.3	Ian Oversby	135.0	43
18	39.6/ 44.9/ 15.5	Taking Names	P.Kline	134.4	3
19	36.7/ 39.8/ 23.6	mrb-test	m r bremer	133.6	44
20	36.2/ 38.9/ 24.9	Inferno 2.4	Philip Kendall	133.5	16
21	36.5/ 39.7/ 23.8	Instant Wolf 3.4	Edgar	133.2	21
22	34.7/ 36.7/ 28.6	T.N.T. pro	Maurizio Vittuari	132.7	856
23	38.0/ 43.4/ 18.5	myVamp5.5	Paulsson	132.6	28
24	31.7/ 31.6/ 36.7	Jack in the box II	Beppe Bezzi	131.9	495
25	26.8/ 24.1/ 49.1	Papyrus 13	Justin Kao	129.6	2

Weekly age: 13 (15 last issue, 9 the month before) more than 100 tests
New warriors: 8 Turnover/age rate 53%
Average age: 140 (146 last issue, 174 the week before)
Average score: 140 (142 last issue, 136 the week before)
The top 25 warriors are represented by 16 authors: Marsden and Oversby with 4; Franz and Bezzi with 2; singles for everyone else.

Testing, testing, testing . . . over 100 tests this week. Unfortunately for some authors (the gigolos), a test warrior can score a lot higher than the real warrior. You have been warned. Franz was probably the biggest tester this week, followed by JKW and Marsden.

Q^2 scans to bomber/imps seem to be the play of the day, but CC Paper 2 is bucking the trend. 40% wins is pretty good for a replicator. The power of the qscan is amazing.

Kline was testing some new warriors on the hill this week: Harmony III and a table based switcher--Yogi's replacement most likely. Neither have climbed too far up the hill by Paul has a way of chipping at a problem.

Damage Incorporated makes a strong showing, debuting in the second spot. The secret to its success? Qscan -> bomber. Try it; You'll like it.

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
2	42.1/ 31.4/ 26.5	CC Paper 2	Franz	152.8	1
14	20.5/ 12.2/ 67.3	Implication v0.3	Ian Oversby	128.9	1
24	37.0/ 48.3/ 14.7	Taking Names	P.Kline	125.8	1
24	25.2/ 24.5/ 50.4	Papyrus 13	Justin Kao	125.9	1

```
 2  42.6/ 34.1/ 23.2       Damage Incorporated        Anton Marsden 151.1    1
```

---

94 - What's No More

```
 #   %W /  %L /  %T                      Name              Author Score  Age
26   1.7/  1.9/  0.4                CC Paper                Franz   5.6    5
26  35.6/ 45.0/ 19.4          BackFromVacation               Edgar 126.3   19
26   0.3/  0.3/  3.4              Flimsy v0.5c          Ian Oversby   4.3   14
26  31.4/ 40.6/ 28.0                 Yogi Bear             P.Kline 122.3  341
26  35.8/ 47.7/ 16.4           Earthquake v0.2          Bjoern & Ian 123.9   95
```

With the loss of Yogi Bear this week, and Twister and Armory last week, average age of the hill is heading down and will probably never recover as old pre-test warrior are pushed off.

---

94 - What's Old

```
 #   %W /  %L /  %T                      Name              Author Score  Age
21  36.1/ 39.0/ 24.9               T.N.T. pro    Maurizio Vittuari 133.2  856
 9  31.5/ 19.7/ 48.8                  Rosebud                Beppe 143.2  811
17  33.8/ 30.3/ 35.9        Jack in the box II          Beppe Bezzi 137.2  495
16  25.1/ 12.6/ 62.3                  ompega       Steven Morrell 137.6  253
```

HALL OF FAME
* means the warrior is still active.

```
Pos    Name                  Author          Age     Strategy
 1  Thermite II            Robert Macrae     2262    Qscan -> bomber
 2  Impfinity v4g1         Planar            1993    Stone/ imp
 3  Jack in the box        Beppe Bezzi       1620    P-warrior
 4  Tornado 3.0            Beppe Bezzi       1567    Bomber
 5  Torch t18              P.Kline           1539    Bomber
 6  Chameleon              Myer R Bremer     1437    P-warrior
 7  Frontwards v2          Steven Morrell    1420    One shot scanner
 8  Evol Cap 6.6           John Wilkinson    1299    Imp / stone
 9  quiz                   Schitzo           1262    Scanner/ bomber
10  T.N.T.                 Maurizio Vittuari 1204    Bomber
11  Grilled Octopus v0.5   David Boeren      1154    P-warrior
12  Hazy Shade II          John Wilkinson    1102    P-warrior
13  Stepping Stone         Kurt Franke       1049    Qscan -> Vampire
14  Iron Gate 1.5          Wayne Sheppard     926    CMP scanner
15  Agony II               Stefan Strack      912    CMP scanner
16  Barrage                Anton Marsden      876    Qscan -> replicator
17  Blue Funk              Steven Morrell     869    Stone/ imp
18  T.N.T. pro             Maurizio Vittuari  856 *  Bomber
19  Flurry                 Anton Marsden      835    Qscan -> pwarrior
21  Rosebud                Beppe Bezzi        811 *  Stone/ imp
20  Thermite 1.0           Robert Macrae      802    Qscan -> bomber
22  Blue Funk 3            Steven Morrell     766    Stone/ imp
23  Night Train            Karl Lewin         755    Replicator
24  Mirage 1.5             Anton Marsden      736    Scanner/ bomber
25  Blizzard               Anton Marsden      713    Qscan -> replicator
```

Rosebud climbs one rank.

Current Status of the Internet Pizza Server Beginner's Hill:

```
Hill Specs:
   coresize: 8000
  max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    maximum age: At age 100, warriors are retired.
   rounds fought: 200
  instruction set: ICWS '94 Draft
```

The current Beginner hill:

```
 #   %W /  %L /  %T                      Name              Author Score  Age
 1  51.2/ 36.5/ 12.3           nSplit Lite v1.2                shar 165.8   30
```

2	50.1/ 38.3/ 11.6	Throw Rug	J E Long	161.9	66
3	41.1/ 25.8/ 33.1	Sapphire	Philip Kendall	156.5	1
4	45.8/ 37.8/ 16.4	Velveeta Shift-I	shar	153.8	42
5	46.9/ 40.7/ 12.4	Violent Micro v0.4d	basehead	153.0	80
6	39.3/ 26.7/ 34.0	Gravel 11	Justin Kao	151.9	3
7	41.5/ 33.5/ 25.0	Versatility 1.6	Ross	149.4	78
8	43.5/ 38.5/ 18.0	Heretic 1.0	Philip Kendall	148.5	91
9	43.8/ 39.2/ 17.0	Flamberge 9.0	Matt Lewinski	148.4	2
10	41.6/ 35.2/ 23.2	Black v0.1	Justin Kao	147.9	81
11	43.6/ 39.6/ 16.8	BloodSucker 1.0	Philip Kendall	147.7	90
12	36.9/ 26.7/ 36.4	Papyrus 13	Justin Kao	147.1	4
13	38.8/ 30.8/ 30.4	FastScan 1.0	Philip Kendall	146.8	22
14	45.4/ 45.0/ 9.6	Hawk 1.0	Philip Kendall	145.8	63
15	42.9/ 40.8/ 16.3	Eagle.b1	Philip Kendall	144.9	7
16	36.7/ 28.5/ 34.8	Papyrus 6	Justin Kao	144.9	97
17	44.0/ 43.6/ 12.4	Neverending Brutality 7	Franz	144.3	57
18	43.3/ 44.4/ 12.3	Conquest II	Zul Nadzri	142.1	23
19	39.0/ 37.4/ 23.7	Inferno 2.3	Philip Kendall	140.6	67
20	37.1/ 38.4/ 24.5	murder.p	harleyQ2	135.9	24
21	35.1/ 34.5/ 30.4	Hammermill v2.4	Matt Lewinski	135.8	38
22	35.0/ 34.4/ 30.6	Frog	Franz	135.5	44
23	35.6/ 38.5/ 25.8	RSB	harleyQ2	132.7	51
24	37.5/ 42.3/ 20.2	Vampirism 1.4	Philip Kendall	132.6	84
25	37.6/ 55.7/ 6.7	Rex II	Franz	119.4	6

Top scores plunge from the 170+ the top three warriors had last week. With the loss of the successful Tsunami, you would think some warriors would get big boosts to their scores. But new programs by Kendall, Kao, and Lewinski have only made the hill more competitive.

The Hint
Qscan bombing engines
by M R Bremer

Q^2 scans are optimized to detect the opposing warrior’s footprint as quickly as possible. But a quick detect and decode does little if your bombing methodology is flawed. I made that mistake with mrb-test (which will never have a real name because it doesn’t deserve one). Once the qscan finds the location, I subtract 100 and bomb through the scan to location+100. Pretty dumb, huh? The highest probability of enemy code should lie close to the originally scanned location. So here are some thoughts on bombing engines that should be much more successful.

Bomb forward from target-CONSTANT and target:

```
qbomb   dat     1, -CONSTANT
...
loop    mov.i   qbomb, @1
        mov.i   qbomb, @target        <-- detected location
        add.ab  #x, -1
        djn.b   loop, #10
```

Everything following the target gets bombed quickly. However, code immediately above will be hit much more slowly. If your qscan flows forward through core in small increments, then this will be less of a problem. Becuase a smaller increment qscan scanning forward in core should find the ’top’ of the enemy’s code.

Bomb forward and backwards from target:

```
qbomb   dat     -step, step
found   dat     x, x+step

;this one bombs x and x+step then x-step and x+2*step ...
...
loop    mov     qbomb, @found
        mov     qbomb, *found
        add.f   qbomb, found
        djn.b   loop, #10
```

This code is slower to start up because of the extra add statement needed to set up the operands of ’found’ instruction.

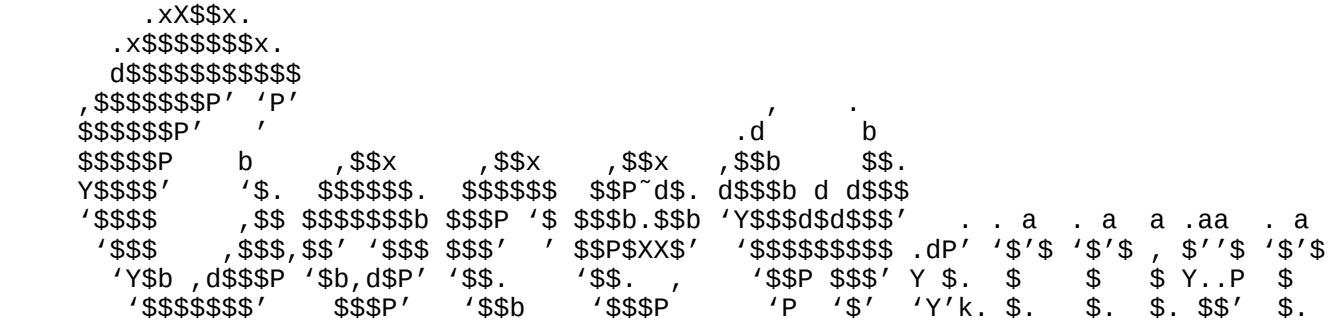
Going faster is possible using a tornado engine, but we'll lose symmetry. Which may not be too bad since instructions above the target are arguably worth 'less' than instructions below it. This code snippet bombs down in core at .4c and up at .2c. We could even modify this code for incendiary bombing forward in core.

```
bomb    dat x, step
incr    dat -step, 2*step


start   mov bomb, @ptr
        mov bomb, *ptr
ptr     mov -step, @step
        add incr, -1
        djn -5, #10
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@comp.vuw.ac.nz>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!cs.utexas.edu!howland.erols.net!news-peer.gsl.net!news.gsl.net!news.uoregon.edu!waikato!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden Mon Oct 7 16:30:24 1996
Article: 6157 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!cs.utexas.edu!howland.erols.net!news-peer.gsl.net!news.gsl.net!news.uoregon.edu!waikato!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@comp.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 46
Date: Mon, 7 Oct 1996 18:17:55 +1300
Organization: NetLink Wellington, New Zealand.
Lines: 403
Message-ID: <Pine.SOL.3.91.961007181711.19111B-100000@regent.comp.vuw.ac.nz>
NNTP-Posting-Host: regent.comp.vuw.ac.nz
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII



Issue 46 October 7, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

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Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

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Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

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ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Greetings.

There was a lot of activity on the 94 hill this week mainly due to testing - the claim is that 100 rounds isn’t enough to measure the performance of a warrior - there will be greater fluctuations in test scores. Perhaps testing should go for 200 rounds.

The Core War Standards committee has not been discussed much. Is it needed right now? Maybe we just need some players to volunteer to complete the ’94 draft documentation and other details. To get more people to play the game someone could arrange an archive for DOS (a popular platform) which contains PMARS, documentation, tutorials, Internet information, etc. and then

distribute the archive. If you do plan to do either of these things, let everyone else know beforehand. Just some thoughts :-)

A reminder: Beppe has organised a tournament. Those who are participating should have received information from him.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	47.0/ 36.7/ 16.3	Blur 2	Anton Marsden	157.3	183
2	31.3/ 9.6/ 59.1	Return Of The Jedimp	John K W	152.9	6
3	43.3/ 34.3/ 22.4	Damage Incorporated	Anton Marsden	152.4	47
4	35.3/ 20.8/ 43.9	Gigolo	Core Warrior staff	149.8	60
5	34.4/ 20.5/ 45.1	unrequited love	kafka	148.3	104
6	30.7/ 14.3/ 54.9	Impish v0.2	Ian Oversby	147.1	45
7	45.8/ 44.7/ 9.5	Q^2 Miro	Anders Ivner	146.9	234
8	40.4/ 36.5/ 23.1	Instant Wolf 3.4	Edgar	144.3	67
9	41.0/ 38.0/ 21.0	Probe	Anton Marsden	144.1	184
10	40.8/ 39.5/ 19.7	Goldfinch	P.Kline	142.1	125
11	29.1/ 18.3/ 52.6	Rosebud	Beppe	140.0	857
12	38.3/ 38.8/ 22.9	mrb-test	m r bremer	137.9	90
13	32.5/ 27.4/ 40.1	Falcon v0.3	Ian Oversby	137.6	89
14	34.2/ 30.8/ 35.0	CC Paper 3.3	Franz	137.5	2
15	35.5/ 34.2/ 30.3	Frogz	Franz	136.9	64
16	36.0/ 35.2/ 28.8	T.N.T. pro	Maurizio Vittuari	136.9	902
17	31.8/ 28.5/ 39.7	Simple v0.4b	Ian Oversby	135.1	135
18	23.5/ 12.0/ 64.5	ompega	Steven Morrell	135.0	299
19	36.2/ 38.7/ 25.0	Inferno 2.4	Philip Kendall	133.8	62
20	38.0/ 43.7/ 18.2	Taking Names	P.Kline	132.3	49
21	29.3/ 29.3/ 41.5	Jack in the box II	Beppe Bezzi	129.2	541
22	33.5/ 39.3/ 27.2	mayhem	harleyQ2	127.7	3
23	24.9/ 35.4/ 39.7	Barbarian 3.1	Franz	114.4	5
24	7.3/ 20.0/ 72.6	sin	harleyQ2	94.6	1
25	4.0/ 0.0/ 0.0	Test	Anton Marsden	12.0	94

Weekly age: 46 (13 last issue, 15 the week before)
New warriors: 6 (2 of which won't last long) Turnover/age rate 13%
Average age: 169 (140 last issue, 146 the week before)
Average score: 133 (140 last issue, 142 the week before)
The top 25 warriors are represented by 15 authors: Marsden with 4; Franz and Oversby with 3; Beppe, Kline and harleyQ2 with 2; everyone else with 1.

King Report: Gigolo was on top for the majority of the challenges but Return of the Jedimp and Blur 2 managed to get reach 1st place for several challenges.

Q^2 scans are still doing very well and will probably continue to do so. They turn draws into wins and this has a big advantage when combined with paper/imp types.

There was a lot of testing this week, mainly by JKW and Franz.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
5	28.3/ 15.9/ 55.9	Impish v0.2	Ian Oversby	140.6	1
1	27.7/ 10.4/ 61.9	Return Of The Jedimp	John K W	145.0	1
24	22.3/ 36.5/ 41.2	Barbarian 3.1	Franz	108.1	1

19	34.0/ 40.1/ 25.9	mayhem	harleyQ2	127.9	1
14	31.8/ 33.0/ 35.2	CC Paper 3.3	Franz	130.5	1
25	3.3/ 21.1/ 75.6	sin	harleyQ2	85.6	1

Return of the Jedimp enters the hill in 1st place and Impish v0.2 also does well to make 5th.

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	31.4/ 40.6/ 28.0	Yogi Bear	P.Kline	122.3	341
26	35.8/ 47.7/ 16.4	Earthquake v0.2	Bjoern & Ian	123.9	95
26	33.6/ 45.2/ 21.2	myVamp5.5	Paulsson	122.1	59
26	1.2/ 35.3/ 63.6	IMP Factory	Franz	67.1	2

The most significant loss this week was Yogi Bear (a pspacer).

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
16	36.0/ 35.2/ 28.8	T.N.T. pro	Maurizio Vittuari	136.9	902
11	29.1/ 18.3/ 52.6	Rosebud	Beppe	140.0	857
21	29.3/ 29.3/ 41.5	Jack in the box II	Beppe Bezzi	129.2	541

No new entries here, but Yogi Bear is now gone. None of the older warriors are in the top ten, indicating that the newer warriors are of a higher quality.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	Agony II	Stefan Strack	912		CMP scanner
16	T.N.T. pro	Maurizio Vittuari	902	*	Bomber
17	Barrage	Anton Marsden	876		Qscan -> replicator
18	Blue Funk	Steven Morrell	869		Stone/ imp
19	Rosebud	Beppe Bezzi	857	*	Stone/ imp
20	Flurry	Anton Marsden	835		Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

Both T.N.T. pro and Rosebud move into better positions.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200

instruction set: ICWS '94 Draft

The current Beginner hill:

#	%W / %L / %T	Name	Author	Score	Age
1	49.6/ 39.4/ 11.1	Throw Rug	J E Long	159.8	78
2	43.2/ 38.8/ 18.0	Velveeta Shift-I	shar	147.6	54
3	41.9/ 36.2/ 22.0	mayhem	harleyQ2	147.5	4
4	43.5/ 40.5/ 16.0	nSplit Lite v1.2	shar	146.6	42
5	43.9/ 41.4/ 14.6	Hawk 1.0	Philip Kendall	146.4	75
6	40.1/ 34.2/ 25.7	Versatility 1.6	Ross	146.1	90
7	33.7/ 21.3/ 45.0	Gravel 11	Justin Kao	146.0	15
8	42.9/ 39.9/ 17.2	Flamberge 9.0	Matt Lewinski	145.8	14
9	42.5/ 40.0/ 17.5	Violent Micro v0.4d	basehead	145.1	92
10	39.0/ 33.1/ 27.8	Inferno 2.3	Philip Kendall	145.0	79
11	33.0/ 27.9/ 39.1	FastScan 1.0	Philip Kendall	138.2	34
12	36.5/ 35.0/ 28.5	Black v0.1	Justin Kao	137.9	93
13	31.2/ 24.7/ 44.0	Sapphire	Philip Kendall	137.7	13
14	35.7/ 37.1/ 27.2	murder.p	harleyQ2	134.3	36
15	29.9/ 27.4/ 42.8	Papyrus 13	Justin Kao	132.4	16
16	37.2/ 42.5/ 20.2	Microsoft NT v2.5	Justin Kao	131.9	5
17	37.3/ 42.7/ 20.1	Eagle.b1	Philip Kendall	131.9	19
18	35.1/ 38.4/ 26.5	Microsoft NT test	Justin Kao	131.8	1
19	37.8/ 45.7/ 16.5	Neverending Brutality 7	Franz	129.9	69
20	38.0/ 46.5/ 15.5	Conquest II	Zul Nadzri	129.6	35
21	35.3/ 41.5/ 23.1	Vampirism 1.4	Philip Kendall	129.2	96
22	30.3/ 32.6/ 37.1	Frog	Franz	128.0	56
23	32.3/ 37.5/ 30.2	RSB	harleyQ2	127.2	63
24	23.7/ 22.4/ 54.0	Sand Storm v0.1	Justin Kao	125.0	10
25	20.5/ 37.5/ 42.0	Hammermill 4.0	Matt Lewinski	103.5	2

The top score has fallen substantially from what it was last week and the warrior scores are more evenly spread indicating that the "beginners" are getting better - it might be time for some of you to start submitting warriors to the 94x hill - there are some old but good warriors on there.

The Hint
Mutation - improving your end game
by Anton Marsden

There has been little development in the basic warrior types recently, perhaps because further optimisation cannot be obtained or is difficult to obtain. In this hint I will discuss mutation of warriors - a potentially powerful method of optimisation.

The most common use of mutation is to bomb your code with a SPL instruction to start a core clear. This technique is usually used in incendiary bombers (see CW #15 for more information on this). The whole idea behind mutation is to reduce the code size (or the number of sequential instructions).

To illustrate the possibilities ...

This is one of my old warriors (Mirage 1.5) with a "standard" DAT clear. It is 11 lines long.

```
ORG s

step EQU 3039
gate EQU data
btm EQU (clr+1)

data: spl.a  #0,>step
pos:  add.ab #step,#2*step
kill: mov.i  bomb,>data
s:    jmz.f  @0,@pos
c:    slt.b  pos,#btm-data+2
      mov.b  pos,data
      jmn.b  @0,pos

bomb: spl.a  #0,#0
      mov.i  clr,>gate
```

```
      djn.f  -1,{gate
clr:  dat.f  0,btm-gate+1
```

I wanted to add a spiral clear to this (see CW #17), but adding the clear made the warrior too big to get anywhere on the hill. Solution: mutation. Amazingly, I could mutate the scan engine into a forward DAT clear and spiral scan. Here is how it turned out (you really have to watch it to see what it does):

```
ORG s

step EQU 98 ; mod-2 - give the spiral clear enough time to go through the core
btm EQU (bomb+1)

data: spl.a  #0,step
pos:  add.ab #step,#2*step
kill: mov.i  bomb,>data
s:    jmz.f  @0,@pos
c:    slt.b  pos,#btm-data+2
chg:  mov.f  @s,@kill
      jmn.b  pos,*0
      mov.f  next,<chg ; pos: add.ab #381,#btm-data
                       ; chg: mov.f @s,@pos
      djn.f  >-2,{chg  ; Stop jmn from falling through again
                       ; chg: mov.f @kill,@pos -> mov.f next,@pos
                       ; kill: mov.i next,>data-1

next: dat.f  381,btm-data
bomb: spl.a  #0,#0
```

This warrior is also 11 lines long, a great improvement! However, it took me hours to get it working properly. Notice the use of indirection and decrements to mutate the code (the chg line is the key to the whole process). The entire warrior (with name, boot, decoy and a few other changes) is at the end of this issue. It still performs poorly against fast scanners/bombers but is much better against imp types. There is a tradeoff between robustness and functionality - the SPL in Mirage stopped it from terminating if the code below the SPL was bombed whereas the new warrior’s instructions must be completely intact to avoid termination.

Mutations like this are very hard to accomplish so I will now suggest a general approach to designing these warriors.

Take the basic structure of the first stage of your warrior and try and base the second stage around it, ie. structure it so that the second stage can be obtained with little change to the instruction sequence.

You need to trigger your mutation somehow. The best approach may be to fall through a DJN/JMN check. If you are dealing with a self-splitting bomber DJN is one to use. Also, self-splitting has the advantage that you don’t have to jump back into the main loop after a mutation.

The next step is to make the mutation happen properly. Use as many lines of code as is necessary. Also remember to modify the code so that the mutation is not retriggered later.

The final step is the most creative. You should aim to reduce the number of lines required for the mutation. This can be done by:

- Using indirection and decrements (DJN is very useful).
- Swapping instructions.
- Thinking very hard.

You will need a lot of patience. Sometimes you may find that optimisation is just not possible. Then it’s time to take another look at the structure or the trigger... or just give up :-)

I hope this information will help someone out there...

Have fun!

Extra Extra
Eggbeater
by Anton Marsden

The warrior boots and immediately starts overwriting it’s own boot code, starting with the destination pointer.

```
;redcode-94
;name Eggbeater
;author Anton Marsden
;strategy Mirage 1.5 with spiral clear
;assert CORESIZE==8000

N FOR 7
    spl.i #0,#0
    spl.a #N+(1*8),#N+(1*8)
    spl.f #0,#0
    spl.x #N+(2*8),#N+(2*8)
    spl.b #0,#0
    spl.ab #N+(3*8),#N+(3*8)
    spl.ba #0,#0
    spl.b #N+(4*8),#N+(4*8)
    spl.ab #0,#0
    spl.f #N+(5*8),#N+(5*8)
ROF

FOR 3
    spl.x #0,#0
    spl.a #1,#1
ROF

;-----------------

destdiv2 EQU 2000 ; not really this
dest EQU (2*destdiv2+1) ; odd number :-)

boot: mov.i  bomb,dest
FOR 9
      mov.i  {boot,<boot
ROF
      spl @boot,}2001
      mov.i  {boot,<boot
      dat.f  $0,$0

;-----------------

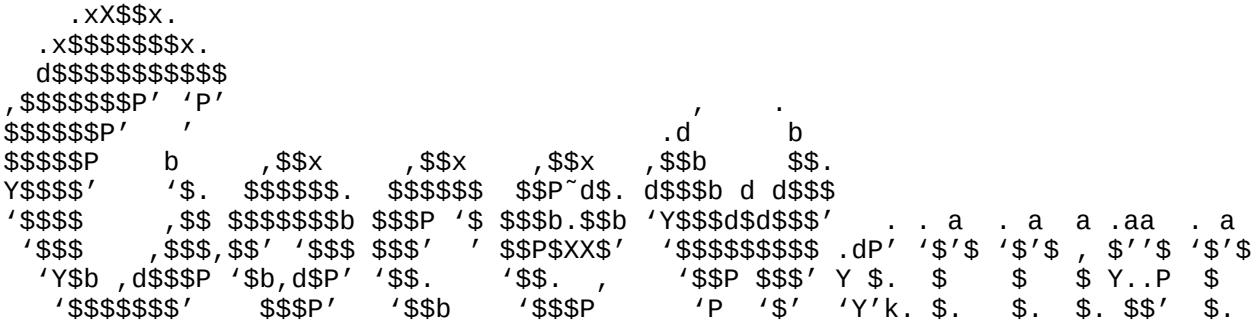
step EQU 98 ; mod-2
btm EQU (bomb+1)

data: spl.a  #0,>-dest+bomb
pos:  add.ab #step,#0
kill: mov.i  bomb,>data
s:    jmz.f  @0,@pos
c:    slt.b  pos,#btm-data+2
chg:  mov.i  @s,@kill
      jmn.b  pos,*0
      mov.f  #381,<chg
      djn.f  <-2,{chg

next: dat.f  0,btm-data
bomb: spl.a  #0,#0

END boot
```

From bezzi@nemo.it Mon Oct 14 10:11:10 1996
Received: from nez-perce.inria.fr (nez-perce.inria.fr [192.93.2.78]) by tobago.inria.fr (
8.6.10/8.6.6) with ESMTP id KAA01294 for <doligez@tobago.inria.fr>; Mon, 14 Oct 1996 10:1
0:45 +0200
Received: from nemont.nemo.it ([194.184.149.2]) by nez-perce.inria.fr (8.7.6/8.7.1) with
SMTP id KAA23255 for <Damien.Doligez@inria.fr>; Mon, 14 Oct 1996 10:10:32 +0200 (MET DST)
Received: from async2.nemo.it (194.184.149.104) by nemont.nemo.it
(EMWAC SMTPRS 0.81) with SMTP id <B0000207459@nemont.nemo.it>;
Mon, 14 Oct 1996 10:09:30 +0100
Message-ID: <B0000207459@nemont.nemo.it>
X-Sender: bezzi@mail.nemo.it
X-Mailer: Windows Eudora Light Version 1.5.2
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
Date: Mon, 14 Oct 1996 10:07:12 +0200
To: corewar-l@stormking.com, "Myer R. Bremer" <bremermr@ecn.purdue.edu>,
Damien.Doligez@inria.fr (Damien Doligez), b.guenzel@ucl.ac.uk,
amarsden@st-james.comp.vuw.ac.nz, bezzi@nemo.it
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 47
Status: R



Issue 47 14 October, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi’s hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

NEW
Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

The first round of the tournament has been a real debacle for Core Warrior staff. Myer and Anton, pitted against two opponents like the young lion Franz and the expert Steven Morrell, lost their matches and now are in the

bottom of the standings. One cannot leave them alone for a moment :-)

The 94 hill lost two of the three older warriors, TNT pro and Jack in the box II. All happened when Robert Mcrae, back to the arena after some time for the tournament and under an obvious attack of battle lust, submitted a dozen test warriors to the hill leaving it with perhaps the lowest average age from its creation, only 117

Thos modified the format of his hills on the web page; now you can look at warriors headers, or mail the author, with a click of the mouse. Good work.

--Beppe Bezzi

Tournament time

First round of my tournament is over, not without some surprising result. Some of the 'battle scarred veterans' have been beated by jounger player used at the beginners hill more than at the hall of fame, in particular the victories of Matt Lewinsky and Justin Kao against two veterans of the caliber of Robert Mcrae and J.K. Wilkinson are worth mention, congratulations.

Here are first round results and standings:

CC Paper 3T by Franz scores 369
Chameleon by M R Bremer scores 180
Results: 106 43 51

invicta by John K. Lewis scores 95
mayhem.q by harleyQ2 scores 455
Results: 15 135 50

Falcon v0.5 by Ian Oversby scores 529
T-1 vX by Ross Morgan-Linial scores 64
Results: 174 19 7

Yet 4b Clear by Justin Kao scores 277
evoltmp by John K W scores 271
Results: 75 73 52

ompega by Steven Morrell scores 279
Damage Incorporated by Anton Marsden scores 225
Results: 61 43 96

Fleetfoot in a Rose-Garden by Robert Macrae scores 120
Flamberge 101 by Matt Lewinski scores 465
Results: 35 150 15

Tangle Trap by David Moore scores 230
Sapphire by Philip Kendall scores 341
Results: 67 104 29

myConfuser by Paulsson scores 383
Negative Energy by Zul Nadzri scores 200
Results: 122 61 17

digital breakdown v01b by bjoern guenzel scores 181
Linalg by George Eadon scores 253
Results: 5 29 166

Standing after round 1 are the following:

Pos.	#	Player	Score
1	1	Franz	3
1	4	Joshua	3
1	5	Ian Oversby	3
1	7	Justin Kao	3
1	9	Steven Morrell	3
1	12	Matt Lewinski	3

1	14	Philip Kendall	3
1	15	Magnus Paulsson	3
1	18	G. Eadon	3
10	2	M. R. Bremer	0
10	3	J. K. Lewis	0
10	6	Ross Morgan-Linial	0
10	8	J. K. Wilkinson	0
10	10	Anton Marsden	0
10	11	Robert McRae	0
10	13	David M. Moore	0
10	16	Zul Nadzri	0
10	17	Bjoern Guenzel	0

Next round will be played withlimited processes rules; redcode and coresize are those of first round but warriors have to work under following assert:

```
;assert MAXPROCESSES == 8 && MAXLENGTH == 200
```

You can see tournament results at my new web page:
http://www.aspide.it/freeweb/Bezzi

the tournament internal link is still floating, because the page is under construction, but I hope all of you will be able to find them even if most of the text is writen in italian (Corewar part is in english, don’t worry)

I’m working at something interesting for next rounds, stay tuned.

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS ’94 Draft

The current ICWS ’94 Draft hill:

#	%W /	%L /	%T	Name	Author	Score	Age
1	36.7/	20.8/	42.5	Gigolo	Core Warrior staff	152.6	116
2	45.6/	45.0/	9.4	Memories	Beppe	146.2	7
3	32.9/	20.4/	46.6	unrequited love	kafka	145.4	160
4	39.2/	33.5/	27.3	Damage Incorporated	Anton Marsden	144.9	103
5	29.3/	15.0/	55.7	Return Of The Jedimp	John K W	143.6	62
6	30.2/	16.8/	53.0	Impish v0.2	Ian Oversby	143.5	101
7	41.1/	39.1/	19.8	Blur 2	Anton Marsden	143.1	239
8	30.4/	18.4/	51.1	Rosebud	Beppe	142.4	913
9	34.4/	29.0/	36.7	Tiberius	Franz	139.7	23
10	24.3/	10.9/	64.8	testing t2	John K W	137.8	2
11	24.2/	10.7/	65.1	Trident^2	John K W	137.7	8
12	41.8/	46.1/	12.1	Eggbeater	Anton Marsden	137.6	21
13	23.4/	9.9/	66.7	test	John K W	136.8	1
14	32.0/	27.9/	40.2	Simple v0.4b	Ian Oversby	136.0	191
15	37.3/	39.1/	23.6	Probe	Anton Marsden	135.5	240
16	24.7/	14.4/	60.9	ompega	Steven Morrell	135.0	355
17	31.3/	27.5/	41.2	Falcon v0.3	Ian Oversby	135.0	145
18	36.4/	39.1/	24.5	Goldfinch	P.Kline	133.8	181
19	40.3/	47.5/	12.2	Q^2 Miro	Anders Ivner	133.1	290
20	38.2/	43.4/	18.4	Bodge 1	Robert Macrae	133.0	32
21	38.3/	43.9/	17.8	Harmony	P.Kline	132.8	26
22	31.9/	31.4/	36.8	CC Paper 3.3	Franz	132.3	58
23	35.5/	40.2/	24.3	Instant Wolf 3.4	Edgar	130.9	123
24	33.3/	36.6/	30.1	Frogz	Franz	129.9	120
25	34.6/	40.7/	24.7	Instant Wolf	Edgar	128.5	40

I like this hilltop :-)

Weekly age: 56 (46 last issue, 13 the week before)
New warriors: 9 Turnover/age rate 16%

Average age: 142 (169 last issue, 140 the week before)
Average score: 138 (133 last issue, 140 the week before)
The top 25 warriors are represented by 15 authors: Marsden with 4; Franz and Oversby with 3; Beppe, Kline and Edgar with 2; everyone else with 1.

King Report: Lot of movement in the top, no warrior held the King spot for long. Blur 2, Damage Incorporated, Return of Jedimp and Unrequited Love kept it for some challenge.

Q^2 scans are still at the top in various combinations. Paper warriors are losing a bit while anti imp scanners are back. Pspacers are having very hard times; the first of them is in 18th position

Lots of testing this week, more than 70 test challenges.
To submit a test warrior you have to put the word 'test' where usually goes quiet or verbose. Example to test on the 94 hill:

```
;redcode-94 test
;name Test
...
```

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
2	45.1/	46.2/	8.7	Memories	Beppe	144.0	1
5	37.7/	28.6/	33.7	Tiberius	Franz	146.7	1
8	20.1/	9.2/	70.7	Trident^2	John K W	131.0	1
11	22.3/	11.2/	66.5	testing t2	John K W	133.3	1
13	37.2/	40.0/	22.7	Instant Wolf	Edgar	134.5	1
15	40.7/	43.2/	16.1	Harmony	P.Kline	138.3	1
15	19.5/	10.0/	70.5	test	John K W	129.0	1
16	42.6/	47.7/	9.7	Eggbeater	Anton Marsden	137.5	1
20	38.7/	48.3/	13.0	Bodge 1	Robert Macrae	129.1	1

Three new entries in the top ten: new version of Memories, Tiberius and Trident^2

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	32.3/	40.4/	27.3	T.N.T. pro	Maurizio Vittuari	124.2	925
26	26.8/	30.7/	42.5	Jack in the box II	Beppe Bezzi	123.0	559
26	33.6/	42.4/	24.0	mrb-test	m r bremer	124.8	114
26	2.1/	1.3/	0.6	Test	Anton Marsden	7.0	95
26	32.5/	42.1/	25.4	Inferno 2.4	Philip Kendall	123.0	84
26	37.1/	48.8/	14.1	Taking Names	P.Kline	125.4	68
26	30.8/	44.3/	24.9	mayhem	harleyQ2	117.3	19
26	21.6/	35.9/	42.5	Barbarian 3.1	Franz	107.3	9
26	3.7/	21.9/	74.4	sin	harleyQ2	85.5	4

T.N.T. pro ends its run at 925 age, Jack II at 559.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
8	30.4/	18.4/	51.1	Rosebud	Beppe	142.4	913
16	24.7/	14.4/	60.9	ompega	Steven Morrell	135.0	355
19	40.3/	47.5/	12.2	Q^2 Miro	Anders Ivner	133.1	290
15	37.3/	39.1/	23.6	Probe	Anton Marsden	135.5	240
7	41.1/	39.1/	19.8	Blur 2	Anton Marsden	143.1	239

Rosebud is now the oldest warrior.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp

3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
15	T.N.T. pro	Maurizio Vittuari	925		Bomber
16	Rosebud	Beppe Bezzi	913	*	Stone/ imp
17	Agony II	Stefan Strack	912		CMP scanner
18	Barrage	Anton Marsden	876		Qscan -> replicator
19	Blue Funk	Steven Morrell	869		Stone/ imp
20	Flurry	Anton Marsden	835		Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

T.N.T. pro ends its run in 15th position. Rosebud moves up some spots.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

The current Beginner hill:

#	%W / %L / %T	Name	Author	Score	Age
1	48.2/ 16.0/ 35.8	Dust 0.7	Justin Kao	180.5	3
2	48.2/ 38.5/ 13.3	Velveeta Shift-I	shar	157.9	93
3	47.5/ 37.9/ 14.7	Paper Shredder 3500	Justin Kao	157.1	30
4	47.0/ 38.6/ 14.4	mayhem.q	harleyQ2	155.3	6
5	47.8/ 41.4/ 10.8	Flamberge 101	Matt Lewinski	154.3	7
6	45.8/ 38.7/ 15.5	nSplit Lite v1.2	shar	152.9	81
7	37.8/ 23.9/ 38.3	Q Yogurt	Franz	151.7	26
8	44.6/ 40.7/ 14.7	Recover 3	Franz	148.5	1
9	44.7/ 41.2/ 14.1	Eagle.b1	Philip Kendall	148.2	58
10	42.3/ 38.6/ 19.1	mayhem	harleyQ2	146.0	43
11	34.6/ 24.3/ 41.0	Gravel 11	Justin Kao	144.9	54
12	34.1/ 25.0/ 40.9	FastScan 1.0	Philip Kendall	143.3	73
13	29.5/ 20.9/ 49.6	Papyrus 13	Justin Kao	138.1	55
14	40.8/ 44.9/ 14.3	Neverending Brutality 10	Franz	136.7	22
15	29.1/ 23.8/ 47.1	testing	Anonymous	134.4	4
16	29.7/ 25.1/ 45.2	Sapphire	Philip Kendall	134.3	52
17	37.5/ 40.9/ 21.7	hack.exp	harleyQ2	134.1	8
18	35.9/ 38.2/ 25.9	murder.p	harleyQ2	133.6	75
19	39.7/ 47.1/ 13.2	Conquest II	Zul Nadzri	132.4	74
20	37.1/ 42.9/ 20.0	Microsoft NT v2.5	Justin Kao	131.3	44
21	26.2/ 23.5/ 50.4	Sand Storm v0.7	Justin Kao	128.8	38
22	35.0/ 42.4/ 22.6	Autumn Leaves	Matt Lewinski	127.7	27
23	28.3/ 30.4/ 41.3	Frog	Franz	126.3	95
24	27.3/ 30.2/ 42.4	Linalg	George Eadon	124.4	9
25	27.2/ 31.1/ 41.7	Barbarian 3	Franz	123.3	23

Dust 0.7 holds the head with an incredible lead over the second; in fact the warrior did well also in the 94 hill; Justin it’s time to play in the pros and leave the -b hill to beginners, same thing for Franz of course.

The Hint
Better Warriors (Papers and Stones)
by Franz

I'm writing this because I don't think these topics have been covered, or I haven't read about them anywhere.

And I am still a beginner so my coding is not so good. These are the things that I have found useful. (what I'm trying to say is this code may suck)

STONES
======

Making stones anti-imp ... well here are a few ideas that DO work. At least I think they do!

If writing regular stone (.33c) have the counter where you are bombing, well in front of the warrior, that way when you add to it, you might kill an imp. your bomb line can also be something like

```
...
mov >gate,@where
...
```

But what about those .6c bombers which have the counter as one of the mov lines ... well put that line as far up as you can and the add line as low as you can. here's an exemple

(opt is the step number, stbm is where to start bombing)

```
gate    dat opt,xxx ;this is the gate line decremented and used as a bomb
...                 ;also the a field is used for the where line bombing

...
stone   mov gate,@where             ;no bdecrement we have to use the gate
where   mov >stbm+opt,*stbm+(opt*2) ;use anything but here we increment
                                    ;the a field which will be bombed in
                                    ;the next step
        mov >gate,*where
        add.f jump,where            ;jump is my coreclear spl# line
        jmp stone,>gate
...

...
jump    spl #opt*3,opt*3
...
```

This is quite effective against imps large spirals especially ... try your old stone configuration against this.

Self splitting might be used in this warrior too ... be sure to reverse the instructions on selfsplitting stones as they are executed backwards. This has been covered many times, by many people ... but I still make that mistake sometimes and then wonder why it doesn't work right. this is usually just small speed decrease but in some cases the speed can go down by .2c and you wander why your bomber is slow.

I have found the >gate is probably the most effective gate there is. Watch how mov #step,*0 can get through

If you increment the *0 to *1 it becomes

```
mov #xxx,*1
```

which can still live as a normal imp (1 point) and could potentially hurt your code or at least start executing your code and tie ... This is what you can do to prevent it

```
gate   dat 0,0
```

```
...
       dat -20,0
...
;your code here
```

this will kill such an imp since the imp uses the a-field of the next instruction for movement and this will kill it. Since it copies itself behind and then just falls off and dies on the dat -20,0

PAPERS
======

What to do with papers.

Silk is probably the only paper worth doing at this time. But how to do a good silk.

From the tutorial you saw how to do a small yet inefficent silk .. since
Status: R

it has to take care of the pointers and reset them. Remember each instruction in a silk is executed many times, so just resetting a pointer takes many turns and slows down the paper. Here's how to avoid it

```
spl @0,>step1  ;silk1
mov }-1,>-1
spl @0,>step2  ;silk2
mov }-1,>-1
spl @0,>step3  ;silk3
mov }-1,>-1
.. your attack goes here
```

this will make copies 3 kinds one will have 3 copiers and be an exact copy, one will have two silks and one will have one silk.

This is probably the standard way to silk .. maybe with a timescape routine at the end which makes one more copy.

Your attack:

1) make sure it never just falls off. It has to continue or you have to make sure it dies. Since if an enemy executes your code he will usually fall htrough to the attack and you want him to die. I did this by making the last instruction copied with the paper a bomb which i used for the attack and then it would die. the problem with falling off is that the enemy migth go through your attack and then fall back to his own code.

2) NEVER, NEVER use DJN.F 0, <-xx for bombing. I tried this and it's VERY hostile against silks but a lot of other warriors are immune or little affected by this.

3) Remember the longer the paper the longer it takes to copy, do not make the bomb routine long, instead bomb a few times and let it die but in the meantime you have several other copies already bombing. Bombing by copying several lines after you is also not too effective .. it's better to just use a bomb routine which can be more effective.

good bomb routines is a set of

```
...
mov >-x,<x
mov >-x*2,<x*2
mov >-x*3,<x*3
...
```

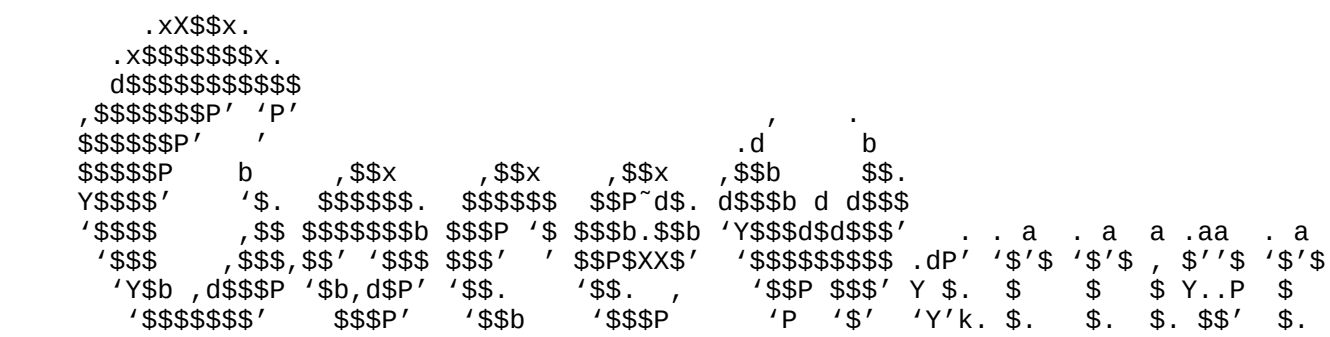
or similiar ... it increments one locations decrements another and creates a bomb carpet on the second location. so depending on the numebr of proccesses n, you bomb n locations decrement 1 n times and increment 1 n times. if you just made n higher and copy few bombs with you you would lose 2 cycles to every bomb since the copy routine works at .5c and the

bomb routine works at 1c for bombs.

OK that’s enough for today.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
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or Anton Marsden <amarsden@comp.vuw.ac.nz>

From bremermr@ecn.purdue.edu Tue Oct 29 04:03:35 1996
Received: from nez-perce.inria.fr (nez-perce.inria.fr [192.93.2.78]) by tobago.inria.fr (
8.6.10/8.6.6) with ESMTP id EAA15634 for <doligez@tobago.inria.fr>; Tue, 29 Oct 1996 04:0
3:34 +0100
Received: from cartoon.ecn.purdue.edu (cartoon.ecn.purdue.edu [128.46.147.13]) by nez-per
ce.inria.fr (8.7.6/8.7.1) with ESMTP id EAA27671 for <Damien.Doligez@inria.fr>; Tue, 29 O
ct 1996 04:03:30 +0100 (MET)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
by cartoon.ecn.purdue.edu (8.7.6/3.8.2moyman)
for delivery to "Damien.Doligez@inria.fr"
id WAA19720; Mon, 28 Oct 1996 22:03:27 -0500 (EST)
Message-Id: <199610290303.WAA19720@cartoon.ecn.purdue.edu>
Date: Mon, 28 Oct 1996 22:03:27 -0500 (EST)
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: Core Warrior 48
Status: R



Issue 48 28 October, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi’s hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

NEW: Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

---

Greetings.

Sorry for the interruption in service. But this issue should be worth the wait. Marsden is offering some help on how to beat those nasty imp/stones in this week’s hint. Plus get the inside scoop on the warrior that’s whipping all of us--The Machine.

--M R Bremer

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS ’94 Draft

The current ICWS ’94 Draft hill:

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.9/	36.6/	18.6	The Machine	Anton Marsden	153.2	10
2	42.6/	36.6/	20.8	Damage Incorporated	Anton Marsden	148.5	145
3	30.7/	13.1/	56.2	Return Of The Jedimp	John K W	148.3	104
4	32.1/	17.6/	50.3	Trident^2	John K W	146.7	34
5	35.7/	25.3/	39.0	Gigolo	Core Warrior staff	146.1	158
6	34.9/	23.9/	41.1	unrequited love	kafka	145.9	202
7	42.3/	42.0/	15.8	Blur 2	Anton Marsden	142.6	281
8	44.0/	46.5/	9.5	Memories	Beppe	141.6	18
9	37.7/	33.9/	28.4	Tiberius 3.1	Franz	141.4	21
10	29.4/	20.3/	50.3	Impish v0.2	Ian Oversby	138.4	143
11	39.6/	41.4/	18.9	Probe	Anton Marsden	137.9	282
12	28.7/	23.2/	48.1	Rosebud	Beppe	134.2	955
13	36.0/	38.3/	25.7	Frogz	Franz	133.7	162
14	41.3/	49.2/	9.5	Q^2 Miro	Anders Ivner	133.5	332
15	36.7/	41.1/	22.2	Instant Wolf 3.4	Edgar	132.2	165
16	33.4/	35.8/	30.8	CC Paper 3.3	Franz	130.9	100
17	31.7/	32.6/	35.7	Falcon v0.3	Ian Oversby	130.7	187
18	39.2/	48.0/	12.8	Bodge 1	Robert Macrae	130.3	74
19	36.9/	43.5/	19.7	Goldfinch	P.Kline	130.2	223
20	37.4/	44.6/	18.0	Dr. Gate Q	Franz	130.2	11
21	36.5/	43.0/	20.5	HAL 9000	Justin Kao	129.9	2
22	35.7/	41.7/	22.6	Instant Wolf	Edgar	129.8	82
23	22.1/	14.6/	63.3	ompega	Steven Morrell	129.6	397
24	31.6/	33.7/	34.6	Simple v0.4b	Ian Oversby	129.6	233
25	28.3/	54.8/	16.9	mayhem.q	harleyQ2	101.9	1

Weekly age: 13 this week, 29 last week (56 last issue, 46 the week before)
New warriors: 7 Turnover/age rate 17%
Average age: 173 (142 last issue, 169 the week before)
Average score: 136 (138 last issue, 133 the week before)
The top 25 warriors are represented by 13 independent authors: Marsden and Franz with 4; Oversby with 3; and Beppe and Edgar have two.

Long live the King! Anton Marsden has a solid lock on the king position with The Machine. And his right hand man, Damage Incorporated, barely nudges JKW’s warrior for second place. Gigolo’s days at the top appear to be over, as two of JKW’s warriors vault into third and fourth place.

Remember when pspacer ruled the roost? Now they languish in the bottom half of the hill. Instant Wolf, Falcon, and Goldfinch are the remaining holdouts of a bygone era. But if bell bottoms can come back (at least for sassy, chic college girls), then I have no doubts that pspace will return in force.

JKW and Franz have provided most of the traffic on the hill these past two weeks. Where is everyone??

---

94 - What’s New

#	%W /	%L /	%T	Name	Author	Score	Age
5	30.0/	19.1/	50.9	Trident^2	John K W	141.0	1
4	39.2/	33.0/	27.8	Tiberius 3.1	Franz	145.3	1
6	44.0/	46.1/	9.9	Memories	Beppe	142.0	1
23	36.5/	45.4/	18.1	Dr. Gate Q	Franz	127.6	1
19	36.4/	43.1/	20.5	HAL 9000	Justin Kao	129.7	1
25	28.3/	54.8/	16.9	mayhem.q	harleyQ2	101.9	1
1	44.2/	36.3/	19.5	The Machine	Anton Marsden	152.2	1

Three new entries in the top ten: new version of Memories, Tiberius and Trident^2. Didn't I say the exact same thing last issue? Oh, and how can you forget 'The Machine'.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	0.0/	0.1/	3.9	test	John K W	4.0	2
26	0.5/	0.1/	7.4	testing t2	John K W	8.9	8
26	0.2/	0.1/	3.7	Trident^2	John K W	4.3	17
26	1.6/	2.0/	0.3	Memories	Beppe	5.3	20
26	1.4/	1.4/	1.2	Tiberius	Franz	5.5	40
26	36.1/	46.7/	17.2	Harmony	P.Kline	125.5	60
26	1.2/	2.3/	0.5	Eggbeater	Anton Marsden	4.0	51

Trident^2, Memories, and Tiberius were all reincarnated and are doing quite well on the '94 hill.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
8	30.4/	18.4/	51.1	Rosebud	Beppe	142.4	955
16	24.7/	14.4/	60.9	ompega	Steven Morrell	135.0	397
19	40.3/	47.5/	12.2	Q^2 Miro	Anders Ivner	133.1	332
15	37.3/	39.1/	23.6	Probe	Anton Marsden	135.5	282
7	41.1/	39.1/	19.8	Blur 2	Anton Marsden	143.1	281
24	31.6/	33.7/	34.6	Simple v0.4b	Ian Oversby	129.6	233
19	36.9/	43.5/	19.7	Goldfinch	P.Kline	130.2	223
6	34.9/	23.9/	41.1	unrequited love	kafka	145.9	202

Simple, Goldfinch, and urequited love all climb over the 200 mark.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Rosebud	Beppe Bezzi	955	*	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925		Bomber
17	Agony II	Stefan Strack	912		CMP scanner
18	Barrage	Anton Marsden	876		Qscan -> replicator
19	Blue Funk	Steven Morrell	869		Stone/ imp
20	Flurry	Anton Marsden	835		Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

Rosebud moves up another 2 spots to 14th.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.

max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

Last challenge: Mon Oct 28 14:21:53 PST 1996

#	%W / %L / %T	Name	Author	Score	Age
1	43.5/ 31.4/ 25.1	HAL 9000	Justin Kao	155.6	10
2	37.6/ 21.2/ 41.2	Hammermill 4.0	Matt Lewinski	154.0	4
3	37.0/ 22.4/ 40.6	Dust 0.7	Justin Kao	151.5	65
4	39.2/ 27.2/ 33.6	Enough is enough	Ilmari Karonen	151.1	62
5	42.2/ 38.3/ 19.4	Flamberge 101	Matt Lewinski	146.1	69
6	36.6/ 28.8/ 34.6	Sandstorm Q/0.6	Ilmari Karonen	144.3	7
7	30.7/ 18.5/ 50.8	The Lost Snail	Edgar	143.0	3
8	35.7/ 29.2/ 35.1	Sandstorm Q/0.6	Ilmari Karonen	142.2	2
9	40.3/ 38.9/ 20.8	Vivid Radiation 1.0	Matt Lewinski	141.7	1
10	35.4/ 29.6/ 35.0	Sandstorm Q/0.6b	Ilmari Karonen	141.2	6
11	39.2/ 37.9/ 22.8	mayhem.q	harleyQ2	140.5	68
12	23.4/ 8.0/ 68.6	U-lat II	Zul Nadzri	138.8	11
13	33.7/ 30.6/ 35.7	Q Yogurt	Franz	136.9	88
14	36.3/ 38.1/ 25.6	Daemon of Zteentch	Christian Schmidt	134.5	22
15	21.5/ 13.9/ 64.6	test 33	John K W	129.1	61
16	27.2/ 27.1/ 45.8	Vogon Poetry 0.2	Justin Kao	127.2	25
17	34.3/ 43.1/ 22.5	Recover 3	Franz	125.6	63
18	30.9/ 37.4/ 31.7	Sarcasm 2.0	Matt Lewinski	124.3	18
19	13.1/ 4.3/ 82.5	Beast of Nurgle	Christian Schmidt	121.9	23
20	35.4/ 49.4/ 15.2	Neverending Brutality 10	Franz	121.4	84
21	33.0/ 47.7/ 19.3	Acid Rain	W.A-Worth and Justin	118.2	44
22	30.2/ 45.4/ 24.5	Autumn Leaves 5.0	Matt Lewinski	114.9	17
23	30.6/ 47.6/ 21.8	Misaligned Drudgery 2.0	Matt Lewinski	113.5	16
24	21.6/ 31.2/ 47.2	Vogon Poetry 0.5 beta	Justin Kao	112.0	9
25	2.0/ 1.3/ 0.7	Autumn Leaves 6.0	Matt Lewinski	6.7	5

Top 25 Averages:

	31.6/ 30.0/ 34.6			129.5	31

HAL 9000 has a low spot on the ’94 hill. Lewinski has declared war on the b-hill. Matt currently has _seven_ warriors on the hill. Now if he can just beat Kao’s HAL 9000 . . .

The Hint
Imp/Stone Killing
by Anton Marsden

At present, qscan -> imp/stone is a lethal combination on the Hill. In fact, roughly half of the top ten warriors are imp/stones. Here are some hints on how to win more against them.

QScan:

- Boot away fast, using one process if necessary. Try not to give the qscan a chance to attack you.
- If you have a qscan, scan a lot of locations (more than an imp/stone could scan). Imps are generally slow to boot, especially if a qscan is done before booting... this is the best time to neutralise the big imps.

Stone:

- Use spl #1,1 as a decoy where possible (or dat 1,1 if your warrior is a paper). This way, any decrements the stone attempts on your decoy will slow it down.

- Use 1,1’s whenever possible in bombs. The more 1,1’s there are around the core the better your chance of slowing down the stone.

Imps:

- In general, you don’t want to target specific warriors in your coreclear (if you have one). dclear is probably the best weapon against imps you are

likely to find. However, it can be altered to produce more wins against 3-point imps than a simple dclear:
  - use more than one MOV in the clear - any imps that don't reach the gate will have a greater chance of being killed.
  - as a coreclear bomb, try DAT <2667,n. This will weaken 3-point imps substantially.
- Some papers use DAT <2667,<2*2667 as an anti-imp bomb.
- If you want to kill 7-point imps, you could use a spiral clear... but this will make your warrior much less equipped to deal with papers. This clear is best combined with a scanner. Memories uses a spiral clear quite successfully.

```
;redcode-94
;name The Machine
;author Anton Marsden
;strategy Blur 2 with some anti-stone improvements
;assert CORESIZE==8000

step EQU 70; mod-10
gate EQU top
away EQU (clr+1995+660) ; not really :-)

      mov.i  bomb-top,>-1
FOR 3
      dat 0,0
ROF
ptr:  mov.i  inc+1,>step
top:  mov.i  bomb,>ptr
scan: seq.i  2*step,2*step+5
      mov.ab scan,@top
a:    sub.f  inc,scan
      jmn.b  top,@top
inc:  spl.i  #-step,>-step
      mov.i  clr,>gate
btm:  djn.f  -1,>gate
clr:  dat.f  <2667,clr-gate+2
      dat 0,0
      spl.i  #-step,>-step
      dat 0,0
bomb: spl.i  #1,#1
      dat 0,0
      dat 0,0
      mov.i  {-3,<6
      dat 0,0
boot: mov.i  clr,<dest
FOR 8
      mov.i  {boot,<dest
ROF
dest: mov.i  bomb,*away
      spl @dest,{-1000
      mov.i  {boot,<dest
      dat <dest,<dest
      mov.i  {-8,<1
FOR 12
      spl.a  #1,*1
      spl.b  #1,1
      spl.ab #1,@1
      spl.ba #1,}1
      spl.i  #1,#1
ROF
FOR 4
      spl.i  #1,#1
ROF

END boot
```

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!usc!newshub.csu.net!csulb.edu!hammer.uoregon.edu!news.uoregon.edu!waikato!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden Mon Nov 4 11:55:46 1996
Article: 6449 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!usc!newshub.csu.net!csulb.edu!hammer.uoregon.edu!news.uoregon.edu!waikato!comp.vuw.ac.nz!regent.comp.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@comp.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 49
Date: Mon, 4 Nov 1996 21:00:08 +1300
Organization: NetLink Wellington, New Zealand.
Lines: 331
Message-ID: <Pine.SOL.3.91.961104205810.13726A-100000@regent.comp.vuw.ac.nz>
NNTP-Posting-Host: regent.comp.vuw.ac.nz
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,     '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 49 4 November, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

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Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

NEW: Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

---

Greetings.

The optimisation of PMARS is currently being discussed in the newsgroup at the moment. Perhaps we will see a new version soon (even if unofficial).

Round 5 of the tournament is this week. Good luck to all involved. The top 4 players go through to the semi-finals.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

The current ICWS ’94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	39.7/ 22.2/ 38.1	unrequited love	kafka	157.3	217
2	30.8/ 13.5/ 55.7	Return Of The Jedimp	John K W	148.2	119
3	36.9/ 26.1/ 37.1	Gigolo	Core Warrior staff	147.6	173
4	32.1/ 16.9/ 51.0	Trident^2	John K W	147.3	49
5	43.0/ 40.0/ 17.0	The Machine	Anton Marsden	146.0	25
6	39.6/ 33.6/ 26.8	Tiberius 3.1	Franz	145.6	36
7	39.2/ 35.5/ 25.2	CC Paper 2	Franz	142.9	8
8	39.3/ 39.5/ 21.2	Damage Incorporated	Anton Marsden	139.2	160
9	42.8/ 47.6/ 9.6	Memories	Beppe	138.0	33
10	38.8/ 40.2/ 21.1	Instant Wolf 3.4	Edgar	137.3	180
11	29.9/ 22.5/ 47.7	Impish v0.2	Ian Oversby	137.3	158
12	40.9/ 44.5/ 14.6	Blur 2	Anton Marsden	137.3	296
13	31.0/ 25.3/ 43.7	Rosebud	Beppe	136.6	970
14	38.9/ 42.3/ 18.8	Probe	Anton Marsden	135.5	297
15	33.9/ 34.1/ 31.9	Nine Seven Six	M R bremer	133.7	9
16	37.9/ 43.2/ 18.9	Silver Talon 1.2	Edgar	132.7	6
17	39.0/ 45.7/ 15.3	AK-47	Franz	132.4	11
18	40.7/ 49.4/ 9.9	Q^2 Miro	Anders Ivner	131.9	347
19	38.3/ 45.3/ 16.4	Dr. Gate Q	Franz	131.2	2
20	32.9/ 34.9/ 32.2	Falcon v0.3	Ian Oversby	131.0	202
21	32.8/ 35.0/ 32.1	Simple v0.4b	Ian Oversby	130.6	248
22	39.0/ 48.0/ 13.0	Golden Gate 3	Franz	129.9	5
23	37.3/ 45.1/ 17.6	Goldfinch	P.Kline	129.6	238
24	37.1/ 45.0/ 17.9	Silver Talon 1.1	Edgar	129.2	10
25	35.3/ 42.3/ 22.4	cryptos	bjoern guenzel	128.3	1

Weekly age: 15 this week (13 last issue, 29 the week before)
New warriors: 8 Turnover/age rate 53%
Average age: 152 (173 last issue, 142 the week before)
Average score: 138 (136 last issue, 138 the week before)
The top 25 warriors are represented by 12 independent authors: Franz with 5; Marsden with 4; Oversby and Edgar have 3; and Beppe and JKW have two.

King Report: The Machine was KOTH for the majority of the week, but when Bodge fell off the Hill it suffered and from then on unrequited love has been the dominant warrior. Again the imp/stones are in control.

---

94 - What’s New

#	%W / %L / %T	Name	Author	Score	Age
14	38.8/ 44.9/ 16.3	AK-47	Franz	132.8	1
22	36.7/ 44.1/ 19.3	Silver Talon 1.1	Edgar	129.3	1
11	33.6/ 31.5/ 34.9	Nine Seven Six	M R bremer	135.6	1
15	34.8/ 37.2/ 28.0	CC Paper 2	Franz	132.4	1
9	39.9/ 41.3/ 18.8	Silver Talon 1.2	Edgar	138.5	1
17	40.6/ 46.3/ 13.1	Golden Gate 3	Franz	134.9	1
19	38.5/ 45.7/ 15.8	Dr. Gate Q	Franz	131.4	1
25	35.3/ 42.3/ 22.4	cryptos	bjoern guenzel	128.3	1

Franz has been busy this week with 4 new/updated warriors. Bremer is finally back on the Hill :-) May his warrior live long and prosper. The most significant new entry is probably Silver Talon, which is also doing very well on the beginner Hill.

---

94 - What’s No More

#	%W / %L / %T	Name	Author	Score	Age
26	36.3/ 45.4/ 18.3	Dr. Gate Q	Franz	127.2	17

26	31.1/ 36.6/ 32.3	CC Paper 3.3	Franz	125.7	107
26	34.5/ 43.1/ 22.4	Instant Wolf	Edgar	125.8	90
26	22.0/ 16.7/ 61.3	ompega	Steven Morrell	127.3	406
26	34.4/ 40.4/ 25.2	Frogz	Franz	128.3	172
26	38.4/ 49.4/ 12.3	Bodge 1	Robert Macrae	127.4	85
26	33.4/ 41.7/ 24.9	MI6	Philip Kendall	125.0	4
26	36.6/ 46.0/ 17.4	HAL 9000	Justin Kao	127.2	17

Morrell’s only Hill warrior was kicked off this week as was Macrae’s. Perhaps we will see them back in force soon.

---

94 - What’s Old

#	%W / %L / %T	Name	Author	Score	Age
13	31.0/ 25.3/ 43.7	Rosebud	Beppe	136.6	970
18	40.7/ 49.4/ 9.9	Q^2 Miro	Anders Ivner	131.9	347
14	38.9/ 42.3/ 18.8	Probe	Anton Marsden	135.5	297
12	40.9/ 44.5/ 14.6	Blur 2	Anton Marsden	137.3	296
21	32.8/ 35.0/ 32.1	Simple v0.4b	Ian Oversby	130.6	248
23	37.3/ 45.1/ 17.6	Goldfinch	P.Kline	129.6	238
1	39.7/ 22.2/ 38.1	unrequited love	kafka	157.3	217
20	32.9/ 34.9/ 32.2	Falcon v0.3	Ian Oversby	131.0	202

Falcon v0.3 is the new entry, ompega leaves us.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Rosebud	Beppe Bezzi	970	*	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925		Bomber
17	Agony II	Stefan Strack	912		CMP scanner
18	Barrage	Anton Marsden	876		Qscan -> replicator
19	Blue Funk	Steven Morrell	869		Stone/ imp
20	Flurry	Anton Marsden	835		Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

No positional changes.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Mon Oct 28 14:21:53 PST 1996

#	%W /	%L /	%T	Name	Author	Score	Age
1	52.2/	28.7/	19.1	Silver Talon 1.1	Edgar	175.7	17
2	45.8/	29.9/	24.4	Microsoft Office ’96	Justin Kao	161.6	13
3	43.0/	30.7/	26.3	HAL 9000	Justin Kao	155.3	29
4	45.4/	37.0/	17.6	Flamberge 101	Matt Lewinski	153.7	88
5	32.3/	20.9/	46.8	Dust 0.7	Justin Kao	143.7	84
6	30.8/	18.7/	50.5	The Lost Snail	Edgar	142.9	16
7	38.4/	36.3/	25.4	MI6	Philip Kendall	140.5	10
8	40.2/	40.3/	19.6	Vivid Radiation 1.0	Matt Lewinski	140.0	20
9	30.2/	21.6/	48.1	Hammermill 4.0	Matt Lewinski	138.8	23
10	39.2/	39.7/	21.1	mayhem.q	harleyQ2	138.8	87
11	35.2/	33.0/	31.8	Sandstorm Q/0.6c	Ilmari Karonen	137.5	8
12	30.9/	29.0/	40.2	Scanitator 2.1	Christian Schmidt	132.8	3
13	31.3/	30.4/	38.2	Enough is enough	Ilmari Karonen	132.2	81
14	36.0/	39.9/	24.1	Daemon of Zteentch	Christian Schmidt	132.1	41
15	28.8/	25.7/	45.5	Plaster 1.0	Anonymous	131.8	11
16	28.9/	27.7/	43.3	Apocalypse	Matt Lewinski	130.1	2
17	28.1/	28.8/	43.1	Throttle 2.0	Matt Lewinski	127.4	15
18	17.0/	13.9/	69.1	test 33	John K W	120.1	80
19	22.0/	25.7/	52.3	Vogon Poetry 0.2	Justin Kao	118.3	44
20	20.0/	22.8/	57.2	Papyrus 21	Justin Kao	117.2	12
21	28.9/	43.7/	27.4	Absolute Zero	Matt Lewinski	114.1	4
22	24.7/	39.0/	36.2	Sarcasm 2.0	Matt Lewinski	110.5	37
23	7.2/	4.2/	88.7	Beast of Nurgle	Christian Schmidt	110.2	42
24	15.8/	24.7/	59.5	Event Horizon 0.1	Justin Kao	106.9	1
25	15.8/	26.4/	57.7	Knight of Khoron	Christian Schmidt	105.2	9
Top 25 Averages:							
	30.7/	28.7/	40.5			132.7	31

Silver Talon has a huge lead over the rest of the field.

The Hint
Random Ramblings

This week I couldn’t think of anything specific to discuss so you will have to settle for a few mini-hints I could throw together. Just a note: for those of you who want to write a hint, send it to one of us and we will probably put it in an issue. It’s difficult for us to come up with something different every week, but we do the best we can with the time available.

Here is an article that Paul Kline sent to the newsgroup a while ago. I think it’s worth putting in CW for future reference.

>From Impfinity:

```
bomb&i  dat     <2667, <5334
stone&i spl     #stone&i+bstep&i+magic&i, {-650
        mov.i   bomb&i, }stone&i
        add.f   #bstep&i-1, stone&i              <---- cool
j&i     djn.f   stone&i, <i-50
```

Use add.f #a,b to store increments on the add line itself!
Change to add.x to put the larger increment on the b-operand of the mov, making it a step-bomber.

Want to decode an imp, but don’t know whether it is

```
   mov   #a,2667
or
   mov.i #2667,*0
```

Just point this instruction at the imp and pop that imp-step into its b-operand:

```
   mov.ab  @0,@wherever
```

Your one-shot scanner keeps attacking imp-code instead of bomber?

Changing your step from 13 to 2671 gives you an increment of 13 (3*2671=13)
and scans three times as many locations before detecting 3- or 9-point imps.

Your one-shot uselessly attacks bomber decrements? Here's a version
that penetrates right through:

```
wScan     add    wIncr  ,wGate   ; increment pointers
          seq    }wGate ,>wGate  ; take a look
          sne.x  *wGate ,@wGate  ; ignore single decrements
          djn.f  wScan  ,<-2001
```

[Editor's Note: this code will also penetrate through the last instruction of
a warrior, but to do otherwise means using a lot more code.]

Want to kill Return of the Jedimp? John's warriors are very durable,
and I'm only scoring 45% wins against the latest :-). When I get
this thing working I'll let you know. It is NOT based on Harmony,
uses no magic numbers and has no core-clear. It is a new way of
thinking about the spiral problem.

Paul Kline
pk6811s@acad.drake.edu

Things I haven't tried but may be worth investigating:
- "core clears" > 100% c may be possible using MOV >gate,>gate but can they
be made to do something useful, eg. mutate into a "normal" clear?
- qscan -> pspace routine -> warrior may perform better against qscans.
- qscan -> non-booting warrior is also an option - one-shots are not as
effective as they once were. But make sure the main warrior is before the
qscan... if the warrior is a bomber it will also confuse one-shots.

Here is Damage Incorporated without qscan, just to make this issue less
empty :-) It's just Torch T18 with a d-clear.

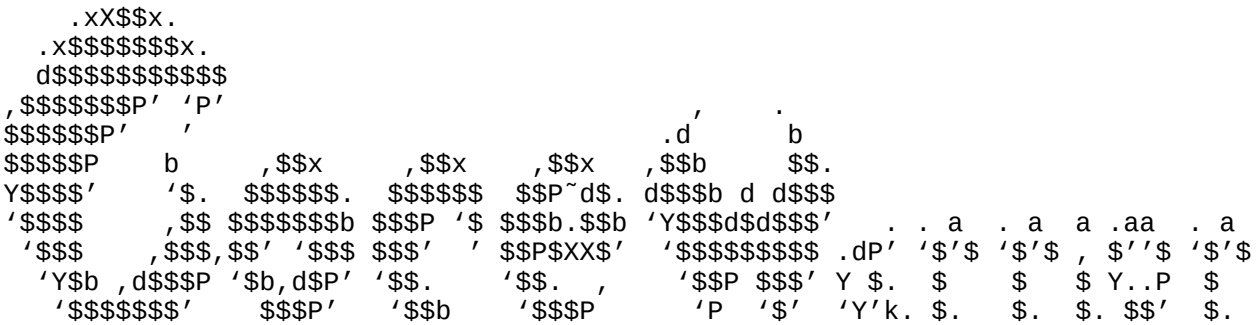
```
;redcode-94
;name Damage Incorporated
;author Anton Marsden
;strategy Bomber
;assert CORESIZE==8000

step     equ   54
count    equ   2000
gate EQU (sp-7)

sp       spl   #-1-step,#-step   ; spl half of the incendiary
in       sub   #step+step,1
msm      mov   sm,*tgt+(step*count)-17228
msp      mov   sp,@msm           ; bomb alternately with spl & mov
tgt      jmz.b in,#0             ; bombed with spl to start clear
clr      mov   wipe,>gate
cp       djn.f clr,>gate
wipe     dat   <2667,wipe-gate+2 ; not sure if <2667 is used in the Hill
      dat   0,0                  ; version
sm       mov   step+1,>step+1    ; mov half of the incendiary

end sp
```

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!cs.utexas.edu!howland.erols.net!news.sprintlink.net!news-peer.sprintlink.net!uunet!in1.uu.net!news2.new-york.net!news.stormking.com!bezzi@nemo.it Tue Nov 12 11:58:46 1996
Article: 6529 of rec.games.corewar
Newsgroups: rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!cs.utexas.edu!howland.erols.net!news.sprintlink.net!news-peer.sprintlink.net!uunet!in1.uu.net!news2.new-york.net!news.stormking.com!bezzi@nemo.it
From: Beppe Bezzi <bezzi@nemo.it>
Subject: Core Warrior 50
X-Nntp-Posting-User: root
Reply-To: bezzi@nemo.it
Sender: server@news.stormking.com
Lines: 334
Organization: Storm King Ind. Inc.
Originator: corewar-l@stormking.com
Message-ID: <B0000216898@nemont.nemo.it>
X-Mailer: Windows Eudora Light Version 1.5.2
X-Trace: 847735239/7596
X-Nntp-Posting-Host: valhalla.stormking.com
Date: Mon, 11 Nov 1996 17:51:48 GMT



Issue 50 11 November, 1996

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Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

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Fechter ftp site--ftp://members.aol.com/ofechner/corewar

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Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

Stefan has released a new faster version of pmars; the source of new sim.c is available at
ftp://koth.org/incoming/sim.zip

soon coming a full release of pmars

Elimination rounds of the tornament are over and Final Four direct elimination part has began. The best four challenging for final victory are Ian Oversby, winning all five matches played, Philip Kendall, Franz and George Eadon.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

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- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

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2	45.4/	37.3/	17.3	The Machine	Anton Marsden	153.5	30
3	34.9/	17.0/	48.1	Trident^2	John K W	152.9	54
4	33.1/	13.7/	53.2	Return Of The Jedimp	John K W	152.5	124
5	38.8/	26.0/	35.3	Gigolo	Core Warrior staff	151.5	178
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8	41.2/	38.0/	20.9	Damage Incorporated	Anton Marsden	144.3	165
9	42.9/	41.8/	15.3	Blur 2	Anton Marsden	144.1	301
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12	40.8/	40.2/	19.0	Silver Talon 1.2	Edgar	141.4	11
13	36.6/	32.1/	31.3	Nine Seven Six	M R bremer	141.0	14
14	32.3/	24.0/	43.7	Rosebud	Beppe	140.7	975
15	40.3/	40.5/	19.2	vamp 0.2b	bjoern guenzel	140.2	1
16	37.9/	35.9/	26.2	CC Paper 2	Franz	140.0	13
17	41.1/	43.4/	15.5	AK-47	Franz	138.8	16
18	42.6/	47.6/	9.8	Q^2 Miro	Anders Ivner	137.7	352
19	35.3/	33.3/	31.3	Falcon v0.3	Ian Oversby	137.3	207
20	32.7/	28.2/	39.1	delay 0.02b 50	bjoern guenzel	137.2	5
21	38.4/	39.8/	21.7	Instant Wolf 3.4	Edgar	137.0	185
22	37.1/	37.6/	25.3	Scanitator 2.1	Christian Schmidt	136.6	2
23	40.6/	45.4/	14.0	Flamberge 13.4	Matt Lewinski	135.7	3
24	39.2/	43.2/	17.6	Goldfinch	P.Kline	135.3	243
25	39.4/	43.8/	16.7	Dr. Gate Q	Franz	135.0	7

Weekly age: 5 this week (15 last issue, 13 the week before)
New warriors: 4 Turnover/age rate 80%
Average age: 146(152 last issue, 173 the week before)
Average score: 143 (138 last issue, 136 the week before)
The top 25 warriors are represented by 13 independent authors: Franz and Marsden with 4; Oversby 3; and Beppe and JKW have two. C. Schmidt makes the hill for first time

King Report: very little to report, unrequited love kept best spot all the week.

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
8	37.6/	36.9/	25.5	Scanitator 2.1	Christian Schmidt	138.3	1
14	38.3/	41.8/	19.9	vamp 0.2b	bjoern guenzel	134.7	1
14	31.1/	28.5/	40.4	delay 0.02b 50	bjoern guenzel	133.8	1
23	38.7/	47.3/	14.0	Flamberge 13.4	Matt Lewinski	130.1	1

Five challenges and four new warriors, none in top spots.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	33.6/	42.8/	23.6	cryptos	bjoern guenzel	124.5	2
26	32.1/	35.6/	32.3	Simple v0.4b	Ian Oversby	128.7	250
26	37.2/	49.0/	13.8	Golden Gate 3	Franz	125.4	9
26	36.8/	45.0/	18.2	Silver Talon 1.1	Edgar	128.6	15

Oversby lost his most aged warrior at 250 age.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
14	32.3/	24.0/	43.7	Rosebud	Beppe	140.7	975
18	42.6/	47.6/	9.8	Q^2 Miro	Anders Ivner	137.7	352
7	42.2/	39.7/	18.1	Probe	Anton Marsden	144.7	302
9	42.9/	41.8/	15.3	Blur 2	Anton Marsden	144.1	301
24	39.2/	43.2/	17.6	Goldfinch	P.Kline	135.3	243
1	40.0/	21.7/	38.2	unrequited love	kafka	158.4	222
19	35.3/	33.3/	31.3	Falcon v0.3	Ian Oversby	137.3	207

No new entries, one loss: Simple.

Tournament time

The first part of the tournament is over, the best four are now qualified for Semi final direct elimination round. Giving a look at standing, and noticing the names of those eliminated with 9 points, little more remains to say about the value of the top four.

Thank you to all for playing and let's look who will be the players of the final.

Pos.	#	Player	Score	Opp. met	2nd lev score
1	5	Ian Oversby	15	6.7.1.9.18	29
2	14	Philip Kendall	12	13.15.2.3.9	30
3	1	Franz	10	2.4.5.18.15	41
4	18	George Eadon	10	17.2.3.1.5	31
5	9	Steven Morrell	9	10.12.15.5.14	42
6	15	Magnus Paulsson	9	16.14.9.13.1	37
7	13	David M. Moore	9	14.11.16.15.4	34
8	10	Anton Marsden	9	9.8.6.7.2	22
8	11	Robert McRae	9	12.13.17.16.8	22
10	4	Joshua	7	3.1.7.8.13	29
11	8	J. K. Wilkinson	7	7.10.12.4.11	28
12	16	Zul Nadzri	6	15.17.13.11.6	24
13	17	Bjoern Guenzel	6	18.16.11.6.12	22
14	7	Justin Kao	4	8.5.4.10.3	36
15	3	J. K. Lewis	4	4.6.18.14.7	30
16	2	M. R. Bremer	3	1.18.14.12.10	41
17	12	Matt Lewinski	3	11.9.8.2.17	31
18	6	Ross Morgan-Linial	0	5.3.10.17.16	30

Congratulations to Ian Oversby, winning all five rounds, and also to PhilKendall, Franz and George Eadon, qualifying for the semifinal round.

Thank you to all others for playing, better luck next time.

Semifinal pairings are as follow

Oversby - Eadon
Kendall - Franz

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Rosebud	Beppe Bezzi	975	*	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925		Bomber
17	Agony II	Stefan Strack	912		CMP scanner
18	Barrage	Anton Marsden	876		Qscan -> replicator
19	Blue Funk	Steven Morrell	869		Stone/ imp
20	Flurry	Anton Marsden	835		Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

No changes.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	51.9/ 34.5/ 13.6	Silver Talon 1.1	Edgar	169.3	49
2	51.4/ 36.7/ 11.8	Flamberge 13.4	Matt Lewinski	166.1	18
3	48.3/ 33.0/ 18.7	Microsoft Office ’96	Justin Kao	163.6	45
4	45.9/ 39.4/ 14.7	Mostly Harmless v1.0	Justin Kao	152.3	8
5	40.4/ 28.7/ 30.9	Scanitator 2.3	Christian Schmidt	152.1	12
6	45.7/ 40.9/ 13.4	Cruise Missile	Philip Kendall	150.5	14
7	41.8/ 37.2/ 21.0	Vivid Radiation 2.0	Matt Lewinski	146.5	17
8	42.8/ 40.0/ 17.2	MI6	Philip Kendall	145.7	42
9	41.4/ 37.6/ 21.0	Bash the Rat V1.4	Ian Sutton	145.1	10
10	41.7/ 38.8/ 19.5	HAL 9000	Justin Kao	144.7	61
11	35.7/ 27.1/ 37.2	Escargot 0.5	Justin Kao	144.3	15
12	39.3/ 35.7/ 24.9	Sandstorm Q/0.6c	Ilmari Karonen	142.9	40
13	41.8/ 43.1/ 15.1	Termite 1.0	Matt Lewinski	140.4	20
14	32.8/ 27.0/ 40.2	Escargot 0.6	Justin Kao	138.5	2
15	41.3/ 44.9/ 13.9	Goothmonger, Berserker of	Ian Sutton	137.7	5
16	33.9/ 30.2/ 35.9	Hammermill 4.0	Matt Lewinski	137.6	55
17	38.1/ 41.4/ 20.4	Daemon of Zteentch	Christian Schmidt	134.8	73
18	33.6/ 32.7/ 33.7	Apocalypse	Matt Lewinski	134.5	26
19	28.8/ 30.3/ 40.9	Papyrus 21	Justin Kao	127.3	44
20	34.6/ 43.8/ 21.6	Supercritical Carbondioxi	Matt Lewinski	125.5	19
21	30.0/ 39.5/ 30.5	Throttle 2.0	Matt Lewinski	120.5	47
22	14.8/ 10.0/ 75.3	Beast of Nurgle	Christian Schmidt	119.6	74
23	23.2/ 31.9/ 44.9	Rock 1.5 beta	Justin Kao	114.5	1
24	24.1/ 18.2/ 5.6	Flamberge 13.3	Matt Lewinski	78.0	28
25	8.3/ 1.2/ 2.5	Microsoft Office Pro ’96	Justin Kao	27.4	6

Top 25 Averages:
30.7/ 28.7/ 40.5 132.7 31

Flamberge, able to enter 94 hill too, enters in second spot

The Hint

Sorry no hint :-(the tournament is getting almost all my Corewar time, and I don’t want to post Gigolo being its code the first prize of the tournament :-)

Extra Extra
HAL 9000 by Justin Kao

Justin asked me if I could do something with his scanner/clear that lived for some time in the bottom of 94 hill. My first impression is that a warrior doing a clear and a scanning in the same time is better done using Blur engine

```
cc:   spl.i  #0,#btm-ptr+3
top:  mov.i  $cc,>ptr
scan: seq.i  $2*step,}2*step+5
      mov.b  $scan,$ptr
a:    add.f  $inc,$scan
      jmn.a  $top,$scan        ; Falls through when all locations scanned
...
```

with more scanning and less clear, compared to HAL, and a much reduced footprint, but this is just an impression having not tested HAL too well. Anyway here is the code of HAL 9000 for anyone wanting to improve it.

```
;redcode-94
;name HAL 9000
;author Justin Kao
;strategy A core clear directed by scanner.
;strategy v9.1 @date@ --the version on the hill.
;strategy NEW: more spl pass
;strategy Formerly Paper Shredder until I discovered the name
;strategy was previously used.  No relation to HAL the stone.
;assert 1

step    equ     2936
scans   equ     400

        org     start

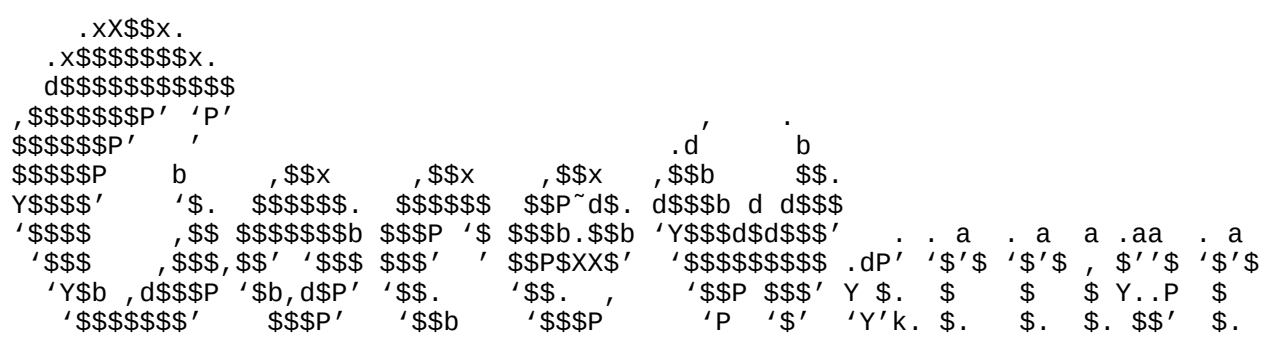
clrptr  dat     4000,   0       ;clear pointer
clrbmb2 dat     {20,    <2667   ;first clear bomb
clrbmb  spl     #25,    100     ;second clear bomb and also djn pointer
scnloop add     clear,  scan    ;\
scan    seq.a   -10,    -2      ; \ scan
        mov.a   scan,   clrptr  ; / loop
        djn     scnloop,#scans  ;/
clear   spl     #step,  <step   ;\----------also the scan step
clrloop mov     clrbmb, }clrptr ;-\
        mov     clrbmb, }clrptr ;  > clear loop
        mov     clrbmb, }clrptr ; /
        djn.a   clrloop,>clrbmb ;/
        jmp     clrloop,>clrbmb ;catch fall through and move djn stream faster

        for     84
        dat     0,      0
        rof

start   spl     scnloop         ;start scan
        jmp     clrloop         ;start clear
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@comp.vuw.ac.nz> [this address will change soon]

From news-rocq.inria.fr!univ-lyon1.fr!howland.erols.net!news.bbnplanet.com!cam-news-hub1.bbnplanet.com!uunet!in1.uu.net!brighton.openmarket.com!decwrl!purdue!mozo.cc.purdue.edu!cartoon.ecn.purdue.edu!bremermr Wed Nov 27 14:34:58 1996
Article: 6605 of rec.games.corewar
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From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 51
Date: 26 Nov 1996 20:27:13 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 295
Message-ID: <57fjr1$3os@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu



Issue 51 25 November, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

In case you haven't heard, the pizza hills are down till Wednesday or so. Thos has promised to bring everything back online as soon as possible.

--M R Bremer

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000

max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

The current ICWS ’94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	30.8/ 12.6/ 56.6	Return Of The Jedimp	John K W	148.9	135
2	35.5/ 24.3/ 40.2	unrequited love	kafka	146.7	233
3	42.7/ 39.6/ 17.7	The Machine	Anton Marsden	145.9	41
4	30.6/ 16.4/ 52.9	Trident^2	John K W	144.9	65
5	34.6/ 25.2/ 40.2	Gigolo	Core Warrior staff	144.1	189
6	40.6/ 40.5/ 18.9	Silver Talon 1.2	Edgar	140.8	22
7	39.8/ 38.8/ 21.4	Damage Incorporated	Anton Marsden	140.8	176
8	40.5/ 40.8/ 18.7	Probe	Anton Marsden	140.2	313
9	43.1/ 46.7/ 10.2	Memories	Beppe	139.5	49
10	40.3/ 42.3/ 17.4	Control	Steven Morrell	138.4	1
11	36.0/ 34.1/ 29.9	Tiberius 3.1	Franz	137.9	52
12	40.7/ 44.3/ 15.1	Blur 2	Anton Marsden	137.1	312
13	42.0/ 48.0/ 10.0	Q^2 Miro	Anders Ivner	135.9	363
14	28.4/ 22.3/ 49.3	Impish v0.2	Ian Oversby	134.5	174
15	37.8/ 41.3/ 20.9	Instant Wolf 3.4	Edgar	134.2	196
16	37.8/ 42.9/ 19.3	vamp 0.2b	bjoern guenzel	132.8	12
17	33.1/ 34.4/ 32.5	Nine Seven Six	M R bremer	131.9	25
18	28.7/ 25.9/ 45.4	Rosebud	Beppe	131.5	986
19	38.4/ 45.8/ 15.8	AK-47	Franz	131.1	27
20	38.8/ 46.6/ 14.6	Mostly Harmless v1.1	Justin Kao	131.0	10
21	32.5/ 34.9/ 32.5	Falcon v0.3	Ian Oversby	130.1	218
22	33.8/ 38.3/ 27.9	CC Paper 2	Franz	129.3	24
23	37.7/ 46.5/ 15.8	Goothmonger v1.4	Ian Sutton	128.8	4
24	29.9/ 31.0/ 39.1	delay 0.02b 50	bjoern guenzel	128.8	16
25	33.7/ 38.7/ 27.6	Scanitator 2.4	Christian Schmidt	128.7	6

Weekly age: 11 this week (5 last issue, 15 the week before)
New warriors: 4 Turnover/age rate 36%
Average age: 145 (146 last issue, 152 the week before)
Average score: 137 (143 last issue, 138 the week before)
The top 25 warriors are represented by 14 independent authors: Marsden with 4; Franz with 3; JKW, Bezzi, Oversby, and Guenzel with 2. Welcome to Ian Sutton with Goothmonger v1.4.

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94 - What’s New (or this week: the uplook)

#	%W / %L / %T	Name	Author	Score	Age
18	32.3/ 32.2/ 35.5	spTest	P.Kline	132.4	1
25	25.0/ 31.8/ 43.3	delay 0.03b 50/16	bjoern guenzel	118.2	1
12	39.1/ 42.3/ 18.5	Flicker	Ian Oversby	136.0	1
22	39.1/ 46.5/ 14.4	Mostly Harmless v1.1	Justin Kao	131.6	1
25	37.8/ 47.1/ 15.1	Goothmonger v1.2	Ian Sutton	128.6	1
23	37.4/ 47.1/ 15.5	Goothmonger v1.3	Ian Sutton	127.6	1
25	37.8/ 48.8/ 13.4	Golden Gate v4	Franz	126.8	1
11	36.9/ 37.1/ 26.0	Scanitator 2.4	Christian Schmidt	136.6	1
25	31.3/ 55.0/ 13.7	ciTest-17	P.Kline	107.6	1
25	32.7/ 54.9/ 12.4	ciTest-17	P.Kline	110.5	1
25	26.5/ 59.9/ 13.6	Mist	P.Kline	93.1	1
25	17.2/ 62.5/ 20.3	Mist	P.Kline	72.0	1
25	0.9/ 54.6/ 44.5	nTest	P.Kline	47.2	1
25	13.5/ 45.0/ 41.5	Leaping Flame	Ilmari Karonen	82.1	1
25	27.6/ 60.9/ 11.6	mTest	P.Kline	94.2	1
24	33.4/ 45.1/ 21.4	mTest	P.Kline	121.8	1
25	33.1/ 54.6/ 12.3	Hologram	Philip Kendall	111.7	1
25	37.6/ 47.0/ 15.4	Goothmonger v1.4	Ian Sutton	128.1	1
7	39.2/ 36.9/ 24.0	Test	Anton Marsden	141.4	1
25	19.6/ 15.4/ 65.0	U-lat II	Zul Nadzri	123.8	1
25	36.3/ 48.2/ 15.5	Flicker	Ian Oversby	124.5	1
25	36.2/ 50.2/ 13.6	Flicker	Ian Oversby	122.2	1
25	34.9/ 44.1/ 21.0	Test	Ian Sutton	125.7	1
25	36.6/ 52.5/ 10.9	tnTest	P.Kline	120.7	1

25	36.2/ 50.2/ 13.6	Flicker	Ian Oversby	122.2	1
22	32.8/ 36.7/ 30.4	No Vice	Ian Oversby	128.9	1
10	37.1/ 37.0/ 25.9	Test	Anton Marsden	137.2	1
10	40.3/ 42.3/ 17.4	Control	Steven Morrell	138.4	1

These four are the new warriors on the hill at this point in time. Schmidt and Morrel entering close to single digit rankings. Scanitator marries a Q^2 scan to pspace logic. Interesting.

#	%W / %L / %T	Name	Author	Score	Age
22	39.1/ 46.5/ 14.4	Mostly Harmless v1.1	Justin Kao	131.6	1
11	36.9/ 37.1/ 26.0	Scanitator 2.4	Christian Schmidt	136.6	1
25	37.6/ 47.0/ 15.4	Goothmonger v1.4	Ian Sutton	128.1	1
10	40.3/ 42.3/ 17.4	Control	Steven Morrell	138.4	1

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94 - What’s No More (or this week: the outlook)

#	%W / %L / %T	Name	Author	Score	Age
26	36.8/ 45.8/ 17.4	Dr. Gate Q	Franz	127.8	8
26	1.0/ 0.7/ 2.3	delay 0.02b 50	bjoern guenzel	5.3	6
26	36.2/ 45.8/ 18.0	Goldfinch	P.Kline	126.6	244
26	36.6/ 46.0/ 17.4	Dr. Gate Q	Franz	127.2	9
26	38.0/ 48.3/ 13.6	Flamberge 13.4	Matt Lewinski	127.7	6
26	2.0/ 2.0/ 0.0	Goothmonger v1.2	Ian Sutton	6.1	2
26	36.9/ 47.5/ 15.6	Goothmonger v1.3	Ian Sutton	126.3	2
26	2.0/ 1.6/ 0.4	Scanitator 2.1	Christian Schmidt	6.4	8
26	1.5/ 2.0/ 0.5	Flicker	Ian Oversby	5.0	7
26	1.5/ 2.0/ 0.5	Flicker	Ian Oversby	5.0	7
26	1.8/ 1.4/ 0.8	Flicker	Ian Oversby	6.3	7
26	2.2/ 0.0/ 1.8	Flicker	Ian Oversby	8.5	7
26	2.4/ 0.0/ 1.6	Flicker	Ian Oversby	8.9	7
26	1.9/ 0.5/ 1.6	Flicker	Ian Oversby	7.3	7
26	1.9/ 1.9/ 0.2	Flicker	Ian Oversby	5.9	7
26	1.6/ 2.1/ 0.4	Flicker	Ian Oversby	5.0	7
26	2.8/ 1.0/ 0.2	Flicker	Ian Oversby	8.6	7
26	33.7/ 54.1/ 12.2	Hologram	Philip Kendall	113.2	2
26	36.1/ 47.8/ 16.1	Goothmonger v1.4	Ian Sutton	124.3	2
26	36.4/ 50.2/ 13.4	Golden Gate v4	Franz	122.6	5
26	17.5/ 17.0/ 65.5	U-lat II	Zul Nadzri	118.1	2
26	17.4/ 17.2/ 65.4	U-lat II	Zul Nadzri	117.7	2
26	16.7/ 15.6/ 67.6	U-lat II	Zul Nadzri	117.8	2
26	17.5/ 17.3/ 65.2	U-lat II	Zul Nadzri	117.6	2
26	17.4/ 17.2/ 65.4	U-lat II	Zul Nadzri	117.7	2
26	16.8/ 17.0/ 66.2	U-lat II	Zul Nadzri	116.7	2
26	32.4/ 37.4/ 30.2	No Vice	Ian Oversby	127.4	2
26	32.3/ 38.2/ 29.4	No Vice	Ian Oversby	126.4	2

The bottom four warriors from last week’s issue all were pushed off the hill.

#	%W / %L / %T	Name	Author	Score	Age
26	36.2/ 45.8/ 18.0	Goldfinch	P.Kline	126.6	244
26	36.6/ 46.0/ 17.4	Dr. Gate Q	Franz	127.2	9
26	38.0/ 48.3/ 13.6	Flamberge 13.4	Matt Lewinski	127.7	6
26	2.0/ 1.6/ 0.4	Scanitator 2.1	Christian Schmidt	6.4	8

---

94 - What’s Old

#	%W / %L / %T	Name	Author	Score	Age
14	32.3/ 24.0/ 43.7	Rosebud	Beppe	140.7	986
18	42.6/ 47.6/ 9.8	Q^2 Miro	Anders Ivner	137.7	363
7	42.2/ 39.7/ 18.1	Probe	Anton Marsden	144.7	313
9	42.9/ 41.8/ 15.3	Blur 2	Anton Marsden	144.1	312
1	40.0/ 21.7/ 38.2	unrequited love	kafka	158.4	233
19	35.3/ 33.3/ 31.3	Falcon v0.3	Ian Oversby	137.3	218

The hill becomes even younger with the loss of Kline’s Goldfinch.

HALL OF FAME

* means the warrior is still active.

Pos	Name	Author	Age	Strategy

1	Thermite II	Robert Macrae	2262		Qscan -> bomber
2	Impfinity v4g1	Planar	1993		Stone/ imp
3	Jack in the box	Beppe Bezzi	1620		P-warrior
4	Tornado 3.0	Beppe Bezzi	1567		Bomber
5	Torch t18	P.Kline	1539		Bomber
6	Chameleon	Myer R Bremer	1437		P-warrior
7	Frontwards v2	Steven Morrell	1420		One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299		Imp / stone
9	quiz	Schitzo	1262		Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204		Bomber
11	Grilled Octopus v0.5	David Boeren	1154		P-warrior
12	Hazy Shade II	John Wilkinson	1102		P-warrior
13	Stepping Stone	Kurt Franke	1049		Qscan -> Vampire
14	Rosebud	Beppe Bezzi	986	*	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926		CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925		Bomber
17	Agony II	Stefan Strack	912		CMP scanner
18	Barrage	Anton Marsden	876		Qscan -> replicator
19	Blue Funk	Steven Morrell	869		Stone/ imp
20	Flurry	Anton Marsden	835		Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802		Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766		Stone/ imp
23	Night Train	Karl Lewin	755		Replicator
24	Mirage 1.5	Anton Marsden	736		Scanner/ bomber
25	Blizzard	Anton Marsden	713		Qscan -> replicator

No changes. Rosebud continues its slow, deliberate climb.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age

I was unable to collect data for the beginner’s hill due to the shutdown at pizza.

The Hint
by M R Bremer

I’ve been working very sporadically on some warriors in between time spent on my compiler project, interviews, and office visits. Here are some little hints that may or may not help you.

I’m using this bombing code in my warrior Nine Seven Six. The bomber throws spl and dat instructions around in core until the spl lands on the djn instruction. A d-clear follows. Normally in a bomber, I could use the spl operands as my increment. However, I wanted a perfect d-clear gate so the b-operand was unavailable to me. Instead of creating a bogus dat instruction containing the necessary data, I simply used my djn line as my increment. I got the idea from an old warrior by Paul Kline called Scimitar. Kline used the bomb itself, dat <4, STEP*2, as the increment in his bomber.

```
first   spl #STEP, >gate-loop
        mov.i }-2200, *loop+STEP*2
        mov.i first, @-1
        add.f 1, -2
loop    djn.f -3, <STEP*2
        mov wipe, >gate
last    djn.f -1, >gate
```

Booting away warriors was also giving me a minor problem. Booting is very

easy to do if all the code is going to be placed sequentially in core. You can do it in linear time with just one boot pointer. However, once you start setting up pointers or gates for your warriors, or you need to jump to the middle of your code, additional pointers are needed. Additional pointers take additional code and additional time to delete them.

I wanted to set up a d-clear with the gate two core locations above the split. Instead of using two pointers or extra instructions, I split to my code before the total boot is finished. And then I decrement the boot pointer in my split. Due to the nature of the splitting process, mov.i will execute before the instruction at ptr+2234. Therefore, all my code is placed before the warrior is started.

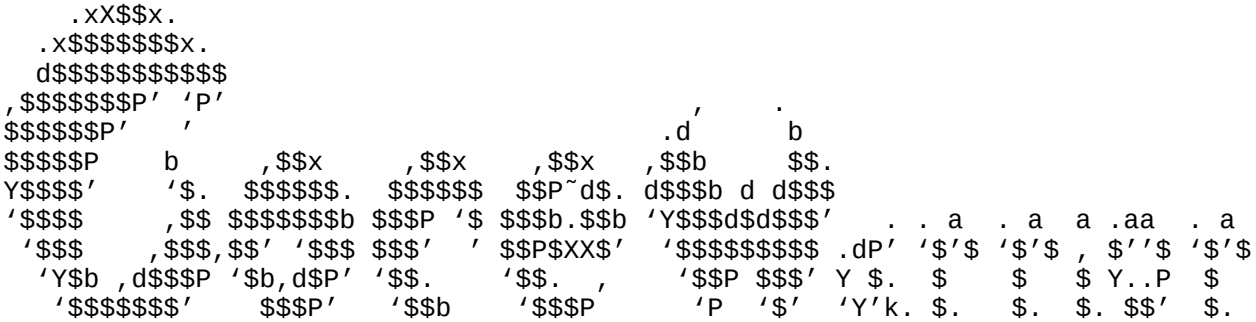
```
        mov.i {gate, {ptr
        djn.b -1, #4
ptr     spl 2234, {ptr
        mov.i gate, {ptr
```

Similar to silk replicators, you can use this technique to place even more code. In the extreme case, a warrior can split to an empty core location while the boot builds the warrior right under the new process. Of course none of the executing instructions could depend on instructions that have not been booted into place yet.

Even more time and space can be saved by having the pointers bombed very early in the bombing run instead of adding div or mov instructions to explicitly destroy them.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@etherspace.gen.nz>

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Issue 52 9 December, 1996

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

There were a lot of significant losses to the '94 hill since last issue. The hill is now much younger.

A reminder: Pizza's '94x hill now has the following specs:
coresize: 800

```
   max. processes: 800
         duration: after 8000 cycles, a tie is declared.
max. entry length: 20
 minimum distance: 20
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS '94 Draft

The current ICWS '94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	36.5/ 24.2/ 39.3	unrequited love	kafka	148.8	244
2	31.2/ 16.3/ 52.5	Return Of The Jedimp	John K W	146.2	146
3	32.3/ 19.4/ 48.2	Trident^2	John K W	145.3	76
4	42.4/ 40.0/ 17.6	Oblivion	Ian Sutton	144.9	11
5	36.1/ 28.4/ 35.5	Gigolo	Core Warrior staff	143.9	200
6	41.3/ 40.0/ 18.7	The Machine	Anton Marsden	142.6	52
7	41.5/ 41.8/ 16.7	Blur 2	Anton Marsden	141.2	323
8	40.1/ 40.1/ 19.8	Silver Talon 1.2	Edgar	140.2	33
9	36.4/ 32.6/ 31.0	Nine Seven Six	M R Bremer	140.2	10
10	43.1/ 46.1/ 10.9	Memories	Beppe	140.1	60
11	43.6/ 47.3/ 9.1	Tim Tack	P.Kline	140.0	2
12	40.5/ 42.5/ 17.0	Probe	Anton Marsden	138.5	324
13	38.2/ 40.9/ 20.9	Damage Incorporated	Anton Marsden	135.5	187
14	35.6/ 37.5/ 26.9	Tiberius 3.1	Franz	133.8	63
15	33.8/ 33.8/ 32.4	Fast Fast Fast	Franz	133.7	3
16	34.8/ 36.1/ 29.0	Test ft	Ian Oversby	133.5	7
17	35.8/ 39.0/ 25.2	CC Paper 2	Franz	132.6	35
18	27.8/ 23.3/ 48.9	Impish v0.2	Ian Oversby	132.3	185
19	33.8/ 35.6/ 30.6	No Vice	Ian Oversby	132.0	13
20	37.2/ 42.8/ 20.1	vamp 0.2b	bjoern guenzel	131.5	23
21	38.4/ 45.5/ 16.2	AK-47	Franz	131.2	38
22	35.5/ 41.3/ 23.2	Scanitator 2.4	Christian Schmidt	129.6	17
23	32.3/ 35.6/ 32.1	Falcon v0.3	Ian Oversby	129.0	229
24	36.7/ 45.1/ 18.2	Frontwards v2	Steven Morrell	128.4	6
25	31.8/ 38.0/ 30.2	scTest	P.Kline	125.6	1

Weekly age: 22 this week (11 last issue, 5 the issue before)
New warriors: 9 Turnover/age rate 41%
Average age: 91 (145 last issue, 146 the issue before)
Average score: 137 (137 last issue, 143 the issue before)
The top 25 warriors are represented by 14 independent authors: Franz, Marsden and Oversby with 4; JKW and Kline with 2; everyone else with one.

---

94 - What's New (or this week: the uplook)

#	%W / %L / %T	Name	Author	Score	Age
11	36.9/ 37.1/ 26.0	Scanitator 2.4	Christian Schmidt	136.6	1
22	32.8/ 36.7/ 30.4	No Vice	Ian Oversby	128.9	1
2	44.7/ 38.7/ 16.7	Oblivion	Ian Sutton	150.6	1
7	36.2/ 31.1/ 32.7	Nine Seven Six	M R Bremer	141.3	1
20	32.3/ 36.4/ 31.2	Test ft	Ian Oversby	128.3	1
14	38.5/ 43.6/ 17.9	Frontwards v2	Steven Morrell	133.4	1
16	34.3/ 33.9/ 31.7	Fast Fast Fast	Franz	134.8	1
9	43.9/ 47.4/ 8.7	Tim Tack	P.Kline	140.5	1
25	31.8/ 38.0/ 30.2	scTest	P.Kline	125.6	1

Ian Sutton makes it onto the hill in style - 2nd place for his new warrior Oblivion. Kline is back in business with Tim Tack.

---

94 - What's No More (or this week: the outlook)

#	%W /	%L /	%T	Name	Author	Score	Age
26	36.2/	45.8/	18.0	Goldfinch	P.Kline	126.6	244
26	36.6/	46.0/	17.4	Dr. Gate Q	Franz	127.2	9
26	38.0/	48.3/	13.6	Flamberge 13.4	Matt Lewinski	127.7	6
26	36.9/	47.5/	15.6	Goothmonger v1.3	Ian Sutton	126.3	2
26	33.7/	54.1/	12.2	Hologram	Philip Kendall	113.2	2
26	36.4/	50.2/	13.4	Golden Gate v4	Franz	122.6	5
26	16.8/	17.0/	66.2	U-lat II	Zul Nadzri	116.7	2
26	37.2/	46.5/	16.4	Goothmonger v1.4	Ian Sutton	127.8	4
26	39.0/	51.2/	9.8	Q^2 Miro	Anders Ivner	126.8	366
26	36.0/	49.2/	14.8	Scankiller 0.1	Christian Schmidt	122.9	2
26	28.8/	31.0/	40.1	delay 0.02b 50	bjoern guenzel	126.6	22
26	27.6/	27.4/	45.0	Rosebud	Beppe	127.7	993
26	38.1/	47.8/	14.1	Mostly Harmless v1.1	Justin Kao	128.5	18
26	35.3/	44.0/	20.7	Instant Wolf 3.4	Edgar	126.7	205

Rosebud finally kicks the bucket, much to Beppe's dismay. Other significant losses were Goldfinch, Q^2 Miro and Instant Wolf.

---

94 - What's Old (or this week: the grey look)

#	%W /	%L /	%T	Name	Author	Score	Age
12	40.5/	42.5/	17.0	Probe	Anton Marsden	138.5	324
7	41.5/	41.8/	16.7	Blur 2	Anton Marsden	141.2	323
1	36.5/	24.2/	39.3	unrequited love	kafka	148.8	244
23	32.3/	35.6/	32.1	Falcon v0.3	Ian Oversby	129.0	229
5	36.1/	28.4/	35.5	Gigolo	Core Warrior staff	143.9	200

A lot of old warriors disappeared this week. Gigolo is a new entry.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

Rosebud stops getting older and now there are no active warriors in the HOF. Probe and Blur 2 will be the next warriors to enter the HOF, assuming they survive long enough.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	50.9/ 33.9/ 15.2	Silver Talon 1.1	Edgar	167.9	73
2	50.8/ 40.0/ 9.3	Goothmonger v1.2	Ian Sutton	161.6	17
3	47.2/ 38.2/ 14.5	Pentagram	J.A.Denny	156.3	1
4	48.1/ 42.7/ 9.2	Scankiller 0.1	Christian Schmidt	153.5	4
5	46.5/ 40.9/ 12.6	Flamberge 13.4	Matt Lewinski	152.2	42
6	41.8/ 33.8/ 24.3	Scanitator 2.4	Christian Schmidt	149.8	16
7	47.1/ 44.6/ 8.3	The Stainless Steel Rat	Christian Schmidt	149.5	15
8	43.8/ 39.7/ 16.5	Microsoft Office '96	Justin Kao	147.9	69
9	44.2/ 44.2/ 11.6	Mostly Harmless v1.1	Justin Kao	144.2	23
10	39.6/ 36.4/ 24.0	Versatility 1.7	Ross Morgan-Linial	142.8	20
11	42.6/ 43.1/ 14.3	Cruise Missile	Philip Kendall	142.2	38
12	40.9/ 42.8/ 16.3	HAL 9000	Justin Kao	139.0	85
13	29.4/ 20.0/ 50.6	DemonSpawn	J.A.Denny	138.9	2
14	39.9/ 41.4/ 18.7	Vivid Radiation 2.0	Matt Lewinski	138.4	41
15	42.4/ 46.8/ 10.8	Hologram	Philip Kendall	138.1	13
16	40.6/ 43.2/ 16.2	Bash the Rat V1.4	Ian Sutton	138.0	34
17	35.6/ 34.3/ 30.1	Dust 0.7.5	Justin Kao	137.0	19
18	35.0/ 33.9/ 31.0	Hammermill 4.0	Matt Lewinski	136.1	79
19	39.3/ 43.0/ 17.7	MI6	Philip Kendall	135.7	66
20	38.0/ 40.9/ 21.0	Sandstorm Q/0.6c	Ilmari Karonen	135.1	64
21	34.7/ 35.8/ 29.5	Apocalypse	Matt Lewinski	133.7	50
22	32.5/ 34.3/ 33.2	Escargot 0.5	Justin Kao	130.8	39
23	33.6/ 38.8/ 27.7	Fusion 0.5	Justin Kao	128.3	11
24	28.6/ 30.7/ 40.8	Paper V	D. D. Randel	126.4	3
25	33.5/ 43.1/ 23.4	Daemon of Zteentch	Christian Schmidt	124.0	97

Top 25 Averages:

	40.3/ 38.7/ 21.1			141.9	36

The Hint
Dclears by Paul Kline

Last issue Myer revealed the bomber form he is using in his Nine Seven Six fighter, which is quite interesting. In order to make other use of the SPL's b-operand he is using the DJN line for the bombing increment. This alternative can be used in a scanner or other bombers as well.

Actually any line in the source can be used as the increment, and leads to the possibility of changing the increment on the fly. Planar's Impfinity uses the ADD line itself:

```
        add.f   #istep+1, ptr&i
```

Myer created a 'perfect dclear gate' something like this:

```
        spl     #0    ,>gate
        mov     wipe  ,>gate
        djn.f   -1    ,>gate
wipe    dat     <2667 ,2-gate
```

This will certainly stop an imp which tries to overrun the gate, but does suffer from an occasional self-destruct. If either the MOV or the DJN changes gate to zero and the SPL executes next then it will self-wipe. This will happen rarely but can be prevented by using this form:

```
        spl     #0
        mov     wipe  ,>gate
        djn.f   -1    ,>gate
wipe    dat     <2667 ,2-gate
```

This second form suffers somewhat in that an imp can pass if it tries when the SPL is executed. But if the gate is far enough back then it should be wiped anyway before it can reach the SPL. If the gate is near, this may be a problem. So there is one way to tell which form to use - if the gate can be positioned well back use form #2, else use form #1. However if you have other uses for the SPL operands then that may determine your form.

Now for the exciting part!

A while back I serendipitously discovered that <5335 is MUCH better than <2667 against paper-based or continuously-launched imps, and just got around to trying some more variations. I created two versions of Die Hard using these imp forms:

```
    mov.i   #2667,*0
    mov.i   #100 ,2667
```

and ran against a dclear continuous wiper with combinations of predec/ postinc using imp and near-imp numbers. Here are the resulting win/loss/tie results:

wiper	2667 ,*0	#100,2667
<2667	00/25/75	00/21/79
>2667	00/28/72	00/22/78
{2667	00/22/78	00/21/79
}2667	00/21/79	00/22/78
<2668	00/24/76	00/26/74
>2668	00/26/74	00/27/73
{2668	00/23/77	00/24/76
}2668	00/27/73	00/25/75
<5334	00/21/79	00/22/78
>5334	00/21/79	00/28/72
{5334	00/17/83	00/19/81
}5334	00/18/82	00/20/80
<5335	36/20/44	57/18/25
>5335	55/20/25	52/21/27
{5335	54/19/27	00/19/81
}5335	55/18/27	00/19/81
<5336	00/19/81	00/19/81
>5336	00/18/82	00/22/78
{5336	00/18/82	00/18/82
}5336	00/18/82	00/19/81
<1	00/16/84	00/18/82
>1	00/19/81	00/21/79
{1	00/18/82	00/19/81
}1	00/21/79	00/20/80

Most of them have that moribund loser look, but wow! those 5335 numbers are very interesting. From this I recommend using this Dclear form:

```
        spl     #0
        mov     wipe  ,>gate
        djn.f   -1    ,>gate
wipe    dat     >5335 ,2-gate
```

Paul Kline
pk6811s@acad.drake.edu

Extra Extra
Blur ’88 by Anton Marsden

I wanted to see how "advanced" the ’88 warriors were so I wrote Blur ’88 to test a modern technique against them. As it turns out, Blur ’88 did quite well.

This warrior is somewhat resistant to DAT ?a,?0 bombs - if some of the code is hit, the jmn line will fall through if the lines ’scan’ or ’a’ are hit.

The one thing I was frustrated with was the coreclear. I can't seem to improve it much. Any ideas?

```
;redcode
;name Blur '88
;author Anton Marsden
;strategy Carpet goes backwards
;assert CORESIZE==8000

step EQU 70

top:  mov bomb,<ptr
a:    add inc,scan
scan: cmp -3*step+5,-3*step
      mov scan,@-3
      jmn top,@-3
bomb: spl 0,<1-step
      mov inc,<bomb-2
      djn -1,@-1-step
inc:  dat <-step,<-step
ptr:  dat #0,#-2*step

END scan
```

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!165.254.2.52!news.new-york.net!news.stormking.com!bezzi@nemo.it Mon Dec 23 11:52:30 1996
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t!165.254.2.52!news.new-york.net!news.stormking.com!bezzi@nemo.it
From: Beppe Bezzi <bezzi@nemo.it>
Newsgroups: rec.games.corewar
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Distribution: world
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NNTP-Posting-Host: valhalla.stormking.com
Originator: corewar-l@stormking.com
X-Mailer: Windows Eudora Light Version 1.5.2

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 53 16 December, 1996

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FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

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Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

Sorry for the delay and for incomplete data but I had an HD crash and I lost, together with lots of other thing, part of the mail from Pizza.

I wish you all a merry Christmas and an happy new year, we'll see agin next january.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	51.3/	42.6/	6.1	He Scans Alone	P.Kline	160.0	4
2	37.9/	22.0/	40.1	unrequited love	kafka	153.8	287
3	39.2/	25.6/	35.2	Gigolo	Core Warrior staff	152.8	243
4	43.2/	35.0/	21.8	Solomon v0.8	Ian Oversby	151.4	35
5	33.2/	15.9/	50.9	Return Of The Jedimp	John K W	150.5	189
6	38.2/	28.2/	33.6	Nine Seven Six	M R Bremer	148.1	53
7	42.7/	37.4/	19.9	The Machine	Anton Marsden	148.0	95
8	33.7/	21.1/	45.2	Trident^2	John K W	146.2	119
9	42.2/	39.9/	17.9	Oblivion	Ian Sutton	144.6	54
10	44.6/	45.9/	9.5	Memories	Beppe	143.2	103
11	40.4/	38.3/	21.3	Silver Talon 1.2	Edgar	142.5	76
12	40.6/	41.4/	18.1	Blur 2	Anton Marsden	139.7	366
13	39.8/	39.9/	20.2	Instant Wolf	Edgar	139.7	10
14	35.8/	32.2/	32.0	Fast Fast Fast v2	Franz	139.4	3
15	39.1/	39.1/	21.9	Damage Incorporated	Anton Marsden	139.1	230
16	30.0/	20.9/	49.2	Impish v0.2	Ian Oversby	139.1	228
17	34.8/	30.9/	34.3	Falcon v0.3	Ian Oversby	138.6	272
18	39.8/	42.6/	17.6	Probe	Anton Marsden	137.1	367
19	35.1/	33.7/	31.2	scTest	P.Kline	136.4	18
20	37.9/	40.2/	22.0	Tsunami v0.5	Ian Oversby	135.6	11
21	29.9/	24.5/	45.6	Terkonit 0.3	Christian Schmidt	135.4	1
22	36.4/	37.7/	25.9	Tiberius 3.1	Franz	135.0	106
23	35.3/	35.9/	28.8	YAP	Franz	134.7	16
24	36.6/	39.0/	24.4	CC Paper 2	Franz	134.2	78
25	40.1/	47.7/	12.2	Scankiller 0.1	Christian Schmidt	132.5	27

Weekly age: 43 this week (22 last issue, 11 the issue before)
New warriors: 9 Turnover/age rate 21%
Average age: 119 (91 last issue, 145 the issue before)
Average score: 142 (137 last issue, 137 the issue before)
The top 25 warriors are represented by 12 independent authors: Franz, Marsden and Oversby with 4; JKW, Edgar, Schimdt and Kline with 2; everyone else with one.

Paul Kline, after some time of vacation, strikes back with his new scanner, putting it on top of the hill. King position was held also by Solomon, another new entry, Gigolo and unrequited love.

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94 - What’s New (or this week: the uplook)

#	%W /	%L /	%T	Name	Author	Score	Age
2	41.6/	35.9/	22.5	Solomon v0.8	Ian Oversby	147.2	1
20	40.1/	48.0/	11.9	Tim Tack	P.Kline	132.1	1
21	39.8/	47.9/	12.3	Scankiller 0.1	Christian Schmidt	131.7	1
23	32.9/	35.5/	31.6	scTest	P.Kline	130.2	1
17	33.7/	36.0/	30.3	YAP	Franz	131.5	1
13	38.1/	40.7/	21.2	Tsunami v0.5	Ian Oversby	135.6	1
19	36.8/	42.2/	21.0	Instant Wolf	Edgar	131.4	1
1	47.9/	46.2/	5.8	He Scans Alone	P.Kline	149.6	1
12	34.2/	33.3/	32.5	Fast Fast Fast v2	Franz	135.0	1
19	28.1/	25.6/	46.3	Terkonit 0.3	Christian Schmidt	130.5	1

Two big new entries: He scans alone and Solomon and some movement in the mid/low part of the hill.

---

94 - What's No More (or this week: the outlook)

#	%W /	%L /	%T	Name	Author	Score	Age
26	37.0/	48.7/	14.4	Pentagram 2	J.A.Denny	125.3	5
26	36.7/	46.7/	16.6	AK-47	Franz	126.7	48
26	36.0/	44.1/	19.9	vamp 0.2b	bjoern guenzel	127.9	34
26	1.9/	2.0/	0.1	Tim Tack	P.Kline	5.7	17
26	35.4/	43.6/	21.0	Frontwards v2	Steven Morrell	127.2	23
26	37.9/	50.2/	12.0	Tim Tack	P.Kline	125.6	8
26	34.5/	41.4/	24.2	Instant Wolf	Edgar	127.6	22
26	26.7/	27.2/	46.2	Terkonit 0.2	Christian Schmidt	126.2	23
26	1.6/	1.7/	0.7	Scanitator 3.0	Christian Schmidt	5.4	42

No aged warrior pushed off this week

---

94 - What's Old (or this week: the grey look)

#	%W /	%L /	%T	Name	Author	Score	Age
18	39.8/	42.6/	17.6	Probe	Anton Marsden	137.1	367
12	40.6/	41.4/	18.1	Blur 2	Anton Marsden	139.7	366
2	37.9/	22.0/	40.1	unrequited love	kafka	153.8	287
17	34.8/	30.9/	34.3	Falcon v0.3	Ian Oversby	138.6	272
3	39.2/	25.6/	35.2	Gigolo	Core Warrior staff	152.8	243
16	30.0/	20.9/	49.2	Impish v0.2	Ian Oversby	139.1	228

Impish enters the over 200 club.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

No changes this week, and I think we won't see any for long

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	48.2/ 36.1/ 15.7	Silver Talon 1.1	Edgar	160.3	84
2	49.5/ 40.0/ 10.5	Pentagram 2.a	J.A.Denny	159.0	5
3	47.9/ 38.7/ 13.4	Goothmonger v1.2	Ian Sutton	157.1	28
4	45.9/ 34.9/ 19.1	Hexagram	J.A.Denny	156.9	3
5	48.3/ 42.9/ 8.8	Scankiller 0.1	Christian Schmidt	153.7	15
6	34.8/ 16.1/ 49.1	Terkonit 0.3	Christian Schmidt	153.6	2
7	43.2/ 35.9/ 20.9	Flimsy v0.6	Ian Oversby	150.4	4
8	45.7/ 45.2/ 9.1	The Stainless Steel Rat	Christian Schmidt	146.3	26
9	39.6/ 33.0/ 27.4	Scanitator 3.0	Christian Schmidt	146.2	10
10	43.8/ 41.6/ 14.6	Flamberge 13.4	Matt Lewinski	146.1	53
11	40.7/ 35.5/ 23.9	Versatility 1.7	Ross Morgan-Linial	145.9	31
12	38.0/ 31.4/ 30.6	Hammermill 4.0	Matt Lewinski	144.7	90
13	33.0/ 21.5/ 45.5	DemonSpawn	J.A.Denny	144.4	13
14	42.2/ 42.8/ 15.0	Mostly Harmless v1.1	Justin Kao	141.5	34
15	40.5/ 39.7/ 19.8	MI6	Philip Kendall	141.3	77
16	37.4/ 33.8/ 28.8	Apocalypse	Matt Lewinski	141.1	61
17	40.5/ 40.4/ 19.0	Microsoft Office ’96	Justin Kao	140.6	80
18	40.3/ 41.1/ 18.6	Vivid Radiation 2.0	Matt Lewinski	139.5	52
19	35.4/ 33.0/ 31.6	Dust 0.7.5	Justin Kao	137.7	30
20	38.9/ 42.1/ 19.0	HAL 9000	Justin Kao	135.7	96
21	39.2/ 44.3/ 16.5	Bash the Rat V1.4	Ian Sutton	134.2	45
22	40.4/ 47.3/ 12.3	Hologram	Philip Kendall	133.5	24
23	32.2/ 31.1/ 36.7	Escargot 0.5	Justin Kao	133.3	50
24	30.3/ 27.8/ 42.0	Quantum	Christian Schmidt	132.8	7
25	31.4/ 31.4/ 37.2	Heartworm	Edgar	131.3	1
Top 25 Averages:					
	40.3/ 36.3/ 23.4			144.3	36

The Hint
Gigolo

Gigolo is a warrior that combines the effectivenes of Probe’s Q^2 scan against slow starting pspacers, and the core trashing power of Rosebud stone, enhanced with improved imps taken from Impfinity.

At the beginning I were looking for a way to improve Rosebud, with a faster launch for his imps; this because the q^2 were giving lots of problems.

Impfinity uses a smaller continual launcher that’s faster to boot and to begin generating imp rings, just coupling it with my stone improved its score some points. Not wanting too many imps I placed the launchers in a position to be stopped by the stone once generated the right quantity of imps.

The tuning was rather long, and the whole thing works at his best only if every part is in the right position. I know that one could take advantage from knowing the realtive positions of the imps and the stone at his advantage, but I decided to hide only the distance of them from the q^2 to allow you see how Gigolo works. (BTW making it work with different values is something I don’t want to do now :-)

Second step was taking the q^2 from probe, just shortend for space reasons and a bit improved in the pattern by Anton; this added a few more points boosting Gigolo on top of the hill; he remained here some time and never slipped below sixt-seventh position.

```
;redcode-94 verbose
;name Gigolo
;author Core Warrior staff
;strategy q^2 -> stone/imp
;strategy Rosebud stone, Probe qscan, Impfinity imps
;strategy v 0.2 new qscan
;assert CORESIZE == 8000
;kill Gigolo

istep   equ     2667
bstep01 equ     2214
```

```
bstep02 equ     3285

trash equ       (boot01+7-359)
impoff equ      (boot01+5+365)
pmpof01 equ     (impoff+1*istep-571)
pmpof02 equ     (impoff+2*istep-493)

step    equ     -845
djnoff  equ     split+step
away    equ     impoff+2906

QB EQU (start+1800)
QS EQU (QD*2)
QD EQU 100

GAP EQU 12
REP EQU 8
REP2 EQU 2

datz EQU (table-3)

         dat    10*QS, 2*QS ; can get 21 values from this table
table:   dat     4*QS, 1*QS ; and can also use the initial value
         dat    23*QS, 3*QS ; of fnd

qinc:    spl    #GAP,-GAP
tab:     add.a  table,table
slow:    add.a  @tab,fnd
fast:    add.ba *tab,@slow
which:   sne.i  datz,*fnd
         add.a  #QD,fnd
         mov.i  datone,*fnd
         add.ab fnd,fnd

fnd:    mov.i  QB,GAP/2
        add.f  qinc,fnd
        mov.i  datone,*fnd
        djn.b  fnd,#REP
        jmp    boot,}QS*13

start:
            ; WHICH
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which,}QB+QS*0+QD/2

             ; FAST
         seq.i  QB+QS*1,QB+QS*1+QD
         jmp    fast,}QB+QS*1+QD/2

         seq.i  QB+QS*13,QB+QS*13+QD
         jmp    fast,{fast
         seq.i  QB+QS*2,QB+QS*2+QD
         jmp    fast,{tab
         seq.i  QB+QS*3,QB+QS*3+QD
         jmp    fast,}tab

            ; SLOW
         seq.i  QB+QS*4,QB+QS*4+QD
         jmp    >fast,}QB+QS*4+QD/2
         seq.i  QB+QS*5,QB+QS*5+QD
         jmp    slow,}QB+QS*5+QD/2

         seq.i  QB+QS*6,QB+QS*6+QD
         jmp    slow,{tab
         seq.i  QB+QS*7,QB+QS*7+QD
         jmp    slow,}tab
         seq.i  QB+QS*10,QB+QS*10+QD
         jmp    >fast,<tab
         seq.i  QB+QS*11,QB+QS*11+QD
         jmp    slow,<tab
```

```
         seq.i  QB+QS*12,QB+QS*12+QD
         djn.f  slow,tab
         seq.i  QB+QS*23,QB+QS*23+QD
         jmp    >fast,>tab
         seq.i  QB+QS*24,QB+QS*24+QD
         jmp    slow,>tab
         seq.i  QB+QS*17,QB+QS*17+QD
         jmp    slow,{fast

            ; TAB

         seq.i  QB+QS*8,QB+QS*8+QD
         jmp    <fast,}QB+QS*8+QD/2
         seq.i  QB+QS*9,QB+QS*9+QD
         jmp    tab,}QB+QS*9+QD/2

         seq.i  QB+QS*15,QB+QS*15+QD
         jmp    tab,<tab

         seq.i  QB+QS*16,QB+QS*16+QD
         jmp    tab,{tab
         seq.i  QB+QS*20,QB+QS*20+QD
         djn.f  <fast,tab

boot
        spl     impboot,}QB+QS*21
        mov     cc,     @stptr1
for 5
        mov     {stptr, {stptr1
rof
        spl     *stptr1,<4000
stptr1  div.f   #split+away,#split+away+2
datone  dat     }1,>1

impboot
        spl     boot02,}QB+QS*22
i FOR 2

boot&i
j FOR 4
        mov.i   {pdst&i, <pdst&i
ROF
        mov.i   instr&i, impoff+(i-1)*istep
for i==1

;-break

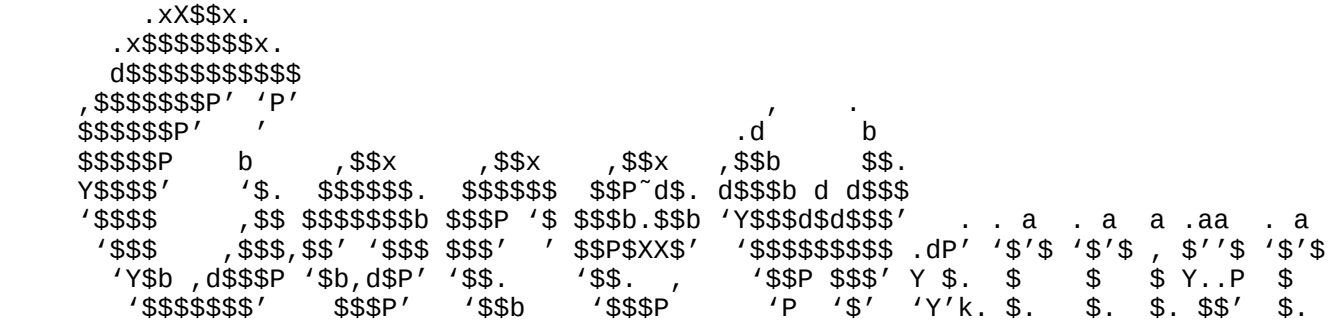
        spl     *stptr1,}QB+QS*23
rof
        jmp     @pdst&i, >trash-15-i*2
psrc&i  dat     0,      0
pdst&i  dat     pend&i, pmpof&i+pend&i-pump&i
point&i equ     (pump&i-pmpof&i+impoff+(i-1)*istep)
pump&i  spl     #1, >prime&i
ptr&i   spl     pump&i-pmpof&i+impoff-istep-1, {1335+i  ;335+i
        add.f   #istep+1, ptr&i
prime&i mov.i   point&i, point&i-2
pend&i
instr&i mov.i   #istep, *0
ROF

clr     spl     #0,     0
split   spl     #-step, <step
stone   mov     >-step, step+1
        add     split,  stone
cnt     djn.f   stone,  <djnoff
stptr
cc      dat     0,      #-9

        end start
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@etherspace.gen.nz>

From bremermr@ecn.purdue.edu Wed Jan 22 21:32:26 1997
Received: from nez-perce.inria.fr (nez-perce.inria.fr [192.93.2.78]) by tobago.inria.fr (8.6.10/8.6.6) with ESMTP id VAA06573 for <doligez@tobago.inria.fr>; Wed, 22 Jan 1997 21:32:25 +0100
Received: from cartoon.ecn.purdue.edu (bremermr@cartoon.ecn.purdue.edu [128.46.147.13]) by nez-perce.inria.fr (8.7.6/8.7.3) with ESMTP id VAA13581 for <Damien.Doligez@inria.fr>; Wed, 22 Jan 1997 21:32:19 +0100 (MET)
Received: from cartoon.ecn.purdue.edu (bremermr@localhost)
by cartoon.ecn.purdue.edu (8.8.5/3.8.2moyman)
for delivery to "Damien.Doligez@inria.fr"
id PAA18528; Wed, 22 Jan 1997 15:32:16 -0500 (EST)
Message-Id: <199701222032.PAA18528@cartoon.ecn.purdue.edu>
Date: Wed, 22 Jan 1997 15:32:16 -0500 (EST)
From: "Myer R. Bremer" <bremermr@ecn.purdue.edu>
To: Damien.Doligez@inria.fr
Subject: Core Warrior 54
Status: R



Issue 54 20 January, 1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi’s hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

Happy New Year everyone. Hopefully 1997 will be an active, progressive year for corewar. It’s been about a month since last issue so most of the stats are for four weeks instead of one.

Also be sure to check Kline’s article in the hints section. Paul is always quick to exploit the composition of the hill and find a niche. RetroQ, currently sitting pretty on top of the hill, does battle with all those nasty Q^2 scans dominating the hill.

--M R Bremer

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	37.4/	20.8/	41.8	RetroQ	P.Kline	154.1	4
2	33.4/	17.7/	48.9	Return Of The Jedimp	John K W	149.1	204
3	38.2/	27.4/	34.4	Gigolo	Core Warrior staff	149.1	258
4	37.9/	29.3/	32.8	Nine Seven Six	M R Bremer	146.5	68
5	34.4/	23.5/	42.1	unrequited love	kafka	145.3	302
6	41.9/	38.6/	19.4	NCC-1701-A	Philip Kendall	145.2	7
7	45.6/	47.8/	6.6	He Scans Alone	P.Kline	143.4	19
8	32.7/	23.4/	43.8	Trident^2	John K W	142.0	134
9	39.8/	37.8/	22.4	Solomon v0.8	Ian Oversby	141.8	50
10	36.8/	36.6/	26.6	TEST FFF mod10 full	Franz	136.9	1
11	29.3/	22.1/	48.6	Impish v0.2	Ian Oversby	136.5	243
12	33.1/	29.7/	37.2	Terkonit 0.4	Christian Schmidt	136.4	10
13	35.0/	34.0/	31.0	Fast Fast Fast v2	Franz	136.1	18
14	38.6/	41.4/	20.0	The Machine	Anton Marsden	135.7	110
15	37.9/	41.6/	20.5	Instant Wolf	Edgar	134.1	25
16	36.9/	41.2/	22.0	Scanitator 4	Christian Schmidt	132.6	6
17	36.5/	40.8/	22.7	Damage Incorporated	Anton Marsden	132.1	245
18	38.1/	44.5/	17.4	Oblivion	Ian Sutton	131.7	69
19	40.2/	49.2/	10.6	Memories	Beppe	131.2	118
20	40.7/	51.1/	8.3	ScanKiller	Christian Schmidt	130.3	2
21	39.2/	48.3/	12.5	Wallung	Christian Schmidt	130.1	8
22	37.6/	45.6/	16.8	Probe	Anton Marsden	129.6	382
23	34.6/	39.8/	25.6	Tiberius 3.1	Franz	129.3	121
24	36.9/	45.0/	18.1	Blur 2	Anton Marsden	128.8	381
25	35.8/	42.9/	21.3	Silver Talon 1.2	Edgar	128.7	91

Weekly age: 15 this week (43 last issue, 22 the issue before)
New warriors: 7 Turnover/age rate 47%
Average age: 115 (119 last issue, 91 the issue before)
Average score: 138 (142 last issue, 137 the issue before)
The top 25 warriors are represented by 12 independent authors: Schmidt and Marsden with 4; Franz with 3; Kline, JKW, Edgar, and Oversby with 2. All others with one lonely warrior each.

Kline rules the roost, first with He Scans Alone and than with RetroQ. As usual, his top rated warrior has a comfortable lead over second place Jedimp.

Venerable Blur 2 is in danger of falling of the hill completely.

---

94 - What’s New

#	%W /	%L /	%T	Name	Author	Score	Age
16	30.0/	29.2/	40.8	Terkonit 0.4	Christian Schmidt	130.9	1
2	42.9/	37.6/	19.5	NCC-1701-A	Philip Kendall	148.2	1
11	37.5/	38.7/	23.8	Scanitator 4	Christian Schmidt	136.3	1
16	41.8/	49.6/	8.5	ScanKiller	Christian Schmidt	134.0	1
1	36.8/	19.9/	43.4	RetroQ	P.Kline	153.6	1
17	40.2/	48.1/	11.8	Wallung	Christian Schmidt	132.3	1
10	36.8/	36.6/	26.6	TEST FFF mod10 full	Franz	136.9	1

New warriors entered the hill in the first and second position, although the Enterprise has fallen to sixth in recent challenges.

---

94 - What’s No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	37.1/	49.8/	13.1	Scankiller 0.1	Christian Schmidt	124.5	31
26	32.1/	36.7/	31.2	YAP	Franz	127.5	22
26	1.3/	1.5/	1.1	Terkonit 0.3	Christian Schmidt	5.1	7
26	30.7/	32.1/	37.2	Falcon v0.3	Ian Oversby	129.4	282
26	33.8/	42.4/	23.7	CC Paper 2	Franz	125.2	91
26	1.0/	1.9/	1.1	Tsunami v0.5	Ian Oversby	4.1	12
26	31.3/	35.6/	33.1	scTest	P.Kline	127.1	25

The average age drops as Oversby’s Falcon v0.3 falls from the hill.

---

94 - What’s Old

#	%W /	%L /	%T	Name	Author	Score	Age
22	37.6/	45.6/	16.8	Probe	Anton Marsden	129.6	382
24	36.9/	45.0/	18.1	Blur 2	Anton Marsden	128.8	381
5	34.4/	23.5/	42.1	unrequited love	kafka	145.3	302
3	38.2/	27.4/	34.4	Gigolo	Core Warrior staff	149.1	258
17	36.5/	40.8/	22.7	Damage Incorporated	Anton Marsden	132.1	245
11	29.3/	22.1/	48.6	Impish v0.2	Ian Oversby	136.5	243
2	33.4/	17.7/	48.9	Return Of The Jedimp	John K W	149.1	204

JKW enters the bottom of the list.

HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

No changes this week, and I think we won’t see any for long time, but we at the Core Warrior are working on a new hall of fame that addresses testing, etc. Stay tuned for details or mail me with your opinions.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Thu Jan 16 17:26:45 PST 1997

#	%W / %L / %T	Name	Author	Score	Age
1	49.9/ 33.7/ 16.4	Silver Talon 1.1	Edgar	166.1	89
2	48.1/ 33.1/ 18.8	Hexagram	J.A.Denny	163.0	8
3	50.4/ 38.5/ 11.1	Pentagram 2.a	J.A.Denny	162.3	10
4	40.4/ 18.9/ 40.7	Terkonit 0.4	Christian Schmidt	161.9	5
5	46.2/ 33.4/ 20.4	Flimsy v0.6	Ian Oversby	159.0	9
6	49.3/ 42.2/ 8.5	Scankiller 0.1	Christian Schmidt	156.4	20
7	43.2/ 31.3/ 25.5	Scanitator 3.0	Christian Schmidt	155.1	15
8	40.9/ 29.0/ 30.1	Hammermill 4.0	Matt Lewinski	152.8	95
9	47.5/ 43.6/ 8.9	The Stainless Steel Rat	Christian Schmidt	151.5	31
10	45.9/ 40.9/ 13.2	Goothmonger v1.2	Ian Sutton	150.9	33
11	35.8/ 20.8/ 43.4	DemonSpawn	J.A.Denny	150.8	18
12	42.3/ 34.3/ 23.5	Versatility 1.7	Ross Morgan-Linial	150.3	36
13	40.8/ 31.5/ 27.6	Apocalypse	Matt Lewinski	150.1	66
14	43.4/ 41.6/ 15.0	Mostly Harmless v1.1	Justin Kao	145.3	39
15	41.6/ 39.4/ 19.0	Vivid Radiation 2.0	Matt Lewinski	143.8	57
16	42.6/ 43.0/ 14.5	Flamberge 13.4	Matt Lewinski	142.2	58
17	37.1/ 32.7/ 30.2	Dust 0.7.5	Justin Kao	141.6	35
18	33.8/ 26.2/ 40.0	Quantum	Christian Schmidt	141.4	12
19	40.0/ 40.5/ 19.5	Microsoft Office ’96	Justin Kao	139.6	85
20	33.7/ 30.6/ 35.7	Heartworm	Edgar	136.8	6
21	32.7/ 30.9/ 36.5	Escargot 0.5	Justin Kao	134.4	55
22	37.5/ 46.2/ 16.3	Bash the Rat V1.4	Ian Sutton	128.8	50
23	32.8/ 57.8/ 9.4	Trap94_1	Waldemar Bartolik	107.8	4
24	29.8/ 58.6/ 11.5	Trap94_2	Waldemar Bartolik	101.0	2
25	28.4/ 61.3/ 10.2	Gisela 7110	Andrzej Maciejczak	95.5	1
26	8.9/ 83.0/ 8.1	Forker v1.0	Andrew Bortz	34.8	0
Top 25 Averages:					
	40.6/ 37.6/ 21.8			143.5	33

The Hint

On QScans and CoreWar Strategy.

QScans, particularly Q^2 scans modeled on Probe, are very successful on the ’94 Hill. A couple of tests show why. My little silk-imp program ’dTest’ scores 120 points and gets zero wins against other replicators and imps. Adding a Q^2 scan increased the score by 20 points and obtained 20-30% wins against those other programs. In fact, a dummy program consisting of the Q^2 scan and a 20-line do-nothing loop scored 52 points, with 20-30% wins against several programs (40% against Scanitator)!

Probe’s Q^2 scan checks 50 core locations in 25 instructions, jumping immediately to the calc/bomb routine when something is found. His scan code is about 70 instructions long, making him a good target for other Q^2 scans. Running the dummy Q^2 program against itself gives about 45% wins to each for a 90% ’find’ rate between the two of them, which is amazing. This means that in a battle between two Q^2 scanning opponents, nearly 90% of the battles could be decided by the Q^2 scan, with the two of them exchanging wins at 3 points apiece. No wonder non-scanners are struggling - by not cooperating with the Q^2 program, they have to slug it out with "real" strategies :-)

Of course, any time you have several programs doing the same thing on the Hill, a niche is created which is also an opportunity. The program ’He Scans Alone’ puts a short decoy at minus-100 locations from the cmp-scanner, which sometimes diverts the Q^2 scanner’s attack.

Another approach is to put the Q^2 scan into reverse. Scanning backwards along the mirrored trail of a normal Q^2 scan will result in the two scanners finding each other at the same time. Then it’s a race to see who can bomb the other faster, putting a lucky bomb in the right place before executing the opponent’s bomb. Still an even chance to win or lose.

However, we don’t want an even chance, we want more! Either more wins or fewer losses. A non-cooperating Q^2 scan that gets his share of wins but withholds them from others :-) Which is where Retro-Q

comes in.

Retro-Q does a mirrored scan of the usual Q^2 so that he and a regular Q^2 scanner find each other at the same time. Then he splits his attack into two routines which are located such that the opponent's attack will not kill both. Now both programs bomb each other, but at least one of Retro-Q's routines will survive long enough to see his opponent die.

How well does it work? Using Probe's Q^2 scan, Retro-Q scored 42/42 against Probe. Using the RQ^2 scan he scored 58/25. Against CCPaper2 he went from 29/25 to 38/7. Against Gigolo from 21/30 to 30/20.

Of course this only works because Anton's scan routine has been copied as-is into several programs. Jumbling up the scan order (as opposed to tweaking the scan 'step') would change the environment for Retro-Q, robbing him of his advantage. Still, he will continue to have an advantage against non-redundant post-scan attacks in those matches where they find each other at the same time, mabye 1-2 times per 200 fights.

If the RQ^2 scan fails to win, the silk-imps are launched. Imps are like:

```
         mov.i #2*spcsz,}-spcsz*1
```

with multiple processes spaced 'spcsz' locations apart. This means that the imp is copying itself backward one step as well as forward one step at the same time, which gives it enormous strength against spl carpets. By themselves the silk-imps go 50/20 against The Machine and Scanitator. Since they don't dat-bomb they can only win by surviving and overwriting the opponent, like a good spiral should :-)

(The term "Retin-A" comes from a wrinkle cream that came out a while back)

```
;redcode-94
;name RetroQ
;kill RetroQ
;author P.Kline
;assert CORESIZE == 8000
;strategy Retro Q^2 scan
;strategy silk-imps with retin-A - clear up those ugly spl's

spcsz    equ  (2000+381)
impsz    equ  (127*22)

;  RQ^2, like Anton's Probe only backward

QB EQU (start-350)
QS EQU (0-200)
QD EQU (0+100)

GAP EQU 8
REP EQU 15
datz     equ (start-200)         ; save one instruction

         dat    10*QS, 2*QS      ; can get 21 values from this table
table:   dat     4*QS, 1*QS      ; and can also use the initial value
         dat    23*QS, 3*QS      ; of fnd
qbomb:   dat    -GAP,GAP
qincr    dat    -GAP,2*GAP

         dat start+1,0           ; very important!
tab:     add.a  table  ,table    ; translate found location
slow:    add.ab @tab   ,fnd
fast:    add.b  *tab   ,@slow
which:   sne.i  datz   ,@fnd
         add.ab #QD    ,fnd
;break
         add.ba fnd    ,fnd
         spl    attack2          ; start primary bomber
```

```
attack1  add.b  fnd,fnd2         ; redundant bomber bombs left-to-right
bmb1     mov.i  qbomb  ,@fnd2
fnd2     mov.i  qbomb  ,@fnd-(GAP*REP)/2-GAP/2
         add    #2*GAP ,fnd2
bcnt     djn    -3     ,#REP
         spl   RetinB  ,<RetinB  ; start silk-imps
         jmz   RetinA  ,RetinA   ; if not already started
         dat 0,0

RetinA   spl   1,0
         mov.i -1,#0
         spl   1
b0       spl   @0,spcsz          ; two-level silk spawner
         mov   }b0,>b0
c0       spl   @0,impsz
         mov   }c0,>c0
         spl   c0,{c0            ; loop and split
         mov.i #2*spcsz,}-spcsz*1
         mov.i #2*spcsz,}-spcsz*1
         mov.i #2*impsz,}-impsz*1

start:   seq.i  QB+QS*0,QB+QS*0+QD
         jmp    which,}QS*13 ; qinc+GAP

         seq.i  QB+QS*1,QB+QS*1+QD
         jmp    fast,}QB+QS*1+QD/2
         seq.i  QB+QS*2,QB+QS*2+QD
         jmp    fast,{tab
         seq.i  QB+QS*3,QB+QS*3+QD
         jmp    fast,}tab

         seq.i  QB+QS*13,QB+QS*13+QD
         jmp    fast,{fast

         seq.i  QB+QS*4,QB+QS*4+QD
         jmp    >fast,}QB+QS*4+QD/2
         seq.i  QB+QS*5,QB+QS*5+QD
         jmp    slow,}QB+QS*5+QD/2
         seq.i  QB+QS*6,QB+QS*6+QD
         jmp    slow,{tab
         seq.i  QB+QS*7,QB+QS*7+QD
         jmp    slow,}tab

         seq.i  QB+QS*10,QB+QS*10+QD
         jmp    >fast,<tab
         seq.i  QB+QS*11,QB+QS*11+QD
         jmp    slow,<tab
         seq.i  QB+QS*12,QB+QS*12+QD
         djn.f  slow,tab

         seq.i  QB+QS*23,QB+QS*23+QD
         jmp    >fast,>tab
         seq.i  QB+QS*24,QB+QS*24+QD
         jmp    slow,>tab

         seq.i  QB+QS*17,QB+QS*17+QD
         jmp    slow,{fast

         seq.i  QB+QS*8,QB+QS*8+QD
         jmp    <fast,}QB+QS*8+QD/2
         seq.i  QB+QS*9,QB+QS*9+QD
         jmp    tab,}QB+QS*9+QD/2

         seq.i  QB+QS*15,QB+QS*15+QD
         jmp    tab,<tab
         seq.i  QB+QS*16,QB+QS*16+QD
         jmp    tab,{tab
         seq.i  QB+QS*20,QB+QS*20+QD
         djn.f  <fast,tab
         seq.i  QB+QS*21,QB+QS*21+QD
```

```
         jmp    tab,{fast
         seq.i  QB+QS*22,QB+QS*22+QD
         djn.f  tab,tab
         seq.i  QB+QS*27,QB+QS*27+QD
         jmp    <fast,>tab
         seq.i  QB+QS*28,QB+QS*28+QD
         jmp    tab,>tab

RetinB   spl   1,0
         mov.i -1,#0
         spl   1
         mov   <1,{1             ; make another copy and start him
         spl   4000+7,7          ;   safer than going back to RetinA
                                 ;   which might have been spl-bombed by now

d0       spl   @0,spcsz          ; two-level silk spawner
         mov   }d0,>d0
e0       spl   @0,impsz
         mov   }e0,>e0
         spl   e0,{e0            ; loop and split
         mov.i #2*spcsz,}-spcsz*1
         mov.i #2*spcsz,}-spcsz*1
         mov.i #2*impsz,}-impsz*1

attack2  mov    qbomb  ,*fnd     ; primary bomber
         mov.i  qbomb  ,@fnd     ; bombs left and right from found location
fnd:     mov.i  -GAP/2 ,@QB
         add    qincr  ,fnd
         djn    -4     ,bcnt
         spl   RetinA  ,<RetinA  ; start silk-imps
         jmz   RetinB  ,RetinB   ; if not already started
         end start
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@etherspace.gen.nz>

From corewar-l@stormking.com Tue Feb 4 14:59:25 1997
Received: from nez-perce.inria.fr (nez-perce.inria.fr [192.93.2.78]) by tobago.inria.fr (8.6.10/8.6.6) with ESMTP id OAA29162 for <doligez@tobago.inria.fr>; Tue, 4 Feb 1997 14:59 :24 +0100
Received: from valhalla.stormking.com (root@valhalla.stormking.com [204.141.98.1]) by nez -perce.inria.fr (8.7.6/8.7.3) with SMTP id OAA26256 for <damien.doligez@inria.fr>; Tue, 4 Feb 1997 14:59:04 +0100 (MET)
Received: from (server@localhost [127.0.0.1]) by valhalla.stormking.com (8.6.12/8.6.12) with SMTP id IAA18356; Tue, 4 Feb 1997 08:51:34 -0500
Date: Tue, 4 Feb 1997 08:51:34 -0500
Message-Id: <Pine.LNX.3.91.970204231822.6377A-100000@bigred>
Errors-To: tuc@stormking.com
Reply-To: amarsden@etherspace.gen.nz
Originator: corewar-l@stormking.com
Sender: corewar-l@stormking.com
Precedence: bulk
From: Anton Marsden <amarsden@etherspace.gen.nz>
To: Multiple recipients of list <corewar-l@stormking.com>
Subject: Core Warrior 55
X-Listprocessor-Version: 6.0b -- ListProcessor by Anastasios Kotsikonas
X-Comment: Usenet News "rec.games.corewar"
MIME-Version: 1.0

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$$P' 'P'                                ,    .
$$$$$$P'   '                                .d     b
$$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 55 3 February, 1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

A new Hall of Fame has been calculated and is included in this issue. It was calculated using CW 42 as a starting point so it doesn't include all the warriors. However, hopefully we will soon have a HOF which includes all the

warriors. I have retained the old HOF so noone will be too annoyed :-)

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS '94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	38.4/ 25.7/ 36.0	Head or Tail	Christian Schmidt	151.1	1
2	33.5/ 20.3/ 46.2	RetroQ	P.Kline	146.6	13
3	46.0/ 46.6/ 7.4	He Scans Alone	P.Kline	145.4	28
4	35.2/ 28.2/ 36.5	Nine Seven Six	M R Bremer	142.2	77
5	34.2/ 27.2/ 38.6	Gigolo	Core Warrior staff	141.2	267
6	28.8/ 16.9/ 54.4	Return Of The Jedimp	John K W	140.7	213
7	38.8/ 38.9/ 22.3	NCC-1701-A	Philip Kendall	138.7	16
8	29.9/ 21.5/ 48.6	unrequited love	kafka	138.3	311
9	37.6/ 38.8/ 23.6	Solomon v0.8	Ian Oversby	136.3	59
10	38.4/ 41.3/ 20.3	QFalcon (vii)	Ian Oversby	135.5	6
11	37.8/ 41.0/ 21.2	The Machine	Anton Marsden	134.5	119
12	28.6/ 23.7/ 47.8	Trident^2	John K W	133.4	143
13	32.6/ 32.6/ 34.8	Pulp v0.5	Ian Oversby	132.6	4
14	37.8/ 43.2/ 19.0	Blur 2	Anton Marsden	132.5	390
15	40.3/ 48.4/ 11.3	Memories	Beppe	132.3	127
16	35.4/ 41.5/ 23.1	Damage Incorporated	Anton Marsden	129.4	254
17	31.4/ 33.7/ 35.0	Fast Fast Fast v2	Franz	129.1	27
18	29.6/ 30.3/ 40.1	Terkonit 0.4	Christian Schmidt	129.0	19
19	23.8/ 19.8/ 56.5	Impish v0.2	Ian Oversby	127.8	252
20	35.7/ 43.9/ 20.4	Oblivion	Ian Sutton	127.5	78
21	32.1/ 39.1/ 28.8	Tiberius 3.1	Franz	125.1	130
22	24.6/ 25.2/ 50.2	Eva Peron	David Randel	123.9	2
23	33.5/ 43.1/ 23.3	Instant Wolf	Edgar	123.9	34
24	34.5/ 47.5/ 18.0	Probe	Anton Marsden	121.6	391
25	31.1/ 42.6/ 26.3	Scanitator 4	Christian Schmidt	119.6	15

Weekly age: 9 this week (15 last issue, 43 the issue before)
New warriors: 4 Turnover/age rate 44%
Average age: 119 (115 last issue, 119 the issue before)
Average score: 134 (138 last issue, 142 the issue before)
The top 25 warriors are represented by 14 independent authors: Marsden and Oversby with 4; Schmidt with 3; Kline, JKW and Franz with 2. All others with one lonely warrior each.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
9	40.6/ 41.4/ 18.0	QFalcon (vii)	Ian Oversby	139.8	1
13	34.9/ 34.0/ 31.1	Pulp v0.5	Ian Oversby	135.8	1
23	26.2/ 25.4/ 48.4	Eva Peron	David Randel	127.1	1
1	38.4/ 25.7/ 36.0	Head or Tail	Christian Schmidt	151.1	1

Schmidt makes it to the top of the hill with his new warrior.

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	34.7/ 43.1/ 22.2	Tsunami v0.5	Ian Oversby	126.4	3
26	35.2/ 44.0/ 20.8	Silver Talon 1.2	Edgar	126.4	93
26	35.9/ 44.8/ 19.3	Silver Talon 1.21	Edgar	127.0	2
26	38.1/ 54.1/ 7.8	ScanKiller	Christian Schmidt	122.1	9
26	36.6/ 50.1/ 13.3	Wallung	Christian Schmidt	123.0	16

Silver Talon 1.2 was the only significant loss of the week.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
24	34.5/	47.5/	18.0	Probe	Anton Marsden	121.6	391
14	37.8/	43.2/	19.0	Blur 2	Anton Marsden	132.5	390
8	29.9/	21.5/	48.6	unrequited love	kafka	138.3	311
5	34.2/	27.2/	38.6	Gigolo	Core Warrior staff	141.2	267
16	35.4/	41.5/	23.1	Damage Incorporated	Anton Marsden	129.4	254
19	23.8/	19.8/	56.5	Impish v0.2	Ian Oversby	127.8	252
6	28.8/	16.9/	54.4	Return Of The Jedimp	John K W	140.7	213

No changes, no losses.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	unrequited love	kafka	289	*	Stone/ imp
2	Probe	Anton Marsden	289	*	Q^2 -> Bomber
3	Blur 2	Anton Marsden	289	*	Scanner
4	Falcon v0.3	Ian Oversby	275		P-warrior
5	Gigolo	Core Warrior staff	267	*	Q^2 -> Stone/ imp
6	Damage Incorporated	Anton Marsden	254	*	Q^2 -> Bomber
7	Impish v0.2	Ian Oversby	252	*	Stone/ imp
8	Rosebud	Beppe	218		Stone/ imp
9	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/ bomber
10	Instant Wolf 3.4	Edgar	205		P-warrior
11	Return Of The Jedimp	John K W	213	*	Q^2 -> Stone/ imp
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		Stone/ imp
14	ompega	Steven Morrell	189		Stone/ imp
15	Frogz	Franz	172		Paper
16	Trident^2	John K W	143	*	Stone/ imp
17	Tiberius 3.1	Franz	130	*	P-warrior
18	Memories	Beppe	127	*	Scanner
19	The Machine	Anton Marsden	110	*	Scanner
20	CC Paper 3.3	Franz	107		Paper
21	mrb-test	m r bremer	106		?
22	T.N.T. pro	Maurizio Vittuari	105		Bomber

23 Jack in the box II Beppe Bezzi 100 P-warrior

There are still a lot of active warriors in this HOF... and you only need an age of 100 to qualify :-)

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	49.9/	33.7/	16.4	Silver Talon 1.1	Edgar	166.1	89
2	48.1/	33.1/	18.8	Hexagram	J.A.Denny	163.0	8
3	50.4/	38.5/	11.1	Pentagram 2.a	J.A.Denny	162.3	10
4	40.4/	18.9/	40.7	Terkonit 0.4	Christian Schmidt	161.9	5
5	46.2/	33.4/	20.4	Flimsy v0.6	Ian Oversby	159.0	9
6	49.3/	42.2/	8.5	Scankiller 0.1	Christian Schmidt	156.4	20
7	43.2/	31.3/	25.5	Scanitator 3.0	Christian Schmidt	155.1	15
8	40.9/	29.0/	30.1	Hammermill 4.0	Matt Lewinski	152.8	95
9	47.5/	43.6/	8.9	The Stainless Steel Rat	Christian Schmidt	151.5	31
10	45.9/	40.9/	13.2	Goothmonger v1.2	Ian Sutton	150.9	33
11	35.8/	20.8/	43.4	DemonSpawn	J.A.Denny	150.8	18
12	42.3/	34.3/	23.5	Versatility 1.7	Ross Morgan-Linial	150.3	36
13	40.8/	31.5/	27.6	Apocalypse	Matt Lewinski	150.1	66
14	43.4/	41.6/	15.0	Mostly Harmless v1.1	Justin Kao	145.3	39
15	41.6/	39.4/	19.0	Vivid Radiation 2.0	Matt Lewinski	143.8	57
16	42.6/	43.0/	14.5	Flamberge 13.4	Matt Lewinski	142.2	58
17	37.1/	32.7/	30.2	Dust 0.7.5	Justin Kao	141.6	35
18	33.8/	26.2/	40.0	Quantum	Christian Schmidt	141.4	12
19	40.0/	40.5/	19.5	Microsoft Office '96	Justin Kao	139.6	85
20	33.7/	30.6/	35.7	Heartworm	Edgar	136.8	6
21	32.7/	30.9/	36.5	Escargot 0.5	Justin Kao	134.4	55
22	37.5/	46.2/	16.3	Bash the Rat V1.4	Ian Sutton	128.8	50
23	32.8/	57.8/	9.4	Trap94_1	Waldemar Bartolik	107.8	4
24	29.8/	58.6/	11.5	Trap94_2	Waldemar Bartolik	101.0	2
25	28.4/	61.3/	10.2	Gisela 7110	Andrzej Maciejczak	95.5	1

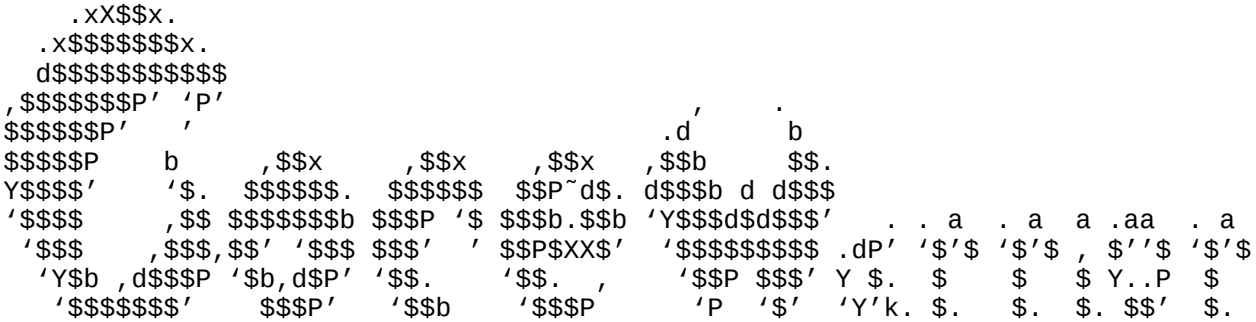
The Hint

I don't have time for a hint this week but here's a few ideas for potentially good warriors given the current state of the Hill:
- There are a reasonable number of P-warriors hovering around the mid and lower parts of the hill so brainwashing could be an option.
- RetroQ can be thrashed by a good vampire. Try using ADD.F #-STEP,STEP.

This is the first issue I've written that hasn't contained a hint or a warrior. I'll try and make up for it in the next issue I do :-)

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu> or Anton Marsden <amarsden@etherspace.gen.nz>

From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.erols.net!cam-news-hub1.bbnplanet.com!news.bbnplanet.com!news.maxwell.syr.edu!metro.atlanta.com!news.new-york.net!news.stormking.com!bezzi@nemo.it Thu Mar 6 11:06:02 1997
Article: 7206 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!howland.erols.net!cam-news-hub1.bbnplanet.com!news.bbnplanet.com!news.maxwell.syr.edu!metro.atlanta.com!news.new-york.net!news.stormking.com!bezzi@nemo.it
From: Beppe Bezzi <bezzi@nemo.it>
Newsgroups: rec.games.corewar
Subject: Core warrior 56
Date: 5 Mar 1997 09:08:33 -0500
Organization: Storm King Ind. Inc.
Lines: 455
Sender: server@news.stormking.com
Distribution: world
Message-ID: <B0000017657@nemont.nemo.it>
Reply-To: bezzi@nemo.it
NNTP-Posting-Host: valhalla.stormking.com
Originator: corewar-l@stormking.com
X-Mailer: Windows Eudora Light Version 1.5.2



Issue 56 3 March, 1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

Traffic on the hills is very little, and I'm rather busy, so I delayed the issue. I hope as soon as traffic will come back to old values to begin publishing CW weekly as usual.
This week we have an interesting hint by Robert Mcrae on hill balance of power and how much a new warrior, He Scans Alone in the example, will move

the equilibrium.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	38.6/	23.7/	37.7	Head or Tail	Christian Schmidt	153.5	14
2	35.4/	18.1/	46.5	RetroQ	P.Kline	152.7	26
3	38.0/	26.3/	35.6	Nine Seven Six	M R Bremer	149.7	90
4	32.1/	15.4/	52.5	Return Of The Jedimp	John K W	148.8	226
5	35.4/	23.7/	40.9	Gigolo	Core Warrior staff	147.2	280
6	46.2/	47.1/	6.7	He Scans Alone	P.Kline	145.2	41
7	39.5/	35.6/	24.8	Tides v0.1	Ian Oversby	143.5	10
8	32.0/	21.7/	46.4	unrequited love	kafka	142.3	324
9	40.4/	38.7/	20.9	NCC-1701-A	Philip Kendall	142.1	29
10	31.0/	20.7/	48.4	Trident^2	John K W	141.3	156
11	39.8/	38.4/	21.7	Solomon v0.8	Ian Oversby	141.2	72
12	39.5/	39.4/	21.1	QFalcon (vii)	Ian Oversby	139.6	19
13	39.4/	40.5/	20.1	The Machine	Anton Marsden	138.2	132
14	32.1/	26.2/	41.8	Terkonit 0.4	Christian Schmidt	138.0	32
15	34.0/	30.3/	35.7	Fast Fast Fast v2	Franz	137.6	40
16	37.7/	38.7/	23.6	Damage Incorporated	Anton Marsden	136.6	267
17	35.5/	36.0/	28.5	Scanitator 4	Christian Schmidt	135.1	28
18	27.7/	20.4/	51.8	Impish v0.2	Ian Oversby	135.1	265
19	32.7/	31.3/	36.0	Instant Ogre	Edgar	134.1	9
20	36.9/	40.4/	22.7	Instant Wolf	Edgar	133.4	47
21	41.0/	49.0/	10.0	Memories	Beppe	132.9	140
22	37.7/	44.4/	17.8	Oblivion	Ian Sutton	131.1	91
23	26.2/	21.9/	51.9	blue spark 0.04	bjoern guenzel	130.5	6
24	31.1/	33.5/	35.4	Dust 7.0	Justin Kao	128.7	1
25	4.0/	0.0/	0.0	Test I	Ian Oversby	12.0	2

Monthly age: 13 this month (9 last issue, 15 the issue before)
New warriors: 5 Turnover/age rate 38%
Average age: 93 (119 last issue, 115 the issue before)
Average score: 135 (134 last issue, 138 the issue before)
The top 25 warriors are represented by 15 independent authors: Oversby with 5; Schmidt with 3; Kline, JKW, Marsden and Edgar with 2. All others with one lonely warrior each.

The fall of Blur2 and Probe, poor Anton :), made the hill much younger. Head or Tail kept the top spot all time.

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
3	39.8/	35.0/	25.2	Tides v0.1	Ian Oversby	144.5	1
13	32.5/	32.5/	35.0	Instant Ogre	Edgar	132.5	1
25	23.2/	22.1/	54.7	blue spark 0.04	bjoern guenzel	124.4	1
11	37.4/	38.8/	23.8	Test I	Ian Oversby	136.0	1
25	29.5/	35.0/	35.5	Dust 7.0	Justin Kao	124.0	1

Tides is the only warrior to enter the hill in the top spots.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	1.9/	0.9/	1.2	Pulp v0.5	Ian Oversby	7.0	5
26	35.4/	46.4/	18.3	Probe	Anton Marsden	124.4	396
26	24.5/	26.0/	49.4	Eva Peron	David Randel	123.0	8
25	23.2/	22.1/	54.7	blue spark 0.04	bjoern guenzel	124.4	1

26 35.1/ 46.4/ 18.5 Blur 2 Anton Marsden 123.8 403

The two older warriors leave the hill.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
8	29.9/	21.5/	48.6	unrequited love	kafka	138.3	324
5	34.2/	27.2/	38.6	Gigolo	Core Warrior staff	141.2	280
16	35.4/	41.5/	23.1	Damage Incorporated	Anton Marsden	129.4	267
19	23.8/	19.8/	56.5	Impish v0.2	Ian Oversby	127.8	265
6	28.8/	16.9/	54.4	Return Of The Jedimp	John K W	140.7	226

No new entries, two losses

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	324	*	Stone/ imp
4	Falcon v0.3	Ian Oversby	275		P-warrior
5	Gigolo	Core Warrior staff	280	*	Q^2 -> Stone/ imp
6	Damage Incorporated	Anton Marsden	267	*	Q^2 -> Bomber
7	Impish v0.2	Ian Oversby	265	*	Stone/ imp
8	Return Of The Jedimp	John K W	226	*	Q^2 -> Stone/ imp
9	Rosebud	Beppe	218		Stone/ imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/ bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		Stone/ imp
14	ompega	Steven Morrell	189		Stone/ imp
15	Frogz	Franz	172		Paper
16	Trident^2	John K W	156	*	Stone/ imp
17	Memories	Beppe	140	*	Scanner
18	The Machine	Anton Marsden	132	*	Scanner
19	Tiberius 3.1	Franz	130		P-warrior
20	CC Paper 3.3	Franz	107		Paper
21	mrb-test	m r bremer	106		?

```
22  T.N.T. pro             Maurizio Vittuari  105    Bomber
23  Jack in the box II     Beppe Bezzi        100    P-warrior
```

Oblivio and NineSevenSix are near to enter the new HoF

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	51.2/ 38.7/ 10.1	Pentagram 2.a	J.A.Denny	163.8	23
2	48.1/ 35.3/ 16.7	Hexagram	J.A.Denny	160.9	21
3	45.5/ 31.3/ 23.2	Flimsy v0.6	Ian Oversby	159.8	22
4	49.2/ 41.0/ 9.8	Goothmonger v1.2	Ian Sutton	157.3	46
5	41.1/ 28.8/ 30.0	Scanitator 3.0	Christian Schmidt	153.4	28
6	43.4/ 33.9/ 22.7	Versatility 1.7	Ross Morgan-Linial	152.9	49
7	40.7/ 28.7/ 30.6	Dust 7.0	Justin Kao	152.7	1
8	40.6/ 29.9/ 29.5	Dust 0.7.5	Justin Kao	151.4	48
9	46.3/ 43.0/ 10.7	Scankiller 0.1	Christian Schmidt	149.6	33
10	46.1/ 44.0/ 9.9	The Stainless Steel Rat	Christian Schmidt	148.1	44
11	43.3/ 39.4/ 17.3	Microsoft Office '96	Justin Kao	147.3	98
12	32.6/ 17.9/ 49.5	DemonSpawn	J.A.Denny	147.2	31
13	44.3/ 43.4/ 12.3	Short Sword 4	JS Pulido	145.2	3
14	41.7/ 38.6/ 19.7	Vivid Radiation 2.0	Matt Lewinski	144.9	70
15	44.0/ 43.1/ 12.9	Flamberge 13.4	Matt Lewinski	144.9	71
16	38.8/ 33.0/ 28.2	Zorm-B	Anonymous	144.7	6
17	37.9/ 32.0/ 30.0	Apocalypse	Matt Lewinski	143.8	79
18	35.9/ 30.3/ 33.8	Escargot 0.5	Justin Kao	141.5	68
19	32.9/ 27.1/ 40.0	Quantum	Christian Schmidt	138.8	25
20	41.4/ 45.1/ 13.5	Mostly Harmless v1.1	Justin Kao	137.7	52
21	32.9/ 30.4/ 36.7	Heartworm	Edgar	135.3	19
22	39.7/ 44.5/ 15.8	Bash the Rat V1.4	Ian Sutton	134.9	63
23	37.3/ 47.2/ 15.5	Dwa Michaly b	Waldemar Bartolik	127.4	9
24	32.2/ 43.1/ 24.8	Time Lag 1c3	Ilmari Karonen	121.3	5
25	33.9/ 51.5/ 14.6	Dwa Michaly a	Waldemar Bartolik	116.4	13

The Hint

The Likely Impact of He Scans Alone on the Hill Population

For some time I have been playing with ideas about how populations of warriors evolve. I think HSA will have an important impact on the hill, so it seemed like a good time to formalise what I've been doing and *test* my views. What difference, if any, will HSA make?

Background.

Imagine that we have a hill with very many warriors, all *sharing* a small number of public designs. Players are continually trying to get warriors on the hill by *selecting* from among those designs, but nothing new is written. As new warriors challenge the hill, the population -- or more precisely, the proportion of each design in the hill population -- will fluctuate around some equilibrium. If you know the scores the warriors average against each other you can calculate what it is.

To make it concrete, imagine that all the warriors where copies of Blur, Labo or Torn, a scanner, paper and bomber respectively. This table shows the

average points scored by each against the others, so Blur scores 165 against Labo. (For the moment lets ignore the uncertainty due to only having estimates of the average scores).

	Blur	Labo	Torn
Blur	142	165	99
Labo	117	101	265
Torn	189	22	149

>From this you can calculate the "equilibrium" population, which is

Blur	Labo	Torn
56.8%	25.0%	18.2%

At equilibrium, every warrior scores equally. In this case, all warriors score 139.93 points. For example for Blur, 56.8% x 142 + 25.0% x 165 + 18.2% x 99 = 139.93. (Nearly)

What happens if you deviate from equilibrium? Well, in this case, if you add more papers the scanners move to the top of the table and more are added, which push off the excess papers. This is a stable equilibrium and the population will oscillate around it, never getting too far out of line before new warriors arrive to take advantage of the disequilibrium.

Life gets more complicated as the number of designs is increased, because some may not be present in the equilibrium at all. This means that you can’t get an explicit formula for the equilibrium, but you can still simulate easily. Just model the hill, run it for several thousands of new submissions and "hopefully" it will end up near equilibrium. If you prefer something more solid than hope, replicate this process many times with slightly differing tables of scores and you obtain a measure of the stability of the equilibrium.

[Theory Note -- I am ignoring potential problems here. In particular it is not in general true that there is only 1 equilibrium -- consider a warrior with a perfect handshake, but which loses to everything else. It may also be possible for non-point equilibria and chaotic behaviour to exist, but I don’t think this matters too much in practice.]

Phew.

So with a small amount of code (Pascal source and Windows executable available) we can take a bunch of warriors and ask which ones would make it into the equilibrium.

The warriors in the equilibrium represent in a compact way the current "state of the art". A new warrior pushes the state forward if it makes it into this population. Warriors which don’t make it can be tested against the population to find out by how much they miss, which provides a global ranking in the style of Mount Olympus.

So How about HSA?

As a practical example, I took a dozen warriors intended to cover a spread of types; for simplicity I ignored P-space and Qscans. I make no great claims for the construction of the list, I just picked some of the code I test against. My lack of hill-success suggests this set is profoundly flawed :-/

He Scans Alone	
Blur 2	
Harmony	
La Bomba Paper	Copy
Die Hard Paper	Copy
D-Clear	Version (Everyone should have one:)
Rosebud	
Impfinity v4g1	
Seventyfive	
Torch t18	
Tornado 3.0	Copy

Tornado Dat Version (Minimalist DAT bomb, DAT clear)

Because I'm really interested in generic types like "bomber" and "paper", I've usually just taken the central element, perhaps with a small decoy. "Copy" means I've chopped the warrior out of something larger (Apologies to the authors for any breakages:) and "Version" means I've adapted it in some way.

This is the resulting score matrix, based on 100 fights.

	H	B	H	L	D	D	R	I	S	T	T	T
HSA	150	171	152	177	195	102	141	91	102	171	127	112
Blur	120	142	199	165	97	148	145	212	167	117	132	99
Harmony	146	85	142	130	150	189	110	175	108	103	122	134
La Bomba	111	117	136	101	105	268	102	99	177	118	134	265
Die Hard	93	127	90	99	100	148	103	97	174	132	136	164
D-Clear 1	177	151	111	16	76	150	97	109	186	130	112	102
Rosebud	156	139	173	105	100	181	101	91	212	176	184	187
Impfin v4g1	205	74	112	105	109	175	118	102	195	144	166	223
Seventy5	198	128	189	102	69	114	71	81	150	113	114	201
Torch t18	120	165	181	136	93	154	89	123	167	138	116	135
Tornado 3.0	160	153	164	119	85	181	82	91	174	152	133	155
Tornado Dat	184	189	161	22	74	195	106	49	99	138	134	149

We can now crank the handle on our simulated hill, to obtain the following equilibria. To get the following estimates I ran a 10000 rounds on the hill, with HSA first excluded and then included. Weights converged to about 4 decimal places.

	Pre-HSA	HSA	Score
HSA	--	18%	140.68
Blur	39%	29%	140.68
Harmony	0%	0%	122.77
La Bomba	14%	6%	140.68
Die Hard	0%	0%	120.85
D-Clear 1	0%	0%	127.81
Rosebud	23%	13%	140.69
Impfin v4g1	0%	12%	140.69
Seventy5	0%	3%	140.66
Torch t18	7%	0%	134.45
Tornado 3.0	0%	0%	136.56
Tornado Dat	17%	19%	140.71

The table shows the equilibrium weights Pre- and Post- HSA. The Score column shows the score of each warrior post-HSA. Those with weights greater than 0% should have identical scores, so the 140.68 to 140.71 range is due to incomplete convergence. Those are not in the equilibrium can be ranked on their score against the equilibrium warriors, from Tornado 3.0 which is just out, to Die Hard and Harmony which are far out.

The above estimates are subject to error due to using only 100 rounds per battle to estimate the strength of the warriors. As a test on this uncertainty, I ran another 100 trials and in each trial perturbed every score by +-10%. This resulted in interquartile spreads of roughly 6.5% for the warriors which are in the equilibrium -- for example HSA had a weight of between 15.6% and 21.7% half of the time. In practice this means that a difference of weights of less than 10% _within_ a column could well be due to chance, though we can be more confident about differences _between_ columns. This is because a lucky result should benefit a warrior in _both_ tests because the same scores were used.

We cannot be confident that Tornado 3.0 is really out of the equilibrium, because it entered the equilibrium in 32 of these 100 perturbed trials, but Harmony and Diehard never make it in.

Interpretation

Firstly, the warriors not in the equilibrium. It is quite possible that they would get in if a different starting set were considered (in particular a set containing a high-scoring warrior against which they excel), but against these warriors they don't make it.

- Harmony does not waste time carpeting trails but is less effective against Silks and loses to anything with SPL bombs.

- Die Hard does not split fast enough to over-write opponents, leading to too many draws.

- D-Clear does well against the scanners, but little else.

Secondly, those in or borderline.

- Blur is highly effective and forms a large part of both populations. HSA can lose a lot of time bombing Blur's carpet. It also handles Impfinity well.

- La Bomba is significantly hurt by HSA but is not, as I had feared, eliminated. It spreads aggressively enough to score very well against anything which can't stun it.

- Impstones overall are little affected; Rosebud is badly hit by HSA but Impfinity takes up the slack. Impfinity seems to gain from its phenomenal split rate, as hitting anything except the stones does not stun. Even with a stone hit, hundreds of further bombs will be thrown by the other. HSA spends a lot of time re-carpeting the DJN trails, so the imp-stones of the future want messy cores... Hmmm... :)

- The fast bombers as a group just break even, even though with HSA pure scanners now comprise a juicy 47% of the population. I suspect the rise of Impfinity is what holds back the fast bombers -- the result would have been different if I'd just used Rosebud as the generic stone-imp representative. My DAT version of Tornado picks up enough against the scanners and rosebud to compensate of worse performance against everything else. For the bombers, dealing with imps will rise up the agenda and papers will recede somewhat.

- HSA itself takes a significant chunk of the population but it could use a tweak against Impfinity. It doesn't replace Blur, partly because once it hits a DJN trail it stops scanning and carpets the whole thing. Blur's more casual approach to bombing is an advantage when the core is full of rubbish.

Assuming these results hold for hill warriors rather than just the examples I've tested, then HSA *is* a substantial step forward. Silks have a major new problem. Fortunately HSA's hyper-aggressive bombing ("positive" is the kind of term the USAF would use:) makes it particularly vulnerable to decoys and trails. Perhaps a stone/silk? Or a fast bomber with a good anti-imp clear? Time to get coding...

Regards, Robert Macrae ff95@dial.pipex.com

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From: bremermr@cartoon.ecn.purdue.edu (Myer R. Bremer)
Newsgroups: rec.games.corewar
Subject: Core Warrior 57
Date: 1 Apr 1997 05:57:34 GMT
Organization: Purdue University, W. Lafayette, IN
Lines: 741
Message-ID: <5hq84e$inq@mozo.cc.purdue.edu>
NNTP-Posting-Host: cartoon.ecn.purdue.edu

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   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 57 30 March, 1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

Aging is slow on the pizza hills these days, but traffic is heavier than the change in age implies. There have been over 430 mailings to the pizza hills in the last 30 days, most of the submissions going to the limited process hill. The beginner's hill had the next highest number of submissions with the '94 hill relatively quiet. You can find all theses usage statistics in a relatively new addition to the pizza homepage. Very nice.

Philip Kendall has been kind enough to provide us with this issues hint on pspace brains.

--M R Bremer

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS ’94 Draft

Last challenge: Fri Mar 21 06:54:21 PST 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.7/	36.6/	18.7	The Bloodhound	Ian Sutton	152.8	10
2	38.1/	27.2/	34.6	Head or Tail	Christian Schmidt	149.0	26
3	40.9/	35.7/	23.4	Tides v0.1	Ian Oversby	146.1	22
4	33.8/	21.8/	44.3	RetroQ	P.Kline	145.9	38
5	36.5/	27.5/	36.0	Nine Seven Six	M R Bremer	145.5	102
6	34.7/	24.0/	41.2	Gigolo	Core Warrior staff	145.5	292
7	30.8/	16.2/	53.0	Return Of The Jedimp	John K W	145.5	238
8	41.5/	37.9/	20.6	Solomon v0.8	Ian Oversby	145.1	84
9	37.7/	31.0/	31.3	Quimp v0.2	Ian Oversby	144.4	6
10	41.1/	39.0/	19.9	NCC-1701-A	Philip Kendall	143.1	41
11	41.1/	39.7/	19.2	The Machine	Anton Marsden	142.4	144
12	32.7/	23.4/	43.9	unrequited love	kafka	142.1	336
13	44.3/	47.7/	8.0	He Scans Alone	P.Kline	141.0	53
14	29.6/	18.8/	51.6	Impish v0.2	Ian Oversby	140.5	277
15	40.4/	41.1/	18.6	Blain	Nimon	139.7	4
16	38.9/	38.3/	22.7	Damage Incorporated	Anton Marsden	139.5	279
17	39.2/	39.0/	21.8	Ace of Spades 2	Christian Schmidt	139.4	3
18	38.7/	38.5/	22.7	Scanitator 5	Christian Schmidt	138.9	3
19	29.9/	21.3/	48.8	Trident^2	John K W	138.5	168
20	37.5/	39.8/	22.7	More testing	Thos	135.3	3
21	27.7/	21.7/	50.6	blue spark 0.04	bjoern guenzel	133.8	18
22	37.5/	41.2/	21.3	One Man Army v1.0	Ian Sutton	133.7	2
23	33.1/	33.5/	33.4	Fast Fast Fast v2	Franz	132.7	52
24	39.3/	46.7/	14.0	Instant Ogre	Edgar	132.0	1
25	32.4/	34.8/	32.8	Instant Ogre	Edgar	130.1	21

Monthly age: 12 this month (13 last issue, 9 the issue before)
New warriors: Turnover/age rate %
Average age: 88 (93 last issue, 119 the issue before)
Average score: 141 (135 last issue, 134 the issue before)
The top 25 warriors are represented by 14 independent authors: Oversby with 4; Schmidt with 3; Sutton, Kline, JKW, Marsden and Edgar with 2. All others with one warrior each.

---

94 - What’s New

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.7/	36.6/	18.7	The Bloodhound	Ian Sutton	152.8	10
9	37.7/	31.0/	31.3	Quimp v0.2	Ian Oversby	144.4	6
15	40.4/	41.1/	18.6	Blain	Nimon	139.7	4
17	39.2/	39.0/	21.8	Ace of Spades 2	Christian Schmidt	139.4	3
18	38.7/	38.5/	22.7	Scanitator 5	Christian Schmidt	138.9	3
20	37.5/	39.8/	22.7	More testing	Thos	135.3	3
22	37.5/	41.2/	21.3	One Man Army v1.0	Ian Sutton	133.7	2
24	39.3/	46.7/	14.0	Instant Ogre	Edgar	132.0	1

Bloodhound vaults onto the scene.

---

94 - What’s No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	1.3/	1.9/	0.9	QFalcon (vii)	Ian Oversby	4.6	23
26	26.6/	29.4/	44.1	Terkonit 0.4	Christian Schmidt	123.8	43
26	30.7/	41.6/	27.8	Scanitator 4	Christian Schmidt	119.7	37

```
26  33.0/ 43.2/ 23.8              Instant Wolf               Edgar 122.8   57
26  38.2/ 50.8/ 10.9                  Memories              Beppe  125.6  152
26  34.4/ 47.1/ 18.4                  Oblivion          Ian Sutton 121.7   99
26  27.9/ 35.1/ 37.0                  Dust 7.0          Justin Kao 120.6    6
26   2.2/  0.6/  1.2                    Test I          Ian Oversby   7.8    3
```

Bezzi's well known Memories falls. QFalcon was killed by its author and replaced by the successful Quimp. Oblivion falls just short of the New Hall of Fame.

---

94 - What's Old

```
 #   %W /  %L /  %T                        Name               Author Score  Age
12  32.7/ 23.4/ 43.9           unrequited love                kafka 142.1  336
 6  34.7/ 24.0/ 41.2                    Gigolo   Core Warrior staff 145.5  292
16  38.9/ 38.3/ 22.7        Damage Incorporated        Anton Marsden 139.5  279
14  29.6/ 18.8/ 51.6                Impish v0.2          Ian Oversby 140.5  277
 7  30.8/ 16.2/ 53.0       Return Of The Jedimp             John K W 145.5  238
```

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	336	*	Stone/ imp
4	Gigolo	Core Warrior staff	292	*	Q^2 -> Stone/ imp
5	Damage Incorporated	Anton Marsden	279	*	Q^2 -> Bomber
6	Impish v0.2	Ian Oversby	277	*	Stone/ imp
7	Falcon v0.3	Ian Oversby	275		P-warrior
8	Return Of The Jedimp	John K W	238	*	Q^2 -> Stone/ imp
9	Rosebud	Beppe	218		Stone/ imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/ bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		Stone/ imp
14	ompega	Steven Morrell	189		Stone/ imp
15	Frogz	Franz	172		Paper
16	Trident^2	John K W	168	*	Stone/ imp
17	Memories	Beppe	152		Scanner

18	The Machine	Anton Marsden	144	*	Scanner
19	Tiberius 3.1	Franz	130		P-warrior
20	CC Paper 3.3	Franz	107		Paper
21	mrb-test	m r bremer	106		?
22	T.N.T. pro	Maurizio Vittuari	105		Bomber
23	Nine Seven Six	M R Bremer	102	*	Q^2 -> Stone / imp
24	Jack in the box II	Beppe Bezzi	100		P-warrior

Nine Seven Six enter the hall while Bezzi’s Memories ends its run.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Sun Mar 30 11:23:28 PST 1997

#	%W / %L / %T	Name	Author	Score	Age
1	51.4/ 38.5/ 10.1	Pentagram 2.a	J.A.Denny	164.4	40
2	47.2/ 34.7/ 18.1	Hexagram	J.A.Denny	159.8	38
3	47.4/ 43.6/ 9.0	Scankiller 0.1	Christian Schmidt	151.3	50
4	46.0/ 41.2/ 12.8	Flamberge 13.4	Matt Lewinski	150.7	88
5	37.6/ 24.7/ 37.7	Dust 7.0	Justin Kao	150.5	18
6	46.8/ 43.4/ 9.9	The Stainless Steel Rat	Christian Schmidt	150.2	61
7	41.0/ 32.0/ 27.0	Flimsy v0.6	Ian Oversby	149.9	39
8	38.6/ 27.4/ 34.1	Scanitator 3.0	Christian Schmidt	149.7	45
9	45.8/ 42.0/ 12.2	Mostly Harmless v1.1	Justin Kao	149.5	69
10	43.3/ 37.8/ 18.9	Vivid Radiation 2.0	Matt Lewinski	148.7	87
11	44.8/ 41.6/ 13.5	Short Sword 4	JS Pulido	148.1	20
12	40.5/ 33.5/ 26.0	Versatility 1.7	Ross Morgan-Linial	147.5	66
13	38.2/ 30.5/ 31.2	Zorm-B	Anonymous	145.9	23
14	45.1/ 46.9/ 8.0	qDeath v .069	Ryan Coleman	143.3	3
15	42.3/ 44.2/ 13.5	Dwa Michaly b	Waldemar Bartolik	140.3	26
16	28.8/ 17.9/ 53.3	DemonSpawn	J.A.Denny	139.7	48
17	35.3/ 32.6/ 32.0	Apocalypse	Matt Lewinski	138.1	96
18	29.7/ 23.2/ 47.1	Quantum	Christian Schmidt	136.2	42
19	31.6/ 29.8/ 38.6	Heartworm	Edgar	133.3	36
20	30.2/ 31.3/ 38.4	Kohonenian Dream	Robert J. Street	129.1	12
21	31.7/ 35.2/ 33.1	Kohonenian Dream	Robert J. Street	128.3	11
22	33.6/ 41.7/ 24.7	Time Lag 1c3	Ilmari Karonen	125.4	22
23	31.1/ 39.5/ 29.4	Five-Finger Discount From	Ryan Coleman	122.8	2
24	33.8/ 46.1/ 20.1	Five-Finger Discount From	Ryan Coleman	121.5	8
25	34.3/ 52.4/ 13.3	Five-Finger Discount From	Ryan Coleman	116.1	1

Top 25 Averages:

39.0/ 36.5/ 24.5		141.6	38

Current Status of the Internet Pizza Server Limited Process Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 200
 minimum distance: 200
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Fri Mar 28 21:18:16 PST 1997

#	%W / %L / %T	Name	Author	Score	Age
1	60.0/ 29.2/ 10.7	Limb Rending Incisors	Ian Sutton	190.8	5
2	55.1/ 34.7/ 10.3	Solomon LP v0.1	Ian Oversby	175.4	2
3	50.2/ 33.0/ 16.8	Flips	Zul Nadzri	167.4	6
4	45.8/ 24.3/ 29.9	Indecisive v0.1	Ian Oversby	167.4	11

5	46.3/ 31.9/ 21.8	Bolder v0.01	Ian Oversby	160.7	10
6	49.0/ 37.5/ 13.5	Romulan Warbird	Philip Kendall	160.5	15
7	45.0/ 30.6/ 24.4	Twin Flame	Ian Oversby	159.4	36
8	43.0/ 28.0/ 28.9	Paper 'LP' II	Philip Kendall	158.1	32
9	41.0/ 27.7/ 31.3	Benchmark 1.0	Zul Nadzri	154.3	30
10	42.3/ 36.8/ 21.0	Bag of Tricks	Anton Marsden	147.8	20
11	41.5/ 35.8/ 22.7	red marble	bjoern guenzel	147.2	25
12	40.7/ 35.7/ 23.5	Romantica	Zul Nadzri	145.8	3
13	39.3/ 36.5/ 24.2	Inferno 1.8	Philip Kendall	142.2	52
14	41.8/ 41.3/ 16.9	red eye	bjoern guenzel	142.2	26
15	34.1/ 26.3/ 39.6	Paper 'LP'	Philip Kendall	141.9	53
16	36.0/ 33.8/ 30.2	Iocane 0.0	John K W	138.2	19
17	36.5/ 38.4/ 25.1	oldtimer	bjoern guenzel	134.6	38
18	35.0/ 40.4/ 24.6	rimmer 2.0	jkw	129.6	44
19	37.0/ 45.6/ 17.4	Hopefully Indestructible	Ian Sutton	128.5	24
20	37.0/ 46.6/ 16.4	Juggernaut	Anton Marsden	127.4	29
21	33.7/ 45.1/ 21.2	Dr. Gate v4	Franz	122.3	40
22	31.0/ 46.1/ 22.9	Dr. Gate	Franz	115.9	42
23	21.5/ 33.9/ 44.6	Completely Indestructible	Ian Sutton	109.1	22
24	32.3/ 56.7/ 11.0	One Man Army v1.0	Ian Sutton	107.8	28
25	4.0/ 0.0/ 0.0	test	Philip Kendall	12.0	1

Top 25 Averages:

39.2/ 35.0/ 22.0		139.5	24

The Hint--by Philip Kendall

Some pspace engines

Whilst I was developing NCC-1701-A (the Starship Enterprise, for any non-trekkies out there :-)), a pspaced one shot and suicidal stone, I got the feeling that the simple switch-on-loss pspace algorithm wasn't working that well: an unlucky loss for my one shot would kick the stone in, which would then lose again, and my losses would be doubled. So, I went looking for some more complex pspace algorithms, but didn't find anything that really grabbed my attention. Quite a few concentrated on detecting brainwashing, and recovering from it, but at the time I wrote Enterprise, there weren't any brainwashers on the hill, and there were a lot of qscans, making fast response times crucial. Eventually, a couple of things that looked like what I wanted showed up: the switcher from Core Warrior 39, which switched on loss/loss,loss/tie,tie/loss or tie/tie and that used in Ian Sutton's Oblivion, which switched on n losses without a win. However, both of these looked like they could have a couple of cycles and instructions shaved off them, so I went about building my own. Whilst I was at it, I built up a small library of pspace routines, which is basically what's here - the entry point for all routines is pGo, and also any constants are defined only in the first switcher they are used in, so check back if you get any undefined symbol errors.

(For those of you not familiar with pspace, Beppe wrote a brief introduction in Core Warrior 5, available from Planar's page:

http://pauillac.inria.fr/~doligez/corewar/

as are all warriors mentioned in this article)

Basic switch-on-loss from Core Warrior 5

This is just the switcher used by Beppe in Core Warrior 5, just re-labelled. It's probably the simplest switcher possible: it's main virtues are that it is short and fast (always good!) and that it won't suicide if brainwashed. However, as mentioned above, spurious losses will mean that the optimal strategy will not always be running, and this costs points.

One simple modification which can be made to this is to change the pThink line to sne.ab #1,pGo which changes this from a switch-on-loss to a switch-on-loss or tie.

```
pResult equ     0               ; pMARS puts results in here
pSpace  equ     1               ; we store our current strategy here
pNum    equ     2               ; how many strategies are we using?
```

```
pGo     ldp.ab  #pResult,#0
        ldp.a   #pSpace,pTable
pThink  sne.ab  #0,pGo
        add.a   #1,pTable
        mod.a   #pNum,pTable
        stp.ab  pTable,#pSpace
pTable  jmp.a   @0,strat1
        dat.f   0,strat2
        [other strategies if you want them, remember to increase pNum]

        end     pGo
```

Length: 6 + 1/strategy
Cycles to completion: after Win/Tie: 6
Loss : 7

Improved switch-on-loss

This is very similar to the above switcher, but with two changes: firstly, and less important, the add.a #1,pTable line has been changed to nop.f }pTable,}-1000: this has two advantages 1) If the b-field of this instruction happens to be hit very early in the round, the warrior will still behave properly and 2) It gets a free bomb in. Both minor advantages, but there are no disadvantages, so why not? The second, and more important, change is that the pspace value is not re-stored unless it has changed (note that it still always undergoes a mod before being used); this saves a cycle and leads to exactly the same behaviour (well, almost exactly... bonus point to the first person to e-mail me with the difference). Disadvantages of this switcher: same as before, and also it can't be modified to a switch-on-loss or tie, without losing it's speed advantage.

If the jmn.b pGood,pGo line is changed to jmn.b pTable,pGo, the switcher gets another cycle quicker on a win or a tie, but it then has the possibility of suicide if it is brainwashed and doesn't lose. Whether this is a good thing or not depends on the number of brainwashers on the hill, what they're brainwashing with, how quick your boot routine is and countless other things.

```
pGo     ldp.ab  #pResult,#0
        ldp.a   #pSpace,pTable
        jmn.b   pGood,pGo
        nop.f   }pTable,}-1000
        stp.ab  pTable,#pSpace
pGood   mod.a   #pNum,pTable
pTable  jmp.a   @0,strat1
        dat.f   0,strat2

        end     pGo
```

Length: 6 + 1/strategy
Cycles: Win/Tie: 5
Loss: 7

Switch on n consecutive losses

This is the switcher used in NCC-1701-A: if the warrior loses for pLosses consecutive rounds, then it will switch to the next strategy in its table. This means that a spurious loss for the optimal strategy won't kick in another strategy, and so the hill placing is (hopefully) improved. Also, after a win or a tie, it is as quick as the above switchers, but is quite a bit slower after a loss, and also bigger.

One potential problem with this switcher is that it is very zero brainwash sensitive: if it is brainwashed with a zero, the first strategy in the table will be selected, and the loss counter reset, which could produce problems if this strategy lost reguarly to the brainwasher. If pLosses is 2, the switcher can be modified by changing pLoss to ldp.ab #pSpace2,#1 and pThink to jmz.b pWin,pLoss, to make it sensitive to a 1-brainwash rather than 0-brainwash, whilst if pLosses>2, then changing pLoss to ldp.ab #pSpace2,#1 and pThink to cmp.b pLoss,#1 will have the same effect, but increasing the running time by 1

cycle for a loss without switch.

One final modification that can be made is changing the first three lines to

```
pGo     ldp.ab  #pResult,pJump
        ldp.a   #pSpace1,pTable
pJump   jmp.a   @0,pLoss
        dat.f   0,pTie
```

which will lead to a switch after pLosses rounds without a win. Note that this modification is not compatible with the brainwash changes above, and changes the stats to: Length: 12+1/strategy. Cycles: Win: 6, Tie/Loss no switch:10, Tie/Loss switch: 12, First round: 4

```
pSpace1 equ     1               ; used to store the current strategy
pSpace2 equ     2               ; used to store the loss counter
pLosses equ     3               ; how many losses before we switch

pGo     ldp.ab  #pResult,#0
        ldp.a   #pSpace1,pTable
pJump   jmn.b   pWin,pGo
pLoss   ldp.ab  #pSpace2,#0
        nop.f   >pLoss,}-1000
        mod.ab  #pLosses,pLoss
pThink  jmn.b   pWin,pLoss
        nop.f   }pTable,}-2000
        stp.ab  pTable,#pSpace1
pWin    stp.b   pLoss,#pSpace2
        mod.a   #pNum,pTable
pTable  jmp.a   @0,strat1
        dat.f   0,strat2

        end     pGo
```

```
Length: 11 + 1/strategy
Cycles: Win/Tie:  6
        Loss: when no strategy switch occurs: 10
                        when switch occurs: 12
```

Switch on loss, select on tie number 1

This switcher and the next have the same behaviour: on a loss, they will change to the next strategy in their table, whilst they will select a specific strategy after a tie. This first switcher (taken from Ian Oversby’s Falcon v0.5, hope he doesn’t mind :-)) is slower but smaller than the second.

```
pSelect equ     0               ; which to select on tie

pGo     ldp.ab  #pResult,#0
        ldp.a   #pSpace,pTable
        sne.ab  #0,pGo
        add.a   #1,pTable
        sne.ab  #2,pGo
        mov.a   #pSelect,pTable
        mod.a   #pNum,pTable
        stp.ab  pTable,#pSpace
pTable  jmp.a   @0,strat1
        dat.f   0,strat2
```

```
Length: 8 + 1/strategy
Cycles:      Win: 7
        Tie/Loss: 8
```

Switch on loss, select on tie number 2

```
pGo     ldp.a   #pResult,pJump
        ldp.a   #pSpace,pTable
pJump   jmp.a   @0,pLoss
        dat.f   0,pWin
        dat.f   0,pTie
```

```
        [any number of instructions you like in here]

pTie    mov.a   #(pSelect-1),pTable
pLoss   nop.f   }pTable,}-1000
        stp.ab  pTable,#pSpace
pWin    mod.a   #pNum,pTable
pTable  jmp.a   @0,strat1
        dat.f   0,strat2

Length: 9 + 1/strategy
Cycles: First round: 4
                Win: 5
                Tie: 8
               Loss: 7
```

Switch on n losses without a win

This switcher is very similar to the switch on n consecutive losses switcher above, but has different enough behaviour to warrant a separate entry (I think, and I'm writing this, so it does!). The only difference here is that a tie will not reset the loss count, so a sequence of loss-tie-loss-loss will cause a switch, if pLosses is equal to 3. Note that this is both smaller and faster than that used by Ian Sutton in Oblivion :-)

```
pGo     ldp.ab  #pResult,pJump
        ldp.a   #pSpace1,pTable
pJump   jmp.a   @0,pLoss
        dat.f   0,pWin
        dat.f   0,pTie

        [any number of instructions here]

pLoss   ldp.ab  #pSpace2,#0
        nop.f   >pLoss,}-1000
        mod.ab  #pLosses,pLoss
pThink  jmn.b   pWin,pLoss
        nop.f   }pTable,}-2000
        stp.ab  pTable,#pSpace1
pWin    stp.b   pLoss,#pSpace2
pTie    mod.a   #pNum,pTable
pTable  jmp.a   @0,strat1
        dat.f   0,strat2

Length: 13+1/strategy
Cycles:     First round: 4
                    Win: 6
                    Tie: 5
        Loss:    switch: 12
              no switch: 10
```

Now, the difficult question: which of these switchers should you use? Well, as you'd expect, there's no simple answer to that: it depends on your components and the warriors on the hill, and the warriors to come on the hill in the future. All these switchers have fast response times, meaning that quickscans are not a serious problem, if you have fast boot routines, but are quite sensitive to brainwashing. This reflects the make-up of the hill when I wrote them, but who's to say what the future will hold? - a brainwashing paper has already appeared on the hill...

Other switchers I could mention include that used by Paul Kline in Yogi Bear, which can actually have different responses for each component depending on whether a win, a loss or a tie occured, but which is rather big and slow, and that used by John K Wilkinson in Hazy Shade II, which is very resistant to brainwashes.

Philip Kendall
pak21@cam.ac.uk

Extra Extra
NCC-1701-A by Philip Kendall

By most successful ’94 warrior to date, there’s nothing really original in this warrior apart from the switcher - everything else has been seen before. As it comes in three parts, Phasers, a suicidal stone, Photon Torpedoes, a one-shot scanner and the switcher, I’ll make some quick comments on each part individually:

1. Phasers: this is basically Carbonite, taken from Ian Sutton’s Oblivion, with just a few changes by me: firstly, I increased the bombing run to its maximum duration (about another 30 bombs in 3500), and also I made the spare field on the spl drive the djn stream. As Beppe mentioned back in Core Warrior 31, this has three advantages: it make the djn stream cover a wider area (decrementing most of a warrior will normally be effective), it can trigger more cmp scans, and it can decrement a warrior without triggering its decrement detector (eg jmz.b loop,#0 in Torch t18). The boot routine has also been changed slightly. The suicidal tendency of this component is an advantage here, as it means the switcher can be more responsive, as Phasers tends to either win or lose, with very few ties.

2. Photon Torpedoes: this is just One Shot, as was seen in the lower reaches of the hill a while back: it was designed specifically as a stone/imp killer, and still does that job quite effectively, even when pspaced with Phasers, but maybe a spl/spl/dat clear would be better than the stargate clear used here on the hill as it is - oh well, ideas for the future!

3. Captain Kirk: this switcher, a switch on 5 consecutive losses (see above) basically has the effect of switching at most once during the fight - it starts off with Phasers active, and if something beats this 5 times consecutively, then Photon Torpedoes will be used instead; whilst many things can get 5 consecutive wins against Phasers, due to its suicidal coreclear, not much get can do this against Photon Torpedoes, meaning that this component will tend to stay active once it is switched to.

As I write this, Memories, which NCC-1701-A trashed due to its pure stone, has just been kicked off the hill, so I predict a downward jump for the Enterprise :-(Well, it was good while it lasted! One last thing - in case you hadn’t noticed, most of the source code has been available via ;show source, but here’s the full version, with all the constants etc as on the hill, so don’t abuse them...

```
;redcode-94
;name NCC-1701-A
;author Philip Kendall
;strategy Captain Kirk is commanding the USS Enterprise
;strategy He has two weapons at his disposal:
;strategy 1) Photon Torpedoes (aka One Shot)
;strategy 2) Phasers (modified Carbonite)
;strategy Original self-destructed over Genesis to prevent Khan
;strategy from gaining possession
;strategy The new version has an improved phaser array
;strategy Also, Kirk has had advanced tactical training from Starfleet
;assert CORESIZE==8000
;planar pspace,boot,stone,scan,clear,gate
;show source

;show off
tStep   equ     30
tSep    equ     15
tStream equ     (tPtr-412)
;show on

tScan1  equ     (tInc+tStep)
tImp    equ     2667
tCstart equ     (tLast+2-tPtr)

tPtr    dat.f   tBomb1,#0               ; scanned-low
tBomb3  dat.f   >tImp,>(2*tImp)
tInc    dat.f   tStep,tStep
```

```
tBomb2  spl.a   #(tBomb3-tPtr),tCstart
tLoop   add.f   tInc,tScan
tScan   sne.i   tScan1,tScan1+tSep
        djn.f   tLoop,<tStream
        mov.ab  tScan,tPtr
tBomb1  spl.a   #(tBomb2-tPtr),tCstart
tClear  mov.i   *tPtr,>tPtr
        mov.i   *tPtr,>tPtr
tLast   djn.f   tClear,<tStream

        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        dat.f   (tBomb1-tPtr),#0        ; scanned-hi

;show off
tBdist  equ     3018
;show on

tBoot
i       for     (tLast-tPtr+1)
        mov.i   (tPtr+i-1),>tBptr
        rof
        spl.a   *tBptr,>-1000
        div.f   tBptr,tBptr
tBptr   dat.f   (tScan+tBdist),(tPtr+tBdist) ; scanned-low

        spl.a   #1,1

;show off
pspace1 equ     318
pspace2 equ     167
;show on

losses  equ     4

kirk    ldp.ab  #0,#0
        ldp.a   #pspace1,strat
        jmn.b   win,kirk
loss    ldp.ab  #pspace2,#0
        nop.f   >loss,}-400
        mod.ab  #losses,loss
        jmn.b   win,loss
        nop.f   }strat,>-800
        stp.ab  strat,#pspace1
win     stp.b   loss,#pspace2
        mod.a   #2,strat
strat   jmp.a   @0,pBoot
        spl.a   #1,tBoot

        dat.f   1,1                     ; scanned-hi
        spl.a   #1,*1

;show off
pBdist  equ     -2138
;show on

pBoot   mov.i   {pBomb,{pBptr
        mov.i   pBomb,@pBptr
        mov.i   {pBomb,{pBptr
        mov.i   {pBomb,{pBptr
        mov.i   {pBomb,{pBptr
        spl.a   *pBptr,<4000
        div.f   pBptr,pBptr
pBptr   dat.f   #pStart+pBdist,#pStart+pBdist-pOffset-4

        spl.ab  *1,#1
        spl.ba  *1,#1
        spl.f   *1,#1
        spl.x   *1,#1
```

```
        spl.i   *1,#1
        spl.a   #1,#1                   ; scanned-low
        spl.a   #1,*1
        spl.b   #1,*1

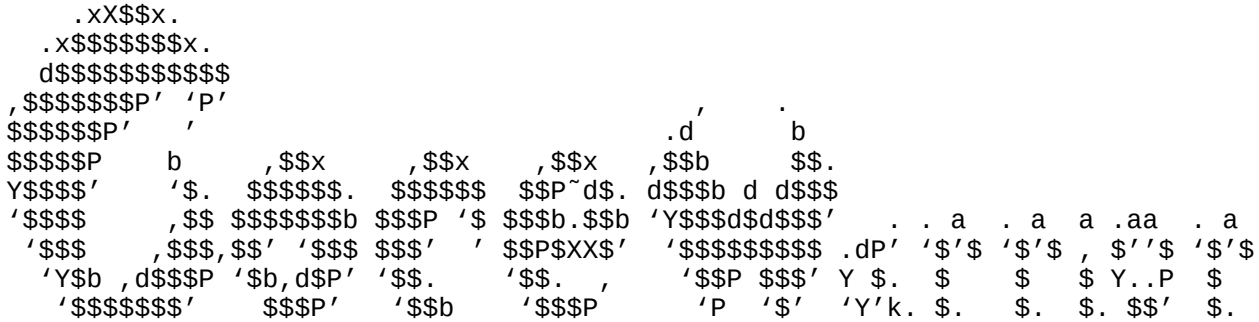
;show off
pOffset equ     15
pStep   equ     197
pStream equ     (pStart-1152)
;show on

pStart  spl.a   #0, <pStream
pLoop   mov.i   (pStart-pOffset), pStep
pHit    add.ab  #pStep,pLoop            ; gets bombed to start coreclear
        djn.f   pLoop, <pStream
pBomb   dat.f   >0, >2667               ; a-field changed to -1 by boot

        spl.a   *1,#1
        spl.b   *1,#1
        spl.ab  *1,#1
        spl.ba  *1,#1
        spl.f   *1,#1
        spl.x   *1,#1
        spl.i   *1,#1
        spl.a   #1,#1                   ; scanned-hi
        spl.a   #1,*1
        spl.b   #1,*1
        spl.ab  #1,*1
        spl.ba  #1,*1
        spl.f   #1,*1
        spl.x   #1,*1
        spl.i   #1,*1
        spl.a   *1,#1
        spl.b   *1,#1
        spl.ab  *1,#1
        spl.ba  *1,#1
        spl.f   *1,#1
        spl.x   *1,#1
        spl.i   *1,#1
        dat.f   0,0                     ; scanned-low
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1
        spl.a   #1,1

        end     kirk
```

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.AU!comp.vuw.ac.nz!regent.mcs.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@mcs.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 58
Date: Mon, 14 Apr 1997 21:50:01 +1200
Organization: School of Mathematical and Computing Sciences, VUW
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Message-ID: <Pine.SOL.3.91.970414214928.6094C-100000@regent.mcs.vuw.ac.nz>
NNTP-Posting-Host: kaukau.mcs.vuw.ac.nz
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Issue 58 14 April, 1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

A lot of experimental warriors were tried this week. Interest seems to be increasing... perhaps we will see some good new warriors soon.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS '94 Draft

Last challenge: Fri Mar 21 06:54:21 PST 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	45.6/	37.1/	17.3	Electric Head	Anton Marsden	154.0	7
2	39.7/	28.3/	31.9	Newt	Ian Oversby	151.2	3
3	38.2/	28.5/	33.2	Head or Tail	Christian Schmidt	148.0	40
4	31.9/	17.8/	50.3	Return Of The Jedimp	John K W	146.1	252
5	37.2/	30.0/	32.8	Nine Seven Six	M R Bremer	144.5	116
6	34.0/	25.6/	40.3	RetroQ	P.Kline	142.4	52
7	37.9/	35.2/	26.8	First Strike	Nimon	140.6	13
8	34.3/	28.0/	37.7	Gigolo	Core Warrior staff	140.6	306
9	40.9/	42.6/	16.5	myVamp5.4	Paulsson	139.2	2
10	41.4/	44.0/	14.6	C^2	Christian Schmidt	138.7	2
11	41.1/	43.6/	15.2	The Bloodhound	Ian Sutton	138.6	24
12	39.3/	40.8/	19.9	Solomon v0.8	Ian Oversby	137.8	98
13	29.3/	21.4/	49.3	Impish v0.2	Ian Oversby	137.2	291
14	30.1/	23.2/	46.7	Trident^2	John K W	137.1	182
15	38.3/	40.4/	21.3	Damage Incorporated	Anton Marsden	136.2	293
16	38.4/	42.4/	19.3	The Machine	Anton Marsden	134.4	158
17	39.6/	45.6/	14.8	Undecided	Nimon	133.7	12
18	33.3/	33.5/	33.2	Fast Fast Fast v6	Franz	133.1	0
19	37.3/	43.3/	19.4	Scanitator 5	Christian Schmidt	131.4	17
20	36.3/	41.5/	22.2	Brainium	James Black	131.1	7
21	41.4/	51.9/	6.8	Obsidian	Nimon	130.8	12
22	36.2/	42.3/	21.5	NCC-1701-A	Philip Kendall	130.1	55
23	35.3/	41.1/	23.5	Tides v0.1	Ian Oversby	129.5	36
24	29.3/	29.2/	41.5	test.	kafka	129.4	9
25	37.5/	45.7/	16.8	Blain	Nimon	129.4	18

Monthly age: 14 this issue (12 last issue, 13 the issue before)
New warriors: 10 Turnover/age rate 71%
Average age: 80 (88 last issue, 93 the issue before)
Average score: 138 (141 last issue, 135 the issue before)
The top 25 warriors are represented by 14 independent authors: Oversby and Nimon with 4; Schmidt and Marsden with 3; JKW with 2. All others with one warrior each.

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
6	37.9/	34.0/	28.2	First Strike	Nimon	141.7	1
9	43.7/	48.8/	7.5	Obsidian	Nimon	138.6	1
11	40.8/	43.9/	15.3	Undecided	Nimon	137.8	1
23	28.3/	26.1/	45.6	test.	kafka	130.4	1
1	48.5/	35.7/	15.8	Electric Head	Anton Marsden	161.2	1
24	35.5/	41.4/	23.1	Brainium	James Black	129.6	1
2	38.4/	29.8/	31.8	Newt	Ian Oversby	147.0	1
6	42.8/	43.2/	14.0	C^2	Christian Schmidt	142.4	1
9	41.4/	42.9/	15.8	myVamp5.4	Paulsson	139.8	1
18	33.3/	33.5/	33.2	Fast Fast Fast v6	Franz	133.1	0

Electric Head and Newt do well to get into the top five. There are also several other good entries.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	29.3/	36.5/	34.2	Instant Ogre	Edgar	122.0	22
26	24.7/	23.3/	52.0	blue spark 0.04	bjoern guenzel	126.1	21
26	34.5/	43.8/	21.6	One Man Army v1.0	Ian Sutton	125.2	7

26	30.0/ 36.7/ 33.3	Fast Fast Fast v2	Franz	123.4	58
26	34.8/ 44.3/ 20.9	Ace of Spades 2	Christian Schmidt	125.3	11
26	39.2/ 50.7/ 10.1	Twisted	James Black	127.8	4
26	28.0/ 28.5/ 43.5	unrequited love	kafka	127.4	346
26	31.6/ 45.3/ 23.1	Yogi Bear	P.Kline	118.0	1
26	34.8/ 44.5/ 20.7	Ranger	James Black	125.1	3
26	33.3/ 43.5/ 23.2	Stonebreaker	Christian Schmidt	123.0	3
26	39.2/ 54.0/ 6.8	He Scans Alone	P.Kline	124.5	6

Unrequited love finally falls.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
8	34.3/ 28.0/ 37.7	Gigolo	Core Warrior staff	140.6	306
15	38.3/ 40.4/ 21.3	Damage Incorporated	Anton Marsden	136.2	293
13	29.3/ 21.4/ 49.3	Impish v0.2	Ian Oversby	137.2	291
4	31.9/ 17.8/ 50.3	Return Of The Jedimp	John K W	146.1	252

No new entries, but these warriors are still doing reasonably well.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	346		Q^2 -> Paper
4	Gigolo	Core Warrior staff	306	*	Q^2 -> Stone/imp
5	Damage Incorporated	Anton Marsden	293	*	Q^2 -> Bomber
6	Impish v0.2	Ian Oversby	291	*	Stone/imp
7	Falcon v0.3	Ian Oversby	275		P-warrior
8	Return Of The Jedimp	John K W	252	*	Q^2 -> Stone/imp
9	Rosebud	Beppe	218		Stone/imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
14	ompega	Steven Morrell	189		Stone/imp
15	Trident^2	John K W	182	*	Q^2 -> Stone/imp

16	Frogz	Franz	172		Q^2 -> Paper
17	The Machine	Anton Marsden	158	*	Scanner
18	Memories	Beppe	152		Scanner
19	Tiberius 3.1	Franz	130		Q^2 -> Paper
20	Nine Seven Six	M R Bremer	116	*	Q^2 -> Stone/imp
21	CC Paper 3.3	Franz	107		Q^2 -> Paper
22	mrb-test	m r bremer	106		?
23	T.N.T. pro	Maurizio Vittuari	105		Bomber
24	Jack in the box II	Beppe Bezzi	100		P-warrior

Unrequited love grabs 3rd place.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Tue Apr 1 11:45:33 PST 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	50.1/	38.4/	11.4	Pentagram 2.a	J.A.Denny	161.8	40
2	49.2/	41.4/	9.4	Scankiller 0.1	Christian Schmidt	157.1	50
3	45.8/	34.7/	19.5	Hexagram	J.A.Denny	156.9	38
4	39.3/	27.4/	33.3	Scanitator 3.0	Christian Schmidt	151.1	45
5	41.4/	32.0/	26.6	Flimsy v0.6	Ian Oversby	150.7	39
6	45.2/	41.2/	13.5	Flamberge 13.4	Matt Lewinski	149.2	88
7	36.3/	24.7/	39.1	Dust 7.0	Justin Kao	147.8	18
8	44.5/	42.0/	13.5	Mostly Harmless v1.1	Justin Kao	147.0	69
9	45.2/	43.4/	11.4	The Stainless Steel Rat	Christian Schmidt	147.0	61
10	42.0/	37.8/	20.2	Vivid Radiation 2.0	Matt Lewinski	146.1	87
11	39.7/	33.5/	26.7	Versatility 1.7	Ross Morgan-Linial	145.9	66
12	42.9/	42.0/	15.1	Short Sword 4	JS Pulido	143.7	20
13	36.7/	30.5/	32.8	Zorm-B	Anonymous	142.9	23
14	44.8/	46.9/	8.3	qDeath v .069	Ryan Coleman	142.6	3
15	29.2/	17.9/	52.9	DemonSpawn	J.A.Denny	140.5	48
16	35.9/	32.7/	31.5	Apocalypse	Matt Lewinski	139.1	96
17	40.8/	44.3/	14.9	Dwa Michaly b	Waldemar Bartolik	137.2	26
18	30.2/	23.3/	46.5	Quantum	Christian Schmidt	137.1	42
19	32.6/	29.8/	37.6	Heartworm	Edgar	135.3	36
20	28.1/	31.3/	40.5	Kohonenian Dream	Robert J. Street	124.9	12
21	31.9/	39.5/	28.6	Five-Finger Discount From	Ryan Coleman	124.3	2
22	29.0/	35.2/	35.8	Kohonenian Dream	Robert J. Street	122.8	11
23	31.9/	41.8/	26.3	Time Lag 1c3	Ilmari Karonen	122.1	22
24	31.5/	46.1/	22.4	Five-Finger Discount From	Ryan Coleman	117.0	8
25	33.8/	52.4/	13.8	Five-Finger Discount From	Ryan Coleman	115.1	1

Top 25 Averages:

38.3/	36.4/	25.3	140.2	38

Current Status of the Internet Pizza Server Limited Process Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 200
 minimum distance: 200
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Sat Apr 12 21:45:03 PDT 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	58.8/	30.3/	10.9	Limb Rending Incisors	Ian Sutton	187.3	13
2	52.5/	35.7/	11.9	Solomon LP v0.1	Ian Oversby	169.2	10

3	49.6/ 34.1/ 16.3	Simplicity	Anton Marsden	165.0	3
4	48.2/ 33.6/ 18.2	Flips	Zul Nadzri	162.7	14
5	43.0/ 26.6/ 30.4	Indecisive v0.1	Ian Oversby	159.5	19
6	42.2/ 30.3/ 27.5	Paper 'LP' II	Philip Kendall	154.0	40
7	41.7/ 29.4/ 28.9	Benchmark 1.0	Zul Nadzri	154.0	38
8	42.2/ 31.2/ 26.6	Twin Flame	Ian Oversby	153.3	44
9	43.0/ 33.2/ 23.8	Bolder v0.01	Ian Oversby	152.8	18
10	45.8/ 39.5/ 14.7	Romulan Warbird	Philip Kendall	152.0	23
11	39.9/ 36.6/ 23.5	red marble	bjoern guenzel	143.2	33
12	42.6/ 43.5/ 13.9	qDeath v .069	Ryan Coleman	141.7	2
13	39.7/ 38.9/ 21.4	Bag of Tricks	Anton Marsden	140.5	28
14	38.3/ 37.6/ 24.1	Romantica	Zul Nadzri	139.1	11
15	39.8/ 42.0/ 18.2	red eye	bjoern guenzel	137.7	34
16	37.1/ 37.2/ 25.7	Inferno 1.8	Philip Kendall	137.1	60
17	35.2/ 34.9/ 29.9	Iocane 0.0	John K W	135.6	27
18	31.5/ 28.5/ 40.1	Paper 'LP'	Philip Kendall	134.5	61
19	35.0/ 42.6/ 22.4	oldtimer	bjoern guenzel	127.5	46
20	35.2/ 44.0/ 20.8	Dr. Gate v4	Franz	126.4	48
21	36.4/ 49.2/ 14.4	Hopefully Indestructible	Ian Sutton	123.7	32
22	31.9/ 43.0/ 25.1	rimmer 2.0	jkw	120.7	52
23	35.9/ 52.6/ 11.5	Roots Radical v .069	Ryan Coleman	119.1	1
24	31.5/ 45.4/ 23.1	Dr. Gate	Franz	117.7	50
25	33.8/ 52.9/ 13.3	Juggernaut	Anton Marsden	114.7	37

Top 25 Averages:

40.4/ 38.1/ 21.5		142.8	29

The Hint
P-Warriors by Anton Marsden

In the last issue of CW, Kendall presented various switching routines with reasonably good response times. The disadvantage of his routines (and most routines up until now) is that they are not very flexible. A switching strategy that works well for one component may work poorly with another. Any attempt to rectify this usually means using a large, slow switching routine.

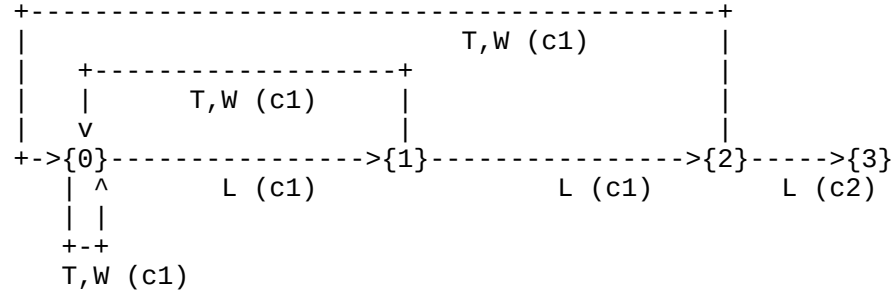
To solve this I wrote a general purpose switching routine (P^2) that was fast no matter what strategy the 'programmer' wanted to use.

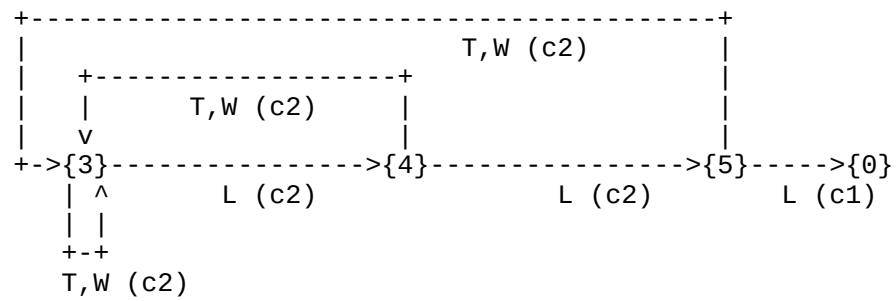
P^2 is based on discrete finite acceptors (DFAs) which I learnt about in a Computer Science course. To demonstrate the steps clearly, I will design a switch-on-3-consecutive-losses routine containing 2 components.

1. Draw a state transition diagram showing all possible states. Each state should have three outward arrows for win, loss, and tie inputs. Each arrow should identify a component to be run and point to the next state. Note that 'components' and 'states' are not equated in this logic as they are in many previous switchers. State numbers should start from 0.

Key:
- {n}=state n
- W=win
- L=loss
- T=tie
- c1=component 1
- c2=component 2

The following diagram is a bit messy but you should get the idea.





2. Pick an initial state transition, eg. {2} -> {0} using c1.

3. Put all loss transitions into a data table where entry n-1 contains the state transition information for state n-1:

```
loss_table
  dat 1,c1 ; State 0 goes to state 1 on a loss using component 1.
  dat 2,c1 ; State 1 goes to state 2 on a loss using component 1.
  dat 3,c2 ; State 2 goes to state 3 on a loss using component 2.
  dat 4,c2 ; State 3 goes to state 4 on a loss using component 2.
  dat 5,c2 ; State 4 goes to state 5 on a loss using component 2.
  dat 0,c1 ; State 5 goes to state 0 on a loss using component 1.
```

4. Do the same for wins and ties.

```
win_table
  dat 0,c1 ; State 0 goes to state 0 on a win using component 1.
  dat 0,c1 ; State 1 goes to state 0 on a win using component 1.
  dat 0,c1 ; State 2 goes to state 0 on a win using component 1.
  dat 3,c2 ; State 3 goes to state 3 on a win using component 2.
  dat 3,c2 ; State 4 goes to state 3 on a win using component 2.
  dat 3,c2 ; State 5 goes to state 3 on a win using component 2.

tie_table
  dat 0,c1 ; State 0 goes to state 0 on a tie using component 1.
  dat 0,c1 ; State 1 goes to state 0 on a tie using component 1.
  dat 0,c1 ; State 2 goes to state 0 on a tie using component 1.
  dat 3,c2 ; State 3 goes to state 3 on a tie using component 2.
  dat 3,c2 ; State 4 goes to state 3 on a tie using component 2.
  dat 3,c2 ; State 5 goes to state 3 on a tie using component 2.
```

5. Set up the initial state.

```
init_state EQU (tie_table+2) ; {2} -> {0} using c1.
```

6. Put the tables and components into P^2. Remember to set STATES to the correct value (6 in this case).

7. Optimise the code - this is left as an exercise for the reader.

Many thanks to Bezzi, Bremer and Kline who reviewed this article (and P^2) and suggested improvements.

Extra Extra
P^2 by Anton Marsden

P^2 is a fast table-based switcher which can manage any conceivable strategy or combination of strategies using 6 cycles. However, the tables are potentially large and for this reason it may not be the best switcher to use in some cases, especially if you want to use a Q^2 scan in your P-Warrior.

How it works: the result of the last fight is loaded as well as the state used for the last fight. From this information the next state is determined using the tables that were constructed from the state transition diagram. Then the component associated with the transition is executed.

```
;redcode-94
;name P^2
;author Anton Marsden
```

```
;assert CORESIZE==8000

PSTATE    EQU 666 ; pspace location containing current state
STATES EQU 6      ; maximum number of states (for brainwash protection)

;NOTE: state values go from 0 to STATES-1

      dat    0,init_state-state
in    dat    0,loss_table-state
      dat    0,win_table-state
      dat    0,tie_table-state

think ldp.a  #0,in              ; get input value
load  ldp.a  #PSTATE,state      ; load old state
      mod.a  #STATES,state      ; brainwash protection
      add.ba *in,state          ; select correct state table
store stp.a  *state,load        ; store new state
state jmp    @0                 ; jump to warrior code

      ; You could also delete the #PSTATE value
      ; if you wish (or the stp.a instruction).

c1 EQU stone_boot
c2 EQU paper_boot

loss_table
  dat 1,c1
  dat 2,c1
  dat 3,c2
  dat 4,c2
  dat 5,c2
  dat 0,c1

win_table
  dat 0,c1
  dat 0,c1
  dat 0,c1
  dat 3,c2
  dat 3,c2
  dat 3,c2

tie_table
  dat 0,c1
  dat 0,c1
init_state dat 0,c1
  dat 3,c2
  dat 3,c2
  dat 3,c2

END think
```

Extra Extra
Simplicity by Anton Marsden

Simplicity is a limited process warrior based on B-scanners live in vain by Matt Hastings (an ’88 warrior). It is currently doing quite well on the LP Hill.

```
;redcode-lp
;name Simplicity
;author Anton Marsden
;assert CORESIZE==8000
;kill Simplicity

step EQU 26

b2    mov    step,{b1+8*step
a     add.ab {0,}0
start jmz.f  a,@b2
b1    mov    grave,@b2
```

```
      jmn    @b1,*0
      spl    #0,0
      mov    5,}b2
grave jmp    {0,}0

FOR b2+step
      dat    0,0
ROF

bomb  spl    #1,#1

FOR MAXLENGTH-CURLINE
      dat    0,0
ROF

END start
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@mcs.vuw.ac.nz>

From news-rocq.inria.fr!jussieu.fr!univ-lyon1.fr!cnusc.fr!eerie.fr!news.maxwell.syr.edu!newsfeed.direct.ca!news.wildstar.net!news.ecn.uoknor.edu!munnari.OZ.AU!comp.vuw.ac.nz!regent.mcs.vuw.ac.nz!amarsden Wed Jul 2 16:50:51 1997
Article: 7676 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!univ-lyon1.fr!cnusc.fr!eerie.fr!news.maxwell.syr.edu!newsfeed.direct.ca!news.wildstar.net!news.ecn.uoknor.edu!munnari.OZ.AU!comp.vuw.ac.nz!regent.mcs.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@mcs.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 59
Date: Wed, 2 Jul 1997 22:35:25 +1200
Organization: School of Mathematical and Computing Sciences, VUW
Lines: 463
Message-ID: <Pine.SOL.3.91.970702223428.25696A-100000@regent.mcs.vuw.ac.nz>
NNTP-Posting-Host: kaukau.mcs.vuw.ac.nz
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
Cache-Post-Path: kaukau.mcs.vuw.ac.nz!unknown@regent.mcs.vuw.ac.nz

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 59 29 June, 1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

There was a long delay between this issue and issue 58. However, there will probably be more frequent issues soon - we are taking on new staff. If you're interested in being an editor, let me know soon.

I'm starting a tournament in a few days. Read the newsgroup for details.

--Anton Marsden

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
   coresize: 8000
   max. processes: 8000
   duration: after 80,000 cycles, a tie is declared.
   max. entry length: 100
   minimum distance: 100
   rounds fought: 200
   instruction set: ICWS ’94 Draft

The current ICWS ’94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	46.2/ 36.1/ 17.7	Electric Head	Anton Marsden	156.3	20
2	47.8/ 43.4/ 8.8	He Scans Again	P.Kline	152.2	8
3	36.7/ 23.8/ 39.5	Newt	Ian Oversby	149.6	11
4	32.4/ 17.5/ 50.1	Return Of The Jedimp	John K W	147.3	265
5	37.4/ 28.0/ 34.6	Head or Tail	Christian Schmidt	146.8	53
6	35.9/ 26.0/ 38.1	RetroQ	P.Kline	145.8	65
7	43.8/ 42.2/ 14.0	C^2	Christian Schmidt	145.4	15
8	37.3/ 29.8/ 32.9	Nine Seven Six	M R Bremer	144.9	129
9	36.5/ 29.6/ 34.0	Ultraviolet	Ken Espiritu	143.3	2
10	39.2/ 35.3/ 25.5	PAN-TAU-RA	Christian Schmidt	143.2	0
11	39.3/ 36.2/ 24.5	First Strike	Nimon	142.5	26
12	40.4/ 38.9/ 20.7	NCC-1701-A	Philip Kendall	142.0	68
13	33.2/ 24.5/ 42.2	unrequited love	kafka	142.0	12
14	42.1/ 42.3/ 15.6	Blain	Nimon	141.9	31
15	39.7/ 38.7/ 21.6	Guessed v0.1	Ian	140.7	5
16	33.8/ 28.1/ 38.1	Ultra-RQ^2	Ken Espiritu	139.5	3
17	39.1/ 39.2/ 21.7	Damage Incorporated	Anton Marsden	139.0	306
18	28.2/ 17.7/ 54.1	Impish v0.2	Ian Oversby	138.8	304
19	39.0/ 39.9/ 21.1	Solomon v0.8	Ian Oversby	138.0	111
20	33.3/ 28.8/ 37.8	Gigolo	Core Warrior staff	137.9	319
21	43.3/ 49.7/ 7.0	Obsidian	Nimon	136.8	25
22	39.9/ 43.0/ 17.1	Fawkes v0.2	Ian Oversby	136.7	3
23	33.7/ 30.8/ 35.6	Terkonit 3	Christian Schmidt	136.5	8
24	39.9/ 44.1/ 16.0	myVamp5.4	Paulsson	135.8	15
25	37.8/ 42.5/ 19.7	Ace of Spades 3	Christian Schmidt	133.0	0

Monthly age: 13 this issue (14 last issue, 12 the issue before)
New warriors: 10 Turnover/age rate 77%
Average age: 72 (80 last issue, 88 the issue before)
Average score: 142 (138 last issue, 141 the issue before)
The top 25 warriors are represented by 11 independent authors: Oversby and Schmidt with 5; Nimon with 3; Espiritu, Kline and Marsden with 2. All others with one warrior each.

Electric Head is still on top but it’s lead isn’t as clear cut as it was last issue. Congratulations to Ken Espiritu for making the hill.

---

94 - What’s New

#	%W / %L / %T	Name	Author	Score	Age
2	46.7/ 45.9/ 7.4	He Scans Again	P.Kline	147.6	1
5	41.3/ 41.6/ 17.0	Fawkes v0.2	Ian Oversby	141.1	1
7	39.0/ 39.1/ 21.9	Guessed v0.1	Ian	138.8	1
10	36.8/ 36.8/ 26.4	PAN-TAU-RA	Christian Schmidt	136.7	0
12	33.0/ 30.8/ 36.2	Ultraviolet	Ken Espiritu	135.2	1
14	31.1/ 28.9/ 40.0	Ultra-RQ^2	Ken Espiritu	133.4	1
19	31.1/ 28.8/ 40.0	Terkonit 3	Christian Schmidt	133.4	1
25	37.8/ 42.5/ 19.7	Ace of Spades 3	Christian Schmidt	133.0	0
??	??.?/ ??.?/ ??.?	Newt	Ian Oversby	???.?	
??	??.?/ ??.?/ ??.?	unrequited love	kafka	???.?	

Ten new warriors. Kline is back with a vengeance.

---

94 - What’s No More

#	%W / %L / %T	Name	Author	Score	Age

26	35.2/ 45.3/ 19.5	The Machine	Anton Marsden	125.1	164
26	36.0/ 47.3/ 16.7	Freebooter 1.5	Ian Sutton	124.7	4
26	37.8/ 47.4/ 14.8	Undecided	Nimon	128.2	20
26	34.5/ 44.4/ 21.1	Scanitator 5	Christian Schmidt	124.6	26
26	28.0/ 31.6/ 40.5	I Stone	Ian	124.4	2
26	37.1/ 46.3/ 16.6	The Bloodhound	Ian Sutton	128.0	35
26	34.4/ 45.0/ 20.6	Silver Talon 1.2	Edgar	123.8	6
26	26.3/ 27.0/ 46.7	Trident^2	John K W	125.5	195

Two significant losses - The Machine and Trident^2.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
20	33.3/ 28.8/ 37.8	Gigolo	Core Warrior staff	137.9	319
17	39.1/ 39.2/ 21.7	Damage Incorporated	Anton Marsden	139.0	306
18	28.2/ 17.7/ 54.1	Impish v0.2	Ian Oversby	138.8	304
4	32.4/ 17.5/ 50.1	Return Of The Jedimp	John K W	147.3	265

No new entries.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	346		Q^2 -> Paper
4	Gigolo	Core Warrior staff	319	*	Q^2 -> Stone/imp
5	Damage Incorporated	Anton Marsden	306	*	Q^2 -> Bomber
6	Impish v0.2	Ian Oversby	304	*	Stone/imp
7	Falcon v0.3	Ian Oversby	275		P-warrior
8	Return Of The Jedimp	John K W	265	*	Q^2 -> Stone/imp
9	Rosebud	Beppe	218		Stone/imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
14	Trident^2	John K W	195		Q^2 -> Stone/imp
15	ompega	Steven Morrell	189		Stone/imp

16	Frogz	Franz	172		Q^2 -> Paper
17	The Machine	Anton Marsden	164		Scanner
18	Memories	Beppe	152		Scanner
19	Tiberius 3.1	Franz	130		Q^2 -> Paper
20	Nine Seven Six	M R Bremer	129	*	Q^2 -> Stone/imp
21	Solomon v0.8	Ian Oversby	111	*	Stone and scanner
22	CC Paper 3.3	Franz	107		Q^2 -> Paper
23	mrb-test	m r bremer	106		?
24	T.N.T. pro	Maurizio Vittuari	105		Bomber
25	Jack in the box II	Beppe Bezzi	100		P-warrior

Trident^2 finishes in 14th place and The Machine finishes in 17th.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

Last challenge: Fri Jun 27 12:07:19 PDT 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	49.2/	36.7/	14.2	Guessed v0.1	Ian	161.6	3
2	49.2/	39.9/	10.9	Pentagram 2.a	J.A.Denny	158.5	65
3	45.0/	35.9/	19.1	Hexagram	J.A.Denny	154.0	63
4	47.7/	41.7/	10.6	The Stainless Steel Rat	Christian Schmidt	153.7	86
5	37.3/	26.4/	36.3	Sections	Zul Nadzri	148.2	23
6	39.7/	33.3/	27.1	Versatility 1.7	Ross Morgan-Linial	146.1	91
7	36.4/	26.8/	36.8	Flimsy v0.6	Ian Oversby	146.0	64
8	34.6/	23.8/	41.5	Scanitator 3.0	Christian Schmidt	145.4	70
9	43.4/	43.3/	13.3	qDeath v .169	Ryan Coleman	143.5	10
10	43.2/	43.5/	13.3	Mostly Harmless v1.1	Justin Kao	142.8	94
11	41.8/	45.2/	12.9	Short Sword 4	JS Pulido	138.4	45
12	27.0/	15.9/	57.1	DemonSpawn	J.A.Denny	138.2	73
13	29.5/	23.8/	46.7	Dust 7.0	Justin Kao	135.2	43
14	29.3/	24.6/	46.1	Six-Finger Discount From	Ryan Coleman	134.1	17
15	38.2/	42.5/	19.2	qbomber v .469	Ryan Coleman	134.0	14
16	26.7/	20.2/	53.1	Quantum	Christian Schmidt	133.1	67
17	38.9/	45.3/	15.7	Dwa Michaly b	Waldemar Bartolik	132.5	51
18	39.6/	49.4/	11.1	Scankiller 0.1	Christian Schmidt	129.8	75
19	32.1/	34.7/	33.2	If I only had a brain?	Ryan Coleman	129.4	15
20	25.8/	24.4/	49.8	It’s a Harmless Addition	Robert Hale	127.3	1
21	28.4/	32.6/	39.0	Zorm-B	Anonymous	124.3	48
22	22.5/	21.2/	56.3	4-Finger Discount From th	Ryan Coleman	123.8	18
23	25.2/	26.8/	48.1	Unknown	George Eadon	123.6	24
24	26.3/	29.4/	44.3	Kohonenian Dream	Robert J. Street	123.1	37
25	25.7/	29.5/	44.8	It’s a Harmless Addiction	Robert Hale	121.9	4

Top 25 Averages:
35.3/ 32.7/ 32.0 137.9 44

Current Status of the Internet Pizza Server Limited Process Hill:

Hill Specs:
coresize: 8000
max. processes: 8
duration: after 80,000 cycles, a tie is declared.
max. entry length: 200
minimum distance: 200
rounds fought: 200
instruction set: ICWS ’94 Draft
Last challenge: Sat Jun 14 09:03:03 PDT 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	58.4/	30.9/	10.8	Limb Rending Incisors	Ian Sutton	185.9	19

2	54.0/ 35.4/ 10.6	Solomon LP v0.1	Ian Oversby	172.6	16
3	53.4/ 35.5/ 11.1	NX-74205	Philip Kendall	171.3	2
4	51.0/ 34.2/ 14.9	Simplicity	Anton Marsden	167.8	9
5	47.7/ 28.5/ 23.8	Paper 'LP' II	Philip Kendall	166.8	46
6	48.6/ 34.9/ 16.5	Flips	Zul Nadzri	162.4	20
7	45.0/ 28.3/ 26.7	Indecisive v0.1	Ian Oversby	161.6	25
8	43.6/ 31.3/ 25.1	Twin Flame	Ian Oversby	155.9	50
9	44.2/ 34.1/ 21.8	Bolder v0.01	Ian Oversby	154.3	24
10	46.9/ 40.2/ 12.9	Romulan Warbird	Philip Kendall	153.6	29
11	42.2/ 30.9/ 26.9	Benchmark 1.0	Zul Nadzri	153.5	44
12	42.3/ 37.3/ 20.4	Bag of Tricks	Anton Marsden	147.4	34
13	41.1/ 37.2/ 21.8	red marble	bjoern guenzel	144.9	39
14	42.0/ 41.0/ 17.1	red eye	bjoern guenzel	142.9	40
15	39.9/ 38.6/ 21.5	Romantica	Zul Nadzri	141.1	17
16	33.2/ 30.4/ 36.4	Paper 'LP'	Philip Kendall	136.1	67
17	35.9/ 36.6/ 27.5	Iocane 0.0	John K W	135.2	33
18	39.9/ 48.8/ 11.4	qDeath v .169	Ryan Coleman	131.0	1
19	38.1/ 46.9/ 15.0	Hopefully Indestructible	Ian Sutton	129.2	38
20	36.3/ 44.3/ 19.4	Dr. Gate v4	Franz	128.3	54
21	34.8/ 43.9/ 21.2	oldtimer	bjoern guenzel	125.7	52
22	33.6/ 43.0/ 23.4	rimmer 2.0	jkw	124.2	58
23	33.5/ 44.7/ 21.7	Dr. Gate	Franz	122.3	56
24	37.8/ 53.9/ 8.3	If I only had a brain?	Ryan Coleman	121.7	5
25	30.5/ 47.0/ 22.5	Inferno 1.8	Philip Kendall	114.0	66

Top 25 Averages:

42.2/ 38.3/ 19.5		146.0	33

Extra Extra
Electric Head by Anton Marsden

Electric Head consists of 4 components:
- The Core Clear
- Mini HSA
- A small paper
- A modified version of Carbonite

These components combined with a nice PSpace routine are the key to the success of this warrior. It has weaknesses but so does every warrior. However, one of it's strengths is the ability to kill heavy imp/stones.

```
;redcode-94
;name Electric Head
;author Anton Marsden
;strategy P-Warrior which uses the P^2 switcher (see CW 58)
;assert CORESIZE==8000
;kill Electric Head

;--------------
;THE CORE CLEAR
;--------------

gate1 EQU (bomb1-19)
gate2 EQU (bomb1-18)
bomb2 EQU (bomb1+22)
cca EQU (-4000) ; not the actual value

        dat     19      ,   500     ; 1: 1/1
        dat     -4040   ,   4045    ; 2: 2/2
bomb1   spl     #bomb2-gate1 , 45   ;20: 5/4
        mov     *gate1  ,   >gate1  ; 1: 1/1
        mov     *bomb2+2,   >gate2  ; 2: 2/2
        djn.f   -1      ,   {gate2  ; 3: 3/3
        dat     1       ,   45      ; 2: 2/2
        spl     #-40    ,   45      ; 3: 3/3

ccb   mov bomb1-1,@ccd
      mov {-1,<ccd
      add #23,ccd
      spl 1,bomb1+4
```

```
      mov <ccb+3,<ccd
ccd   mov {ccb+1,{cca
      mov <ccb+3,<ccd
      djn @ccd,#2
      div.f #0,ccd

;--------
;MINI HSA
;--------

step EQU 9
ptr EQU (bomb-5)
away EQU (bomb1-4000) ; not the actual value

bomb: spl    #1,{1
kill: mov    bomb,<ptr
mptr: mov    >ptr,>ptr
      jmn.f  kill,>ptr
a:    add    #step+1,@mptr
scan: jmz.f  a,<ptr
      slt    @mptr,#btm-ptr+3
      djn    kill,@mptr
      djn    a,#16
btm:  jmp    a,{kill

boot: mov    btm,@dest
N FOR 8
      mov    btm-N,<dest
ROF
      spl    @dest,1
dest: mov    #250,@away
      mov    bomb,<dest
      div.f  #0,dest

FOR 6
      dat    0,0
ROF

dbomb dat    >-1,>1
in    dat    0,loss_table-state
p     spl    1,win_table-state
      spl    1,tie_table-state

;----------
;MINI PAPER
;----------

      spl    @0,1234 ; not the actual value
      mov    }-1,>-1
      mov    {-2,<1
      jmp    @0,>5678 ; not the actual value

PSTATE EQU 250 ; pspace location containing current state
STATES EQU 10  ; maximum number of states (for brainwash protection)

;NOTE: state values go from 0 to STATES-1

w0 EQU ccb   ; THE CORE CLEAR
w1 EQU boot  ; MINI HSA
w2 EQU p     ; MINI PAPER
w3 EQU cboot ; CARBONITE


think ldp.a  #0,in              ; get input value
load  ldp.a  #PSTATE,state      ; load old state
      mod.a  #STATES,state      ; brainwash protection
      add.ba *in,state          ; select correct state table
store stp.a  *state,load        ; store new state

win_table
```

```
state jmp    @0,w0              ; jump to warrior code

init_state
      spl    #0,w0
      spl    #0,w0
      spl    #3,w1
      spl    #3,w1
      spl    #4,w1
      spl    #6,w2
      spl    #7,w3
      spl    #7,w3
      spl    #8,w3

tie_table
      spl    #1,w0
      spl    #2,w0
      spl    #3,w1
      spl    #3,w1
      spl    #4,w1
      spl    #5,w1
      spl    #0,w0
      spl    #7,w3
      spl    #8,w3
      spl    #9,w3

loss_table
      spl    #1,w0
      spl    #2,w0
      spl    #3,w1
      spl    #4,w1
      spl    #5,w1
      spl    #6,w2
      spl    #7,w3
      spl    #8,w3
      spl    #9,w3
      spl    #3,w1

;-----------
;CARBONITE++
;-----------

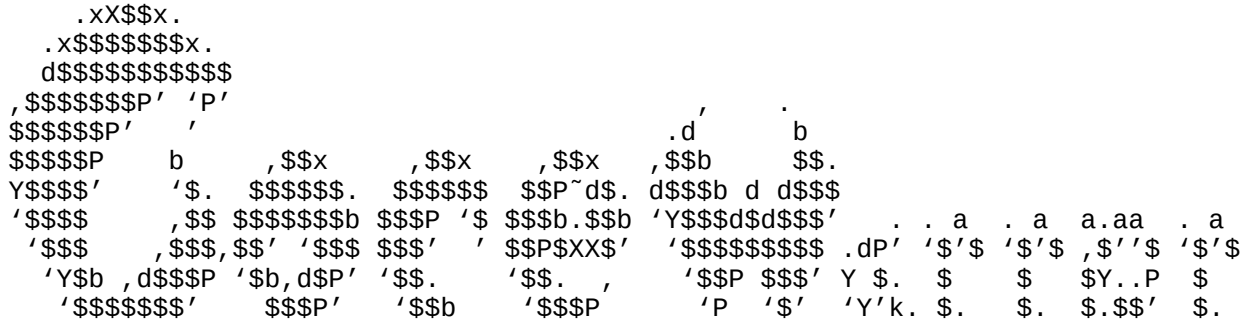
caway EQU (-100) ; not the actual value

cboot mov tar+1,<cdest
      mov tar,<cdest
      mov tar-1,<cdest
cdest mov dbomb,*caway
      spl <cdest,<2000
      mov tar-2,@cdest
      div.f #0,cdest
      spl    #0,<-1151+3
      mov    197,tar-197*3500
tar   add.ab {0,}0
      djn.f  -2,<-1151

END think
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it> or Myer Bremer <bremermr@ecn.purdue.edu>
or Anton Marsden <amarsden@mcs.vuw.ac.nz>

From news-rocq.inria.fr!jussieu.fr!pasteur.fr!oleane!eerie.fr!news.apfel.de!fu-berlin.de!cs.tu-berlin.de!news.uni-hamburg.de!news.uni-mainz.de!omalley.zdv.Uni-Mainz.DE!schmc003 Tue Jul 29 11:20:40 1997
Article: 7732 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!pasteur.fr!oleane!eerie.fr!news.apfel.de!fu-berlin.de!cs.tu-berlin.de!news.uni-hamburg.de!news.uni-mainz.de!omalley.zdv.Uni-Mainz.DE!schmc003
From: Christian Schmidt <schmc003@omalley.zdv.Uni-Mainz.DE>
Newsgroups: rec.games.corewar
Subject: Corewarrior 60 (better wrapped?)
Date: Tue, 29 Jul 1997 09:46:23 +0200
Organization: Johannes Gutenberg-Universitaet Mainz, Germany
Lines: 467
Message-ID: <Pine.OSF.3.95.970729092902.8798A-100000@omalley.zdv.Uni-Mainz.DE>
NNTP-Posting-Host: omalley.zdv.uni-mainz.de
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII



Issue 60 11 July,1997

Core Warrior is a weekly newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.ncs.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi’s hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

OK, with some delay, here I am. My first issue and also my first hint.
There are at the moment not much movements on the hill. But after Anton Marsden published the p^2-engine and his incredible good Electric Head I think everybody is working on new p-warriors.
The first round of Anton’s Core War Tournament is now finish.

--Christian Schmidt

Round 1 Results

Name	Score
Brian Haskin	8
Ilmari Karonen	7
Mole IX	5
Philipp Offermann	4
Zul Nadzri	3
Robert Hale	2
Christian Schmidt	1

Seaside sort (length 31) by Brian Haskin
Notes: works, fastest program
Average cycles: 320907

Bubbly Sort 1b (length 10) by Ilmari Karonen
Notes: works, smallest program
Average cycles: 13505607

Particle Sorter (length 12) by Mole IX
Notes: works, could be made a little bit faster :-)
Average cycles: 11644522

PSort v1.0 (length 12) by Philipp Offermann
Notes: works
Average cycles: 11998609

Sort v1.5 (length 20) by Zul Nadzri
Notes: doesn’t work for ITEMS==0
Average cycles: 9066053

Consort (length 14+1) by Robert Hale
Notes: I had to add an extra line to make this terminate properly (it assumes that the data consists of DAT instructions). I also had to change some mov.i instructions to mov.f. This also sorts the list in descending order. Apart from these details, it works just fine. :-)
Average cycles: 27968360

Sortidator (length 31) by Christian Schmidt
Notes: doesn’t work for ITEMS==0 or ITEMS==CORESIZE/2
Average cycles: 68427233

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	46.4/	36.0/	17.6	Electric Head	Anton Marsden	156.8	22
2	47.6/	43.6/	8.8	He Scans Again	P.Kline	151.6	10
3	35.5/	23.2/	41.3	Newt	Ian Oversby	147.8	13
4	44.3/	41.1/	14.6	C^2	Christian Schmidt	147.4	17
5	30.7/	16.7/	52.6	Return Of The Jedimp	John K W	144.7	267
6	36.5/	28.7/	34.9	Nine Seven Six	M R Bremer	144.3	131
7	38.9/	33.8/	27.3	PAN-TAU-RA	Christian Schmidt	144.0	2
8	35.4/	27.2/	37.4	Head or Tail	Christian Schmidt	143.6	55
9	42.1/	41.7/	16.3	Blain	Nimon	142.5	33
10	40.5/	38.6/	20.9	NCC-1701-A	Philip Kendall	142.4	70
11	40.2/	38.4/	21.4	Guessed v0.1	Ian	142.0	7
12	29.6/	17.1/	53.3	Impish v0.2	Ian Oversby	142.0	306
13	37.7/	34.6/	27.8	First Strike	Nimon	140.8	28
14	33.6/	27.4/	39.0	Gigolo	Core Warrior staff	139.9	321

15	39.7/ 39.7/ 20.7	Solomon v0.8	Ian Oversby	139.7	113
16	41.0/ 42.4/ 16.6	Fawkes v0.2	Ian Oversby	139.5	5
17	30.6/ 24.0/ 45.4	unrequited love	kafka	137.3	14
18	30.8/ 24.7/ 44.5	RetroQ	P.Kline	136.8	67
19	37.9/ 39.1/ 23.0	Damage Incorporated	Anton Marsden	136.8	308
20	40.2/ 43.9/ 15.9	myVamp5.4	Paulsson	136.4	17
21	42.9/ 49.9/ 7.1	Obsidian	Nimon	135.9	27
22	31.2/ 28.2/ 40.6	Ultraviolet	Ken Espiritu	134.3	4
23	31.1/ 29.2/ 39.7	Terkonit 3	Christian Schmidt	132.9	10
24	28.9/ 26.5/ 44.6	Ultra-RQ^2	Ken Espiritu	131.3	5
25	12.5/ 45.5/ 42.0	Pure Genius	Compudemon	79.5	0

Monthly age: 2 this issue (13 last issue, 14 the issue before)
New warriors: 3 Turnover/age rate 12%
Average age: 74 (72 last issue, 80 the issue before)
Average score: 139 (142 last issue, 138 the issue before)
The top 25 warriors are represented by 11 independent authors: Oversby with 5; Schmidt with 4; Nimon with 3; Espiritu, Kline and Marsden with 2. All others with one warrior each.

Electric Head is still on top followed by He Scans Again and Newt.

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
??	??.?/ ??.?/ ??.?	Test T	Ian Oversby	???.?	1
14	39.4/ 44.8/ 15.8	Tranken	Ian	134.1	0
25	4.8/ 71.7/ 23.5	Super clone	Compudemon	38.0	1

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	1.5/ 1.5/ 1.0	Test T	Ian Oversby	5.6	1
26	3.6/ 0.3/ 0.1	Tranken	Ian	10.9	0
26	4.5/ 69.1/ 26.3	Super clone	Compudemon	40.0	0

No significant losses.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
14	33.6/ 27.4/ 39.0	Gigolo	Core Warrior staff	139.9	321
19	37.9/ 39.1/ 23.0	Damage Incorporated	Anton Marsden	136.8	308
12	29.6/ 17.1/ 53.3	Impish v0.2	Ian Oversby	142.0	306
5	30.7/ 16.7/ 52.6	Return Of The Jedimp	John K W	144.7	267

No new entries.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator

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20	Flurry	Anton Marsden	835	Qscan -> pwarrior
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22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
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2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	346		Q^2 -> Paper
4	Gigolo	Core Warrior staff	321	*	Q^2 -> Stone/imp
5	Damage Incorporated	Anton Marsden	306	*	Q^2 -> Bomber
6	Impish v0.2	Ian Oversby	306	*	Stone/imp
7	Falcon v0.3	Ian Oversby	275		P-warrior
8	Return Of The Jedimp	John K W	267	*	Q^2 -> Stone/imp
9	Rosebud	Beppe	218		Stone/imp
10	Q^2 Miro	Anders Ivner	214		Q^2 ->Scanner/bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
14	Trident^2	John K W	195		Q^2 -> Stone/imp
15	ompega	Steven Morrell	189		Stone/imp
16	Frogz	Franz	172		Q^2 -> Paper
17	The Machine	Anton Marsden	164		Scanner
18	Memories	Beppe	152		Scanner
19	Tiberius 3.1	Franz	130		Q^2 -> Paper
20	Nine Seven Six	M R Bremer	131	*	Q^2 -> Stone/imp
21	Solomon v0.8	Ian Oversby	113	*	Stone and scanner
22	CC Paper 3.3	Franz	107		Q^2 -> Paper
23	mrb-test	m r bremer	106		?
24	T.N.T. pro	Maurizio Vittuari	105		Bomber
25	Jack in the box II	Beppe Bezzi	100		P-warrior

No new entries.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	50.2/	36.8/	13.0	Guessed v0.1	Ian	163.6	14
2	50.8/	38.1/	11.1	Pentagram 2.a	J.A.Denny	163.4	76
3	47.3/	34.6/	18.2	Hexagram	J.A.Denny	160.0	74
4	40.2/	25.6/	34.2	Sections	Zul Nadzri	154.7	34
5	39.4/	27.5/	33.1	Flimsy v0.6	Ian Oversby	151.2	75
6	38.0/	25.2/	36.9	Scanitator 3.0	Christian Schmidt	150.8	81
7	35.7/	21.2/	43.1	Dust 7.0	Justin Kao	150.1	54
8	46.3/	43.1/	10.5	The Stainless Steel Rat	Christian Schmidt	149.5	97
9	45.6/	42.7/	11.7	qDeath v .169	Ryan Coleman	148.4	21
10	30.5/	15.1/	54.4	DemonSpawn	J.A.Denny	145.8	84
11	43.4/	44.5/	12.1	Short Sword 4	JS Pulido	142.4	56
12	40.6/	41.0/	18.4	qbomber v .469	Ryan Coleman	140.2	25
13	31.8/	25.0/	43.1	Six-Finger Discount From	Ryan Coleman	138.6	28
14	29.4/	21.4/	49.2	Quantum	Christian Schmidt	137.3	78
15	34.7/	34.3/	31.0	If I only had a brain?	Ryan Coleman	135.2	26
16	30.0/	25.4/	44.6	It’s a Harmless Addition	Robert Hale	134.6	12
17	40.9/	47.5/	11.6	Scankiller 0.1	Christian Schmidt	134.2	86

18	39.7/ 45.3/ 15.0		Dwa Michaly b	Waldemar Bartolik	134.2	62
19	31.3/ 29.8/ 38.9		Zorm-B	Anonymous	132.7	59
20	26.5/ 23.2/ 50.3	4-Finger Discount From th		Ryan Coleman	129.8	29
21	30.0/ 30.3/ 39.7	It’s a Harmless Addiction		Robert Hale	129.6	15
22	28.8/ 30.6/ 40.6		Kohonenian Dream	Robert J. Street	127.1	48
23	26.4/ 43.8/ 29.8		Nautilus	Mole IX	109.1	1
24	5.4/ 1.0/ 1.6		Nautilus	Mole IX	17.8	2
25	5.4/ 1.0/ 1.6		Nautilus	Mole IX	17.8	4

Top 25 Averages:

	34.7/ 30.2/ 27.8				131.9	45

The Hint

Replicators (part 3)

In the first two parts (issue 1 and 3) Beppe Bezzi discus the basics of replicators (called papers) and a way to optimize their constants. But over the time new ideas were tried to improve the offensive power of replicators (the greatest disadvantage of them) based on new strategies or in different ways of optimizing constants.

In this hint I give with three examples only a short overview and how they work against some warriors. I hope this will animate to further ideas. You can find all of them at Planar‘s warrior archive.

Let’s start with kafkas unrequited love (IMPORTANT: I extract only the replicator of the appropriate programs for clarity. I hope the authors will forgive me these sacrilege) which was based on Beppes paper01o.

```
;redcode-94
;name unrequited love
;author kafka
;assert 1

 dest0   equ   7889
 dest1   equ   3602
 dest2   equ   4095
 range   equ   1253

 paper   spl   1,      <-300
         spl   1,      <-400
         spl   1,      <-500

 silk    spl   @0,     {dest0
         mov.i }-1,    >-1
 silk1   spl   @0,     <dest1
         mov.i }-1,    >-1
         mov   bomba,  }range
         mov   {silk1, <silk2
 silk2   jmp   @0,     >dest2
 bomba   dat   <2667,  <5334


;redcode-94
;name paper01o
;author Beppe Bezzi
;strategy paper module, partially optimized with pmars
;assert CORESIZE == 8000

dest0   equ     2200
dest1   equ     3740
dest2   equ     -1278   ;pmars optimized
range   equ     933     ;pmars optimized

paper     spl     1,      <300    ;\
          spl     1,      <400    ;-> generate 8 consecutive processes
```

```
          spl     1,      <500    ;/

silk      spl     @0,     {dest0
          mov.i   }-1,    >-1
silk1     spl     @0,     <dest1
          mov.i   }-1,    >-1
          mov.i   bomba,  }range
          mov     {silk1, <silk2
silk2     jmp     @0,     >dest2
bomba     dat     <2667,  <1

end     paper
```

Kafka optimize the constants of his unrequited love against actual, published warriors of the hill. In contrast to Stefan Strack‘s cdb-macro Beppe described in issue 3, which find the best value for spreading, kafkas method can have a slightly advantage on the hill. But only as long as the used warriors are on the hill.

Another way to improve the offensive power is to increase the number of bombing instruction, like in Beppe‘s huge Maria Trionfale. A smaller but also very aggressive one is for example Ian Oversby‘s Pulp.

```
;redcode-94
;name Pulp
;author Ian Oversby
;assert 1

dest1   equ     1400    ; For Pulp v0.2
dest2   equ     5460
dest3   equ     725
pos1    equ     930
pos2    equ     3359
pos3    equ     1009    ; clear old copies

org paper

paper   SPL.B   1,      <-300
        MOV.I   -1,     0
        MOV.I   -1,     0
        SPL.B   1,      {-300

silk    SPL..B   @0,     >dest1
        MOV.I   }-1,    >-1
        MOV.I   bomb,   >pos1
silk2   SPL.B   @0,     >dest2
        MOV.I   }-1,    >-1
        MOV.I   bomb,   >pos2   ; linear bombing
        MOV.I   bomb,   }pos3   ; anti-vamp
        MOV.I   {silk2, <silk3
silk3   JMP.B   @0,     >dest3
bomb    DAT.F   <2667,  <5334
```

A complete different strategy used franz, with great success, in his CC Paper. He don’t throw bombs but he combined in a effective way a replicator with a coreclear. The advantage is that every copy starts his own coreclear and the chance to kill the opponent by a dat-wipe is much higher than by a single bomb.

```
;redcode-94
;name CC Paper 2
;author Franz
;assert CORESIZE==8000

len EQU 9

fcp EQU 3039
scp EQU 2365
tcp EQU 777
```

```
boot    spl 1,<-3000  ;letz get 9 processes together
        mov -1,0
        mov -1,0
        mov -1,0

frog    spl     @0,     <fcp-len
        mov     }-1,    >-1
        spl     @0,     <scp
        mov     }-1,    >-1
        spl     @0,     <tcp
        mov     }-1,    >-1
        mov     2,      <-1
        jmp     -1,     <-10
        dat     <2667,  <2667*2
datz    end
```

Now, let’s see how well (or worth) they work in 1000 fights against the following list of warriors. As a standard paper is use also J. Pohjalainen‘s TimeScape (1.0)

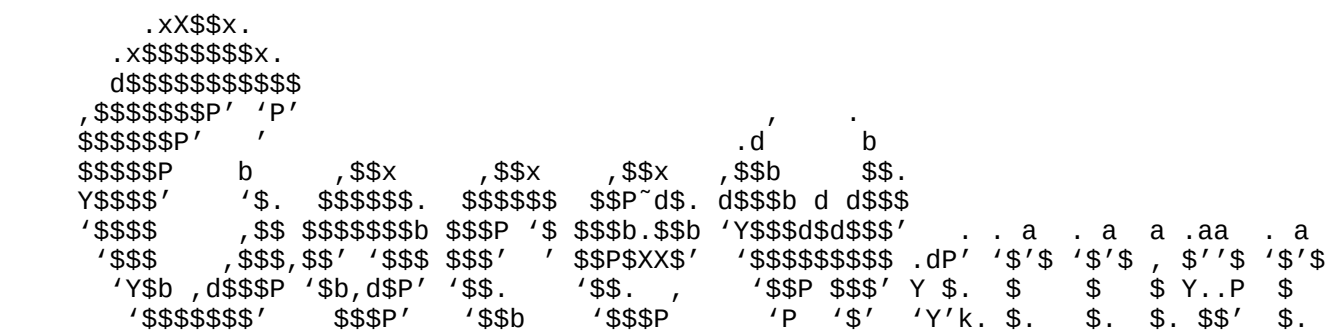
1) He scans alone (the publicated version, not the actual) (Scanner)
2) MyVamp 5.4 (Vamp)
3) Bluefunk (light stone/imp)
4) Impish v0.2 (heavy stone/imp)
5) Damage Incorporated (q^2 + stone)

And here is the table of the results

	HSA	MyVamp	Bluefunk	Impish	Damag Inc.
TimeScape	308-604- 88 1012 Pts	376-422-202 1330 Pts	204- 27-769 1381 Pts	22- 9-969 1035 Pts	268-193-539 1343 Pts
unrequited love	241-674- 85 808 Pts	534-311-155 1757 Pts	231- 32-737 1430 Pts	60- 3-937 1117 Pts	302-219-479 1385 Pts
paper 01o	227-687- 86 767 Pts	461-363-176 1559 Pts	219- 43-738 1395 Pts	38- 13-949 1063 Pts	297-212-491 1382 Pts
Pulp	252-682- 66 822 Pts	524-331-145 1717 Pts	337-141-522 1533 Pts	170- 28-802 1312 Pts	313-350-337 1276 Pts
CC Paper	242-680- 78 804 Pts	508-331-161 1685 Pts	325-211-464 1439 Pts	97-166-737 1028 Pts	335-311-354 1359 Pts

He Scans Alone kick them all. Only TimeScape scores slightly better than the rest but he works worther against MyVamp. The other paper win in contrast more or less the half of the fights. Against the both Stone/imp-warriors Pulp get the most points. And finally against Damage Incorporated no one scores significant better.
If we compare the unrequited love and paper01o we can see a slight advantage of kafka‘s warrior. Mmmh, it seems to be that unrequited love are not only optimized against the warriors which kafka used, but also against all other. The strengths of Ian Oversby‘s Pulp is the good scoring against stone/imps. And finally franz‘s CC Paper shows no significant disadvantage and is for my feeling a good all-round paper.

From: Philip Kendall <pak21@kendalls.demon.co.uk>
Subject: Core Warrior 61
Date: 1997/08/04
Message-ID: <XLPLZDAhrh5zEwOs@kendalls.demon.co.uk>
Distribution: world
X-NNTP-Posting-Host: kendalls.demon.co.uk [194.222.25.137]
Organization: Private
Newsgroups: rec.games.corewar



Issue 61 4 August, 1997

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note Stormking's new address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth/ ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.nc5.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Welcome to my first issue of Core Warrior, following Christian's two weeks back. I hope at least someone finds it vaguely useful :-)

The Hills are still quite, with very little action. Is everyone just off on their summer/winter break, or have we exhasted the possibilities of the '94 Draft? It was a year ago last Tuesday that Anton Marsden published Probe, with its Q^2 scan, which is still seen on many of the warriors on the Hill. Who will come with something similar this year?

STOP PRESS -- First and exclusive: the results of the second round of Anton's Core War Tournament -- see below -- STOP PRESS ENDS

Phil Kendall

Anton's Tournament Round 2 Results

The aim of round 2 was to write a warrior designed to beat Electric Head, currently on top of the ’94 Hill. (See _Core Warrior 59_ for the source)

Rank	Name	Author	Score	Points
1	Shelter 1f3	Ilmari Karonen	2986	7
2	Head Basher	Brian Haskin	2940	6
3	PBeat v1.0	Philipp Offermann	2903	5
4	Short Circuit	Philip Kendall	2875	4
5	P^(1/2)	Christian Schmidt	2389	3
6	Nautilus	Mole IX	2098	2
7	Anti Head	Ian Oversby	1533	1

Congratulations to Ilmari Karonen for dropping only 14 points over the 1000 round fight.

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- rounds fought: 200
- instruction set: ICWS ’94 Draft

The current ICWS ’94 Draft hill:

#	%W / %L / %T	Name	Author	Score	Age
1	43.5/ 38.3/ 18.3	Electric Head	Anton Marsden	148.7	24
2	45.6/ 45.6/ 8.9	He Scans Again	P.Kline	145.6	12
3	35.1/ 25.1/ 39.9	Newt	Ian Oversby	145.1	15
4	30.5/ 19.0/ 50.5	Return Of The Jedimp	John K W	142.0	269
5	33.8/ 26.8/ 39.4	RetroQ	P.Kline	140.9	69
6	35.2/ 29.6/ 35.2	Head or Tail	Christian Schmidt	140.8	57
7	35.5/ 30.8/ 33.7	Nine Seven Six	M R Bremer	140.2	133
8	41.6/ 43.3/ 15.1	C^2	Christian Schmidt	139.9	19
9	37.4/ 36.2/ 26.4	PAN-TAU-RA	Christian Schmidt	138.6	4
10	34.1/ 30.9/ 35.0	Ultraviolet	Ken Espiritu	137.3	6
11	40.2/ 43.8/ 16.0	Blain	Nimon	136.6	35
12	31.2/ 26.6/ 42.2	unrequited love	kafka	135.8	16
13	36.7/ 38.0/ 25.3	First Strike	Nimon	135.5	30
14	31.8/ 28.3/ 39.9	Ultra-RQ^2	Ken Espiritu	135.3	7
15	38.0/ 41.3/ 20.7	NCC-1701-A	Philip Kendall	134.8	72
16	37.7/ 41.0/ 21.3	Guessed v0.1	Ian	134.4	9
17	26.5/ 18.9/ 54.6	Impish v0.2	Ian Oversby	134.1	308
18	37.2/ 40.7/ 22.1	Damage Incorporated	Anton Marsden	133.6	310
19	40.1/ 47.0/ 12.9	Overdrive	Christian Schmidt	133.1	1
20	30.9/ 30.1/ 39.0	Gigolo	Core Warrior staff	131.6	323
21	36.8/ 42.0/ 21.2	Solomon v0.8	Ian Oversby	131.5	115
22	36.4/ 42.1/ 21.5	Guru	Robert Hale	130.7	2
23	31.3/ 32.3/ 36.5	Terkonit 3	Christian Schmidt	130.2	12
24	37.4/ 45.7/ 16.9	Fawkes v0.2	Ian Oversby	129.2	7
25	37.6/ 46.5/ 15.9	myVamp5.4	Paulsson	128.7	19

Age since last issue: 2 (2 last issue, 13 the issue before)
New warriors: 2 Turnover/age rate 100%
Average age: 74 (74 last issue, 72 the issue before)
Average score: 142 (139 last issue, 142 the issue before)
The top 25 warriors are represented by 13 independent authors: Schmidt with 6; Oversby with 5; Espiritu, Kline, Marsden and Nimon with 2. All others with one warrior each.

---

94 - What’s New

#	%W / %L / %T	Name	Author	Score	Age
19	36.9/ 41.9/ 21.2	Guru	Robert Hale	131.9	1
19	40.1/ 47.0/ 12.9	Overdrive	Christian Schmidt	133.1	1

We welcome Robert Hale to the ’94 Hill.

---

94 - What’s No More

#	%W / %L / %T	Name	Author	Score	Age
26	11.4/ 45.4/ 43.1	Pure Genius	Compudemon	77.4	0
26	40.3/ 52.5/ 7.1	Obsidian	Nimon	128.2	29

---

94 - What’s Old

#	%W / %L / %T	Name	Author	Score	Age
20	30.9/ 30.1/ 39.0	Gigolo	Core Warrior staff	131.6	323
18	37.2/ 40.7/ 22.1	Damage Incorporated	Anton Marsden	133.6	310
17	26.5/ 18.9/ 54.6	Impish v0.2	Ian Oversby	134.1	308
4	30.5/ 19.0/ 50.5	Return Of The Jedimp	John K W	142.0	269

The top three here have all looked in trouble in recent weeks, never leaving the lower reaches of the Hill. Jedimp, on the other hand, goes from strength to strength.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	346		Q^2 -> Paper
4	Gigolo	Core Warrior staff	323	*	Q^2 -> Stone/imp
5	Damage Incorporated	Anton Marsden	310	*	Q^2 -> Bomber
6	Impish v0.2	Ian Oversby	308	*	Stone/imp
7	Falcon v0.3	Ian Oversby	275		P-warrior
8	Return Of The Jedimp	John K W	269	*	Q^2 -> Stone/imp
9	Rosebud	Beppe	218		Stone/imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
14	Trident^2	John K W	195		Q^2 -> Stone/imp
15	ompega	Steven Morrell	189		Stone/imp
16	Frogz	Franz	172		Q^2 -> Paper

17	The Machine	Anton Marsden	164		Scanner
18	Memories	Beppe	152		Scanner
19	Nine Seven Six	M R Bremer	133	*	Q^2 -> Stone/imp
20	Tiberius 3.1	Franz	130		Q^2 -> Paper
21	Solomon v0.8	Ian Oversby	115	*	Stone and scanner
22	CC Paper 3.3	Franz	107		Q^2 -> Paper
23	mrb-test	m r bremer	106		?
24	T.N.T. pro	Maurizio Vittuari	105		Bomber
25	Jack in the box II	Beppe Bezzi	100		P-warrior

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Sat Aug 2 20:56:55 PDT 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	51.6/	37.1/	11.4	Pentagram 2.a	J.A.Denny	166.1	94
2	47.2/	33.9/	18.9	Hexagram	J.A.Denny	160.5	92
3	47.7/	38.7/	13.6	Guessed v0.1	Ian	156.8	32
4	45.6/	37.0/	17.5	guru v0.1	Robert Hale	154.1	8
5	39.9/	25.7/	34.5	Sections	Zul Nadzri	154.1	52
6	45.8/	40.9/	13.3	Nautilus	Mole IX	150.6	11
7	44.4/	41.9/	13.7	qDeath v .169	Ryan Coleman	146.8	39
8	41.5/	38.4/	20.1	qbomber v .469	Ryan Coleman	144.5	43
9	32.4/	20.7/	46.9	Dust 7.0	Justin Kao	144.1	72
10	34.1/	24.4/	41.6	Flimsy v0.6	Ian Oversby	143.8	93
11	41.8/	41.0/	17.3	guru v0.3	Robert Hale	142.6	2
12	32.2/	22.4/	45.4	A Blaise Affair	Robert J. Street	142.1	12
13	43.5/	45.6/	10.9	Short Sword 4	JS Pulido	141.4	74
14	31.2/	21.2/	47.5	Scanitator 3.0	Christian Schmid	141.3	99
15	38.8/	37.3/	23.9	Pain and Panic v0.1	Robert Hale	140.3	1
16	31.0/	23.5/	45.5	Six-Finger Discount From	Ryan Coleman	138.5	46
17	34.1/	33.5/	32.4	If I only had a brain?	Ryan Coleman	134.6	44
18	39.4/	47.4/	13.2	Dwa Michaly b	Waldemar Bartolik	131.4	80
19	26.0/	21.3/	52.7	4-Finger Discount From th	Ryan Coleman	130.7	47
20	23.6/	19.4/	56.9	Quantum	Christian Schmidt	127.9	96
21	28.0/	31.6/	40.4	Zorm-B	Anonymous	124.4	77
22	23.7/	23.3/	53.0	It’s a Harmless Addition	Robert Hale	124.1	30
23	25.3/	28.7/	46.0	It’s a Harmless Addiction	Robert Hale	121.9	33
24	24.6/	29.3/	46.2	Kohonenian Dream	Robert J. Street	119.9	66
25	1.1/	54.6/	44.4	PruebaX5	Eleazar Martinez Can	47.5	3
	35.0/	32.7/	32.3	Top 25 Averages		137.2	49

The Hint
A new way of avoiding self-bombing

[Note: the warriors mentioned in this article are available from Planar’s Web page: http://pauillac.inria.fr/~doligez/corewar/]

When writing a stone, if all else is equal (which it never is :-)), a stone which bombs with a smaller mod will beat the one which bombs with a larger mod. However, if a stone has a small mod, then it will very often drop a bomb on itself. Sometimes this can be used to mutate the warrior (for example, see Beppe Bezzi’s _Tornado 3.0_, which uses a spl bomb to change from a bomber to a coreclear), but often it is a thing to be avoided.

This article gives a (hopefully) new way which means that the mod of a (self-splitting) bomber can be reduced. The actual method is rather complicated, so instead of doing a general analysis, I’ll do a specific example instead: Consider this stone, taken from John K Wilkinson’s _evoltmp_:

(The actual stone is between the lines labelled p and l, with the d-clear bomb at jclr; the rest of the warrior is a boot routine and a dat 1,1 decoy)

```
;redcode-94
;name evoltmp's stone
;author John K W & Philip Kendall
;assert CORESIZE == 8000

org EvolCap

BOOT_DIST equ (2626+24*66)
S       equ 24

jclr:   dat     >2667,     S+10

evol
EvolCap mov.i   jclr,   evol+BOOT_DIST+S+4

for 6
        mov.i   {pptr,  <pptr
rof
        jmp     @pptr

        for     84
        dat.f   1,1
        rof

p       spl     #0,     {-S+1
a       add.f   3,      1
m       mov     }S-2,   -S+1
d       djn.f   -2,     <-1160
c       mov     S,      >-S
l       djn.f   -1,     >-S-1

pptr:   nop     0,      evol+BOOT_DIST+6

        end
```

(Note that this method will work only for self-splitting stones which have the add line _before_ one of the bombing lines)

This stone is a stone -> d-clear, which mutates when the mov line looks like

```
        mov     }-2,1
```

which moves the spl at p on top of the first djn.f. Currently, it uses a mod-8 step for bombing, with a-field increments offset from this by 3. If we trace the execution of the warrior once it is booted, the instructions execute in this order:

```
[p]
[a p]                   (*)
[m a p]
[d m a p]
[a d m a p]             (*)
[m a d m a p]
[d m a d m a p]
[a d m a d m a p]       (*)
etc...
```

If we look at the lines marked with * (those where the number of processes is congruent to 2 mod 3), we notice that there are more adds (a) executed than movs (m). Therefore there must be some of the mod-8 locations which we thought were going to be bombed which will not be, at least before the mutation occurs (a small amount of bombing still occurs after this due to the spl instruction at p still feeding processes into the loop). In fact, the locations which are missed are those which occur after (3/2)*n*(n+1) additions, where n=0,1,2,...

This fact enables us to reduce the mod to 4 and, so long as we syncronise our stone correctly, still avoid self-bombing. As an example, let us consider a

step size, S, of 28 (it is important to keep the step size small with this warrior as the region from (c-S) to (c+S) is not cleared). The mov instruction we are trying to miss is mov }2,-3, as this would increment our step size.

Each time a is executed, 28 is added to the initial value of -2 of the a-field of m, so we require 28k mod 8000=4 (k=0,1,2,...) to get to mov.i }2,-3. This has a solution of k=1143. There is no value of n such that (3/2)*n*(n+1)=1143, but if we take n=27, this gives 1134. Then, if we start the warrior with m as

```
        mov     }(-2+(9*S)),(1-(9*S))
```

after 1134 additions (the point at which m is skipped), m will be

```
        mov     }(-2+(1143*S)),(1-(1143*S))
```

which is equivalent to

```
        mov     }2,-3
```

the instruction we are trying to miss. This only leaves one very small problem: before the mutation to d-clear occurs, at one stage m looks like

```
        mov     }30,-31
```

which increments the a-field of the bomb, so we must change the jclr instruction to

```
jclr:   dat     >2666,     S+10
```

(A better bomb to use would be dat >5335,S+10, which would have to start off as dat >5334,S+10 - see _Core Warrior 52_ for details)

So, here's the complete source to the mod 4 version of evoltmp's stone:

```
;redcode-94
;name evoltmp's stone
;author John K W & Philip Kendall
;assert CORESIZE == 8000

;see Core Warrior 61 for details of this warrior

org EvolCap

BOOT_DIST equ (2626+24*66)
S       equ 28
magic   equ     9               ; to avoid self-bombing

jclr:   dat     >2666,     S+10 ; changed to >2667 by the stone

evol
EvolCap mov.i   jclr,   evol+BOOT_DIST+S+4

for 6
        mov.i   {pptr,  <pptr
rof
        jmp     @pptr

        for     84
        dat.f   1,1
        rof

        spl     #0,     {-S+1
        add.f   3,      1
        mov     }(-2+(magic*S)),(1-(magic*S))
        djn.f   -2,     <-1160
        mov     S,      >-S
        djn.f   -1,     >-S-1

pptr:   nop     0,      evol+BOOT_DIST+6
```

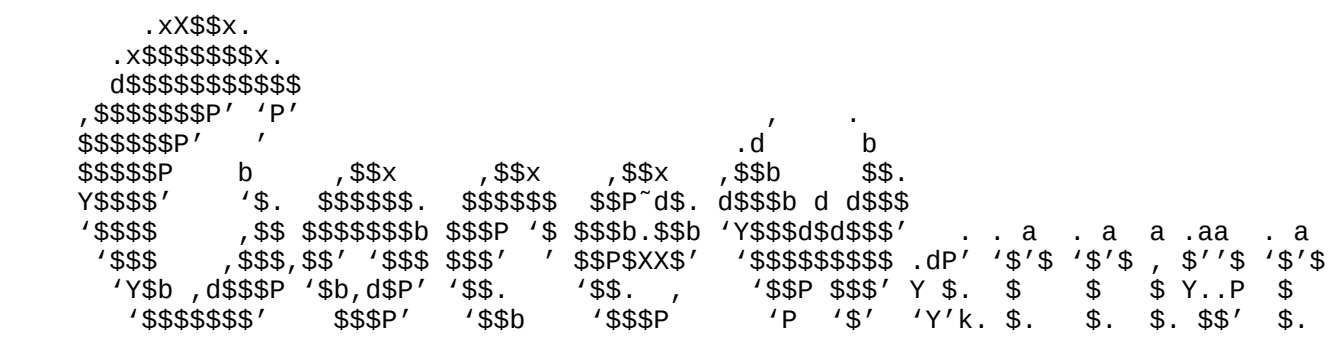
```
        end
```

At present, if this warrior is run off against some other warriors, its performance is actually worse than that of the mod-8 version; for example, versus Planar's _Impfinity v4g1_, the mod-8 version scores 61/86/53 (236 points), whilst the mod-4 version scores 37/99/64 (175 points), and against Paul Kline's _Torch t18_, mod-8 scores 95/63/42 (327), but mod-4 scores only 77/68/55 (286). One of the principal reasons for this change in performance is that the mod-4 version is in its bombing mode for (approximately) twice as long as the mod-8 version; this means that a) Impfinity has twice as long to build up processes in its imp spirals and b) the d-clear is running for less time, both of which make Impfinity harder to kill. This is shown by the fact that the change versus Impfinity is mostly from wins to ties. Similar considerations apply versus Torch, and many other warriors.

The above is only an example of a technique, rather than an attempt to create a warrior which will do well on the Hills, so the fact that performance is actually degraded by this is not of prime importance; however, it does show that reducing the mod of a stone is not always a good point.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it>, Anton Marsden <amarsden@mcs.vuw.ac.nz>, Christian Schmidt <schmc003@goofy.zdv.Uni-Mainz.de> and Philip Kendall <pak21@cam.ac.uk>

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c.nz!majestic.mcs.vuw.ac.nz!amarsden Wed Sep 3 13:12:44 1997
Article: 7815 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!newsxfer3.itd.umich.edu!newsfeed1-hme1!newsfee
d.internetmci.com!164.67.42.145!nntp.info.ucla.edu!ihnp4.ucsd.edu!munnari.OZ.AU!comp.vuw.
ac.nz!majestic.mcs.vuw.ac.nz!amarsden
From: Anton Marsden <amarsden@mcs.vuw.ac.nz>
Newsgroups: rec.games.corewar
Subject: Core Warrior 62
Date: Wed, 3 Sep 1997 21:10:24 +1200
Organization: School of Mathematical and Computing Sciences, VUW
Lines: 288
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Issue 62 3 September, 1997

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
Web pages are at: (Please note Stormking's new address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth/ ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.nc5.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/pmars
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Hill activity has increased substantially since the last issue. Everyone's come out of hibernation :-)

--Anton Marsden

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
        coresize: 8000

```
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft

Last challenge: Tue Sep  2 17:42:20 PDT 1997
```

#	%W / %L / %T	Name	Author	Score	Age
1	38.6/ 27.2/ 34.2	obvious to those who know	Robert Macrae	150.0	1
2	37.7/ 26.1/ 36.2	Pulp v0.4	Ian Oversby	149.2	4
3	38.3/ 27.5/ 34.2	obvious to those who know	Robert Macrae	149.1	2
4	33.9/ 25.1/ 40.9	Newt	Ian Oversby	142.8	42
5	41.9/ 44.1/ 14.0	C^3	Christian Schmidt	139.8	10
6	39.9/ 40.3/ 19.8	Red Baron	Christian Schmidt	139.6	7
7	31.8/ 25.7/ 42.5	Merciless-A	Ken Espiritu	138.0	9
8	34.0/ 31.5/ 34.5	Nine Seven Six	M R Bremer	136.6	160
9	38.2/ 40.0/ 21.8	Damage Incorporated	Anton Marsden	136.4	337
10	34.3/ 32.3/ 33.3	Head or Tail	Christian Schmidt	136.3	84
11	34.8/ 33.7/ 31.4	Baseline	Ken Espiritu	136.0	6
12	29.2/ 22.9/ 47.9	Return Of The Jedimp	John K W	135.4	296
13	41.8/ 49.0/ 9.2	He Scans Again	P.Kline	134.7	39
14	38.2/ 42.1/ 19.6	No Good	Ian Oversby	134.3	14
15	35.5/ 37.1/ 27.3	test p209	Beppe	133.9	12
16	40.0/ 46.8/ 13.2	Overdrive	Christian Schmidt	133.2	27
17	37.3/ 41.7/ 21.0	Electric Head	Anton Marsden	133.0	51
18	38.0/ 43.7/ 18.4	Test OS	Ian Oversby	132.3	4
19	35.1/ 38.3/ 26.5	PAN-TAU-RA 2	Christian Schmidt	132.0	12
20	31.6/ 31.3/ 37.2	RetroQ II	P.Kline	131.8	3
21	38.9/ 46.0/ 15.2	Blain	Nimon	131.8	62
22	35.7/ 40.2/ 24.1	Bigger Brother	Philip Kendall	131.2	5
23	25.4/ 19.8/ 54.8	Impish v0.2	Ian Oversby	131.1	335
24	36.5/ 42.9/ 20.5	Used Car	Ian Oversby	130.2	7
25	34.7/ 39.6/ 25.6	First Strike	Nimon	129.9	57

```
Age since last issue: 27 ( 2 last issue, 2 the issue before )
New warriors: 13  Turnover/age rate 48%
Average age: 63 ( 74 last issue, 74 the issue before )
Average score: 136 ( 142 last issue, 139 the issue before )
The top 25 warriors are represented by 13 independent authors: Oversby
with 6; Schmidt with 5; Macrae, Espiritu, Marsden, Kline and Nimon with 2.
All others with one warrior each.

Yet another gap has opened up between the top few and the rest of the
pack. Electric Head has dropped from 1st to 17th! Macrae is back with a
vengeance.
```

---

94 - What's New

#	%W / %L / %T	Name	Author	Score	Age
6	42.3/ 41.7/ 16.0	No Good	Ian Oversby	142.9	1
??	??.?/ ??.?/ ??.?	test p209	Beppe	???.?	1
12	34.2/ 34.1/ 31.6	PAN-TAU-RA 2	Christian Schmidt	134.3	1
13	39.7/ 44.3/ 16.1	C^3	Christian Schmidt	135.0	1
16	28.7/ 24.3/ 47.0	Merciless-A	Ken Espiritu	133.0	1
2	43.1/ 39.6/ 17.3	Red Baron	Christian Schmidt	146.6	1
14	39.5/ 43.3/ 17.2	Used Car	Ian Oversby	135.7	1
3	35.8/ 30.0/ 34.2	Baseline	Ken Espiritu	141.6	1
12	38.1/ 38.9/ 23.0	Bigger Brother	Philip Kendall	137.4	1
20	38.3/ 43.7/ 18.0	Test OS	Ian Oversby	132.9	1
25	31.5/ 31.8/ 36.7	RetroQ II	P.Kline	131.2	1
1	38.4/ 25.9/ 35.7	Pulp v0.4	Ian Oversby	150.9	1
1	38.6/ 27.2/ 34.2	obvious to those who know	Robert Macrae	150.0	1

```
There have been a lot of quality warriors challenging the Hill this month.
```

---

94 - What's No More (Age >= 10)

#	%W / %L / %T	Name	Author	Score	Age
26	40.3/ 52.5/ 7.1	Obsidian	Nimon	128.2	29

26	34.8/ 42.4/ 22.7	Solomon v0.8	Ian Oversby	127.2	116
26	36.3/ 46.8/ 17.0	myVamp5.4	Paulsson	125.8	24
26	36.4/ 45.9/ 17.6	Fawkes v0.2	Ian Oversby	126.9	14
26	27.4/ 30.6/ 42.1	Gigolo	Core Warrior staff	124.2	332
26	29.9/ 33.7/ 36.4	Terkonit 3	Christian Schmidt	126.2	22
26	36.3/ 45.7/ 18.0	NCC-1701-A	Philip Kendall	127.0	83
26	36.0/ 46.2/ 17.8	Guessed v0.1	Ian	125.9	21
26	28.2/ 30.9/ 40.9	RetroQ	P.Kline	125.5	82
26	36.1/ 44.4/ 19.5	Guru	Robert Hale	127.9	16
26	36.3/ 46.1/ 17.6	C^2	Christian Schmidt	126.6	34
26	28.2/ 29.3/ 42.5	Ultraviolet-A	Ken Espiritu	127.1	17
26	29.5/ 29.0/ 41.5	Ultra-RQ^2	Ken Espiritu	130.1	31
26	29.4/ 28.4/ 42.1	unrequited love	kafka	130.4	41
26	37.1/ 43.8/ 19.0	Big Brother	Philip Kendall	130.5	14
26	40.6/ 49.4/ 10.1	BeachBlanketBingo	J E Long	131.7	12

Gigolo has departed from the Hill at the ripe old age of 332. Solomon v0.8 has also been kicked off.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
9	38.2/	40.0/	21.8	Damage Incorporated	Anton Marsden	136.4	337
23	25.4/	19.8/	54.8	Impish v0.2	Ian Oversby	131.1	335
12	29.2/	22.9/	47.9	Return Of The Jedimp	John K W	135.4	296

The next warrior to enter this section will be Nine Seven Six... if it survives.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	unrequited love	kafka	346		Q^2 -> Paper
4	Damage Incorporated	Anton Marsden	337	*	Q^2 -> Bomber
5	Impish v0.2	Ian Oversby	335	*	Stone/imp
6	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
7	Return Of The Jedimp	John K W	296	*	Q^2 -> Stone/imp

8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Rosebud	Beppe	218		Stone/imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
14	Trident^2	John K W	195		Q^2 -> Stone/imp
15	ompega	Steven Morrell	189		Stone/imp
16	Frogz	Franz	172		Q^2 -> Paper
17	The Machine	Anton Marsden	164		Scanner
18	Nine Seven Six	M R Bremer	160	*	Q^2 -> Stone/imp
19	Memories	Beppe	152		Scanner
20	Tiberius 3.1	Franz	130		Q^2 -> Paper
21	Solomon v0.8	Ian Oversby	116		Stone and scanner
22	CC Paper 3.3	Franz	107		Q^2 -> Paper
23	mrb-test	m r bremer	106		?
24	T.N.T. pro	Maurizio Vittuari	105		Bomber
25	Jack in the box II	Beppe Bezzi	100		P-warrior

Gigolo finishes in 6th place and Solomon in 21st.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
- coresize: 8000
- max. processes: 8000
- duration: after 80,000 cycles, a tie is declared.
- max. entry length: 100
- minimum distance: 100
- maximum age: At age 100, warriors are retired.
- rounds fought: 200
- instruction set: ICWS ’94 Draft

Last challenge: Mon Aug 25 22:45:07 PDT 1997

#	%W /	%L /	%T	Name	Author	Score	Age
1	39.7/	19.8/	40.5	Dust 7.0	Justin Kao	159.7	86
2	49.2/	41.8/	9.0	BeachBlanketBingo	J E Long	156.6	1
3	47.9/	40.4/	11.7	Guessed v0.1	Ian	155.4	46
4	46.1/	38.2/	15.7	guru v0.1	Robert Hale	154.0	22
5	40.6/	27.4/	32.0	Sections	Zul Nadzri	153.7	66
6	38.5/	23.9/	37.6	A Blaise Affair	Robert J. Street	153.2	26
7	45.3/	37.5/	17.3	qbomber v .469	Ryan Coleman	153.1	57
8	44.7/	39.9/	15.4	Hell’s Fury	Robert Hale	149.5	3
9	45.2/	42.4/	12.5	qDeath v .169	Ryan Coleman	148.0	53
10	35.2/	24.5/	40.3	Six-Finger Discount From	Ryan Coleman	146.0	60
11	44.4/	43.3/	12.3	Nautilus	Mole IX	145.6	25
12	41.1/	38.3/	20.6	Pain and Panic v0.1	Robert Hale	143.8	15
13	43.6/	44.9/	11.5	Short Sword 4	JS Pulido	142.2	88
14	42.2/	42.7/	15.1	guru v0.3	Robert Hale	141.8	16
15	40.3/	39.2/	20.5	Pain and Panic v0.2	Robert Hale	141.5	7
16	40.5/	40.7/	18.8	Pain and Panic v0.3	Robert Hale	140.2	6
17	36.6/	33.5/	29.9	If I only had a brain?	Ryan Coleman	139.7	58
18	34.3/	30.5/	35.2	Zorm-B	Anonymous	138.0	91
19	31.5/	26.3/	42.3	It’s a Harmless Addition	Robert Hale	136.7	44
20	27.0/	21.6/	51.3	4-Finger Discount From th	Ryan Coleman	132.4	61
21	38.0/	45.3/	16.7	Wolverine	Robert Hale	130.8	2
22	30.8/	31.3/	37.9	Kohonenian Dream	Robert J. Street	130.2	80
23	30.2/	31.2/	38.5	It’s a Harmless Addiction	Robert Hale	129.2	47
24	37.8/	49.0/	13.2	Dwa Michaly b	Waldemar Bartolik	126.7	94
25	17.5/	56.8/	25.6	FireAnt 0.0.1	Robert Hetland	78.2	12

Top 25 Averages:

38.7/	36.4/	24.9	141.0	42

Anton’s Core War Tournament Round 3 Results

Entry	Name	Author	Score
Fern		Ilmari Karonen	4
Life		Philip Kendall	3

PStars	Philipp Offermann	2
Fireworks	Brian Haskin	1

The quality of entries in this round was very good.

I've decided to end the tournament here because quite a few players can't play any more rounds and I'm running out of ideas for rounds :-)

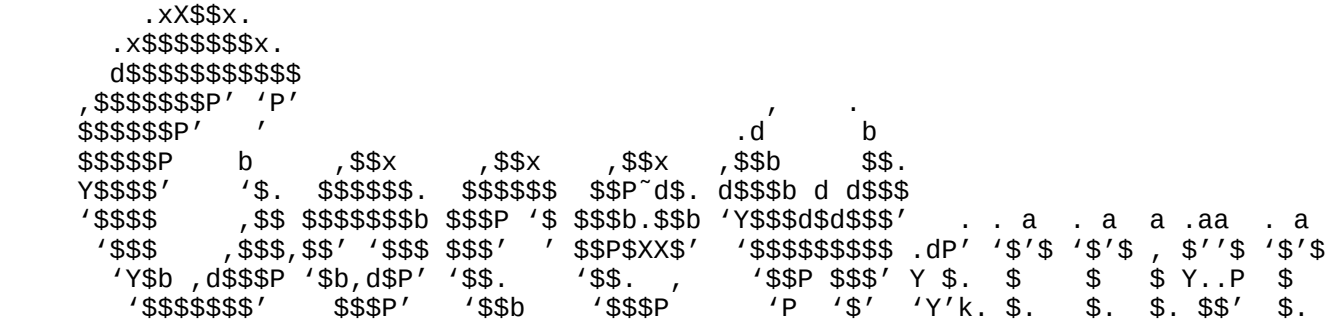
I'll publish the entries for all rounds soon... I'm not going to declare a winner for the tournament because of the nature of the tournament... you can calculate your final score if you're interested though.

For those who are interested in running a tournament like this in the future, try single round tournaments (competitions). It's OK to have multiple rounds if the rounds involve writing warriors but when you have obscure rules for different rounds, the individual rounds have no correlation and hence the tournament becomes a little bit complicated to judge.

However, I think most people found the tournament interesting because it was so different from normal Hill competition.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
authors: Beppe Bezzi <bezzi@nemo.it>, Anton Marsden <amarsden@mcs.vuw.ac.nz>, Christian Schmidt <schmc003@goofy.zdv.Uni-Mainz.de> and Philip Kendall <pak21@cam.ac.uk>

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Article: 7889 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!newsxfer3.itd.umich.edu!newsfeed.internetmci.com!195.99.66.215!news-feed1.eu.concert.net!unlisys!news.snafu.de!cs.tu-berlin.de!news.uni-hamburg.de!news.uni-mainz.de!marie.zdv.Uni-Mainz.DE!schmc003
From: Christian Schmidt <schmc003@marie.zdv.Uni-Mainz.DE>
Newsgroups: rec.games.corewar
Subject: Corewarrior 63
Date: Mon, 13 Oct 1997 08:22:39 +0200
Organization: Johannes Gutenberg-Universitaet Mainz, Germany
Lines: 549
Message-ID: <Pine.OSF.3.95.971013081139.8574B-100000@marie.zdv.Uni-Mainz.DE>
NNTP-Posting-Host: marie.zdv.uni-mainz.de
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Issue 63 13 October, 1997

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror.
Web pages are at: (Please note new Stormking’s address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry’s web page--http://www.ncs.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi’s hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

After a short phase with lots of entries the traffic decrease over the last two weeks. Only Paul Kline, Ian Oversby and Beppe Bezzi are continuously testing warriors. And the rest of the pack?

--Christian Schmidt

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	41.0/	31.9/	27.0	Nomolos	Ian Oversby	150.1	7
2	41.8/	39.6/	18.6	Red Baron	Christian Schmidt	143.9	38
3	33.3/	24.6/	42.1	Pulp v0.5	Ian Oversby	142.0	30
4	34.9/	28.8/	36.3	obvious to those who know	Robert Macrae	141.1	31
5	43.2/	45.3/	11.5	Memories	Beppe Bezzi	141.0	1
6	33.9/	27.9/	38.2	test t4.4	Beppe Bezzi	139.9	0
7	38.6/	38.4/	23.0	Digitalis 2	Christian Schmidt	138.8	16
8	39.4/	40.6/	19.9	Electric Head	Anton Marsden	138.3	82
9	29.2/	21.0/	49.8	Return Of The Jedimp	John K W	137.5	327
10	41.1/	45.1/	13.8	Fusion v0.1	Ian Oversby	137.1	12
11	37.4/	39.0/	23.6	Dim Wit	Ian Oversby	135.7	30
12	31.0/	26.7/	42.3	Ultraviolet-B	Ken Espiritu	135.4	5
13	41.7/	48.0/	10.3	He Scans Again	P.Kline	135.4	70
14	31.3/	27.2/	41.5	Newt	Ian Oversby	135.4	73
15	41.9/	48.7/	9.4	Scorch	P.Kline	135.1	18
16	33.8/	32.9/	33.3	Nine Seven Six	M R Bremer	134.6	191
17	36.0/	37.9/	26.1	PaperBoy Throws Some Rock	Robert Hale	134.0	22
18	37.1/	40.4/	22.5	Damage Incorporated	Anton Marsden	133.8	368
19	32.6/	31.7/	35.7	Vengeance	Robert Hale	133.5	30
20	32.0/	31.2/	36.7	Baseline-A	Ken Espiritu	132.9	30
21	32.1/	31.4/	36.5	Head or Tail	Christian Schmidt	132.8	115
22	29.3/	26.2/	44.5	Merciless-A	Ken Espiritu	132.3	40
23	39.3/	46.9/	13.7	C^3	Christian Schmidt	131.8	41
24	39.6/	47.5/	12.9	Conan the Barbarian	Christian Schmidt	131.6	1
25	22.2/	27.0/	50.8	paper	CS	117.4	0

Age since last issue: 31 (27 last issue, 2 the issue before)
New warriors: 14 Turnover/age rate 56%
Average age: 63 (63 last issue, 74 the issue before)
Average score: 136 (136 last issue, 142 the issue before)
The top 25 warriors are represented by 10 independent authors: Schmidt with 6; Oversby with 5; Espiritu with 3; Hale, Marsden, Kline and Bezzi with 2.
All others with one warrior each.

Ian Oversby's Nomolos dominates the hill with a large gap to Christian Schmidt's Red Baron.

---

94 - What's New (and survived until now)

#	%W /	%L /	%T	Name	Author	Score	Age
3	33.3/	24.6/	42.1	Pulp v0.5	Ian Oversby	142.0	30
11	37.4/	39.0/	23.6	Dim Wit	Ian Oversby	135.7	30
19	32.6/	31.7/	35.7	Vengeance	Robert Hale	133.5	30
20	32.0/	31.2/	36.7	Baseline-A	Ken Espiritu	132.9	30
17	36.0/	37.9/	26.1	PaperBoy Throws Some Rock	Robert Hale	134.0	22
15	41.9/	48.7/	9.4	Scorch	P.Kline	135.1	18
7	38.6/	38.4/	23.0	Digitalis 2	Christian Schmidt	138.8	16
10	41.1/	45.1/	13.8	Fusion v0.1	Ian Oversby	137.1	12
1	41.0/	31.9/	27.0	Nomolos	Ian Oversby	150.1	7
12	31.0/	26.7/	42.3	Ultraviolet-B	Ken Espiritu	135.4	5
24	39.6/	47.5/	12.9	Conan the Barbarian	Christian Schmidt	131.6	1
5	43.2/	45.3/	11.5	Memories	Beppe Bezzi	141.0	1
6	33.9/	27.9/	38.2	test t4.4	Beppe Bezzi	139.9	0
25	22.2/	27.0/	50.8	paper	CS	117.4	0

There are a lot of good entries since the last issue.

---

94 - What's No More

11	34.8/ 33.7/ 31.4	Baseline	Ken Espiritu	136.0	6
14	38.2/ 42.1/ 19.6	No Good	Ian Oversby	134.3	14
15	35.5/ 37.1/ 27.3	test p209	Beppe	133.9	12
16	40..0/ 46.8/ 13.2	Overdrive	Christian Schmidt	133.2	27
18	38.0/ 43.7/ 18.4	Test OS	Ian Oversby	132.3	4
19	35.1/ 38.3/ 26.5	PAN-TAU-RA 2	Christian Schmidt	132.0	12
20	31.6/ 31.3/ 37.2	RetroQ II	P.Kline	131.8	3
21	38.9/ 46.0/ 15.2	Blain	Nimon	131.8	62
22	35.7/ 40.2/ 24.1	Bigger Brother	Philip Kendall	131.2	5
23	25.4/ 19.8/ 54.8	Impish v0.2	Ian Oversby	131.1	335
24	36.5/ 42.9/ 20.5	Used Car	Ian Oversby	130.2	7
25	34.7/ 39.6/ 25.6	First Strike	Nimon	129.9	57

Sorry, I havn't data for this section but I think Impish is the only significant loss.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
18	37.1/ 40.4/ 22.5	Damage Incorporated	Anton Marsden	133.8	368
9	29.2/ 21.0/ 49.8	Return Of The Jedimp	John K W	137.5	327
16	33.8/ 32.9/ 33.3	Nine Seven Six	M R Bremer	134.6	191
21	32.1/ 31.4/ 36.5	Head or Tail	Christian Schmidt	132.8	115

Nine Seven Six and Head or Tail enter this section, while Impish is kicked off the hill.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	337	*	Q^2 -> Bomber
4	unrequited love	kafka	346		Q^2 -> Paper
5	Impish v0.2	Ian Oversby	345		Stone/imp
6	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp

7	Return Of The Jedimp	John K W	327	*	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Rosebud	Beppe	218		Stone/imp
10	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
11	Instant Wolf 3.4	Edgar	205		P-warrior
12	Goldfinch	P.Kline	201		P-warrior
13	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
14	Trident^2	John K W	195		Q^2 -> Stone/imp
15	Nine Seven Six	M R Bremer	191	*	Q^2 -> Stone/imp
16	ompega	Steven Morrell	189		Stone/imp
17	Frogz	Franz	172		Q^2 -> Paper
18	The Machine	Anton Marsden	164		Scanner
19	Memories	Beppe	152		Scanner
20	Tiberius 3.1	Franz	130		Q^2 -> Paper
21	Solomon v0.8	Ian Oversby	116		Stone and scanner
22	Head or Tail	Christian Schmidt	115	*	Q^2 -> Paper
23	CC Paper 3.3	Franz	107		Q^2 -> Paper
24	mrb-test	m r bremer	106		?
25	T.N.T. pro	Maurizio Vittuari	105		Bomber

Damage Incorporated has reached the 3rd place. Anton now holds the first three ranks. Congratulations. Nine Seven Six climb to the 15th rank and Head or Tail enters the new hall of fame at the 22th place. Jack in the box II has been kicked off.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	50.9/	41.1/	8.0	BeachBlanketBingo	J E Long	160.7	1
2	38.8/	19.6/	41.6	Dust 7.0	Justin Kao	157.9	86
3	42.4/	27.2/	30.3	Sections	Zul Nadzri	157.7	66
4	47.2/	37..7/	15.1	guru v0.1	Robert Hale	156.8	22
5	48.2/	40.4/	11.4	Guessed v0.1	Ian	156.0	46
6	46.2/	37.1/	16.7	qbomber v .469	Ryan Coleman	155.2	57
7	38.2/	23.9/	37.9	A Blaise Affair	Robert J. Street	152.5	26
8	45.6/	39.3/	15.1	Hell’s Fury	Robert Hale	151.8	3
9	46.3/	41.8/	11.8	qDeath v .169	Ryan Coleman	150.8	53
10	36.5/	24.3/	39.2	Six-Finger Discount From	Ryan Coleman	148.6	60
11	45.4/	42.9/	11.7	Nautilus	Mole IX	148.0	25
12	42.1/	37.9/	20.0	Pain and Panic v0.1	Robert Hale	146.3	15
13	44.6/	44.6/	10.8	Short Sword 4	JS Pulido	144.6	88
14	43.4/	42.2/	14.4	guru v0.3	Robert Hale	144.6	16
15	38.3/	33.2/	28.5	If I only had a brain?	Ryan Coleman	143.4	58
16	41.0/	38.8/	20.2	Pain and Panic v0.2	Robert Hale	143.3	7
17	41.5/	40.1/	18.4	Pain and Panic v0.3	Robert Hale	142.9	6
18	30.2/	21.6/	48.2	4-Finger Discount From th	Ryan Coleman	138.9	61
19	33.9/	30.4/	35.7	Zorm-B	Anonymous	137.3	91
20	39.3/	45.0/	15.7	Wolverine	Robert Hale	133.6	2
21	29.1/	26.0/	44.9	It’s a Harmless Addition	Robert Hale	132.2	44
22	31.5/	31.3/	37.2	Kohonenian Dream	Robert J. Street	131.8	80
23	38.8/	48.8/	12.4	Dwa Michaly b	Waldemar Bartolik	128.7	94
24	29.7/	31.1/	39.2	It’s a Harmless Addiction	Robert Hale	128.3	47
25	14.2/	56.6/	29.2	FireAnt 0.0.1	Robert Hetland	71.8	12

Top 25 Averages:

39.3/	36.1/	24.5		142.6	42

The Hint

About Q^2-Scanner and (not really) new strategies

After a very strong phase of p-warriors (especial the P^2-warriors) the Q^2-scanners dominate the hill again. More than 15 of the 25 warriors on the hill are still using this, most of them in combination with stone/imps or papers.

The two following Q^2-warriors, now discuss , use coreclears as their basic strategy.
This is not very sensational or original, but very effective :-)

C^3 uses simply van Dam's The Core Clear.
The basic idea of van Dam was to survive mod 4 and mod 5 dat bomber by using a Spl/Spl/Dat/... core clear with a Spl/Dat/... core clear as backup. But it works well not only against bomber but also good against all other strategies.
I added a fast bootstrap and put them behind a Q^2 scanner. And surprisingly they score damn good on the hill.

```
;redcode-94
;name C^3
;author Christian Schmidt
;strategy Q^2 -> boot, clear
;assert 1

        org     start

;----------Q^2 Scan from Probe----------

QB      equ     (start-350)
QS      equ     (0-200)
QD      equ     100
GAP     equ     8
REP     equ     15
datz:   equ     (start+200)
bptr1   equ     2000
bptr2   equ     (bptr1+39)

qinc    dat     >(-1)*GAP*2, >GAP

        dat     10*QS,       2*QS
table:  dat     4*QS,        1*QS
        dat     23*QS,       3*QS

tab:    add.a   table,       table
slow:   add.ab  @tab,        fnd
fast:   add.b   *tab,        @slow
which:  sne.i   datz,        @fnd
        add.ab  #QD,         fnd

        add.ba  fnd,         fnd
qbo     mov.i   qinc,        @fnd
        mov.i   qinc,        *fnd
fnd     mov.i   (-1)*(GAP/2),@QB
        sub.x   qinc,        fnd
        djn.b   qbo,         #REP
        jmp     boot,        }-300

start:
                seq.i  QB+QS*0,QB+QS*0+QD
                jmp    which,}QS*13 ; qinc+GAP

                seq.i  QB+QS*1,QB+QS*1+QD
                jmp    fast,}QB+QS*1+QD/2
                seq.i  QB+QS*2,QB+QS*2+QD
                jmp    fast,{tab
                seq.i  QB+QS*3,QB+QS*3+QD
                jmp    fast,}tab

                seq.i  QB+QS*13,QB+QS*13+QD
                jmp    fast,{fast
```

```
                seq.i  QB+QS*4,QB+QS*4+QD
                jmp    >fast,}QB+QS*4+QD/2
                seq.i  QB+QS*5,QB+QS*5+QD
                jmp    slow,}QB+QS*5+QD/2
                seq.i  QB+QS*6,QB+QS*6+QD
                jmp    slow,{tab
                seq.i  QB+QS*7,QB+QS*7+QD
                jmp    slow,}tab

                seq.i  QB+QS*10,QB+QS*10+QD
                jmp    >fast,<tab
                seq.i  QB+QS*11,QB+QS*11+QD
                jmp    slow,<tab
                seq.i  QB+QS*12,QB+QS*12+QD
                djn.f  slow,tab

                seq.i  QB+QS*23,QB+QS*23+QD
                jmp    >fast,>tab
                seq.i  QB+QS*24,QB+QS*24+QD
                jmp    slow,>tab

                seq.i  QB+QS*17,QB+QS*17+QD
                jmp    slow,{fast

                seq.i  QB+QS*8,QB+QS*8+QD
                jmp    <fast,}QB+QS*8+QD/2
                seq.i  QB+QS*9,QB+QS*9+QD
                jmp    tab,}QB+QS*9+QD/2

                seq.i  QB+QS*15,QB+QS*15+QD
                jmp    tab,<tab
                seq.i  QB+QS*16,QB+QS*16+QD
                jmp    tab,{tab
                seq.i  QB+QS*20,QB+QS*20+QD
                djn.f  <fast,tab
                seq.i  QB+QS*21,QB+QS*21+QD
                jmp    tab,{fast
                seq.i  QB+QS*22,QB+QS*22+QD
                djn.f  tab,tab
                seq.i  QB+QS*27,QB+QS*27+QD
                jmp    <fast,>tab
                seq.i  QB+QS*28,QB+QS*28+QD
                jmp    tab,>tab

                seq.i  QB+QS*30,QB+QS*30+QD
                jmp    tab,}tab

boot    mov     g1,           bptr1
        mov     g2,           bptr1
        mov     b,            bptr2
        mov     b1,           bptr2
boot2   mov     {bptr3,       <bptr3
        mov     {bptr3,       <bptr3
        mov     {bptr3,       <bptr3
        mov     {bptr3,       <bptr3
        jmp     @bptr3,       {0

g1      dat     st+17,        500
g2      dat     -4040,        4045
st      spl     #b-g1+35,     45
        mov     *g1-17,       >g1-17
        mov     *b+18,        >g2-17
cc      djn.f   -1,           {g2-17
b       dat     #1,           45
b1      spl     #-40,         45

bptr3   dat     cc+1,         boot2+bptr1+19
```

Digitalis uses also a Q^2-scanner combined with a d-clear and a 7-pt imp. I saw this great idea the first time in Justin Kao's Dust 0.7.
After the Q^2-scan, Digitalis boots the d-clear, launches the 7-pt imps via a JMP/ADD-launcher, and then starts the booted d-clear. As the d-clear is self-splitting, this speeds up (relative to the imps) as time goes on.

The great advantage of Digitalis is that he beats P^2-warriors and some scanners (like HSA and Scorch). He only loses significantly against Q^2-scanners with paper or stone/imps.

```
;redcode-94
;name Digitalis 2
;author Christian Schmidt
;strategy q^2 -> clear/imp
;assert 1

        org     start

QB      equ     (start-350)
QS      equ     (0-200)
QD      equ     100
GAP     equ     8
REP     equ     15
datz:   equ     (start+200)
ist     equ     1143
bptr1   equ     2000

qinc    dat     >(-1)*GAP*2, >GAP

        dat     10*QS,       2*QS
table:  dat     4*QS,        1*QS
        dat     23*QS,       3*QS

tab:    add.a   table,       table
slow:   add.ab  @tab,        fnd
fast:   add.b   *tab,        @slow
which:  sne.i   datz,        @fnd
        add.ab  #QD,         fnd

        add.ba  fnd,         fnd
qbo     mov.i   qinc,        @fnd
        mov.i   qinc,        *fnd
fnd     mov.i   (-1)*(GAP/2),@QB
        sub.x   qinc,        fnd
        djn.b   qbo,         #REP
        jmp     boot,        }-300

start:
                seq.i  QB+QS*0,QB+QS*0+QD
                jmp    which,}QS*13

                seq.i  QB+QS*1,QB+QS*1+QD
                jmp    fast,}QB+QS*1+QD/2
                seq.i  QB+QS*2,QB+QS*2+QD
                jmp    fast,{tab
                seq.i  QB+QS*3,QB+QS*3+QD
                jmp    fast,}tab

                seq.i  QB+QS*13,QB+QS*13+QD
                jmp    fast,{fast

                seq.i  QB+QS*4,QB+QS*4+QD
                jmp    >fast,}QB+QS*4+QD/2
                seq.i  QB+QS*5,QB+QS*5+QD
                jmp    slow,}QB+QS*5+QD/2
                seq.i  QB+QS*6,QB+QS*6+QD
                jmp    slow,{tab
                seq.i  QB+QS*7,QB+QS*7+QD
                jmp    slow,}tab
```

```
                seq.i  QB+QS*10,QB+QS*10+QD
                jmp    >fast,<tab
                seq.i  QB+QS*11,QB+QS*11+QD
                jmp    slow,<tab
                seq.i  QB+QS*12,QB+QS*12+QD
                djn.f  slow,tab

                seq.i  QB+QS*23,QB+QS*23+QD
                jmp    >fast,>tab
                seq.i  QB+QS*24,QB+QS*24+QD
                jmp    slow,>tab

                seq.i  QB+QS*17,QB+QS*17+QD
                jmp    slow,{fast

                seq.i  QB+QS*8,QB+QS*8+QD
                jmp    <fast,}QB+QS*8+QD/2
                seq.i  QB+QS*9,QB+QS*9+QD
                jmp    tab,}QB+QS*9+QD/2

                seq.i  QB+QS*15,QB+QS*15+QD
                jmp    tab,<tab
                seq.i  QB+QS*16,QB+QS*16+QD
                jmp    tab,{tab
                seq.i  QB+QS*20,QB+QS*20+QD
                djn.f  <fast,tab
                seq.i  QB+QS*21,QB+QS*21+QD
                jmp    tab,{fast
                seq.i  QB+QS*22,QB+QS*22+QD
                djn.f  tab,tab
                seq.i  QB+QS*27,QB+QS*27+QD
                jmp    <fast,>tab
                seq.i  QB+QS*28,QB+QS*28+QD
                jmp    tab,>tab

                seq.i  QB+QS*30,QB+QS*30+QD
                jmp    tab,}tab

boot    mov    ptr,         bptr1
        mov    clrb,        bptr1
boot2   mov    {bptr3,      <bptr3
        mov    {bptr3,      <bptr3
        mov    {bptr3,      <bptr3

istart  spl    1
        spl    1
        spl    1
        spl    1
        spl    1
        spl    2
        djn.f  imp,         <-250
        add    bst,         -1
        djn.f  @bptr3,      <-400

bst     dat    ist,         -100

imp     mov.i  #ist,        *0

ptr     dat    0,           2150
clrb    dat    >2667,       25
clear   spl    #0,          >ptr-16
loop    mov    clrb-16,     >ptr-16
cc      djn.f  loop,        >ptr-16

bptr3   dat    cc+1,        boot2+bptr1+19
```

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From news-rocq.inria.fr!univ-lyon1.fr!pasteur.fr!oleane!newsxfer3.itd.umich.edu!news.maxwell.syr.edu!news.new-york.net!news.stormking.com!bezzi@nemo.it Fri Jan 9 10:50:17 1998
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From: Beppe Bezzi <bezzi@nemo.it>
Newsgroups: rec.games.corewar
Subject: Corewarrior 64
Date: 8 Jan 1998 17:37:22 -0500
Organization: Storm King Ind. Inc.
Lines: 758
Sender: server@news.stormking.com
Distribution: world
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Reply-To: bezzi@nemo.it
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```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                              ,    .
$$$$$P'   '                              .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 64 8 January 1998

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available by anonymous FTP from rtfm.mit.edu as
pub/usenet/news.answers/games/corewar-faq.Z
FTP site is: ftp.csua.berkeley.edu /pub/corewar
ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror.
Web pages are at: (Please note new Stormking's address)
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

If ftp.csua.berkeley.edu is unreachable, you can download pMARS at:
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Planar ftp site--ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

Beppe Bezzi web page - http://www.aspide.it/freeweb/Bezzi

Greetings.

I'm a bit late with this issue, sorry, but i hope you'll be satisfied with the code of Nomolos and obvious and forgive me.

I had some problems of space with this issue and i had to cut the beginners hill and the old hall of fame; my mailer strongly refused to paste other text.

Best wishes of merry Christmas and Happy New Year to you all.

--Beppe Bezzi

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	46.6/	36.1/	17.3	Alladins Cave	P.Kline	157.0	6
2	41.1/	29.1/	29.9	Nomolos	Ian Oversby	153.0	10
3	38.9/	28.1/	33.0	Fixed	Ken Espiritu	149.8	5
4	36.6/	24.4/	39.0	Newt	Ian Oversby	148.9	99
5	37.9/	29.0/	33.0	Vain	Ian Oversby	146.8	21
6	36.8/	27.0/	36.2	Vigor	Ken Espiritu	146.7	9
7	42.2/	38.3/	19.4	Electric Head	Anton Marsden	146.1	108
8	45.6/	45.8/	8.6	He Scans Again	P.Kline	145.5	1
9	42.1/	40.2/	17.7	Red Baron	Christian Schmidt	144.0	64
10	33.7/	23.4/	43.0	Benchmark [94]	Zul Nadzri	143.9	21
11	39.6/	36.6/	23.8	PAN-TAU-RA	Christian Schmidt	142.6	6
12	36.5/	30.5/	33.0	obvious to those who know	Robert Macrae	142.4	57
13	41.3/	42.4/	16.3	The Boys are Back in Town	Philip Kendall	140.3	3
14	33.7/	27.5/	38.8	Pulp v0.5	Ian Oversby	139.9	56
15	34.8/	30.2/	35.1	Vengeance	Robert Hale	139.3	56
16	38.4/	38.0/	23.6	Stasis	David Moore	138.8	2
17	40.5/	42.6/	16.9	Silver Talon 1.2	Edgar	138.4	7
18	37.1/	36.8/	26.1	Tornado 4	Beppe Bezzi	137.4	23
19	28.2/	19.4/	52.4	Return Of The Jedimp	John K W	137.1	353
20	42.5/	48.2/	9.4	Memories	Beppe Bezzi	136.7	27
21	38.8/	41.5/	19.7	HnK II	Ivan Krajnovic	136.2	5
22	34.1/	32.7/	33.1	Head or Tail	Christian Schmidt	135.5	141
23	31.9/	28.4/	39.7	Ultraviolet-B	Ken Espiritu	135.5	31
24	38.9/	42.7/	18.4	It’s not a trick	Christian Schmidt	135.2	12
25	33.9/	33.0/	33.1	Nine Seven Six	M R Bremer	134.8	217

Age since last issue: 26 (31 last issue, 27 the issue before)
New warriors: 15 Turnover/age rate 60%
Average age: 53 (63 last issue, 63 the issue before)
Average score: 142 (136 last issue, 136 the issue before)
The top 25 warriors are represented by 14 independent authors: Schmidt and Oversby with 4; Espiritu with 3; Kline and Bezzi with 2.
All others with one warrior each.

Paul Kline put his Alladins Cave on the top and here it remained all time, even if he tried very hard to do better in 94 test; let’s see who will be the first to find the magic word (’open sesame’ is for Ali Baba cave :-)

---

94 - What’s New

#	%W /	%L /	%T	Name	Author	Score	Age
1	41.6/	36.9/	21.5	Alladins Cave	P.Kline	146.4	2
2	36.0/	28.1/	36.0	Fixed	Ken Espiritu	143.9	1
4	33.6/	26.9/	39.5	Vigor	Ken Espiritu	140.2	5
5	34.4/	29.7/	35.8	Nomolos	Ian Oversby	139.2	6
6	33.9/	29.1/	37.0	Vain	Ian Oversby	138.8	17
9	37.8/	41.4/	20.8	Silver Talon 1.2	Edgar	134.1	3
10	36.6/	39.4/	24.0	It’s not a trick	Christian Schmidt	133.9	8
13	28.2/	24.8/	47.0	Benchmark [94]	Zul Nadzri	131.5	17
17	39.6/	49.6/	10.8	Memories	Beppe Bezzi	129.6	23
18	28.4/	27.5/	44.1	Ultraviolet-B	Ken Espiritu	129.3	27
22	34.8/	42.4/	22.8	HnK II	Ivan Krajnovic	127.1	1

```
24  31.8/ 37.2/ 31.0                Tornado 4          Beppe Bezzi 126.4   19
 6  40.4/ 41.9/ 17.7 The Boys are Back in Town       Philip Kendall 138.8    1
17  35.6/ 39.6/ 24.9                   Stasis          David Moore 131.6    1
 9  43.6/ 47.5/  9.0            He Scans Again              P.Kline 139.6    1
```

More than half hill is changed.

---

94 - What's No More

```
26  35.6/ 43.5/ 20.9       Damage Incorporated        Anton Marsden 127.7  373
26   1.0/  0.0/  3.0                   Dim Wit          Ian Oversby   6.1   35
26  39.1/ 50.4/ 10.5            He Scans Again              P.Kline 127.8   76
26  32.1/ 42.1/ 25.8 PaperBoy Throws Some Rock          Robert Hale 122.1   29
26  35.9/ 48.4/ 15.7                       C^3    Christian Schmidt 123.5   51
26   1.7/  1.6/  0.7                   Nomolos          Ian Oversby   5.7   17
26  37.2/ 49.9/ 12.9       Conan the Barbarian    Christian Schmidt 124.4   15
26  26.7/ 29.2/ 44.1              Merciless-A         Ken Espiritu 124.2   56
26  32.7/ 43.1/ 24.1              Digitalis 2    Christian Schmidt 122.4   37
```

And something else that i missed :-(

Damage incorporated is the leaves the hill and loses the * in the Hall of Fame

---

94 - What's Old

```
 #   %W /  %L /  %T                       Name              Author Score  Age
20  23.5/ 19.0/ 57.5      Return Of The Jedimp            John K W 128.1  353
19  30.6/ 32.4/ 37.0            Nine Seven Six          M R Bremer 128.8  217
12  31.8/ 31.7/ 36.5              Head or Tail    Christian Schmidt 131.9  141
14  35.6/ 40.3/ 24.1             Electric Head        Anton Marsden 131.0  108
```

Return of the Jedimp is the oldest warrior now, Elrctric Head the new entry.

No space left for Old Hall of Fame, no changes from last issue.

NEW HALL OF FAME
* means the warrior is still active.

```
Pos    Name                 Author          Age     Strategy
 1  Probe                Anton Marsden      403    Q^2 -> Bomber
 2  Blur 2               Anton Marsden      396    Scanner
 3  Damage Incorporated  Anton Marsden      373    Q^2 -> Bomber
 4  Return Of The Jedimp John K W           353 *  Q^2 -> Stone/imp
 5  unrequited love      kafka              346    Q^2 -> Paper
 6  Impish v0.2          Ian Oversby        345    Stone/imp
 7  Gigolo               Core Warrior staff 332    Q^2 -> Stone/imp
 8  Falcon v0.3          Ian Oversby        275    P-warrior
 9  Rosebud              Beppe              218    Stone/imp
10  Nine Seven Six       M R Bremer         217 *  Q^2 -> Stone/imp
11  Q^2 Miro             Anders Ivner       214    Q^2 -> Scanner/bomber
12  Instant Wolf 3.4     Edgar              205    P-warrior
13  Goldfinch            P.Kline            201    P-warrior
14  Simple v0.4b         Ian Oversby        197    QScan -> Stone/imp
15  Trident^2            John K W           195    Q^2 -> Stone/imp
16  ompega               Steven Morrell     189    Stone/imp
17  Frogz                Franz              172    Q^2 -> Paper
18  The Machine          Anton Marsden      164    Scanner
19  Memories             Beppe              152    Scanner
20  Head or Tail         Christian Schmidt  141 *  Q^2 -> Paper
21  Tiberius 3.1         Franz              130    Q^2 -> Paper
22  Solomon v0.8         Ian Oversby        116    Stone and scanner
23  CC Paper 3.3         Franz              107    Q^2 -> Paper
24  mrb-test             m r bremer         106    ?
25  T.N.T. pro           Maurizio Vittuari  105    Bomber
```

Jedimps gains 3 spots, nine seven six 5, Head or tail 3; no new entries.

Current Status of the Internet Pizza Server Beginner's Hill:

Sorry no space for beginners hill :-(

Extra Extra (I)
Nomolos by Ian Oversby

I wouldn't normally publish anything as flimsy as a p-spacer. However, maybe Kline does have a point that code-sharing will encourage others to jump in so I thought I would share Nomolos. I am interested to know how making the code public will effect it.

> By the way, I think the hill is a bit weird at the moment
> with many complex p-switchers. Testing results are very
> different from real ones and changing boot distances a bit
> often changes the score significantly.
>
> Then those damn tests and not scoring if the dead warrior
> is less than 110 or something. I hate another warrior being
> the same age as one of mine. Is it just my imagination or
> did people stop playing when tests were introduced? Anyway,
> that is quite enough from this soapbox...

The original concept was quite simple. As the hill is so full of paper, kill the papers and then switch to a imp/paper to draw against everything else. I had quite an aggressive imp/paper that scored reasonably against most warriors, only suffering from HSA and Memories type things.

I tried various warriors for the paper-killer including a Blur-style warrior, mini-HSA and CMP scanners but nothing did quite so well as one-shot scanners. I wrote a fairly flawed one a while back called Tsunami which also handled some imp/stones well.

The result did OK, landing in the upper part of the hill but was easily beaten by Electric Head and HSA/Scorch. I then wanted to handle scanners with something else and change the paper to something a little more aggressive. Carbonite is very effective against HSA/Scorch so I chose that.

The last point was the choice of paper. I was only really expecting paper/imps imp/stones and P-Spacers at this point so it had to perform quite well alround against scanners. The original Pulp is a little fragile against scanners so after a little experimentation I came up with a replacement that is OK against E-Head and isn't destroyed by scanners.

For the p-space algorithm resetting on tie for the stone seems to work against pure scanners the best. I also thought it would be best to stay at the paper, even on losing. If I am brainwashed to this point by a scanner, maybe I will be brainwashed back to the stone again. It seems to work OK anyway.

;----------

That was the original plan. Then came several imp/papers against which, my one-shot is helpless. I wanted to add mini-HSA which also handles imp/papers but there wasn't enough space so I developed a new p-space brain and added mini-HSA.

This did OK for a few challenges until people updated their imp/papers but the real blow was when the next Bloodhound appeared. This trashed Nomolos 25/140 so I made a minor tweak (sorry Christian :-) and now it takes hill-top again. I suspect not for very long though...

```
;redcode-94
;name Nomolos
;author Ian Oversby
;strategy Stone, One-shot Scanner
;strategy then try to tie
;strategy v2 Added mini-HSA
;strategy One scanner is never enough :-)
;assert 1

;--------
; Paper
;--------

pdist   equ     4000    ; Not really

dist0   equ     5689
dist1   equ     1021
dist2   equ     3607
range1  equ     4723
range2  equ     6892

pboot   spl.b   1,      <-300
for 6
        mov.i   <pptr,  {pptr
rof
pptr    jmp.b   pdist,  #bomba+1

        mov.i   -pdist+5,       #0
        mov.i   -1,     #0
        mov.i   -1,     #0
silk    spl.b   @0,     <dist0
        mov.i   }-1,    >-1
silk1   spl.b   @0,     <dist1
        mov.i   }-1,    >-1
        mov.i   bomba,  }range1
        mov.i   bomba,  >range1
        mov.i   {silk1, <silk2
silk2   jmp.b   @0,     <dist2
bomba   dat.f   <2667,  <5334

;---------
; P-Logic
;---------

w1      equ     cboot
w2      equ     tboot
w3      equ     boot
w4      equ     pboot

plc     equ     123

init    dat.f   #0,     #0
loss    dat.f   #0,     #1
win     dat.f   #0,     #-1
tie     dat.f   #0,     #0

pcode   ldp.a   #0,     loss
        ldp.a   #plc,   table
        add.ba  *loss,  table
        mod.a   #19,    table   ; (-1 mod 19) = 0 :-)
        stp.ab  *table, #plc
table   jmp.b   @0,     w1      ; State 0

        dat.f   #1,     w1      ; Stone
        dat.f   #2,     w1
        dat.f   #3,     w1
        dat.f   #4,     w1
```

```
        dat.f   #6,     w2      ; Must always waste one line :-(
        dat.f   #6,     w2      ; One-shot
        dat.f   #7,     w2
        dat.f   #8,     w2
        dat.f   #9,     w2
        dat.f   #10,    w2

        dat.f   #12,    w3      ; Must always waste one line :-(
        dat.f   #12,    w3      ; Mini-HSA
        dat.f   #13,    w3
        dat.f   #14,    w3
        dat.f   #15,    w3

        dat.f   #17,    w4      ; Paper
        dat.f   #17,    w4

        dat.f   #17,    w4      ; Safety net

;----------
; Mini HSA
;----------

mst     equ     9
ptr     equ     (bomb-5)

away    equ     5000

bomb    spl    #1,{1
kill    mov    bomb,<ptr
mptr    mov    >ptr,>ptr
        jmn.f  kill,>ptr
a       add    #mst+1,@mptr
scan    jmz.f  a,<ptr
        slt    @mptr,#btm-ptr+3
        djn    kill,@mptr
        djn    a,#16
btm     jmp    a,{kill
hp      dat.f   0,      -1

boot    mov    btm,@dest
for 4
        mov     <hp,<dest
rof
        djn.b   -4,     #2
        spl    @dest,1
dest    mov    #250,@away
        mov    bomb,<dest
        div.f  #0,dest

;-----------
;CARBONITE++
;-----------

caway   EQU     1800    ; not really

cboot   mov     tar+1,  <cdest
        mov     tar,    <cdest
        mov     tar-1,  <cdest
cdest   mov     dbomb,  *caway
        spl     <cdest, <2000
        mov     tar-2,  @cdest
        div.f   #0,     cdest
        spl     #0,     <-3000+3
        mov     197,    tar-197*3500
tar     add.ab  {0,     }0
        djn.f   -2,     <-3000

dbomb   dat     >-1,    >1

;-----------------
```

```
; One-shot scanner
;-----------------

tgate   equ     (tloop-8)
half    equ     10
step    equ     (2*half)
dstr    equ     3001
tdist   equ     700

tpos    equ     (cptr+1)

tboot   mov.i   <tpos,  <tptr
for 4
        mov.i   <tpos,  <tptr
rof
        djn.b   tboot,  #2
        spl.b   *tptr,  <-202
tptr    div.f   #tdist, #tdist+7
        dat.f   }-200,  >-303
        dat.f   #-25,   #cptr+4-tgate
        spl.b   #-20,   #20
b1      spl.b   #120,   #120-half
tloop   sub.f   tstep,  b1
        sne.i   *b1,    @b1
        djn.f   tloop,  <-dstr
tstep   spl.b   #-step, <-step
        mov.i   @cptr,  >tgate
        mov.i   @cptr,  >tgate
cptr    djn.b   -2,     {b1

end pcode
```

Extra Extra (II)
obvious to those who know
By Robert Mcrae

"obvious" -- Or, How Not to Name Your Warrior.

obvious has just made it into middle age at 50, a good occasion to publish it. Besides, I’ve been working on a oneshot for *ages* and with just a few more papers on the hill... ;-)

obvious is a Q^2 scan followed by an aggressive paper. The Q^2 is actually a new engine, which I wrote for convenience rather than power as it doesn’t work any better than the Probe masterpiece.
However, new constants make it slightly more programmer-friendly because there are now no accesses outside the table of pointers. This makes it relatively easy to modify or re-order the code.

I’ve kept the Probe attack as it has a particularly neat bombing pattern. After lengthy analysis I came up with a full Tornado-style bomber which shaved a couple of cycles off the bomb run but it never justified the extra length and boredom quickly set in. If you want a longer scan, there are eight lines which are available but are currently commented out. I found that extra length
gave away more losses to other Q^2s than it gained in wins; as far as I can see a longer run would only make sense with a less aggressive main warrior, or when there are fewer Q^2s on the hill.

The paper is also a close copy of existing code, in this case CCPaper:

```
len     EQU 9
fcp     EQU 3039
scp     EQU 2365
tcp     EQU 777

boot    spl 1,  <-3000 ; 9 processes together
        mov -1, 0
        mov -1, 0
```

```
        mov -1, 0

frog    spl @0,         <fcp-len
        mov }-1,        >-1
        spl @0,         <scp
        mov }-1,        >-1
        spl @0,         <tcp
        mov }-1,        >-1
        mov 2,                <-1
        jmp -1,         <-10

        dat <2667,      <2667*2
```

The idea of CCPaper is to make an aggressive replicator. Each Silk carries a simple suicidal coreclear and as the battle progresses, more and more processes accumulate in these clears. This gives very effective coverage of core, and also means that an enemy warrior which manages to hop aboard the Silk replicator when it is over-written is not yet safe. Unless it manages to subvert the mechanism very effectively and spread widely within core, it may still be wiped by the other DAT clears. If it only establishes itself in a single clear then it will eventually wipe itself.

Sad 1.0, my variant, makes two small modifications to this warrior. The first is to cut the number of processes from 9 to 7 by adding a second MOV instruction to the first stage replicator. This reduction in processes leads to a substantial increase in replication rates, as less time is wasted by the subsequent stages copying trailing DATs. I have found that this modification improves many published Silks.

The second modification is to begin the DAT carpet not on the replicator's own code, but on that of an "uncle" - a paper from a previous generation. My argument for this follows Beppe's reasoning that against scanners and SPL clears it pays to kill off older copies in case they have been stunned. OTOH there is little point a replicator wiping itself because, if it is still capable of wiping, it is probably not damaged.

There is something rather special about those step sizes, and I don't know what. I have tried over 60 alternatives, hand-picked from amongst thousands of PMARS simulations -- see Beppe's article in an early Corewarrior for the general approach. None were better and most were clearly worse, so I will just give George's account of how he generated the numbers:

> well it's kind of a funny story ... if you look at frogz .. that's where CCPaper originated ...
>
> Frogs is a simple paper that just happend to have the right step sizes ... and believe me I chose those in random ...

The skill of "Just happening" to pick the right numbers is one I *want*.

The result is a very aggressive, fast-splitting replicator. It spends a substantial effort on self destruction, hence the name, and this makes it more vulnerable than most Silks. For example it sometimes loses to DAT bombers, and fairly frequently to incendiary bombers (and vampires?). The compensation is that it achieves many more kills than most Silks,

especially against traditional scissors such as scanners and SPL clears. This makes it particularly hard for P-spacers to handle as they are often fooled into fielding the wrong warrior.

The combination achieved pretty good scores against most warriors, with the worst results coming against imp-heavy warriors that are usually too tough to kill. I suspect that its recent slide has been due to an increase in the population of Oneshots, as these stun quickly but, unlike single-process scanners, are hard to kill by over-writing.

There is a small mystery in the hill scores. I have resubmitted this code to Pizza and it barely makes it onto the hill -- yet the original is still in the top half. I know that the starting positions will have changed since I first submitted, but a 15-point difference in scores is rather hard to understand.

And the ;name? Spot the classic bug... I didn't.

```
;redcode-94 test
;name Benj's Revenge 1.0
;author Robert Macrae
;assert CORESIZE==8000
;strategy Q^2 (new), and Suicidal Paper

; Name obvious to those who know my son :-)
; (oops -- classic "Name" bug, but I like the new one too:)

        ORG start

; History
; 2.1   reverts to Probe attack.
; 2.6   puts gap after paper, before bomber.
; 2.9   2.6 is best yet, so drop to 44 scans.
; Time to stop fiddling!

; Q2NEW
;       See q2table.pas for the code to get the table values.
;       These [9,5,13,1,2,17,16] give up to 28 distinct targets
;       with the greatest at only 34. Easier to use than Probe's,
;       as no references leak outside table.
;       Checked by exec k, exec k+1 and checking bomb fell on scan mark!
;       All the scans included as, depending on step, different ones
;       will need to be commented out to avoid self-scans.


; -----------------------------------------------
;-redcode-94 test
;-name Sad 1.0
;-author Robert Macrae
;-assert CORESIZE==8000
;-strategy Suicidal Paper

; 1.0  spends a lot of time bombing, often itself. This makes it
;      resistant to carpets and scanners, but it may lose to dwarves!
;      Constants straight from ccpaper.

len     EQU 9
fcp     EQU 3039
scp     EQU 2365
tcp     EQU 777

boot    spl 1,  >-3000    ; 7 processes replace 9 in CCPaper
        spl 1,  <-3200    ; for cost of extra Mov in launcher.
        mov -1, 0

frog    spl @0,         <fcp-len
        mov }-1,        >-1
        mov }-2,        >-2
        spl @0,         <scp
```

```
        mov }-1,        >-1
        spl @0,         <tcp
        mov }-1,        >-1
        mov 2,          <-fcp+len+1   ; Wipe uncle.
        jmp -1,         <-10
        dat <2667,      <2667*2
; ----------------------------------------------

for 21
   dat 0,0
rof

; ----------------------------------------------

QS      EQU 100             ; Illustration only!
QD      EQU 4000            ; Ditto.
QB      EQU (start+14*QS)   ; Ditto.
CR      EQU (fnd-which)
datz    EQU (table-3)

        dat     9*QS,  1*QS     ; can get 28 values from this table
table:  dat     5*QS,  2*QS     ;
        dat    13*QS, 17*QS     ;

P:      add.f  table,table  ; point into table. Nudge with }{>< and djn.f.
slow:   add.ab *P,fnd       ; adds an element A column (usually)
fast:   add.b  @P,@-1       ; adds an element B column (usually)

which:  sne.i  datz,@fnd    ; which half of scan hit?
        add.ab #QD,fnd

; ----------------------------------------------
; Original Probe attack

COUNT   EQU 6
GAP     EQU 15
REP     EQU 6

         mov.i  qbomb,@fnd
fnd:     mov.i  -GAP/2,@QB    ; picks up table as bomb...
         add.ba fnd,fnd
         mov.i  qbomb,*fnd
         add.f  qinc,fnd
         mov.i  qbomb,@fnd
         djn.b  -3,#REP
         jmp    boot,}-300

qbomb:   jmp    -200,GAP
qinc:    dat    GAP,-GAP


; ----------------------------------------------
;                  0/1 cycle
; ----------------------------------------------

start:
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which, 0                ; 0

        seq.i  QB+QS*2,QB+QS*2+QD
        jmp    fast, 0                 ; E
        seq.i  QB+QS*1,QB+QS*1+QD
        jmp    fast, <P                ; D
        seq.i  QB+QS*17,QB+QS*17+QD
        jmp    fast, >P                ; F

; ----------------------------------------------
;                   2 cycles
; ----------------------------------------------
```

```
        seq.i  QB+QS*7,QB+QS*7+QD
        jmp    slow, 0                  ; BE
        seq.i  QB+QS*6,QB+QS*6+QD
        jmp    slow, <P                 ; BD
        seq.i  QB+QS*22,QB+QS*22+QD
        jmp    slow, >P                 ; BF
        seq.i  QB+QS*11,QB+QS*11+QD
        jmp    slow, {P                 ; AE
        seq.i  QB+QS*15,QB+QS*15+QD
        jmp    slow, }P                 ; CE
        seq.i  QB+QS*10,QB+QS*10+QD
        djn.f  slow, P                  ; AD

        seq.i  QB+QS*5,QB+QS*5+QD
        jmp    >fast, 0                  ; B
        seq.i  QB+QS*9,QB+QS*9+QD
        jmp    >fast, {P                 ; A
        seq.i  QB+QS*13,QB+QS*13+QD
        jmp    >fast, }P                 ; C

; ---------------------------------------------
;                   3 cycles
; ---------------------------------------------

        seq.i  QB+QS*14,QB+QS*14+QD
        jmp    P, 0                     ; BBEE
        seq.i  QB+QS*8,QB+QS*8+QD
        jmp    P, <P                    ; BDE
;        seq.i  QB+QS*24,QB+QS*24+QD             ; KO to avoid self scan!
;        jmp    P, >P                     ; BEF   ; KO to avoid self scan!
        seq.i  QB+QS*12,QB+QS*12+QD
        jmp    P, {P                    ; ADE
        seq.i  QB+QS*32,QB+QS*32+QD
        jmp    P, }P                    ; CEF
        seq.i  QB+QS*20,QB+QS*20+QD
        djn.f  P, P                     ; AADD

        seq.i  QB+QS*4,QB+QS*4+QD
        jmp    }slow, 0                 ; EE
        seq.i  QB+QS*3,QB+QS*3+QD
        jmp    }slow, {P                ; DE
        seq.i  QB+QS*19,QB+QS*19+QD
        jmp    }slow, }P                ; FE
;        seq.i  QB+QS*2,QB+QS*2+QD               ; Duplicates a faster scan
;        djn.f  }slow, P                  ; DD   ; Duplicates a faster scan

;        seq.i  QB+QS*10,QB+QS*10+QD             ; Duplicates a faster scan
;        jmp    <fast, 0                 ; BB    ; Duplicates a faster scan
        seq.i  QB+QS*18,QB+QS*18+QD
        djn.f  <fast, P                 ; AA

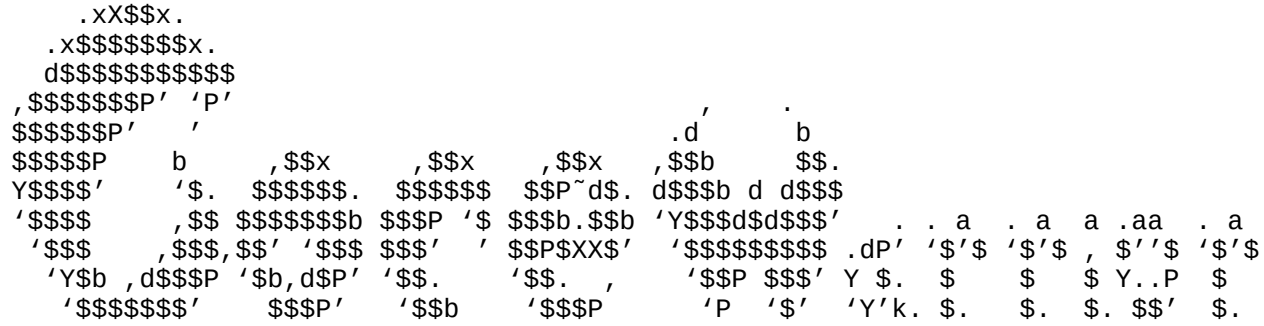
        seq.i  QB+QS*36+CR,QB+QS*36+QD+CR         ; CR corrects for the gap
        jmp    }fast, 0                 ; BBBBG    ; between fnd and which.
;        seq.i  QB+QS*26+CR,QB+QS*26+QD+CR
;        jmp    }fast, >P                ; BBG
;        seq.i  QB+QS*34+CR,QB+QS*34+QD+CR
;        jmp    }fast, {P                ; AAG
;        seq.i  QB+QS*42+CR,QB+QS*42+QD+CR
;        jmp    }fast, }P                ; CCG
;        seq.i  QB+QS*52+CR,QB+QS*52+QD+CR
;        djn.f  }fast, P                 ; AAAAG
;        seq.i  QB+QS*16+CR,QB+QS*16+QD+CR
;        djn.f  }fast, }slow             ; G

        jmp    boot ; If you don't spot any, get sad ;-)

        end
```

Anton Marsden <amarsden@mcs.vuw.ac.nz> or Christian Schmidt <schmc003@goofy.zdv.uni-mainz.de>

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Issue 65 6 February, 1998

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the ’94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available from:
ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
http://www.koth.org/corewar-faq.html

FTP site is: ftp://ftp.csua.berkeley.edu/pub/corewar
Mirrored at: ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
        and: ftp://www.koth.org/corewar

pMARS itself is also available from:
Stormking web pages--http://www.koth.org/pmars.html
Terry’s web page--http://www.ncs.infi.net/~wtnewton/corewar/
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Web pages are at:
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi’s hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Hello again.

All change on the ’94 Hill this week -- see below for details. Also, don’t forget the Redcode Maniacs Tournament, being run by Christian Schmidt and myself; visit http://www.geocities.com/SiliconValley/Park/5427/maniacs.htm for info.

Sorry this issue is a little short, but with Pizza being down my testing has been somewhat curtailed :-(Thanks to Paul Kline for revealing one of the secrets behind Alladin's Cave -- see the hint section.

-- Philip Kendall

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	42.1/	38.0/	20.0	The Next Baron	Christian Schmidt	146.2	2
2	37.2/	33.7/	29.2	Fire and Ice	David Moore	140.6	1
3	41.2/	43.0/	15.9	Alladins Cave	P.Kline	139.4	12
4	34.0/	29.1/	36.9	Fixed	Ken Espiritu	138.9	11
5	31.5/	24.3/	44.2	Newt	Ian Oversby	138.7	105
6	32.7/	28.0/	39.2	Vain	Ian Oversby	137.4	27
7	39.5/	42.9/	17.6	Silver Talon 1.2	Edgar	136.1	13
8	39.8/	43.6/	16.5	The Boys are Back in Town	Philip Kendall	136.1	9
9	34.3/	32.5/	33.2	Nomolos	Ian Oversby	136.0	16
10	31.7/	27.9/	40.5	Vigor	Ken Espiritu	135.5	15
11	28.8/	22.9/	48.3	Benchmark [94]	Zul Nadzri	134.7	27
12	37.2/	40.9/	21.9	Electric Head	Anton Marsden	133.5	114
13	35.3/	37.6/	27.1	Tornado 4	Beppe Bezzi	132.9	29
14	29.0/	25.7/	45.4	Ultraviolet-B	Ken Espiritu	132.3	37
15	30.5/	28.8/	40.7	Vengeance	Robert Hale	132.2	62
16	31.6/	31.2/	37.1	obvious to those who know	Robert Macrae	132.0	63
17	29.6/	28.0/	42.3	Pulp v0.5	Ian Oversby	131.2	62
18	39.7/	49.1/	11.2	He Scans Alone	P.Kline	130.3	4
19	30.5/	31.2/	38.3	test	JKW	129.9	1
20	31.2/	32.7/	36.1	traumatic smurf	bjoern guenzel	129.7	3
21	31.2/	32.8/	36.0	Nine Seven Six	M R Bremer	129.6	223
22	33.6/	37.9/	28.6	Digitalis 3	Christian Schmidt	129.2	5
23	33.3/	37.7/	29.0	PAN-TAU-RA	Christian Schmidt	128.8	12
24	23.3/	18.0/	58.7	Metal IIa	Ivan Krajnovic	128.6	6
25	30.2/	33.8/	35.9	The Return of the PaperBo	Robert Hale	126.7	4

Age since last issue: 6 (26 last issue, 31 the issue before)
New warriors: 7 Turnover/age rate 117%
Average age: 34 (53 last issue, 63 the issue before)
Average score: 134 (142 last issue, 136 the issue before)
The top 25 warriors are represented by 15 independent authors: Oversby with 4, Schmidt and Espiritu with 3, Kline and Hale with 2, and everyone else with just the one.

Paul Kline's Alladin's Cave dominated the Hill at the start with a good lead, before Schmidt came back with The New Baron to take the lead, with David Moore's Fire and Ice close behind. Also, this week saw the loss of by far the oldest warrior on the hill, John K Wilkinson's Return of the Jedimp, leaving the hill with its youngest age since its formation.

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
??	??.?/	??.?/	??.?	Metal IIa	Ivan Krajnovic	???.?	?
16	36.0/	38.6/	25.5	Digitalis 3	Christian Schmidt	133.4	1
16	41.6/	50.0/	8.4	He Scans Alone	P.Kline	133.2	0
20	31.9/	32.8/	35.4	The Return of the PaperBo	Robert Hale	131.0	1
??	??.?/	??.?/	??.?	traumatic smurf	bjoern guenzel	???.?	?
1	43.9/	37.1/	19.1	The Next Baron	Christian Schmidt	150.7	0
2	37.0/	33.9/	29.1	Fire and Ice	David Moore	140.1	0
19	30.5/	31.2/	38.3	test	JKW	129.9	1

---

94 - What's No More

#	%W / %L / %T	Name	Author	Score	Age
26	1.9/ 2.0/ 0.0	He Scans Again	P.Kline	5.9	3
26	(killed)	Red Baron	Christian Schmidt		
26	34.0/ 41.7/24.4	Stasis	David Moore	126.3	8
26	??.?/ ??.?/??.?	Return Of The Jedimp	John K W	???.?	357?
26	38.2/ 52.0/ 9.8	Memories	Beppe Bezzi	124.5	32
26	34.8/ 43.3/21.8	HnK II	Ivan Krajnovic	126.3	8
26	??.?/ ??.?/??.?	Head or Tail	Christian Schmidt	???.?	???
26	35.5/ 44.8/19.7	It's not a trick	Christian Schmidt	126.2	14

If someone could confirm the ages of Jedimp and Head or Tail when they were pushed off, that would be appreciated.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
21	31.2/ 32.8/ 36.0	Nine Seven Six	M R Bremer	129.6	223
14	35.6/ 40.3/ 24.1	Electric Head	Anton Marsden	131.0	108
5	31.5/ 24.3/ 44.2	Newt	Ian Oversby	138.7	105

Two of the old guard (Return of the Jedimp and Head or Tail) are pushed off, whilst Newt joins the 100+ club.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357(?)	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	223 *	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp

11	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
12	Instant Wolf 3.4	Edgar	205	P-warrior
13	Goldfinch	P.Kline	201	P-warrior
14	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
15	Trident^2	John K W	195	Q^2 -> Stone/imp
16	ompega	Steven Morrell	189	Stone/imp
17	Frogz	Franz	172	Q^2 -> Paper
18	The Machine	Anton Marsden	164	Scanner
19	Memories	Beppe	152	Scanner
20	Head or Tail	Christian Schmidt	141(?)	Q^2 -> Paper
21	Tiberius 3.1	Franz	130	Q^2 -> Paper
22	Solomon v0.8	Ian Oversby	116	Stone and scanner
23	Electric Head	Anton Marsden	108 *	P-warrior
24	CC Paper 3.3	Franz	107	Q^2 -> Paper
25	mrb-test	m r bremer	106	?

(Ages with ? need confirming)

Nine Seven Six creeps up a place, whilst Electric Head enters and kicks T.N.T. pro off; Newt is just outside the top 25.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	52.3/	9.8/	37.9	Metal IIa	Ivan Krajnovic	194.8	22
2	52.2/	11.7/	36.1	Metal II	Ivan Krajnovic	192.6	60
3	50.2/	8.0/	41.9	Vain	Ian Oversby	192.4	100
4	45.3/	23.3/	31.4	HnK II	Ivan Krajnovic	167.3	94
5	31.8/	14.0/	54.1	p-U v.2	Ryan Coleman	149.6	24
6	29.7/	11.7/	58.6	Moderation II	Andy Nevermind	147.7	98
7	33.4/	26.4/	40.1	I.R. Baboon v1	Gene Gomez	140.4	31
8	36.5/	36.5/	27.0	Voodoo Glow Skull v2.1	Gene Gomez	136.4	33
9	33.9/	35.8/	30.3	QScissor	Ryan Coleman	132.1	32
10	23.8/	21.8/	54.5	cascade 12,41	Steve Gunnell	125.8	1
11	20.7/	18.1/	61.1	Paper Test v3	Gene Gomez	123.3	52
12	36.4/	51.1/	12.6	Iced Creamer	Compudemon	121.7	9
13	26.0/	31.4/	42.7	archangel	John K. Lewis	120.5	15
14	29.9/	42.2/	27.9	Tornado -1.0	George Eadon	117.5	2
15	32.6/	49.4/	18.0	I am EMCFDT	Compudemon	115.9	13
16	15.8/	16.4/	67.8	saturn 3	Steve Gunnell	115.2	36
17	21.6/	28.0/	50.4	Werewolf 1.25	Compudemon	115.1	10
18	27.2/	39.8/	32.9	KPO 2.02	Csaba Biro	114.6	16
19	16.7/	28.8/	54.5	Q-paper v1	Gene Gomez	104.6	21
20	21.5/	43.1/	35.3	RTFM	John K. Lewis	99.9	17
21	15.7/	34.2/	50.2	qDeath v .269	Ryan Coleman	97.2	26
22	16.2/	39.8/	44.0	Pure Genius 1.21	Compudemon	92.5	11
23	3.9/	1.8/	2.3	Tornado 3.0	Beppe	13.9	6
24	0.2/	92.9/	6.9	NO v .069	Ryan Coleman	7.4	4
25	0.3/	0.3/	3.4	cascade 27,20	Steve Gunnell	4.3	14
	26.9/	28.7/	36.9	Top 25 Averages		117.7	29

The very low proportion of wins on the hill (26.9%) suggests to me that a scanner would be a good idea here. Also, I would tend to say that you learn more about Core War by trying to write one component very well, rather than a p-spacer; would anyone object if the b-hill were made no pspace?

The Hint
(by Paul Kline)

A while back I posted a 3-line bomber which performed somewhat better than the usual mod-4/5 version by modifying its step one or more times during the battle. Since that time I have uncovered a number of these that actually dat-bomb nearly ninety percent of core without self-destructing and use an efficient starting step. These are remarkably effective against cmp-scanners and also against larger self-splitting bombers because they have an improved ability to destroy spl-zero instructions.

The trick in designing these is to find an ascending or descending sequence of steps that never leads to a self-bomb. The initial step is somewhat flexible since you can choose the starting bomb location and the number of bombs dropped, after that each step will drop 4000 bombs in 12000 cycles. Six full steps occupy 72000 cycles, leaving one or two partial runs.

So we need a series of seven or eight sequential steps, some of which are mod-4/5/8 or greater, and some of which are imp numbers. The imp numbers have to be chosen such that they can bomb 4000 locations while leaving at least one gap of three locations for the bomber to hide in. In spite of these requirements the NUM8000.DAT file reveals quite a few candidate series.

Tesing a series amounts to choosing a starting position for the first bomb, and the number of bombs that the first step is allowed. Watch it run and see how long before a self-bomb. Adjust the starting position or number and try again.

There must be many, many of these that I did not identify, but here are some of them, one of which is used by Alladin’s Cave.

```
sStep     equ    5266
Stone     mov    }1629    ,1-sStep
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2

sStep     equ    4954
Stone     mov    {1601    ,1-sStep
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2

sStep     equ    4154
Stone     mov    {1685    ,1-sStep
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2

sStep     equ    3174
Stone     mov    {1545     ,1-sStep
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2

sStep     equ    3054
Stone     mov    {1481     ,1-sStep
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2
```

I have found these bombers to be as close to a silver bullet against cmp-scanners as can be hoped, and since several of those scanners have come back to the 94 Hill, this accounts for much of the success of Alladin’s Cave. That plus the one-shot scanner killer "CLP". AC loses terribly to qscanning replicators and fast bombers, but also wins 70-90% against some good opponents. It does not contain a HSA-type scanner which I miss, but does include a mini one-shot that gets some wins against replicators.

Now that Christian has replaced Red Baron with The Next Baron AC looks a little less magical. Red Baron gave up 90% losses

to AC, while The Next Baron only gives up 44%.

Paul Kline

Questions? Concerns? Comments? Complaints? Mail them to people who care.
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NNTP-Posting-Host: kendalls.demon.co.uk
X-NNTP-Posting-Host: kendalls.demon.co.uk [194.222.25.137]
MIME-Version: 1.0
X-Newsreader: Turnpike (32) Version 3.05 <W1r$a20cp$SHkK5hpGdN6Y8JFw>
Lines: 1256

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                              ,    .
$$$$$P'   '                              .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 66 8 April, 1998

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
http://www.koth.org/corewar-faq.html

FTP site is: ftp://ftp.csua.berkeley.edu/pub/corewar
Mirrored at: ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
and: ftp://www.koth.org/corewar

pMARS itself is also available from:
Stormking web pages--http://www.koth.org/pmars.html
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Web pages are at:
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Hello again.

With Pizza being down for almost all of the time since the last issue, most of the Core War action has been taking place in the Redcode Maniacs Tournament, being run by Christian Schmidt and myself. Round 8, the penultimate round, is almost over (about 23 hours to enter from when I posted

this message), and it looks like either Robert Macrae or David Moore will go on to win, but it still isn't too late to enter: see

http://www.geocities.com/SiliconValley/Park/5427/maniacs.htm

for details.

Pizza is now back up though so we can all get back to beating Alladin's Cave, a task which may be made considerably easier due to it being published further down in this issue. Thanks to Paul Kline for his code and Robert Macrae for the analysis. (and apologies for forgetting to put this in the last issue ;-( )

One final point: fellow CW author Beppe Bezzi has a new e-mail address:

giuseppe.bezzi@galactica.it

-- Philip Kendall

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	42.1/ 38.4/ 19.5	Diamonds and Rust	Christian Schmidt	145.7	3
2	38.0/ 31.8/ 30.2	Nomolos	Ian Oversby	144.1	28
3	38.7/ 35.2/ 26.1	Fire and Ice	David Moore	142.3	12
4	41.2/ 42.3/ 16.5	Three Musketeers	Robert Macrae	140.2	2
5	34.4/ 30.3/ 35.2	Fixed	Ken Espiritu	138.6	23
6	31.9/ 25.5/ 42.6	Newt	Ian Oversby	138.3	117
7	33.0/ 27.9/ 39.1	Vigor	Ken Espiritu	138.1	27
8	33.3/ 29.7/ 37.0	Vain	Ian Oversby	136.8	39
9	40.1/ 43.7/ 16.1	Alladins Cave	P.Kline	136.6	24
10	36.9/ 37.7/ 25.4	Tornado 4	Beppe Bezzi	136.1	41
11	33.8/ 32.2/ 34.1	obvious to those who know	Robert Macrae	135.3	75
12	29.2/ 23.5/ 47.3	Benchmark [94]	Zul Nadzri	134.9	39
13	37.9/ 41.3/ 20.8	Electric Head	Anton Marsden	134.5	126
14	39.5/ 45.2/ 15.4	The Boys are Back in Town	Philip Kendall	133.8	21
15	31.9/ 30.2/ 38.0	Vengeance	Robert Hale	133.5	74
16	41.8/ 50.6/ 7.6	Seven-Eleven	Robert Macrae	133.0	1
17	38.7/ 44.6/ 16.8	Silver Talon 1.2	Edgar	132.8	25
18	30.5/ 28.6/ 40.9	Pulp v0.5	Ian Oversby	132.4	74
19	32.9/ 33.4/ 33.6	traumatic smurf	bjoern guenzel	132.4	15
20	28.9/ 26.4/ 44.7	LeatherNeck	Robert Hale	131.3	6
21	35.3/ 39.5/ 25.2	Digitalis 4	Christian Schmidt	131.2	11
22	38.2/ 45.7/ 16.1	Sharkrage	Christian Schmidt	130.7	0
23	30.5/ 31.0/ 38.5	Head or Tail 1.1	Christian Schmidt	130.0	6
24	29.2/ 28.4/ 42.5	Ultraviolet-B	Ken Espiritu	130.0	49
25	30.5/ 35.2/ 34.3	The Return of the PaperBo	Robert Hale	125.9	16

Age since last issue: 11 (6 last issue, 26 the issue before)
New warriors: 7 Turnover/age rate 64%
Average age: 34 (34 last issue, 53 the issue before)
Average score: 135 (134 last issue, 142 the issue before)
The top 25 warriors are represented by 13 independent authors: Oversby and Schmidt with 4 each, Hale, Espiritu and Macrae with 3 and everyone else with just one.

Since the last issue, all of Fire and Ice, Nomolos, The Next Baron, Alladins Cave and Diamonds and Rust have been King. The loss of Electric Head once again gave the Hill its youngest average age since formation (31).

#	%W /	%L /	%T	Name	Author	Score	Age
10	36.7/	37.6/	25.6	Digitalis 4	Christian Schmidt	135.9	0
11	31.3/	29.2/	39.5	Head or Tail 1.1	Christian Schmidt	133.5	0
16	29.3/	24.8/	45.9	LeatherNeck	Robert Hale	133.7	0
2	42.0/	39.1/	18.9	Diamonds and Rust	Christian Schmidt	144.9	0
7	40.2/	42.1/	17.7	Three Musketeers	Robert Macrae	138.3	1
24	40.4/	52.0/	7.6	Seven-Eleven	Robert Macrae	128.9	1
22	38.2/	45.7/	16.1	Sharkrage	Christian Schmidt	130.7	0

Schmidt replaces one pspacer with another to go back to King, whilst Macrae sends in two of his entries from the Redcode Maniacs Tournament.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	1.5/	1.4/	1.1	test	JKW	5.5	1
26	21.5/	17.4/	61.1	Metal IIa	Ivan Krajnovic	125.7	7
26	1.8/	2.0/	0.2	Digitalis 3	Christian Schmidt	5.7	6
26	38.8/	52.4/	8.7	He Scans Alone	P.Kline	125.3	6
26	32.1/	39.1/	28.8	PAN-TAU-RA	Christian Schmidt	125.2	17
26	29.3/	34.4/	36.3	Nine Seven Six	M R Bremer	124.2	232
26	1.6/	2.1/	0.3	The Next Baron	Christian Schmidt	5.2	14

For the second consecutive issue, the Hill loses its oldest warrior.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
13	37.9/	41.3/	20.8	Electric Head	Anton Marsden	134.5	126
6	31.9/	25.5/	42.6	Newt	Ian Oversby	138.3	117
11	33.8/	32.2/	34.1	obvious to those who know	Robert Macrae	135.3	75
18	30.5/	28.6/	40.9	Pulp v0.5	Ian Oversby	132.4	74

Electric Head has been in trouble in the lower reaches of the Hill for a while now, but Newt continues to do well.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy

1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	373		Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357		Q^2 -> Stone/imp
5	unrequited love	kafka	346		Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345		Stone/imp
7	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Nine Seven Six	M R Bremer	232		Q^2 -> Stone/imp
10	Rosebud	Beppe	218		Stone/imp
11	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
12	Instant Wolf 3.4	Edgar	205		P-warrior
13	Goldfinch	P.Kline	201		P-warrior
14	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
15	Trident^2	John K W	195		Q^2 -> Stone/imp
16	ompega	Steven Morrell	189		Stone/imp
17	Frogz	Franz	172		Q^2 -> Paper
18	The Machine	Anton Marsden	164		Scanner
19	Memories	Beppe	152		Scanner
20	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
21	Tiberius 3.1	Franz	130		Q^2 -> Paper
22	Electric Head	Anton Marsden	126	*	P-warrior
23	Solomon v0.8	Ian Oversby	116		Stone and scanner
24	Newt	Ian Oversby	117	*	Q^2 -> Stone/imp
25	CC Paper 3.3	Franz	107		Q^2 -> Paper

Nine Seven Six finishes in 9th place, whilst Electric Head climbs one place to 22nd and Newt appears, forcing mrb-test out of the top 25.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.2/	9.7/	46.1	Metal IIa	Ivan Krajnovic	178.7	77
2	41.9/	30.7/	27.4	cute	John K. Lewis	153.1	16
3	43.4/	38.0/	18.6	Death kiss	Anders Rosendal	148.8	33
4	42.0/	35.7/	22.3	Incisor+	John Metcalf	148.2	1
5	37.1/	26.2/	36.7	Torn	M. J. Pihlaja	148.1	14
6	42.2/	37.5/	20.3	Beescan	M. J. Pihlaja	146.9	4
7	40.5/	35.1/	24.3	qbomber v .469	Ryan Coleman	146.0	32
8	40.4/	37.1/	22.5	Incisor	John Metcalf	143.7	3
9	37.7/	35.7/	26.6	Arsonic	pvk	139.7	18
10	25.0/	17.3/	57.7	p-U v.2	Ryan Coleman	132.8	79
11	23.8/	18.5/	57.7	fylle	Klaus	129.0	12
12	29.6/	34.2/	36.2	Get A-life V2.04	Don H. McGee	125.1	9
13	30.8/	37.3/	31.9	Voodoo Glow Skull v2.1	Gene Gomez	124.2	88
14	25.6/	28.0/	46.4	I.R. Baboon v1	Gene Gomez	123.2	86
15	27.7/	32.3/	40.0	Gold fish	P._V._K.	123.2	20
16	27.5/	32.5/	40.0	Gold fish	P._V._K.	122.5	19
17	23.3/	25.1/	51.6	March 0.92c	Csaba Biro	121.6	8
18	21.8/	22.7/	55.5	March 0.94	Csaba Biro	120.9	2
19	19.3/	17.7/	63.1	paperlike	Anders Rosendal	120.9	30
20	20.7/	21.8/	57.5	Cold Company	John Metcalf	119.6	21
21	24.2/	29.3/	46.5	cascade 9,66	Steve Gunnell	119.2	36
22	33.4/	50.1/	16.5	Iced Creamer	Compudemon	116.6	64
23	27.6/	40.5/	31.9	trying my first multipass	PVK	114.8	22
24	30.1/	47.5/	22.4	WannaChatInWarriorNames?	John Metcalf	112.8	28
25	14.7/	19.7/	65.5	Bilbo	John Metcalf	109.8	38

Krajnovic continues to thrash the rest of the Hill with his Metal IIa -- should the age limit for this hill be lowered now that Thos has removed

almost all artifical ageing? Comments/suggestions to the newsgroup.

The Hint - Improving a beginner's warrior
Philip Kendall

For this hint, I'm going to take a beginner's warrior, and see how much I can improve it. The warrior I'm going to use is qDeath v .269 by Ryan Coleman; thanks to Ryan for sharing his code.

Here's the original version of the warrior:

```
;redcode-b verbose
;name qDeath v .269
;author Ryan Coleman
;strategy QScan -> Scissor
;strategy v .269 modified scissor
;assert 1

;this warrior is the prototypical 'beginner' warrior.  One simply gets
;code for a q-scan and code for a scissor or paper from planar's archives
;or other sources around the net.  I did improve the qscan a bit by
;switching around the order somewhat.  My idea was to put the ones most
;likely to find the other warrior first.  I know that odds are a warrior
;will be randomly placed in the middle of the code rather than immediately
;after or before mine.

;my strategy as far as the scissor went was that i see a lot of papers on
;the hill and a good paper should 'beat up' on them.  The more I messed with
;the code for the scissor portion of the code, the more it didn't work
;I eventually gave up and submitted it 'as is'.  One improvement I have done
;(in another version) was to boot the scissor away, scoring better against
;scanners.

;Well, it's obvious I'm a beginner and have a lot to learn.  But one day....

ORG start

QB EQU (start+400)
QS EQU 200
QD EQU 100
;COUNT EQU 6
;        _RES    equ 0
;        _STR    equ 1
;dest0   equ     2200
;dest1   equ     3740
;dest2   equ     -1278
;range   equ     933
CDIST   equ 12
IVAL    equ 42
FIRST   equ scan+OFFSET+IVAL
OFFSET  equ (2*IVAL)
DJNOFF  equ -431
BOMBLEN equ CDIST+2


GAP EQU 15
REP EQU 6

         dat    10*QS, 2*QS ; can get 21 values from this table
table:   dat     4*QS, 1*QS ; and can also use the initial value
         dat    23*QS, 3*QS ; of fnd
qbomb:   jmp    -200,GAP
qinc:    dat    GAP,-GAP

tab:     add.a  table,table
slow:    add.ab @tab,fnd
fast:    add.b  *tab,@slow
which:   sne.i  datz,@fnd
         add.ab #QD,fnd
```

```
        mov.i  qbomb,@fnd
fnd:    mov.i  -GAP/2,@QB
        add.ba fnd,fnd
        mov.i  qbomb,*fnd
        add.f  qinc,fnd
        mov.i  qbomb,@fnd
        djn.b  -3,#REP
        jmp    comp,}-300

start:

        seq.i  QB+QS*13,QB+QS*13+QD
        jmp    fast,{fast

        seq.i  QB+QS*21,QB+QS*21+QD
        jmp    tab,{fast
        seq.i  QB+QS*22,QB+QS*22+QD
        djn.f  tab,tab
        seq.i  QB+QS*27,QB+QS*27+QD
        jmp    <fast,>tab
        seq.i  QB+QS*28,QB+QS*28+QD
        jmp    tab,>tab


        seq.i  QB+QS*4,QB+QS*4+QD
        jmp    >fast,}QB+QS*4+QD/2
        seq.i  QB+QS*5,QB+QS*5+QD
        jmp    slow,}QB+QS*5+QD/2
        seq.i  QB+QS*6,QB+QS*6+QD
        jmp    slow,{tab
        seq.i  QB+QS*7,QB+QS*7+QD
        jmp    slow,}tab

        seq.i  QB+QS*10,QB+QS*10+QD
        jmp    >fast,<tab
        seq.i  QB+QS*11,QB+QS*11+QD
        jmp    slow,<tab
        seq.i  QB+QS*12,QB+QS*12+QD
        djn.f  slow,tab

        seq.i  QB+QS*23,QB+QS*23+QD
        jmp    >fast,>tab
        seq.i  QB+QS*24,QB+QS*24+QD
        jmp    slow,>tab

        seq.i  QB+QS*17,QB+QS*17+QD
        jmp    slow,{fast

        seq.i  QB+QS*8,QB+QS*8+QD
        jmp    <fast,}QB+QS*8+QD/2
        seq.i  QB+QS*9,QB+QS*9+QD
        jmp    tab,}QB+QS*9+QD/2

        seq.i  QB+QS*15,QB+QS*15+QD
        jmp    tab,<tab
        seq.i  QB+QS*16,QB+QS*16+QD
        jmp    tab,{tab
        seq.i  QB+QS*20,QB+QS*20+QD
        djn.f  <fast,tab
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which,}QS*13 ; qinc+GAP

        seq.i  QB+QS*1,QB+QS*1+QD
        jmp    fast,}QB+QS*1+QD/2
        seq.i  QB+QS*2,QB+QS*2+QD
        jmp    fast,{tab
        seq.i  QB+QS*3,QB+QS*3+QD
        jmp    fast,}tab
```

```
         seq.i  QB+QS*30,QB+QS*30+QD
         jmp    tab,}tab


; insert stuff here

jmp comp, comp
scan    sub.f  incr,comp
comp    cmp.i  FIRST,FIRST-CDIST
        slt.a  #incr-comp+BOMBLEN,comp
        djn.f  scan,<FIRST+DJNOFF
        mov.ab #BOMBLEN,count
split   mov.i  bomb,>comp
count   djn.b  split,#0
        sub.ab #BOMBLEN,comp
        jmn.b  scan,scan
bomb    spl.a  0,{-1
        mov.i  incr,<count
incr    dat.f  <0-IVAL,<0-IVAL



datz dat 0,0              ;keep here!
     dat 0,0
     dat 0,0
```

This is simply a Q^2 scan, followed by Stefan Strack's Rave, a classic cmp-scanner. Let's submit it to Pizza's b-hill (hoping it's up today :-)) and see how it does:

```
21  12.7/ 26.6/ 60.7             qDeath v .269 Ryan Coleman (submit  98.9    1
```

Yikes! That's not too good really. The thing which really stands out here is the lack of wins, and the very high percentage of ties: both the qscan and scanner are very offensive components, which generally get many wins, many losses and only a few ties. What's going wrong?

[If you're feeling studious at this point, it's probably a good idea to try and find out for yourself: the best of to learn is by doing! Issue 12 of Steve Bailey's Guide for Beginners (available from http://www.koth.org/sgb/) has a very good analysis of Rave]

The problem is with this line:

```
bomb    spl.a  0,{-1
```

Rave eventually bombs its first line (sub.f incr,comp) with this bomb, and then detects this fact to switch to its coreclear and kill off the opponents which it has stunned. However, the test is made with the

```
        jmn.b  scan,scan
```

line, which will now never be satisfied, as the b-field of 'loop' is non-zero even after it has been bombed. Probably the simplest way to remove this problem is to change the test to

```
        jmn.a   loop,*0
```

and re-submit the warrior. Any better?

```
 4  50.0/ 29.9/ 20.1                qDeath II Ryan Coleman/Philip  170.1    1
```

Yes :-) Let's see if we can get anywhere near the '94 Draft Hill:

```
25  31.0/ 32.8/ 36.2 The Return of the PaperBo          Robert Hale 129.1    4
26  24.3/ 61.4/ 14.2                qDeath II Ryan Coleman/Philip   87.2    0
```

No :-(

The next problem with this warrior is what happens if the qscan misses, or fails to find a target: when this occurs, the main code loop is now executing next to an enormous (in Core War terms) number of dead instructions, which do nothing apart from give away our position to other scanners. To alleviate this problem, let’s boot the scanner portion of the code away after scanning. Now, we have:

Beginner’s Hill:

```
 4  43.0/ 37.3/ 19.7               qDeath 2.1 Ryan Coleman/Philip  148.7    1
```

Surprisingly, this doesn’t do as well (the hill had changed a bit between the submission of qDeath II and qDeath 2.1, so this isn’t really a fair test)

However, it does do better than the unbooted version on the ’94 Hill:

```
26  29.4/ 59.6/ 11.0               qDeath 2.1 Ryan Coleman/Philip   99.2    0
```

Next, Rave’s endgame is a simple one-pass dat clear, which isn’t going to be effective enough to wipe out many of the imp-heavy defensives around today. A much more effective clear for killing imps is the d-clear, as invented by Bjoern Guenzel. Adding one of these to qDeath means increasing its size by 2 instructions (never a good thing...), but let’s see what happens:

Beginner’s Hill:

```
11  30.9/ 36.6/ 32.4               qDeath 2.2 Ryan Coleman/Philip  125.2    1
```

’94 Hill:

```
26  29.0/ 55.8/ 15.2               qDeath 2.2 Ryan Coleman/Philip  102.2    0
```

This doesn’t do as well on the Beginner’s Hill (again, there was some change in the hill make-up between submissions), but once again does better on the ’94 Hill. What this says? Principally the fact that a warrior doing better on the Beginner’s Hill will not necessarily do better on the ’94 Hill due to their different make-up.

A couple more points whilst I’m here:

1) Ryan states in the original comments "changed the qscan order to hit locations where the enemy is more likely to be earlier". In a two warrior fight, the second warrior is equally (*) likely to start anywhere in the range 100 to 7900, which means that the locations 199 to 7900 are equally likely to contain your opponent (assuming it has length 100). All th locations scanned by the standard Q^2 code are in this range, so there is no gain to be made from this. The best order for a qscan _may_ be to put the fastest response scans first (as was done in Gigolo), but there are warriors designed to take advantage of this (eg Paul Kline’s RetroQ).

2) I’m not sure of the effectiveness of qscan -> scanner as a strategy. Scanners are at there most effective early in the round, before other warriors have filled much of core with bombs, decoys, etc, and qscanning loses much of this advantage. However, qDeath does worse on both the Beginner’s and ’94 Hill without its qscan, so the Q^2 is obviously useful in the current climate on both hills.

To finish, here’s qDeath 2.2; I hope at least some of you found this useful :-)

Philip Kendall

```
;redcode-b test
;name qDeath 2.2
;author Ryan Coleman/Philip Kendall
;strategy QScan -> Scissor
;strategy Testing some ideas for CW 66
;assert CORESIZE==8000

ORG start
```

```
CDIST   equ 12
IVAL    equ 42
OFFSET  equ (2*IVAL)
FIRST   equ scan+OFFSET+IVAL
DJNOFF  equ -431
BOMBLEN equ CDIST+2
gate    equ     (scan-3)

scan    sub.f  incr,comp
comp    cmp.i  FIRST,FIRST-CDIST
        slt.a  #bomb-comp+BOMBLEN,comp
        djn.f  scan,<FIRST+DJNOFF
        mov.ab #BOMBLEN,count
split   mov.i  bomb,>comp
count   djn.b  split,#0
        sub.ab #BOMBLEN,comp
        jmn.a  scan,scan
incr    spl.a  #-IVAL,>-IVAL
clear   mov.i  cbomb,>gate
        djn.f  clear,>gate
cbomb   dat.f  >5335,(cbomb-gate+3)
bomb    spl.a  #0,0

QB EQU (start+400)
QS EQU 200
QD EQU 100

GAP EQU 15
REP EQU 6
datz    equ     (-CURLINE-1)

         dat    10*QS, 2*QS ; can get 21 values from this table
table:   dat     4*QS, 1*QS ; and can also use the initial value
         dat    23*QS, 3*QS ; of fnd
qbomb:   jmp    -200,GAP
qinc:    dat    GAP,-GAP

tab:     add.a  table,table
slow:    add.ab @tab,fnd
fast:    add.b  *tab,@slow
which:   sne.i  datz,@fnd
         add.ab #QD,fnd

         mov.i  qbomb,@fnd
fnd:     mov.i  -GAP/2,@QB
         add.ba fnd,fnd
         mov.i  qbomb,*fnd
         add.f  qinc,fnd
         mov.i  qbomb,@fnd
         djn.b  -3,#REP
         jmp    boot,}-300

start:   seq.i  QB+QS*13,QB+QS*13+QD
         jmp    fast,{fast

         seq.i  QB+QS*21,QB+QS*21+QD
         jmp    tab,{fast
         seq.i  QB+QS*22,QB+QS*22+QD
         djn.f  tab,tab
         seq.i  QB+QS*27,QB+QS*27+QD
         jmp    <fast,>tab
         seq.i  QB+QS*28,QB+QS*28+QD
         jmp    tab,>tab


         seq.i  QB+QS*4,QB+QS*4+QD
         jmp    >fast,}QB+QS*4+QD/2
         seq.i  QB+QS*5,QB+QS*5+QD
         jmp    slow,}QB+QS*5+QD/2
```

```
         seq.i  QB+QS*6,QB+QS*6+QD
         jmp    slow,{tab
         seq.i  QB+QS*7,QB+QS*7+QD
         jmp    slow,}tab

         seq.i  QB+QS*10,QB+QS*10+QD
         jmp    >fast,<tab
         seq.i  QB+QS*11,QB+QS*11+QD
         jmp    slow,<tab
         seq.i  QB+QS*12,QB+QS*12+QD
         djn.f  slow,tab

         seq.i  QB+QS*23,QB+QS*23+QD
         jmp    >fast,>tab
         seq.i  QB+QS*24,QB+QS*24+QD
         jmp    slow,>tab

         seq.i  QB+QS*17,QB+QS*17+QD
         jmp    slow,{fast

         seq.i  QB+QS*8,QB+QS*8+QD
         jmp    <fast,}QB+QS*8+QD/2
         seq.i  QB+QS*9,QB+QS*9+QD
         jmp    tab,}QB+QS*9+QD/2

         seq.i  QB+QS*15,QB+QS*15+QD
         jmp    tab,<tab
         seq.i  QB+QS*16,QB+QS*16+QD
         jmp    tab,{tab
         seq.i  QB+QS*20,QB+QS*20+QD
         djn.f  <fast,tab
         seq.i  QB+QS*0,QB+QS*0+QD
         jmp    which,}QS*13 ; qinc+GAP

         seq.i  QB+QS*1,QB+QS*1+QD
         jmp    fast,}QB+QS*1+QD/2
         seq.i  QB+QS*2,QB+QS*2+QD
         jmp    fast,{tab
         seq.i  QB+QS*3,QB+QS*3+QD
         jmp    fast,}tab

         seq.i  QB+QS*30,QB+QS*30+QD
         jmp    tab,}tab

bdist    equ    3422

boot
i        for    (bomb-scan+1)
         mov.i  (bomb+1-i),{bptr
         rof
bptr     spl.a  (bomb+bdist),#0
         div.f  bptr,bptr
```

Extra Extra - Alladin’s Cave by Paul Kline, with analysis by Robert Macrae

Robert Macrae foolishly wrote:

> r.g.c is generally free from flaming. When you *really* hate
> someone, you write a suite of specialists to destroy their
> warriors. Look at Alladins Cave -- Kline must hate nearly everyone
> :-)

But I didn’t realise what I was letting myself in for. In a typically devious counterstrike, Paul asked me to review Alladin’s Cave for him thus 1) saving himself about 3000 words 2) keeping me out of mischief for a week and 3) providing some harmless amusement when I fail to understand the P-engine. Oh well...

Perhaps the best start is Paul’s own description:

> Alladin's Cave began with "Curious Little Program" which revealed significant numbers of one-shots on the 94 Hill and beat them about 90%. I added to it a 3-line bomber to kill cmp-scanners about 70%, and a one-shot/dclear and one-shot spl-dat wiper to broaden the strength. Then reworked the brains for more efficiency.

Lets take a look at the components in turn.

CLP

This is a highly specialised component. A slow vampire with a linear attack, 17 cells long cannot be expected to do well against any general-purpose warrior but against coreclears it is deadly. The key lies in the bombing loop, where an SNE checks the state of two fixed "Fence" cells every 4 cycles. The fences are above and below CLP so an enemy clear must overwrite one of them before it reaches CLP. When this happens, CLP copies itself away to a distant location so that it can proceed with its own leisurely vampiric coreclear.

The pit contains a brainwash so I guess there were once many P-Spacers which brainwashed to a oneshot. This is no longer fashionable :-]

Speed and length are not critical for this warrior since it already has virtually no chance against non-clears, but I think a couple of cells could be shaved here and there. How about a 3-cycle loop using > and { on the fang, instead of an ADD instruction? Can the pit becleaner? Gain would come from the faster boot, the smaller target offered to Quickscans and the shorter delay before the carpet built into a decoy.

I'm not convinced that booting is worthwhile; a few QS kills are avoided -- but how many, given the boot takes 30 cycles to complete? Perhaps a few oneshot kills are avoided where the oneshot would otherwise scan the launch code after the fence. Both gains sound minor, but I suppose the cost is even smaller: 5 cells, and 25 cycles time wasted before the carpet starts to create the second decoy.

What can go wrong against coreclears? Well, very occasionally CLP will copy itself onto its enemy. Some clears leave occasional gaps in their carpets (for example a Dclear which has a line like SPL #0, >gate) and this will give a few losses if gap falls on a fence, butboth of these problems are minor. CLP eats coreclears.

Against oneshots, CLP needs some help against the scan. The first line of defence is the launch code; oneshots often use a small positive step (say 10-20) between scan locations so they are almost certain to hit the launch code, and once the clear starts CLP is safe. To protect against oneshots that make negative steps, the fangs build a carpet, which acts as a decoy following the second fence. This takes about 60 cycles to reach an effective length (about 15), so negative-step oneshots do not have long to detect CLP. Could it be worth adding a decoy-generator to reduce even this possibility?

Building a oneshot which is resistant to CLP with is hard work -- I've tried with Phantasm. I see two techniques. One is to combine bombs with your scans with something like

```
        ADD #10, 2
        MOV db, @1
        JMZ -2, @X

db      DAT 0, 4000
```

Unfortunately, this scanner is slow to pick up Silks and the oneshot becomes significantly less effective against other warriors; tests of Phantasm using this approach dropped from about #6 to #12 on the hill

as a result, though gaining over 100 points against AC.

Another tack is to tune the scan step to avoid the decoys, but any such warrior would be useless against a version of CLP with slightly different constants, so this is not a general solution.

Stone

```
sStep     equ    4954

Stone     mov    {1601    ,1-sStep    ; dat-bomb about 90% of core
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2
```

MOV {X, Y is a conventional dwarf attack. SUB.x has the effect of stepping the Y by -sStep and X by +1, while permitting sStep to be modified by the { attack. Finally the JMP increments X so that the decrement trail grows at 0.66c. This permits the trail to over-run the stone without damage, but reduces the colouring speed because the { no longer picks up a decremented cell.

With minimalist pattern bombers the step is everything. 4954 has been chosen with exquisite care, because not only this but 4953, 4952, ... 4948 all contribute to the bombing pattern -- the trail wraps around core every 12k cycles so the step is decremented 6 times. As the step changes, the pattern magically avoids hitting the stone -- this is where the exquisite care comes in :-) Most of core is bombed, but a few spaces lurk so warriors with an SPL may sometimes survive.

Again this is a specialist, helpless against replicators and imps. It is acceptable against fast bombers and dwarves because it is smaller and the { trail is quite effective, but both torch and the rosebud stone beat it. Against scanners it is very strong because it colours core and, even disregarding the trail, it has a higher attack/size ratio. This component is another elegant specialist.

Scanner/Bomber/D-Clear/Thing

So far the warrior will lose to any imp-stone and any replicator; with about 6 of each on the hill this is not an obvious recipe for success! This unusual component handles the imp-stones.

```
Clear     spl    clSpl+1                ; Run clear and scan in parallel
          add    #6667  ,clGate
          jmz.f  -1     ,@clGate    ; 0.25c scan
clSpl     spl    #4000  ,{clGate
          mov    clBomb ,>clGate    ; 0.5c DClear
          djn.f  -1     ,>clGate
          jmp    -3                   ; protect Dclear during scan
          dat    {5335,12
clBomb    dat    {5335,12
```

The parallel execution of the ADD/JMZ scan with the MOV/DJN DClear maximised its resistance to DAT bombs; only a hit to the MOV instruction is certain to destroy the attack.

I am not sure that JMP -3 is ideal. The good side is that when the initial, 1-process Dclear hits a 1,1 cell (which Paul thoughtfully provides in the stone boot:) it will convert into a robuster normal Dclear. OTOH, a JMP -2 would avoid a loss if the SPL is bombed. With JMP -2, clBomb should be modified to DAT {5335,13 so the 1-process Dclear will still sweep the whole of core. Health Warning: this is untested. The bomb seems to be tuned to prevent MOV #2667, *0 imps from leaping the gate.

How effective a component is this? Well, the "scanner" runs rather slowly at 0.25c, but it also yanks the "carpet" along every 2 cycles. The end result of the redundancy is that the code fights much like a 2-cell, 0.25c bomber converting to a D-Clear when the JMZ finds something. Two-cell bombs are thrown 14 cells apart, which is efficient against scanners. It might be worth experimenting with other step sizes, but against bombers the scan is likely to be triggered early in any case, because a bomb will be found.

To disable this component, DAT bombers have to hit the SPL or MOV instruction so it is effectively length 2 and it is very resistant to inc/dec attacks. The "Scanner"’s 0.25c attack against a length-4 dwarf is pretty much equivalent to the Dclear’s 1.0c linear attack (linear attacks can only hit the first cell of an enemy, so every opponent is effectively length 1). Comparing them to a dwarves attack at 0.33, for a relative efficiency of about

```
        Scanner     0.25 / 2 : 0.33 / 4   =   1.5 : 1.0, or
        Dclear      1.00 / 2 : 0.33 / 1   =   1.5 : 1.0.
```

Consequently this component should win roughly 60% of the battles against dwarves. Against fast bombers the DClear does worse because their greater length does not make them any easier for the linear attack to hit, but the scanner remains competitive. It helps that the component is rather resistant to SPL 0 bombs, which often just trigger the Dclear.

Once it has flattened the bomber, it needs to kill the imp and Dclears really shine at this, though if the imp has a lot of processes it may not reach the gate. This component does well against Rosebud, but less well against Gigolo (imps too heavy to reach gate) and Impfinity (linear attach weak against the widely-spaced dwarves).

Oneshot TwoPass

... which leaves the replicators. The scan step may again provide some resistance to triggering by imps. I prefer to have the scanner after the wiper because this improves performance against scanners (if they hit the used scan, they might not carpet the sweep) and to separate the two (harder to hit) but this would make the launch harder.

Anyway, improving a component against warriors which are still going to beat it may be counterproductive; it is better for the engine to move on to the next specialist quickly. Optimising against Silks, I think here it is better to start the carpet further back; as it stands you often hit the last few instructions of a Silk which would delay the stun by 500+ cycles. There is some compensation, in that the copies made in this time will carry the carpet with them, but I believe the net effect should be negative.

However, when I checked this by deleting the trailing JMP and adding SUB.ab #7, Sweep after the scan, it lost about 10 points against a range of papers. Hmmm... where did I leave Phantasm..?

```
Sweep     add    #2671   ,#2681           ;one-shot scan
          jmz.f  Sweep   ,@Sweep          ;with spl-dat wipe
          jmp    @6      ,<Sweep
          dat    #-100   ,{swWipe+7-Sweep
          dat    #-100   ,{swWipe+7-Sweep
swWipe    spl    #5900   ,{swWipe+7-Sweep
          mov    @2      ,>Sweep
          mov    @1      ,>Sweep
          djn.b  -2      ,{swWipe
          jmp    swWipe  ,swWipe
```

This component beats aggressive papers like Pulp and Sad about half the time, for scores around 175 -- it is hard to do better than this without redundant copies. Against Diehard it is poor as it cannot

handle the imps, but at least it draws; if it mainly lost it would expose the other components which do worse! Against Ultraviolet, it has no problem at all though I am sure Ken Espiritu is working on this.

P-Logic

I guess I can't avoid this, but let me warn you; P-Code is not my forte.

```
think ldp.a  #0,in              ; get input value
load  ldp.a  #PSTATE,state      ; load old state
      mod.a  #STATES,state      ; brainwash protection
      add.ba *in,state          ; select correct state table
store stp.a  *state,load        ; store new state
state jmp    @0        ,w1
```

This is a fast, flexible engine that uses two DAT tables to control performance. All that is hard-coded here is that the state transitions depend on current state and results in an additive way. The first table,

```
      dat    0,init_table-state
in    dat    0,loss_table-state
      dat    0,win_table-state
      dat    0,tie_table-state
```

tells us that the second table is organised as 4 separate sub-tables covering the 4 possible results (-1/init, 0/loss, 1/win, 2/tie). In fact the win and tie tables are identical, so the same table is used twice to save space.

```
tie_table
win_table

      spl    #wx0-win_table,w0   ; Brainwash
ww1   spl    #ww1-win_table,w1   ; Sweep
wx1   spl    #ww1-win_table,w1
      spl    #ww1-win_table,w1
ww0   spl    #ww0-win_table,w0   ; Clear
wx0   spl    #ww0-win_table,w0
      spl    #ww0-win_table,w0
ww2   spl    #ww2-win_table,w2   ; Stone
      spl    #ww2-win_table,w2
      spl    #ww2-win_table,w2
ww3   spl    #ww3-win_table,w3   ; Dodger
      spl    #ww3-win_table,w3
      spl    #ww3-win_table,w3

loss_table
      spl    #wx0-win_table ,w0  ; Brainwash
      spl    #1-loss_table  ,w1  ; Sweep
      spl    #1-loss_table  ,w1
      spl    #2-loss_table  ,w0
      spl    #1-loss_table  ,w0  ; Clear
      spl    #1-loss_table  ,w0
      spl    #3-loss_table  ,w2
      spl    #1-loss_table  ,w2  ; Stone
      spl    #1-loss_table  ,w2
      spl    #wx1-win_table ,w1
      spl    #1-loss_table  ,w3  ; Dodger (not after first trial)

init_table
      spl    #1-loss_table  ,w3
      spl    #wx1-win_table ,w1
```

This is simpler than it at first appears, honest. The .b fields contain the address of the warrior to be executed. The .a fields

contain the state which is to be stored.

The effect of the win/tie sub-table is that any warrior which wins or ties a battle is used again, and the state is reset to the first of the 3 states which use that warrior. The effect of the #1-loss_table entries in the loss table is that if a warrior loses the state is increased by 1, so after 3 losses in a row the next warrior is selected.

To make life more interesting, the #2-, #3- and #wx1 entries mean that the first time a new warrior is used, it already has two strikes against it for the stone, or 1 for the clear and dclear, thus more quickly switching out a poorly selected warrior. Finally, CLP is never tried as a result of another component losing -- if it ever takes 3 strikes, it is out for good. It is much simpler to see all of this in cdb.

Phew.

Is this a good system? Well, it is very reluctant to change warriors. Partly this represents tuning against Q^2s, which will score a fair number of wins even when the right warrior is selected. CLP is only tried once because 3 running losses are implausible against its intended victims, and it gives away too many points against other warriors to try again. This will make switch-on-loss P-spacers with Oneshot/Other almost immune... hmmm.

The approach of counting draws as wins may suit a set of real specialists such as this, because draws will be relatively rare, but in general I think it would be better not to change the state on draws. That way a warrior with a mediocre mix of draws and losses would be replaced fairly quickly. The current requirement of "three losses in a row" may be much rarer than "three losses before the next win". However, there are an infinity of other variations available. There is no rule, for example, which says that all components must be treated alike. The rule could be two losses for some warriors, 3 or more for the others...

Of course the current scheme has been selected partly because it is very efficient in table space and p-logic, but I think the "Ignore Draws" rule could be implemented (at least approximately) with a single SLT instruction. This is untested, as is the assumption that it would be beneficial.

Warrior sequence will also matter somewhat, because when fighting other P-Spacers both warriors will cycle frequently; as soon as one starts winning, the other will change warrior and changing to the *right* one may give a couple of wins before the enemy adapts in turn. Currently the sequence is Stone-Clear-DClear-Stone.

Examining this engine has taught me *why* the hill can be so sensitive to start positions. With a criterion as specific as "Three losses in a row", we are relying on rather rare events to determine which warrior is picked. The difference between DLLL and LDLL will lead to a completely different warrior being fielded for in many or most subsequent rounds, so random variation plays a large role.

The choice of engine is critical to the success of a warrior like this, where each component is so specialised, and I the engine could only be improved by extensive testing on the hill -- more tuning.

Testing

I hardwired the P-Engine to select each component in turn and submitted them to the hill. This table shows the results, with P-spacers at the top. "Best" is the best component score, "AC" is the score of the complete P-Spacer, and "Effic" is the ratio of the two.

Test Scores for Components and Whole Warrior

	CLP	DClr	Stone	2Pass	Best	AC	Effic
Alladins Cave	175	99	131	48	175	116	66%
Electric Head	270	113	87	108	270	273	101%
Nomolos	18	110	100	84	110	145	132%
The Next Baron	13	161	136	82	161	129	80%
Fire and Ice	10	64	22	29	64	88	138%
The Boys are Bk	48	96	232	120	232	201	87%
He Scans Alone	12	115	192	167	192	168	88%
Pulp v0.5	0	13	52	190	190	165	87%
Silver Taln 1.2	24	90	208	71	208	162	78%
Stasis	38	119	176	159	176	161	91%
Return of Paper	0	22	24	180	180	159	88%
Ultraviolet-B	16	31	24	175	175	159	91%
obvious	6	39	28	165	165	156	95%
Vain	2	157	19	158	158	155	98%
Digitalis 3	84	171	33	152	171	147	86%
Newt	4	185	22	165	185	144	78%
Metal IIa	8	152	15	136	152	140	92%
PAN-TAU-RA	9	171	37	128	171	136	80%
Vigor	0	40	57	150	150	131	87%
Tornado 4	22	143	158	147	158	124	78%
Nine Seven Six	23	152	37	158	158	115	73%
Fixed	1	70	63	137	137	107	78%
traumatic smurf	34	109	133	73	133	99	74%
Benchmark [94]	5	112	20	95	112	96	86%
Vengeance	3	122	21	129	129	95	74%

There are a few surprises here. Firstly, the 2-pass is by far the most effective component. It is best in 9 cases, and close-second in another 9! It is so effective that the Dclear is reduced to a very minor role -- there are few warriors that the stone and 2-pass cannot handle between them. CLP also plays a very minor role, terrorising Alladins Cave (!) and Electric Head but otherwise useless. I suspect it has hunted its original prey into extinction.

Ignoring the P-Spacers, the average efficiency is 84%. This suggests that the engine is doing a pretty good job of selecting the right component against the non-P warriors; I would be interested to know how other P-spacers compare on this measure.

Against the P-spacers, the engine does pretty well except against AC (it is psyched out of CLP, and cannot re-use it) and Next Baron which has been tuned against it. Fire and Ice has been tuned in a different way, beating the individual components rather than outsmarting the engine.

Conclusion

This is a highly-tuned P-Spacer. It has a team of strong, specialised components and they have been selected to beat most of the warriors on the hill when it was created. The result of this tuning has been a dominant position at the top of the table. By the same token, the tuning makes it vulnerable to new warriors; for example, none of the next generation of P-spacers will brainwash into oneshots making CLP a dead weight, at least until I perfect Phantasm :)

With such specialised warriors on the hill, we can expect continued rapid turnover because specialists age fast. Penultimate word goes to Paul:

> There are several programs that beat AC on the Hill, fast bombers and qscanning silks do very well against him. But those silks feed the scanners that AC eats so it balances out. I think I serendipitously anticipated the return of several cmp-

scanners which accounts for part of the success.

I don't want to write another qscanning silk just yet, so... look out hill, here comes Thermite III :-]

```
;redcode-94
;name Alladin's Cave
;author P.Kline
;assert CORESIZE == 8000
;strategy pswitch stone, CLP, one-shot dclear, and one-shot spl/dat wiper

slStone   mov    <btStone ,{btStone
          mov    <btStone ,{btStone
          mov    <btStone ,{btStone
btStone   jmp    -300     ,4
sStep     equ    4954
Stone     mov    {1601    ,1-sStep         ; dat-bomb about 90% of core
          sub.x  #sStep   ,-1
          jmp    -2       ,}-2
      for 4
          dat 0,0
      rof
clBoot    equ    (2800)
slClear   mov    clGate     ,clGate+clBoot ;clear and sweep share
boot
code
          mov    btClear    ,btSweep
slSweep   mov    <btSweep   ,{btSweep
          mov    <btSweep   ,{btSweep
          mov    <btSweep   ,{btSweep
          mov    <btSweep   ,{btSweep
          djn    -3         ,#3
btSweep   jmp    Sweep+10+5600,Sweep+10
clGate    dat    0,clBomb
btClear   jmp    Clear+10-btSweep+clBoot ,Clear+10-btSweep

Clear     spl    clSpl+1
          add    #6667  ,clGate           ;one-shot scan
          jmz.f  -1     ,@clGate          ;with dclear

clSpl     spl    #4000  ,{clGate
          mov    clBomb ,>clGate
          djn.f  -1     ,>clGate
          jmp    -3
          dat    {5335,12
clBomb    dat    {5335,12
          dat    0,0

Sweep     add    #2671   ,#2681           ;one-shot scan
          jmz.f  Sweep   ,@Sweep          ;with spl-dat wipe
          jmp    @6      ,<Sweep
          dat    #-100   ,{swWipe+7-Sweep
          dat    #-100   ,{swWipe+7-Sweep
swWipe    spl    #5900   ,{swWipe+7-Sweep
          mov    @2      ,>Sweep
          mov    @1      ,>Sweep
          djn.b  -2      ,{swWipe
          jmp    swWipe  ,swWipe

PSTATE EQU 110
STATES EQU (loss_table-win_table)
      dat    0,init_table-state
in    dat    0,loss_table-state
      dat    0,win_table-state
      dat    0,tie_table-state

think ldp.a  #0,in              ; get input value
```

```
load  ldp.a  #PSTATE,state      ; load old state
      mod.a  #STATES,state      ; brainwash protection
      add.ba *in,state          ; select correct state table
store stp.a  *state,load        ; store new state
      mov    0,-1               ; eliminate accidental stp's

                                 ; p-table managing four options plus bw
                                 ; note that any number of brainwash vals
                                 ; could be put in between valid values
                                 ;
                                 ; loss-table is designed to speed up
                                 ; search for best routine by skipping
                                 ; one or more trials of each program
w0 EQU slClear
w1 EQU slSweep
w2 EQU slStone
w3 EQU slDodger

state jmp    @0        ,w1

tie_table
win_table
      spl    #wx0-win_table,w0   ; Brainwash  (zero should not happen!)
ww1   spl    #ww1-win_table,w1   ; Sweep
wx1   spl    #ww1-win_table,w1
      spl    #ww1-win_table,w1
ww0   spl    #ww0-win_table,w0   ; Clear
wx0   spl    #ww0-win_table,w0
      spl    #ww0-win_table,w0
ww2   spl    #ww2-win_table,w2   ; Stone
      spl    #ww2-win_table,w2
      spl    #ww2-win_table,w2
ww3   spl    #ww3-win_table,w3   ; Dodger
      spl    #ww3-win_table,w3
      spl    #ww3-win_table,w3
loss_table
      spl    #wx0-win_table ,w0  ; Brainwash
      spl    #1-loss_table  ,w1  ; Sweep
      spl    #1-loss_table  ,w1
      spl    #2-loss_table  ,w0
      spl    #1-loss_table  ,w0  ; Clear
      spl    #1-loss_table  ,w0
      spl    #3-loss_table  ,w2
      spl    #1-loss_table  ,w2  ; Stone
      spl    #1-loss_table  ,w2
      spl    #wx1-win_table ,w1
      spl    #1-loss_table  ,w3  ; Dodger (never selected after first trial)
init_table
      spl    #1-loss_table  ,w3
      spl    #wx1-win_table ,w1

slDodger  mov    <btDodger,{btDodger
          mov    <btDodger,{btDodger
          mov    <btDodger,{btDodger
          djn    -3,#6
btDodger  jmp    pescape+300,pescape+1
                                 ; code from "Curious Little Program"
                                 ; after "Cowboy"
pescape   equ    (pb+1)
plen      equ    (pescape-p1)
pstep     equ    (5093)
p1        mov    pb       ,@pfence  ; build fences
          mov    pb       ,*pfence
ploop     add    pincr    ,psnare   ; snare opponent
          mov    psnare   ,@psnare
pfence    sne    pb-56    ,pb+26    ; monitor fences
          djn.f  ploop    ,>p1-pstep
pmove     add    preset   ,psnare   ; adjust snare for new base
          mov    pb       ,pescape  ; set copy pointers
pcopy     mov    >pescape ,}pescape ; make copy
```

```
          jmn.b  -1       ,pescape  ;
preset    jmp    p1+pstep ,-p1-pstep; jump to new location
psnare    jmp    ptrap-2000,+2000
ptrap     mod.x  #10      ,#1       ; allow only one process
          stp.ab #0       ,#0       ; complete brainwash
          djn.b  -1       ,-1
pincr     mov    1        ,-1       ; opponent dies
pb        dat    pstep+p1-pescape,-plen

          end think
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
Authors: Beppe Bezzi <giuseppe.bezzi@galactica.it>, Anton Marsden <amarsden@mcs.vuw.ac.nz>, Christian Schmidt <schmc003@goofy.zdv.Uni-Mainz.de> and Philip Kendall <pak21@cam.ac.uk>

From news-rocq.inria.fr!jussieu.fr!fu-berlin.de!news-ber1.dfn.de!news-fra1.dfn.de!news.uni-mainz.de!marie.zdv.Uni-Mainz.DE!schmc003 Mon May 18 17:37:11 1998
Article: 9052 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!fu-berlin.de!news-ber1.dfn.de!news-fra1.dfn.de!news.uni-mainz.de!marie.zdv.Uni-Mainz.DE!schmc003
From: Christian Schmidt <schmc003@marie.zdv.Uni-Mainz.DE>
Newsgroups: rec.games.corewar
Subject: Core Warrior 67
Date: Mon, 18 May 1998 12:48:23 +0200
Organization: Johannes Gutenberg-Universitaet Mainz, Germany
Lines: 506
Message-ID: <Pine.OSF.3.95.980518124511.15180A-100000@marie.zdv.Uni-Mainz.DE>
NNTP-Posting-Host: marie.zdv.uni-mainz.de
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 67 18 May,1998

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
http://www.koth.org/corewar-faq.html

FTP site is: ftp://ftp.csua.berkeley.edu/pub/corewar
Mirrored at: ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
and: ftp://www.koth.org/corewar

pMARS itself is also available from:
Stormking web pages--http://www.koth.org/pmars.html
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Web pages are at:
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Hi everybody,

here it is... the next issue. After the Redcode Maniac Tournament was over the traffic on the hill was very high.
Sorry for the big gap since the last issue, but I hope you'll be satisfied with the code of Alien, one of my actual hill warriors.

Ok, happy programming...

Christian

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	35.8/	29.2/	35.0	Fixed	Ken Espiritu	142.4	57
2	35.0/	28.6/	36.4	Vigor	Ken Espiritu	141.5	61
3	32.9/	25.2/	41.9	Tuesday Afternoon	John K W	140.6	1
4	34.2/	27.9/	37.9	Alien	Christian Schmidt	140.5	6
5	33.5/	27.1/	39.4	Vain	Ian Oversby	139.9	73
6	42.5/	45.7/	11.8	Silccon	M. J. Pihlaja	139.3	15
7	35.0/	31.4/	33.6	Sphere	Christian Schmidt	138.5	6
8	38.0/	38.7/	23.3	The Body Guard	Ian Oversby	137.4	0
9	39.3/	42.8/	17.9	hTest 6000	P.Kline	135.8	0
10	34.8/	33.9/	31.3	Digitalis 4	Christian Schmidt	135.6	45
11	38.3/	41.9/	19.8	Electric Head 2	Anton Marsden	134.6	1
12	30.4/	26.6/	43.0	Newt	Ian Oversby	134.1	151
13	30.0/	26.0/	43.9	Ultraviolet-B	Ken Espiritu	134.1	83
14	34.2/	34.8/	31.0	Scanitator Pro	Christian Schmidt	133.7	1
15	34.0/	34.8/	31.2	Fire and Ice	David Moore	133.3	46
16	24.7/	16.9/	58.4	Return Of Return Of The J	John K W	132.6	23
17	25.5/	20.1/	54.4	Fugitive	David Moore	130.8	27
18	28.0/	27.2/	44.8	Gemini Dream	John K Wilkinson	128.7	2
19	31.2/	33.9/	34.9	obvious to those who know	Robert Macrae	128.4	109
20	34.4/	41.0/	24.6	BiShot	Christian Schmidt	127.8	17
21	35.5/	43.8/	20.7	)((Ca*mou*flage))(	Sayembara	127.2	7
22	32.3/	37.6/	30.2	Tornado 4	Beppe Bezzi	126.9	75
23	34.9/	44.6/	20.6	One or Zero	Sayembara	125.2	3
24	28.0/	31.1/	40.9	Indecisive	Robert Hale	124.9	8
25	30.8/	39.4/	29.8	Vixen	Robert Hale	122.2	1

Age since last issue: 34 (11 last issue, 6 the issue before)
New warriors: 16 Turnover/age rate 53%
Average age: 32 (34 last issue, 34 the issue before)
Average score: 133 (135 last issue, 134 the issue before)
The top 25 warriors are represented by 12 independent authors: Schmidt with 5, Oversby, Espiritu and Wilkinson with 3, Hale, Moore and Sayembara with 2 and everyone else with just one.

It’s the time of Espiritu with his two very strong papers Fixed and Vigor in the first two ranks.

---

94 - What’s New (sorted by rank and points)

#	%W /	%L /	%T	Name	Author	Score	Age
1	27.3/	8.9/	63.8	Fugitive	David Moore	145.7	0
1	40.5/	36.6/	22.9	The Story In Your Eyes	John K W	144.4	0
1	38.9/	35.3/	25.9	The Body Guard	Ian Oversby	142.5	1
1	35.6/	28.8/	35.6	Sphere	Christian Schmidt	142.5	1
2	38.3/	35.8/	25.9	Liquid Paper v.1.01	Sean McDonald	140.9	1
2	33.3/	27.1/	39.6	Alien	Christian Schmidt	139.5	0
4	26.7/	13.3/	60.1	Return Of Return Of The J	John K W	140.1	1
5	43.2/	44.7/	12.1	Silccon	M. J. Pihlaja	141.7	1
5	31.1/	25.3/	43.6	Tuesday Afternoon	John K W	137.0	0
8	34.9/	34.1/	31.0	Scanitator Pro	Christian Schmidt	135.7	0
9	39.3/	42.8/	17.9	hTest 6000	P.Kline	135.8	0
9	37.7/	41.7/	20.6	Electric Head 2	Anton Marsden	133.6	0
10	37.4/	42.5/	20.1	)((Ca*mou*flage))(	Sayembara	132.2	1
11	28.9/	23.8/	47.3	Gemini Dream	John K Wilkinson	134.0	0
12	35.9/	41.1/	23.0	BiShot	Christian Schmidt	130.6	0
13	33.0/	33.0/	34.0	Indecisive	Robert Hale	133.0	0

15	40.6/ 47.4/ 12.1	Harquebus	M. J. Pihlaja	133.8	0
15	23.2/ 18.1/ 58.6	ROROTJ-11pt	John K W	128.5	1
16	37.8/ 42.7/ 19.5	myVamp5.5	Paulsson	132.9	1
19	24.2/ 20.7/ 55.1	Emperor 2	Robert Hale	127.8	0
20	27.3/ 44.5/ 18.2	One or Zero	Sayembara	130.1	1
20	32.6/ 37.3/ 30.1	Vixen	Robert Hale	127.8	1
21	38.3/ 49.2/ 12.5	harquebus? :)	jkw	127.4	1
22	37.5/ 47.3/ 15.1	Eggbeater	Anton Marsden	127.7	0
24	25.4/ 30.1/ 44.5	Metal 3	Ivan Krajnovic	120.7	1
25	24.9/ 25.8/ 49.3	The Emperor’s Child	Robert Hale	124.0	1

So, as everybody can see there are lots of high quality entries and also lots of KotH’s.

---

94 - What’s No More (sorted by age >15)

#	%W / %L / %T	Name	Author	Score	Age
26	33.5/ 43.6/ 22.9	Electric Head	Anton Marsden	123.5	140
26	27.9/ 30.6/ 41.5	Pulp v0.5	Ian Oversby	125.3	105
26	25.8/ 31.2/ 43.1	Vengeance	Robert Hale	120.3	101
26	25.6/ 27.3/ 47.1	Benchmark [94]	Zul Nadzri	123.8	61
26	30.0/ 34.7/ 35.4	Nomolos	Ian Oversby	125.3	43
26	29.6/ 34.9/ 35.5	traumatic smurf	bjoern guenzel	124.3	39
26	36.4/ 48.4/ 15.2	Harquebus	M. J. Pihlaja	124.4	26
26	33.4/ 45.9/ 20.7	myVamp5.4a	Paulsson (+IO)	120.9	26
26	24.3/ 25.6/ 50.1	LeatherNeck	Robert Hale	122.9	24
26	33.4/ 44.0/ 22.6	Diamonds and Rust	Christian Schmidt	122.8	24
26	34.5/ 45.5/ 20.0	Recycled Bits --	David Moore	123.6	21
26	23.8/ 22.1/ 54.1	Emperor 2	Robert Hale	125.5	17

For the third consecutive issue, the Hill loses its oldest warrior. And with Pulp and Vangeance two warriors are falling shortly before they enter the new hall of fame.

---

94 - What’s Old

#	%W / %L / %T	Name	Author	Score	Age
12	30.4/ 26.6/ 43.0	Newt	Ian Oversby	134.1	151
19	31.2/ 33.9/ 34.9	obvious to those who know	Robert Macrae	128.4	109
13	30.0/ 26.0/ 43.9	Ultraviolet-B	Ken Espiritu	134.1	83

Newt is now the oldest warrior on the hill.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator

24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	373		Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357		Q^2 -> Stone/imp
5	unrequited love	kafka	346		Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345		Stone/imp
7	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Nine Seven Six	M R Bremer	232		Q^2 -> Stone/imp
10	Rosebud	Beppe	218		Stone/imp
11	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
12	Instant Wolf 3.4	Edgar	205		P-warrior
13	Goldfinch	P.Kline	201		P-warrior
14	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
15	Trident^2	John K W	195		Q^2 -> Stone/imp
16	ompega	Steven Morrell	189		Stone/imp
17	Frogz	Franz	172		Q^2 -> Paper
18	The Machine	Anton Marsden	164		Scanner
19	Memories	Beppe	152		Scanner
20	Newt	Ian Oversby	151	*	Q^2 -> Stone/imp
21	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
22	Electric Head	Anton Marsden	140		P-warrior
23	Tiberius 3.1	Franz	130		Q^2 -> Paper
24	Solomon v0.8	Ian Oversby	116		Stone and scanner
25	CC Paper 3.3	Franz	107		Q^2 -> Paper

Newt climbs to the 20th place, while Electric Head stops on the 22th.

Current Status of the Internet Pizza Server Beginner’s Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

Last challenge: Fri May 15 00:16:19 PDT 1998

#	%W / %L / %T	Name	Author	Score	Age
1	49.8/ 9.5/ 40.8	Bob the ImpStoneer V 1.1	Sean McDonald	190.1	25
2	57.3/ 29.5/ 13.2	meld	M. J. Pihlaja	185.1	53
3	52.0/ 29.7/ 18.3	Beescan	M. J. Pihlaja	174.2	61
4	49.6/ 26.4/ 24.0	cute	John K. Lewis	172.7	91
5	37.0/ 9.1/ 53.8	p-U v.4	Ryan Coleman	164.9	69
6	48.5/ 34.7/ 16.7	Death kiss with a dash of	Anders Rosendal	162.3	75
7	46.1/ 33.1/ 20.8	Death kiss	Anders Rosendal	159.0	47
8	43.2/ 27.7/ 29.1	Torn	M. J. Pihlaja	158.7	89
9	46.2/ 37.9/ 15.9	Incisor+	John Metcalf	154.5	76
10	41.7/ 30.8/ 27.5	Get A-life V3.00	Don H. McGee	152.7	72
11	35.9/ 19.9/ 44.2	March 0.93c	Csaba Biro	151.9	38
12	34.2/ 16.9/ 48.9	March 0.92c	Csaba Biro	151.5	83
13	41.2/ 31.7/ 27.2	Get A-life V2.04	Don H. McGee	150.6	84
14	28.8/ 16.2/ 54.9	March 0.94	Csaba Biro	141.4	77
15	29.1/ 16.9/ 54.0	fylle	Klaus	141.2	87
16	29.2/ 19.8/ 51.0	Qilk v.1	Ryan Coleman	138.6	63
17	26.1/ 15.2/ 58.7	Cold Company	John Metcalf	137.1	96
18	34.5/ 36.9/ 28.7	Enceladus v5	Ryan Coleman	132.1	16
19	36.8/ 43.7/ 19.5	kinda 2-pass d-clear	P._V._K.	129.9	1
20	22.5/ 42.3/ 35.2	Sachinhamirwasia	Sapan Bhatia	102.8	4
21	21.7/ 44.5/ 33.8	Sachinhamirwasia ver 2	Sapan Bhatia	98.9	6

22	17.7/ 55.3/ 27.0	wart02	Anonymous	80.0	12
23	17.2/ 59.7/ 23.0	Sachinhamirwasia ver 2	Sapan Bhatia	74.8	7
24	12.4/ 51.1/ 36.6	Winslet	Sapan Bhatia	73.7	14
25	4.5/ 53.2/ 42.3	IMPy	WFB	55.8	2

McDonald and Pihlaja dominates the beginner hill followed by Lewis, Rosendal and Coleman. There are also serveral new names here.

Extra Extra - Alien by Christian Schmidt

Well, as nobody has an article ready for this issue and the gap since the last issue was getting bigger and bigger I decided to publish one of my hill warrior. Alien. I choosed this name, because it looks different to all stone/imp-warriors I've seen before.
The starting idea came after Pihlaja published Harquebus. He talked about how he lost against Krajnovic's stone/imp warriors and that he eventually used Carbonite as stone. Mmmh, I decided that this sounds not to bad for some experiments and I started to build up a stone/imp with Carbonite. The first few tries weren't very successfull. I booted the Carbonite, started that and then launched the imp. If the imp was strong (launching with lot of processes) it lost most of the offensive power and if I used less processes for the imp it lost too much defensive power. And I wasn't able to find an optimal point between both these extremes.
Then I remembered how Digitalis works. The JMP/ADD-launcher starts the imp-spiral AND speeds up the d-clear with lots of processes. So, am I not still working with a self-splitting stone? Why don't I try the same.

And here is the result of this idea filled with some short comments:

```
cBoot   spl    iStart

```

It gives the best results if it runs parallel, the bootstrap of the stone and the imp-launcher.

```
        mov    cBomb,      cSp+cBptr+198
        mov    cSp,        cSp+cBptr
        mov    cSp+1,      cSp+cBptr+1
        mov    cSp+2,      cSp+cBptr+2
        mov    cSp+3,      cSp+cBptr+3
        jmp    cSp+cBptr,  {0
```

Ok, that's the bootstrap of the stone. Nothing else to say about it.

```
iStart  spl    1,          0
        spl    1,          0
        spl    1,          0
        spl    1,          0
        spl    1,          0
```

This five SPL 1 makes 32 parallel processes for the 3-pt imps. Wow, that's a lot.

```
        spl    2,          0
        djn.f  imp,        <-250
        add    bst,        -1
```

The JMP/ADD-launcher looks a bit different, due to the DJN instruction. But it doesn't matter what's used for. I took this directly from Kao's Dust 0.7, that's the reason.

```
        djn.f  cSp+cBptr,  <-100
```

This DJN instruction will decrement 32 consecutive cells in the core by the 32 processes.

```
bst     dat    iStep,      -100
```

Here is the impstep-size for the JMP/ADD-launcher, which add -100 into the b-field of the first DJN instruction. This means it decrements one cell per

100.
I haven't checked this, but both decrementing actions gives some extra 1/10 points.

```
cSp     spl    #0,         <-1151+3
        mov    197,        cAd-(197*3500)
cAd     add.ab {0,         }0
        djn.f  -2,         <-1151
cBomb   dat    >-1,        >1
```

Yeah, Carbonite. Directly from Electric Head.

```
imp     mov.i   #iStep,      *0
```

And the Imp...

The last step was to add a q^2-scanner in front of the code. I used the reordered one from Macrae's Benj's Revenge (aka obvious) but with a tornado-style bomb routine.

```
;redcode-94
;name Alien
;author Christian Schmidt
;strategy q^2 -> stone/imp
;strategy faster launcher
;assert 1

        org    start

QS      equ    (0-200)
QD      equ    100
QB      equ    (start-350)
CR      equ    (fnd-which)
datz    equ    (table-3)
GAP     equ    8
REP     equ    15
cBptr   equ    3000
iStep   equ    2667

qinc    dat    >(-1)*GAP*2,   >GAP

        dat    9*QS,          1*QS
table:  dat    5*QS,          2*QS
        dat    13*QS,         17*QS

P:      add.f  table,         table
slow:   add.ab *P,            fnd
fast:   add.b  @P,            @-1

which:  sne.i  datz,          @fnd
        add.ab #QD,           fnd

        add.ba fnd,           fnd
qbo     mov.i  qinc,          @fnd
        mov.i  qinc,          *fnd
fnd     mov.i  (-1)*(GAP/2),  @QB
        sub.x  qinc,          fnd
        djn.b  qbo,           #REP
        jmp    cBoot,         }-300

start:
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which, 0

        seq.i  QB+QS*2,QB+QS*2+QD
        jmp    fast, 0
        seq.i  QB+QS*1,QB+QS*1+QD
        jmp    fast, <P
        seq.i  QB+QS*17,QB+QS*17+QD
```

```
        jmp    fast, >P

        seq.i  QB+QS*7,QB+QS*7+QD
        jmp    slow, 0
        seq.i  QB+QS*6,QB+QS*6+QD
        jmp    slow, <P
        seq.i  QB+QS*22,QB+QS*22+QD
        jmp    slow, >P
        seq.i  QB+QS*11,QB+QS*11+QD
        jmp    slow, {P
        seq.i  QB+QS*15,QB+QS*15+QD
        jmp    slow, }P
        seq.i  QB+QS*10,QB+QS*10+QD
        djn.f  slow, P

        seq.i  QB+QS*5,QB+QS*5+QD
        jmp    >fast, 0
        seq.i  QB+QS*9,QB+QS*9+QD
        jmp    >fast, {P
        seq.i  QB+QS*13,QB+QS*13+QD
        jmp    >fast, }P

        seq.i  QB+QS*14,QB+QS*14+QD
        jmp    P, 0
        seq.i  QB+QS*8,QB+QS*8+QD
        jmp    P, <P
        seq.i  QB+QS*12,QB+QS*12+QD
        jmp    P, {P
        seq.i  QB+QS*32,QB+QS*32+QD
        jmp    P, }P
        seq.i  QB+QS*20,QB+QS*20+QD
        djn.f  P, P

        seq.i  QB+QS*4,QB+QS*4+QD
        jmp    }slow, 0
        seq.i  QB+QS*3,QB+QS*3+QD
        jmp    }slow, {P
        seq.i  QB+QS*19,QB+QS*19+QD
        jmp    }slow, }P
        seq.i  QB+QS*18,QB+QS*18+QD
        djn.f  <fast, P

        seq.i  QB+QS*36+CR,QB+QS*36+QD+CR
        jmp    }fast, 0

cBoot   spl    iStart
        mov    cBomb,      cSp+cBptr+198
        mov    cSp,        cSp+cBptr
        mov    cSp+1,      cSp+cBptr+1
        mov    cSp+2,      cSp+cBptr+2
        mov    cSp+3,      cSp+cBptr+3
        jmp    cSp+cBptr,  {0
iStart  spl    1,          0
        spl    1,          0
        spl    1,          0
        spl    1,          0
        spl    1,          0
        spl    2,          0
        djn.f  imp,        <-250
        add    bst,        -1
        djn.f  cSp+cBptr,  <-100
bst     dat    iStep,      -100

cSp     spl    #0,         <-1151+3
        mov    197,        cAd-(197*3500)
cAd     add.ab {0,         }0
        djn.f  -2,         <-1151
cBomb   dat    >-1,        >1

imp     mov.i   #iStep,      *0
```

Now lets see how well Alien (and three other stone/imps) works against some warriors:

(200 fights)	DC	TCC	TM	HSA	OS	P	G	NSS	N	A
Gigolo	311	227	242	392	213	289	-	235	245	251
Nine Seven Six	291	333	195	389	249	180	283	-	287	298
Newt	373	260	257	313	330	190	266	224	-	268
Alien	331	325	294	448	333	216	272	229	244	-

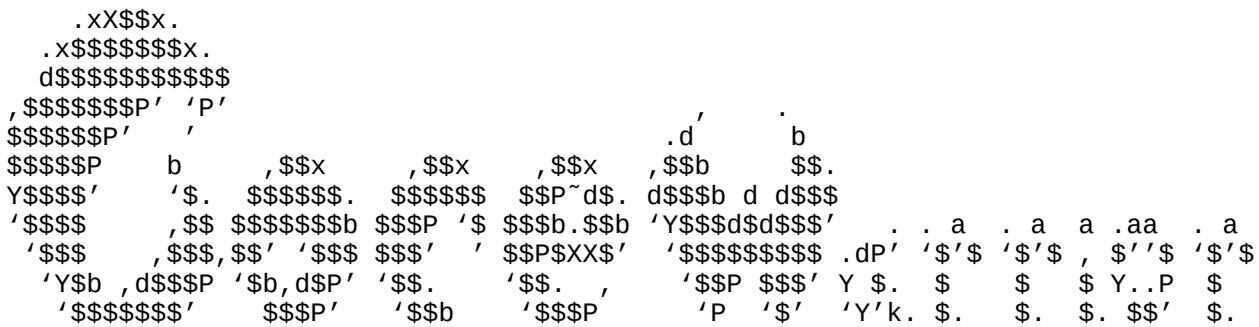
DC: d-clear TCC: The Core Clear TM: The Machine HSA: He Scans Alone
OS: Oneshot P: Pulp G: Gigolo NSS: Nine Seven Six N: Newt A: Alien

That looks not bad. Against d-clear and The Core Clear it scores as good as the other stone/imps. But it scores much better against scanner. HSA loses really badly against Alien.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
Authors: Beppe Bezzi <giuseppe.bezzi@galactica.it>, Anton Marsden <amarsden@mcs.vuw.ac.nz>, Christian Schmidt <schmc003@goofy.zdv.Uni-Mainz.de> and Philip Kendall <pak21@cam.ac.uk>

From news-rocq.inria.fr!jussieu.fr!oleane!newsfeed.nacamar.de!nntp.news.xara.net!xara.net
!server6.netnews.ja.net!server4.netnews.ja.net!server2.netnews.ja.net!pegasus.csx.cam.ac.
uk!lyra.csx.cam.ac.uk!hammer.thor.cam.ac.uk!pak21 Sat Jun 13 14:31:04 1998
Article: 9163 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!oleane!newsfeed.nacamar.de!nntp.news.xara.net!xara.ne
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.uk!lyra.csx.cam.ac.uk!hammer.thor.cam.ac.uk!pak21
From: Philip Kendall <pak21@hermes.cam.ac.uk>
Newsgroups: rec.games.corewar
Subject: Core Warrior 68 (repost)
Date: Sat, 13 Jun 1998 10:16:39 +0100
Organization: University of Cambridge, England
Lines: 738
Sender: pak21@hammer.thor.cam.ac.uk
Message-ID: <Pine.SOL.3.96.980613101507.8661A-100000@hammer.thor.cam.ac.uk>
NNTP-Posting-Host: hammer.thor.cam.ac.uk
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII
To: Damien Doligez <Damien.Doligez@inria.fr>

[Reposting as this doesn't appear to have propogated properly around
Usenet; apologies if you've now seen this twice -- Philip Kendall]



Issue 68 9 June, 1998

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
http://www.koth.org/corewar-faq.html

FTP site is: ftp://ftp.csua.berkeley.edu/pub/corewar
Mirrored at: ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
and: ftp://www.koth.org/corewar

pMARS itself is also available from:
Stormking web pages--http://www.koth.org/pmars.html
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Web pages are at:
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

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Welcome back.

In this issue, you can find a summary of my exploits in Ilmari Karonen's recent Tournament, and how I went about writing the warriors I used in that Tournament, as well as David Moore's once-almost-unkillable 'The Fugitive'.

-- Philip Kendall

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	39.4/	37.0/	23.7	Recycled Bits++	David Moore	141.8	3
2	34.2/	28.0/	37.8	Vain	Ian Oversby	140.4	80
3	35.2/	30.6/	34.2	Fixed	Ken Espiritu	139.8	64
4	34.4/	30.0/	35.5	Vigor	Ken Espiritu	138.9	68
5	33.1/	28.4/	38.5	Shadow	Christian Schmidt	137.9	4
6	31.4/	25.0/	43.7	Ultraviolet-B	Ken Espiritu	137.7	90
7	31.1/	26.6/	42.3	Newt	Ian Oversby	135.7	158
8	31.3/	27.5/	41.2	Tuesday Afternoon	John K W	135.1	8
9	34.5/	34.7/	30.7	Shape	Christian Schmidt	134.4	5
10	40.3/	46.4/	13.3	Silccon	M. J. Pihlaja	134.2	22
11	34.0/	33.9/	32.1	Fire and Ice	David Moore	134.1	53
12	36.2/	38.6/	25.2	The Body Guard	Ian Oversby	133.9	7
13	36.3/	38.7/	25.1	He Scans a Little Crooked	P.Kline	133.9	0
14	35.7/	37.9/	26.4	Floody River	P.Kline	133.6	1
15	32.7/	32.1/	35.2	Alien	Christian Schmidt	133.3	13
16	32.0/	32.6/	35.4	Pulp v0.4	Ian Oversby	131.5	2
17	37.4/	43.5/	19.1	Blurstone	M. J. Pihlaja	131.3	4
18	25.1/	19.2/	55.7	Fugitive	David Moore	130.9	34
19	35.1/	39.5/	25.4	BiShot	Christian Schmidt	130.8	24
20	35.8/	41.3/	22.9	Eraser	Ken Espiritu	130.4	5
21	33.7/	37.2/	29.1	Digitalis 4	Christian Schmidt	130.2	52
22	36.2/	43.0/	20.7	Electric Head 2	Anton Marsden	129.4	8
23	24.0/	19.6/	56.4	Return Of Return Of The J	John K W	128.5	30
24	27.9/	28.6/	43.5	Gemini Dream	John K Wilkinson	127.3	9
25	30.0/	34.2/	35.8	obvious to those who know	Robert Macrae	125.8	116

Age since last issue: 7 (34 last issue, 11 the issue before)
New warriors: 9 Turnover/age rate 129%
Average age: 34 (32 last issue, 34 the issue before)
Average score: 134 (133 last issue, 135 the issue before)
The top 25 warriors are represented by just 9 independent authors: Schmidt with 5, Oversby and Espiritu with 4, Wilkinson and Moore with 3, Pihlaja and Kline with 2, and Marsden and Macrae with one each.

It was a battle of the papers at the beginning, before David Moore hit the top again with Recycled Bits++

---

94 - What's New

#	%W /	%L /	%T	Name	Author	Score	Age
8	37.8/	38.3/	23.9	The Body Guard	Ian Oversby	137.2	0
19	35.5/	40.9/	23.6	Eraser	Ken Espiritu	130.2	0
5	35.7/	34.2/	30.1	Shape	Christian Schmidt	137.1	0
10	38.8/	42.9/	18.3	Blurstone	M. J. Pihlaja	134.8	0
4	33.3/	28.3/	38.4	Shadow	Christian Schmidt	138.3	0
1	40.7/	35.7/	23.6	Recycled Bits++	David Moore	145.7	1
18	30.9/	31.3/	37.7	Pulp v0.4	Ian Oversby	130.5	1
8	36.4/	37.5/	26.1	Floody River	P.Kline	135.2	1
13	36.3/	38.7/	25.1	He Scans a Little Crooked	P.Kline	133.9	0

David Moore is back with his new pspacer to regain the KotH spot.

---

94 - What's No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	1.3/	1.4/	1.3	The Body Guard	Ian Oversby	5.2	14
26	1.7/	1.8/	0.4	hTest 80	P.Kline	5.6	0
26	30.1/	38.2/	31.7	Vixen	Robert Hale	122.0	2
26	33.7/	44.8/	21.5	One or Zero	Sayembara	122.5	5
26	1.5/	2.0/	0.6	Scanitator Pro	Christian Schmidt	5.0	3
26	30.7/	37.4/	31.9	Tornado 4	Beppe Bezzi	124.1	78
26	1.3/	1.6/	1.1	Sphere	Christian Schmidt	5.1	9
26	27.2/	29.7/	43.1	Indecisive	Robert Hale	124.6	12
26	34.7/	44.0/	21.3	)((Ca*mou*flage))(	Sayembara	125.3	14

The only significant loss here is Beppe's Tornado 4.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
7	31.1/	26.6/	42.3	Newt	Ian Oversby	135.7	158
25	30.0/	34.2/	35.8	obvious to those who know	Robert Macrae	125.8	116
6	31.4/	25.0/	43.7	Ultraviolet-B	Ken Espiritu	137.7	90

Newt keeps on going, whilst obvious may well not be around for the next edition of Core Warrior.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber

12	Instant Wolf 3.4	Edgar	205		P-warrior
13	Goldfinch	P.Kline	201		P-warrior
14	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
15	Trident^2	John K W	195		Q^2 -> Stone/imp
16	ompega	Steven Morrell	189		Stone/imp
17	Frogz	Franz	172		Q^2 -> Paper
18	The Machine	Anton Marsden	164		Scanner
19	Newt	Ian Oversby	158	*	Q^2 -> Stone/imp
20	Memories	Beppe	152		Scanner
21	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
22	Electric Head	Anton Marsden	140		P-warrior
23	Tiberius 3.1	Franz	130		Q^2 -> Paper
24=	Solomon v0.8	Ian Oversby	116		Stone and scanner
24=	obvious to those who k	Robert Macrae	116		Q^2 -> Paper

Newt climbs another place to 19th, whilst obvious fights its way onto the bottom of the Hill, displacing Franz's CC Paper 3.3

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Fri May 15 00:16:19 PDT 1998

#	%W /	%L /	%T	Name	Author	Score	Age
1	55.2/	18.1/	26.7	March 0.93c	Csaba Biro	192.2	85
2	55.3/	28.3/	16.5	Rusty	John Lewis	182.3	38
3	54.8/	30.4/	14.8	WannaChatInWarriorNames?	John Metcalf	179.2	47
4	54.9/	33.0/	12.1	Minge VIII	Simon Wainwright	176.7	4
5	49.0/	28.4/	22.6	Fook	Max Misch	169.6	10
6	49.6/	33.6/	16.8	One Step Beyond	John Metcalf	165.5	13
7	47.6/	29.8/	22.6	Fook	Max Misch	165.4	6
8	45.8/	34.0/	20.2	Enceladus v5	Ryan Coleman	157.6	63
9	47.8/	44.2/	8.0	Ghost Train	John Metcalf	151.3	2
10	45.6/	42.6/	11.8	Sleepy Warrior	John Metcalf	148.6	46
11	43.4/	38.7/	17.9	Death kiss	Anders Rosendal	148.2	94
12	36.5/	28.9/	34.6	Cascade 6	Steve Gunnell	144.1	24
13	39.3/	43.6/	17.2	delta	Peter Andrewartha	134.9	3
14	38.3/	42.7/	19.0	Twinkle	John Metcalf	133.8	44
15	38.7/	47.5/	13.8	Fire-master 3	P._V._K.	129.9	1
16	34.8/	41.4/	23.9	Sachinhamirwasia	Sapan Bhatia	128.2	51
17	38.2/	50.6/	11.2	NewClear 5	Ryan Coleman	125.9	14
18	35.8/	50.5/	13.6	Brimstone	John Metcalf	121.2	37
19	30.3/	48.3/	21.5	Sachinhamirwasia ver 2	Sapan Bhatia	112.3	53
20	35.4/	59.4/	5.2	Oscck	John Metcalf	111.3	5
21	14.1/	16.9/	69.0	DJ85	Peter Andrewartha	111.2	18
22	28.6/	49.5/	21.9	KB15	Peter Anrewartha	107.7	7
23	26.5/	47.4/	26.2	QUIRK	Mwolak	105.6	25
24	31.9/	65.0/	3.1	Splat	Paul Crook	98.8	36
25	24.1/	57.2/	18.6	Fleapit	Steve Gunnell	91.0	9

The Hint - How to win Ilmari's Tournament

Ilmari Karonen recently ran a tournament, based around Round 4 of the Redcode Maniacs Tournament (see http://www.geocities.com/SiliconValley/Park/5427/maniacs.htm for details of this), and the classic 'Prisoner's Dilemma' problem. Basically, the idea was to design a p-switcher switching between Carbonite (a stone) and TimeScape (a paper). One thing which made the Tournament different from the normal Hill was that it was not just a straight all-fights-all; after all the fights had been completed, the worst warriors were removed, and the remaining warriors fought again. The winner was the last warrior standing :-) Full details can be found on the Tournament Web pages:

http://www.sci.fi/~iltzu/corewar/imt1/

The first thing I realised about this tournament was that the strategy needed was rather different to normal Hill fights: on the Hill, to get a good result, you need to score well against all warriors, both good and bad, whilst in IMT1, the worse warriors will get removed from the running, so a successful warrior will have to do well against other good warriors, with the scores against the weaker warriors not mattering too much. A good example of this is TimeScape: against simple warriors which run Carbonite a lot, this does very well, but it is not a successful warrior in the Tournament (as can be seen from the results).

The next question is how to determine what is a good warrior, using the currently available tools. mts appears to be along the right lines, but this doesn't store the results of each individual battle, only the total scores, so determining the new scores after the bottom n warriors have been removed would require re-running all the battles, which would take a lot of runtime (and all this was being doing on what was supposedly the undergraduate teaching Unix box at university :-)), so I ended up writing a program to do this job: it isn't quite the same as the Tournament in that only 1 warrior is removed every time, rather than being removed it batches as happened in the Tournament, but it is quite close. If anyone's interested, I've put the ANSI C source code up on my web pages, at http://www.geocities.com/SiliconValley/Park/5427/ilmari.html.

At this stage, some more thinking about the tournament took place, and it became obvious that the strategy for a successful warrior would be to split wins as much as possible with the opposition, as this would score an average of 1.5 points per round, as opposed to the 1 point per round which is very easily obtained by both parties running TimeScape every round. Therefore a successful warrior will be scoring around 150 points per 100 rounds, at least against other successful warriors.

Enough thinking, time for some practice: testing revealed that the Carbonite after win, TimeScape after loss or tie warrior (DTfT) was the best of any of the standard warriors given by Ilmari, and a few more simple and not-so-simple switchers thrown in my me. DTfT has a great strength in that it is virtually impossible to beat in a 1-on-1 fight (the only way to gain a decisive victory is to run TimeScape a lot, and DTfT very quickly starts throwing TimeScape back when fighting an opponent which does that). Also, it likes to cooperate with an opponent: if it wins a round, it runs Carbonite in the next round, thus giving the other warrior a chance for a win.

Self-fights are also very important in the Tournament (in the final round, involving 3 warriors, half your score comes from the self-fight). At first glance it appears that DTfT should be good in a self-fight, as both copies will run Carbonite in the first round, and then alternation will occur between Carbonite-TimeScape and TimeScape-Carbonite states, giving a win for one copy or other in every round, and therefore a perfect score in the self-fight. However, TimeScape beats Carbonite only around 90% of the time, and after one tie, the warrior drops into the low-scoring TimeScape-TimeScape state, and stays there.

To solve this problem, I changed from the very simple switcher used in DTfT to a P^2 switcher which still selected Carbonite after a win and TimeScape after a loss (no matter what the previous state), but ran the same warrior again after a tie. This doesn't make the warrior significantly easier to beat, but does mean it gets a much better score in self-fights, and is also less likely to get stuck into a TimeScape-TimeScape state when fighting other cooperative warriors.

This makes the self-fight score much better, but still not perfect; I didn't do any detailed tests, but I think that it tends to drop around 10 points per 100 rounds in self-fight, which could be the difference between winning and losing. The first thing I tried was putting in a decoy which had all its b-fields pointing to just after Carbonite, so TimeScape's bombing line (mov.i {-FSTEP,<FSTEP) would then blow Carbonite away. This improved the score in self-fights, but did tend to give away some points in other fights, so I'm not sure if this was an improvement or not.

Then, Ilmari made the ruling that suicidal switchers were allowed: this gives a very easy method of getting a perfect score, by simply having two suicidal states, when the two copies of the warrior alternating between them. The P^2 switcher used was now a 4-state affair:

			State to change to after		
	State	Component	W	L	T
	0	TimeScape	1	0	0
	1	Carbonite	1	0	1
(Initial state)	2	Suicide	2	3	0
	3	Suicide	2	0	0

State 2 expects to lose, whilst state 3 expects to win. In the first round, state 2 will win for the warrior which moves second, thus placing the two warriors into the correct states for the next round, when the starting orders are reversed.

This now gives a perfect score in the self-fight (gaining say 10 points per 100 rounds), but gives away two losses at the start of every other fight while it switches away from its suicidal states (therefore losing 6 points per fight). Therefore whether this is a good idea or not depends on both the number of rounds per fight and the number of warriors in the fight, neither of which were known at this stage. Is there a way to detect a self-fight without giving up two losses, remembering that the tournament rules stated that no PINs were allowed, and the p-switcher could not read or write outside the warrior’s initial 100-instruction length?

Ths solution which I came up with was to create a special routine, which was to be run on the first round only, and simply did nothing for almost 80000 cycles! If this routine did not complete its waiting phase (which can occur either because it won because the other warrior suicided earlier, or it was killed by the opponent), it was pre-set to switch to TimeScape for the second round. On the other hand, if it did complete its wait, it reloaded its pspace to switch into suicidal mode, and then commited suicide itself. This still gives the perfect self-fight, but now gave up only 3 points when fighting other warriors (or perhaps less: I think that most successful warriors will run Carbonite on the first round, to avoid getting locked into a TimeScape-TimeScape state, and after Carbonite has killed my ‘do nothing’ routine, I again think that successful warriors will stick with Carbonite, so by running TimeScape, I get a win and end up back on level terms).

To decide which four warriors to submit to the Tournament, I created nine different warriors: the 2-state P^2, the 4-state P^2 and the 4-state P^2 with first round routine, each with three different decoys: the decoy pointing towards Carbonite, a decoy pointing away from Carbonite, and a 1,1 decoy designed to slow down the djn trail of Carbonite. I ran all nine of these off together using my test program, and took the last four standing. These were the 4-state P^2 with first round with all three of the decoys, and the simple 4-state P^2 with the 1,1 decoy (which came last of the four).

Anyway, the results:

Rank	Name	Author	%W	%L	%T	Score
1	Type Three Quantum Sing	Philip Kendall	50	49	1	1199
2	Type One Quantum Singul	Philip Kendall	49	49	2	1197
3	Altruist 2/3	Robert Macrae	48	49	3	1181
4	Variations 1	M. J. Pihlaja	45	46	9	2034
5	Type Two Quantum Singul	Philip Kendall	43	43	13	2012
6	Variations 1	M. J. Pihlaja	42	43	15	1987
7	System D 2-12/20	Robert Macrae	33	32	34	2945
8	Modus Vivendi 3/20	Robert Macrae	34	34	32	2935
9	Type Four Quantum Singu	Philip Kendall	32	32	37	2893
10	Variations 4	M. J. Pihlaja	30	29	41	2886

Quite good, even if I do say so myself :-) I was helped in the final battle by having two of my warriors in there, as the self-fight detection routine works

just as well between two of my warriors with the first round routine, so both of my warriors immediately scored 900 points, and only had Altruist 2/3 to fight. Anyway, here's the code of the winning warrior, Type Three Quantum Singularity:

```
;redcode-94
;name Type Three Quantum Singularity
;author Philip Kendall
;strategy A P^2 switcher doing win -> Carbonite, loss -> Timescape,
;strategy tie as last round. Also with a couple of suicidial states
;strategy to ensure a perfect score in self-fights, a special first
;strategy round 'do nothing' loop to work out when we're fighting
;strategy ourself, and a decoy which points towards Carbonite to
;strategy reduce the number of ties.
;assert CORESIZE==8000 && MAXCYCLES==80000

        for     49
        dat.x   0,(carb+3)
        rof

dbomb   dat     >-1, >1
carb    spl     #0, <-100
        mov     dbomb, tar-197*3500
tar     add     #197, -1                ; gets bombed to start coreclear
        djn.f   -2, <-1151

        for     8               ; must be followed by 8 dats
        dat.f   0,0
        rof

TSTEP equ 1800
CSTEP equ 3740
NSTEP equ -1922
FSTEP equ 1870

time    spl     1,              <-200
        spl     1,              <-300
        mov.i   -1,             0

tim1    spl     @tim1,          }TSTEP
        mov.i   }tim1,          >tim1
cel1    spl     @cel1,          }CSTEP
        mov.i   }cel1,          >cel1
        mov.i   {-FSTEP,        <FSTEP
        mov.i   {cel1,          <ncl1
ncl1    jmp     @ncl1,          >NSTEP

        for     2               ; must be followed by 2 dats
        dat.f   0,0
        rof

pState  equ     138     ; pspace location containing current state
nStates equ     4       ; maximum number of states (for brainwash protection)

;NOTE: state values go from 0 to STATES-1

        dat.f   0,init-state
in      dat.f   0,loss_t-state
        dat.f   0,win_t-state
        dat.f   0,tie_t-state

think   ldp.a   #0,in               ; get input value
load    ldp.a   #pState,state       ; load old state
        mod.a   #nStates,state      ; brainwash protection
        add.ba  *in,state           ; select correct state table
store   stp.a   *state,load         ; store new state
state   jmp.a   @0                  ; jump to warrior code

init    dat.f   0,first
win_t   dat.f   1,carb
```

```
        dat.f   1,carb
        dat.f   2,suicide
        dat.f   2,suicide
tie_t   dat.f   0,time
        dat.f   1,carb
loss_t  dat.f   0,time
        dat.f   0,time
suicide dat.f   3,suicide
        dat.f   0,time

first   mov.ab  #7996,count        ; wait around for ~80000 cycles
count   djn.b   0,#0
        djn.b   first,#10

        ; if we haven't lost yet, we're almost certainly fighting
        ; ourself, so enable the suicide routine

        mov.i   (win_t+2),init
        jmp.a   store

        end     think
```

Extra Extra - The Fugitive by David Moore

Imp versus Gate. The final showdown of countless battles.
What can our own imps do to survive?
We find the secret to longevity in superior numbers!
When imps run with 100s of processes they are so slow that
they miss much of the core. If any one of them avoids the impending gate,
then the battle is saved.

That's the plan, but how can we accomplish it?
In this article we improve upon the classic approach of launching from paper.
In the past there have been two types of imp-launching paper:
Die Hard, which copies an entire launcher with each silk,
and theMystery1.5, which synchronizes three different copies of paper
to make a single on-board imp work.
The goal is to create a new kind of imp-launching paper that is more
prolific than Die Hard but does not require the expensive binary
launch code of theMystery.

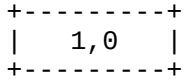
Sometime during the execution of the paper, we would like 3 of its
copies to coincide to execute their 3 imp instructions
in the same order and places that an imp ring would.

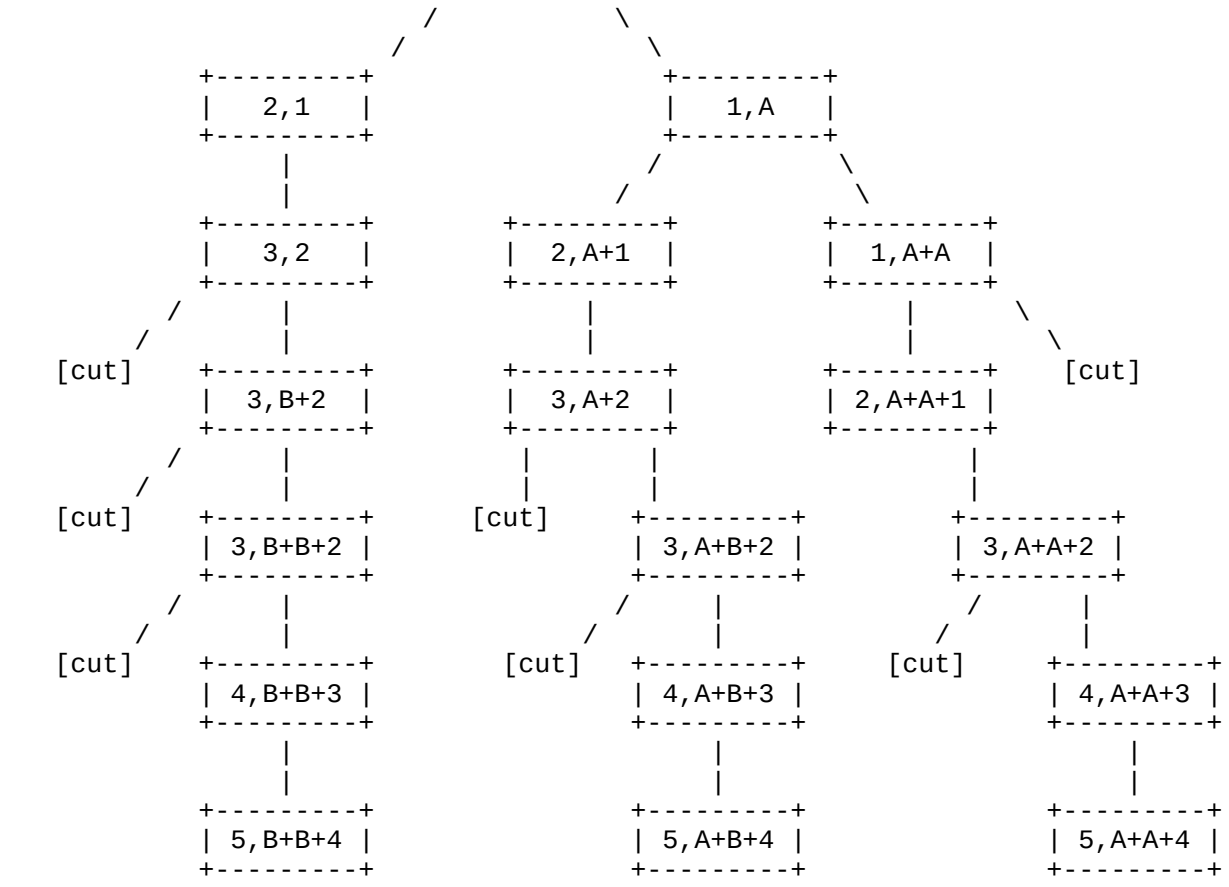
```
        spl  1, 0       ; generate 5 parallel processes
        mov -1, 0
        mov -1, 0

paper   spl   @0,    A   ; 1
        mov  }-1,  >-1   ; 2
        spl   @0,    B   ; 3
        mov  }-1,  >-1   ; 4
imp     mov.i #0, 2667   ; 5
```

We're looking for A and B such that the execution of an imp at location C
will be followed by other imps at C+2667 and C+5334.

The following diagram traces the execution of the paper.
Each pair I,J represents the Ith instruction being executed at
location J. Instructions in the same row execute in turn, with the
leftmost instruction executing first.





Since the 5th instruction (the imp) is executed 3 times in the last row,
an imp ring is possible if for some C:

```
        B+B+4 = C
        A+B+4 = C + 2667      (2667 == (CORESIZE+1)/3)
        A+A+4 = C + 5334
```

Solving the system of equations yields:

```
        A = B + 2667
```

Therefore, the following paper can launch imp rings:

```
        B equ 2355      ; B can be almost any number

        spl  1, 0       ; start 5 parallel processes
        mov -1, 0
        mov -1, 0

        spl   @0, B+2667  ; substituted  a <- b+2667
        mov  }-1,  >-1
        spl   @0,    B
        mov  }-1,  >-1
        mov.i #0, 2667
```

Some programs clear with DAT <2667, <5334 bombs.
If they give you a hard time then you can use 7 point imps:

```
;redcode-94
;name Seven Brothers
;author David Moore
;assert CORESIZE==8000

        size equ 1143
```

```
        c1 equ 2365
        c2 equ 5715

start   spl  1, 0       ; start 7 parallel processes
        spl  1, 0
        mov -1, 0

paper   spl   @0,   c1
        mov  }-1,  >-1
        spl   @0,   c2+size
        mov  }-1,  >-1
        spl   @0,   c2
        mov  }-1,  >-1

imp     mov.i #1, size

end
```

Finally, the source code for The Fugitive, which uses a q^2 and paper with imps and anti-imp bombing:

```
;redcode-94
;name The Fugitive
;author David Moore
;strategy qscan, silk, imps
;assert CORESIZE==8000

;---------
; q^2 scan
;---------

QB equ 1000  ; scan pattern
QS equ 500
QI equ 250

qscan seq qscan+QB+(QS*0), qscan+QB+(QS*0)+QI
      jmp q0, 0

      seq qscan+QB+(QS*3), qscan+QB+(QS*3)+QI
      jmp q1, 0
      seq qscan+QB+(QS*6), qscan+QB+(QS*6)+QI
      jmp q1, {q1
      seq qscan+QB+(QS*7), qscan+QB+(QS*7)+QI
      jmp q1, }q1

      seq qscan+QB+(QS*1), qscan+QB+(QS*1)+QI
      djn.a q2, >q1
      seq qscan+QB+(QS*2), qscan+QB+(QS*2)+QI
      jmp q2, >q1
      seq qscan+QB+(QS*4), qscan+QB+(QS*4)+QI
      jmp q2, {q2
      seq qscan+QB+(QS*5), qscan+QB+(QS*5)+QI
      jmp q2, 0
      seq qscan+QB+(QS*8), qscan+QB+(QS*8)+QI
      jmp q2, {q1
      seq qscan+QB+(QS*9), qscan+QB+(QS*9)+QI
      jmp q2, }q1
      seq qscan+QB+(QS*10), qscan+QB+(QS*10)+QI
      jmp q2, }q2

      jmp pboot, >393

;-----------
; q^2 bomber
;-----------

qb1   dat 23,  23
qb2   dat  1,  34
```

```
      dat  QS*1,  QS*6
tab   dat  QS*2,  QS*3
      dat  QS*7,  QS*7

q2    add.ab tab, fwd
q1    add.b  tab, @-1
q0    sne   @fwd, pboot-1
      add  #QI-2, @2
      add.ba fwd, fwd
      mov    qb2, *fwd
      mov    qb2, @fwd
fwd   mov     88, @qscan+QB+(QS*0)
      sub    qb1, @-3
      djn     -4, #5
      jmp  pboot,  0

for 48
 dat 0,0
rof

;---------------
; Silk with Imps
;---------------

impy equ 2667

c1 equ 3855
c2 equ 2355
c3 equ  831
c4 equ 4000

pboot spl  1, >7648        ; 8 processes
      spl  1, >7356
      spl  1, >7212

      mov <1, {1               ;optional
      spl paper+c4+8, paper+8  ;extra launcher

paper spl  @0, >c1
      mov }-1, >-1
      spl  @0, >c2+impy
      mov }-1, >-1
      spl  @0, >c2
      mov }-1, >-1

      mov.i #1, {1         ; anti-imp bombing

      mov.i #c3, impy      ; my imp (a-field is data)

end qscan
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
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From news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!news.cis.ohio-state.edu!news.maxwell.syr.edu!bignews.mediaways.net!news-fra1.dfn.de!news.uni-mainz.de!marie.zdv.Uni-Mainz.DE!schmc003 Thu Aug 20 10:25:55 1998
Article: 9503 of rec.games.corewar
Path: news-rocq.inria.fr!jussieu.fr!math.ohio-state.edu!news.cis.ohio-state.edu!news.maxwell.syr.edu!bignews.mediaways.net!news-fra1.dfn.de!news.uni-mainz.de!marie.zdv.Uni-Mainz.DE!schmc003
From: Christian Schmidt <schmc003@marie.zdv.Uni-Mainz.DE>
Newsgroups: rec.games.corewar
Subject: Core Warrior 69
Date: Thu, 20 Aug 1998 09:24:15 +0200
Organization: Johannes Gutenberg-Universitaet Mainz, Germany
Lines: 907
Message-ID: <Pine.OSF.3.95.980820091834.11395A-100000@marie.zdv.Uni-Mainz.DE>
NNTP-Posting-Host: marie.zdv.uni-mainz.de
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 69 20 august, 1998

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills--currently the '94 draft hill and the beginner hill. Coverage will follow where ever the action is. If you have no clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
http://www.koth.org/corewar-faq.html
FTP site is: ftp://ftp.csua.berkeley.edu/pub/corewar
Mirrored at: ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
and: ftp://www.koth.org/corewar

pMARS itself is also available from:
Stormking web pages--http://www.koth.org/pmars.html
Terry's web page--http://www.ncs.infi.net/~wtnewton/corewar/
Fechter ftp site--ftp://members.aol.com/ofechner/corewar

Web pages are at:
http://www.koth.org/ ;Stormking
http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
http://pauillac.inria.fr/~doligez/corewar/ ;Planar

Newbies should check the stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi's hints in the first issues is available at:
ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Welcome back.

You can find in this issue three hints written by John Metcalf and Ian Oversby. So enjoy and happy programming.

-- Christian Schmidt

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.2/	35.6/	20.3	Recycled Bits	David Moore	152.7	7
2	35.7/	25.5/	38.8	Vain	Ian Oversby	145.9	93
3	36.4/	28.2/	35.4	Vigor	Ken Espiritu	144.6	81
4	39.4/	34.5/	26.1	Defender	Ian Oversby	144.3	1
5	36.4/	28.7/	35.0	Fixed	Ken Espiritu	144.1	77
6	35.3/	26.6/	38.1	Shadow	Christian Schmidt	144.0	0
7	33.5/	23.5/	43.0	Newt	Ian Oversby	143.4	171
8	27.8/	14.0/	58.2	Fugitive	David Moore	141.5	47
9	33.5/	25.5/	41.0	Tuesday Afternoon	John K W	141.5	21
10	40.4/	40.1/	19.6	Diamonds and Rust v2	Christian Schmidt	140.7	12
11	36.9/	33.6/	29.5	Shape	Christian Schmidt	140.2	18
12	31.9/	25.1/	43.0	Ultraviolet-B	Ken Espiritu	138.6	103
13	27.7/	16.9/	55.4	Return Of Return Of The J	John K W	138.6	43
14	35.5/	32.4/	32.1	Fire and Ice	David Moore	138.6	66
15	33.4/	29.1/	37.5	Alien	Christian Schmidt	137.6	26
16	36.7/	36.2/	27.1	Digitalis 4	Christian Schmidt	137.3	65
17	37.2/	37.2/	25.5	The Body Guard	Ian Oversby	137.3	20
18	39.0/	42.5/	18.5	Blurstone	M. J. Pihlaja	135.6	17
19	33.0/	31.0/	36.0	Nine Seven Six	M R bremer	135.0	2
20	38.4/	42.3/	19.3	Electric Head 2	Anton Marsden	134.4	21
21	30.0/	26.1/	43.9	Gigolo	Core Warrior staff	133.9	3
22	34.9/	36.5/	28.6	Tornado 4	Beppe Bezzi	133.3	4
23	36.1/	41.7/	22.1	Eraser	Ken Espiritu	130.6	18
24	32.6/	34.9/	32.5	Falcon v0.5	Ian Oversby	130.3	0
25	31.7/	35.7/	32.6	C I A	Anders Ivner	127.6	7

Age since last issue: 13 (7 last issue, 34 the issue before)
New warriors: 9 Turnover/age rate 69%
Average age: 36 (34 last issue, 32 the issue before)
Average score: 138 (134 last issue, 133 the issue before)
The top 25 warriors are represented by just 9 independent authors: Schmidt and Oversby with 5, Espiritu with 4, Moore with 3, Wilkinson with 2, and the rest with one each.

David Moore’s Recycled Bits dominates with a big gap the hill.

---

94 - What’s New

#	%W /	%L /	%T	Name	Author	Score	Age
2	38.5/	35.9/	25.6	Defender	Ian Oversby	141.1	0
21	29.4/	28.6/	42.0	Faces 0.1	Csaba Biro	130.1	1
1	41.7/	37.3/	21.0	Diamonds and Rust v2	Christian Schmidt	146.0	0
3	41.9/	43.9/	14.3	Red Carpet	David Moore	139.9	1
1	45.6/	34.5/	19.8	Recycled Bits	David Moore	156.7	0
18	32.8/	35.8/	31.4	C I A	Anders Ivner	129.8	0
23	30.6/	36.3/	33.1	Falcon v0.5	Ian Oversby	124.9	0
4	33.4/	27.8/	38.8	Shadow	Christian Schmidt	138.9	0
??	? /	? /	?	Nine Seven Six	M R bremer	?	1
??	? /	? /	?	Gigolo	Core Warrior staff	?	1
??	? /	? /	?	Tornado 4	Beppe Bezzi	?	1

Diamonds and Rust v2 spots the first place until Moore strikes back with his new version of Recycled Bits.

---

94 - What’s No More

#	%W /	%L /	%T	Name	Author	Score	Age
26	29.4/	33.3/	37.3	obvious to those who know	Robert Macrae	125.4	117
26	1.9/	2.0/	0.1	Red Carpet	David Moore	5.8	3
26	32.5/	41.9/	25.6	He Scans a Little Crooked	P.Kline	123.0	7

26 1.2/ 1.6/ 1.2 Shadow Christian Schmidt 4.8 17

The only significant loss here is Macrae's obviouse to those...

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
7	33.5/	23.5/	43.0	Newt	Ian Oversby	143.4	171
12	31.9/	25.1/	43.0	Ultraviolet-B	Ken Espiritu	138.6	103
2	35.7/	25.5/	38.8	Vain	Ian Oversby	145.9	93

Newt keeps on going followed by Ultraviolet-B and Ian's next stone/imp Vain.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> bomber
2	Impfinity v4g1	Planar	1993	Stone/ imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	One shot scanner
8	Evol Cap 6.6	John Wilkinson	1299	Imp / stone
9	quiz	Schitzo	1262	Scanner/ bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/ imp
15	Iron Gate 1.5	Wayne Sheppard	926	CMP scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	CMP scanner
18	Barrage	Anton Marsden	876	Qscan -> replicator
19	Blue Funk	Steven Morrell	869	Stone/ imp
20	Flurry	Anton Marsden	835	Qscan -> pwarrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> bomber
22	Blue Funk 3	Steven Morrell	766	Stone/ imp
23	Night Train	Karl Lewin	755	Replicator
24	Mirage 1.5	Anton Marsden	736	Scanner/ bomber
25	Blizzard	Anton Marsden	713	Qscan -> replicator

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	373		Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357		Q^2 -> Stone/imp
5	unrequited love	kafka	346		Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345		Stone/imp
7	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Nine Seven Six	M R Bremer	232		Q^2 -> Stone/imp
10	Rosebud	Beppe	218		Stone/imp
11	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
12	Instant Wolf 3.4	Edgar	205		P-warrior
13	Goldfinch	P.Kline	201		P-warrior
14	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
15	Trident^2	John K W	195		Q^2 -> Stone/imp
16	ompega	Steven Morrell	189		Stone/imp
17	Frogz	Franz	172		Q^2 -> Paper
18	Newt	Ian Oversby	171	*	Q^2 -> Stone/imp
19	The Machine	Anton Marsden	164		Scanner
20	Memories	Beppe	152		Scanner
21	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
22	Electric Head	Anton Marsden	140		P-warrior
23	Tiberius 3.1	Franz	130		Q^2 -> Paper
24	obvious to those who k	Robert Macrae	117		Q^2 -> Paper
25	Solomon v0.8	Ian Oversby	116		Stone and scanner

Obviouse stops at 24th, while Newt climbs another place to 18th.

Current Status of the Internet Pizza Server Beginner's Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

Last challenge: Mon Aug 17 15:15:29 PDT 1998

#	%W /	%L /	%T	Name	Author	Score	Age
1	60.3/	26.9/	12.9	Hostile Takeover	Ryan Coleman	193.7	25
2	49.0/	31.9/	19.2	Cut 'n Paste	Mark Howard	166.0	19
3	48.1/	39.6/	12.3	Have Pity	John Metcalf	156.6	4
4	46.8/	39.2/	14.0	OXY-10	Mark Howard	154.4	17
5	45.9/	39.8/	14.2	Snowman v4.2	John Metcalf	152.1	3
6	42.4/	33.5/	24.1	Jam Major Zick 3	Ryan Coleman	151.2	31
7	44.7/	39.1/	16.2	Look or Drop??	Ryan Coleman	150.3	27
8	37.6/	30.5/	32.0	StiZ v0.1	Stajp	144.6	38
9	32.4/	21.6/	46.0	SpiImp	Sergio Camarena	143.3	54
10	32.4/	21.6/	46.0	SpiImp	Sergio Camarena	143.2	55
11	36.4/	30.5/	33.1	Stranger	John Metcalf	142.2	9
12	33.7/	26.7/	39.6	Weasel	WFB	140.7	18
13	40.8/	41.8/	17.5	stargate derivative 1	P._V._K., Beppe Bezz	139.7	21
14	33.2/	27.0/	39.8	StiY v0.1	Stajp	139.3	39
15	38.1/	37.2/	24.7	Arsonic B	P._V._K.	139.1	33
16	32.3/	25.7/	42.0	Multiply or Drop??	Ryan Coleman	138.8	32
17	31.8/	25.4/	42.8	More Snotty CSnots	WFB	138.2	35
18	39.5/	40.9/	19.6	Silly Evil Quack	Ryan Coleman	138.0	30
19	27.2/	18.1/	54.7	Unknown Quantity	John Metcalf	136.4	2
20	37.0/	38.5/	24.5	Big Guy	John Lewis	135.4	64
21	39.7/	44.0/	16.3	Neverland	John Metcalf	135.4	5
22	30.7/	26.7/	42.6	More Snotty Snots	WFB	134.7	36
23	35.3/	42.9/	21.9	One Step Beyond	John Metcalf	127.6	79
24	5.6/	79.5/	14.8	Whatisit?	John Metcalf	31.7	1
25	7.7/	0.2/	0.1	Multipack	John Metcalf	23.3	11

Ryan dominates with a very, very big gap the Beginner's Hill. Mmmmhhhh, he gets 100% wins against his own warriors. Mmmhhh, looks like hostile takeover?!

The Hint - Code snippets by John Metcalf

For warriors which contain a multi-process paper, or a vector launched imp, it is neccessary to create a number of processes running in parallel. The usual method of achieving this is to use a combination of spl 1 and mov -1,0 instructions.

So says Beppe Bezzi in Corewarrior #1:
```
: The simpler way to generate an exact number of parallel
: processes is converting the number required in binary 3 -> 11,
: subtract one -> 10, use a spl 1 for every one and a mov -1,0
: for every zero.
```

E.g. 5 decimal = 101 binary, take away one = 100 binary. This becomes the following code,

```
   spl 1     ;
   mov -1,0  ; Generate 5 processes
   mov -1,0  ;
```

However, by using these long-overlooked snippets of code I have found, it is possible to do this slightly faster, and perhaps even gain an extra b-field or two into the bargain, which can

be used for storing data, or decrementing locations in core.

To date, I have managed to find snippets which product 3,5,7 and 9 processes. If required, it is possible to add a number of spl 1,<nnn instructions to the end of the snippet. Each one will double the number of processes.

```
N   OLD CODE          NEW CODE          COMMENTS

2   spl  1, <xxx      spl  1, <xxx      Here only for completeness

3   spl  1, <xxx      spl  2, <xxx      One cycle faster, and one
    mov -1,    0      spl  1, <yyy      extra b-field

5   spl  1, <xxx      spl  2, <xxx      Faster by two cycles, and
    mov -1,    0      spl  2, <yyy      two extra b-fields
    mov -1,    0      spl  1, <zzz

7   spl  1, <xxx      spl  1, <xxx      One cycle faster, but no
    spl  1, <yyy      spl  1,   }0      extra b-fields, and won't
    mov -1,    0      spl  1, <yyy      work under ICWS'88 and is
                                        self-modifying.

9   spl  1, <xxx      spl 2, <xxx       Three cycles faster, plus
    mov -1,    0      spl 2, <yyy       two extra b-fields, but
    mov -1,    0      spl 1,   }0       won't work under ICWS'88
    mov -1,    0      spl 1, <zzz       and is self-modifying.
```

While you will be lucky if this method gains your paper a fraction of a point on the hill, it is still clearly better. Of course, the code for 2^n processes remains identical, and cannot be improved.

Finally, I'm certain there are some other interesting code snippets just waiting to be found. Its always interesting to see that sometimes, the way we've always done something is not neccessarily the best way :-)

John Metcalf

The Hint - Improving a beginner's warrior by Ian Oversby

Once again, this hint is concerned with improving a beginner's warrior. Thank you to WFB for sharing his warrior Weasel with us.

Here is the original:

```
;redcode-b
;name Weasel
;author WFB
;strategy P-spacer...combines Diamond in the Rough and
;strategy More Snotty CSnots.
;assert CORESIZE==8000
_RES    equ     #0
_STR    equ     #1    ;Not that obviously
step    equ 3044
start
res     ldp.ab  _RES,   #0
str     ldp.a   _STR,   str1    ;load strategy in use
        sne.ab  #0,     res     ;check result
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure result
win     stp.ab  str1,   _STR
str1    jmp     @0,     dstart
        dat     0,      csnots

for 69
dat }-2667,<2667
```

```
rof

dstart  spl #1234
diamond spl #-step,<step
rough   mov >-step,step+1
        add diamond,rough
        djn.f  rough,<diamond-50
        dat #0,#0
        dat #-7
csnots  spl 1,<-200
        mov -1,0
        spl 1,<-800
        mov -1,0
s1      spl @0,}1100 ;experimenting with values-original is 1100
        mov }-1,>-1
s2      spl @0,<2620 ;original is 2620
        mov }-1,>-1
s3      spl @0,{1870 ;original value is 1870
        mov }-1,>-1
        mov snot,<88 ;88
s4      mov {-3,<1
        spl @0,}-639 ;-639
        mov 2,<-4
        jmp -1,<-13
snot    dat <2667,<2667*2
end start
```

This is a switch on loss p-spacer combining a paper and a stone. I can see a few minor modifications that may improve it a little.

Firstly, I boot the stone as otherwise we are easily found and destroyed by one-shot scanners. I changed the first spl line to spl #0, #0 for invisibility to f-scans.

I notice the number of processes for the paper does not match the number of lines. Maybe removing the final launcher would not matter too much either. At the same time I add another mov line to the first launcher and use the correct number of processes for the number of lines in the paper.

The result is:

```
;redcode-b test
;name Weasel
;author WFB
;strategy P-spacer...combines Diamond in the Rough and
;strategy More Snotty CSnots.
;assert CORESIZE==8000
_RES    equ     #0
_STR    equ     #1    ;Not that obviously
step    equ 3044
start
res     ldp.ab  _RES,   #0
str     ldp.a   _STR,   str1    ;load strategy in use
        sne.ab  #0,     res     ;check result
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure result
win     stp.ab  str1,   _STR
str1    jmp     @0,     sboot
        dat     0,      csnots
for 40
        dat }-2667,<2667
rof

sdist   equ     2000
sboot   mov.i   {loc, <sptr
for 4
        mov.i   {loc, <sptr
rof
        mov.ab  #-7,    *sptr
```

```
        spl.b   @sptr,  <-700
sptr    div.f   #sdist, #sdist-1
        dat.f   }300,   >200

dstart  spl #0, #0
diamond spl #-step,<step
rough   mov >-step,step+1
        add diamond,rough
        djn.f  rough,<diamond-50
loc     dat #0,#0

csnots  spl 1,<-200
        spl 1,<-800
        spl 1,<-800
s1      spl @0,}1100 ;experimenting with values-original is 1100
        mov }-1,>-1
        mov }-2,>-2
s2      spl @0,<2620 ;original is 2620
        mov }-1,>-1
s3      spl @0,{1870 ;original value is 1870
        mov }-1,>-1
        mov snot,<88 ;88
        mov 2,<-4
        jmp -1,<-13
snot    dat <2667,<2667*2

end start

15  32.4/ 32.9/ 34.7    Weasel  WFB 131.9    1
...
19  29.0/ 30.3/ 40.7    Weasel  WFB 127.7   12
```

This scores about 4 points better than the original. Time for some analysis.

The score against the hill is as follows:

```
Hostile Takeover        : 38/34/28      P-Spacer
OXY-10                  : 32/41/27      Core-clear
Multipack               : 53/35/12      Scanner/something
Cut'n'Paste             : 24/44/32      Scanner (Oneshot?)
Look or Drop            : 63/25/12      Scanner/Stone
Jam Major Zick 3        : 33/48/19      Scanner
Stranger                : 36/29/35      Incendiary Bomber
Stranger in town        : 44/20/36      ???
StiZ v0.1               : 14/54/32      Paper/Scissors
SpiImp                  : 22/06/72      Something with imps ?
SpiImp                  : 22/06/72      Something with imps ?
Arsonic B               : 45/37/18      Bomber ?
Multiply or Drop        : 02/24/74      Paper/Stone
Stargate...             : 35/41/24      Core-clear
Incisor+                : 24/60/16      One-shot
StiY v0.1               : 03/17/80      Paper/Scissors
Weasel                  : 18/25/57      Paper/Stone
Rusty                   : 30/51/19      Scanner
More Snotty C...        : 14/32/54      Paper
More Snotty Snots       : 30/29/41      Paper
One Step Beyond         : 55/30/15      Scanner
Silly Evil Quack        : 59/35/06      Scanner
Big Guy                 : 14/29/57      ???
Scarecrow               : 64/24/12      Scanner
Sword in the...         : 36/46/18      ???
```

I can see a definite weakness against one-shot scanners and core-clears. We don't score too well against papers either as we have no stunning power. I think we will try to counter the first problem without modifying the warrior too much away from the original idea.

To kill scanners, we should run the stone more often but

then we are vulnerable to papers. How about adding an imp to the stone. As it has a double spl we aren't slowed too much and now we have resistance to papers and other stones. In addition, maybe the other scanners do not have much imp resistance and we can improve our score against them.

I took the imp out of Juliet Storm and tacked it on the end. I also changed the decoy to dat 1,1 to slow djn streams and moved our own djn stream a little further back to decoy the enemy one-shots better. I run the imp/stone twice as often as the paper although subsequent tests showed this was not as much improvement as I expected.

The code:

```
;redcode-b test
;name Weasel
;author WFB
;strategy P-spacer...combines Diamond in the Rough and More Snotty
;strategy CSnots.
;strategy More testing (Ian)
;assert CORESIZE==8000

_RES    equ     #0
_STR    equ     #121    ;Not that obviously
step    equ 3044
start
res     ldp.ab  _RES,   #0
str     ldp.a   _STR,   str1    ;load strategy in use
        sne.ab  #0,     res     ;check result
lost    add.a   #1,     str1    ;lost change
        mod.a   #2,     str1    ;secure result
win     stp.ab  str1,   _STR
str1    jmp     @0,     sboot
        dat     0,      sboot
        dat     0,      csnots

for 17
        dat.f   #1,     @1
        dat.f   #1,     *1
        dat.f   #1,     #1
rof
        dat.f   #1,     @1

sdist   equ     4620
sboot   mov.i   {loc, <sptr
for 4
        mov.i   {loc, <sptr
rof
        mov.ab  #-7,    *sptr
        spl.b   impboot,        <-707
        spl.b   @sptr,  <-700
sptr    div.f   #sdist, #sdist-1
        dat.f   }300,   >200

dstart  spl #0, #0
diamond spl #-step,<step
rough   mov >-step,step+1
        add diamond,rough
        djn.f  rough,<diamond-1051
loc     dat #0,#0

csnots  spl 1,<-200
        spl 1,<-800
        spl 1,<-800
s1      spl @0,}1100 ;experimenting with values-original is 1100
        mov }-1,>-1
        mov }-2,>-2
s2      spl @0,<2620 ;original is 2620
        mov }-1,>-1
```

```
s3      spl @0,{1870 ;original value is 1870
        mov }-1,>-1
        mov snot,<88 ;88
        mov 2,<-4
        jmp -1,<-13
snot    dat <2667,<2667*2

imp_sz  equ     2667

impboot spl     1       ,<-450
        spl     1       ,<-458
        spl     <0      ,#vector+1
        djn.a   @vector,#0

imp     mov.i   #imp_sz, *0

        jmp     imp+imp_sz*7,imp+imp_sz*6
        jmp     imp+imp_sz*5,imp+imp_sz*4
        jmp     imp+imp_sz*3,imp+imp_sz*2
vector  jmp     imp+imp_sz  ,imp

end start
```

The result:

```
 2  37.5/ 21.7/ 40.8    Weasel  WFB 153.3    1
...
19  29.0/ 30.3/ 40.7    Weasel  WFB 127.7   12
```

Not bad! We lose very badly against Have Pity and the score is worse than the original against Multipack. Fixing these problems is left as an exercise.

The Hint - Longevity, Imp/Stones and Newt by Ian Oversby

In Core War, the true value of a fighter is measured by its age. Beppe Bezzi, a veteran redcoder who should know a few things about long-lasting warriors, once pointed out that longevity comes from scoring points not only against the current hill but also the hill of the future. As we do not know how the hill of the future is going to look, how can we do this. The answer is simple - score well against everything that is viable on the hill.

So, how is it possible to future-proof your new program? I believe we must look at the problem in the correct light. If we take the traditional analogy of warriors to stone/paper/scissors then we condemn our warrior to death as the hill balance changes. If we wrote a scanner then when many stones enter the hill we will surely die. However, this analogy holds very loosely. For example, it is possible to write a stone that will kill paper or paper that will kill scissors. That attitude that we _can_ beat a warrior type that would usually beat us is very important. It is interesting to note that Vigor, allegedly a paper, suffers its worst defeat at the hands of a stone - Newt.

I will use Newt to illustrate the points I wish to discuss. Firstly we will see how the warrior operates and then we will see how he performs against various enemies.

The stone itself bombs and decrements in a mod-5 pattern with the decrements offset from the bombs by 2. This gives as good a pattern as I could wish for. When the bombing run is finished the core should look like this:

```
        *.X..*.X..*.X..*
```

where * is decrement, X is bomb and . is unbombed. The stone at this point will look like this:

```
        spl.b  #0,    <-step+1
stone   spl.b  #step, <-step
        mov.i  {0,     2
```

```
        add.f  stone, -1
hit     djn.f  -2,    <stone-step
        mov.i  cbmb,  >gate
        djn.f  -1,    >gate
```

The mov line executes, decrementing itself and moving the spl at stone over the hit line. This moves the stone into the core-clear phase. The stone is quite big and slow at seven lines and 0.33c. However, a correctly placed bomb is usually fatal to scanner. The decrements are also quite useful, sometimes wounding opponents. The stone scores well against traditional scanners and bombers. He Scans Alone scores around even. I believe this is because of the mod-5 bombing - Tornado scores similarly against HSA. I feel I could have improved this by leaving the spl above stone as a spl #0, #0 making it invisible to HSA. Alternatively, the a-field could be changed to (say) 100 so it doesn't point to the rest of the stone. This may have a small effect against silk a-field bombing.

The spl line above the stone can be hit with either spl or dat with no effect to the correct operation. The hit line may also be hit with either spl or dat. A dat will slow the warrior but the clear phase will still be entered. This helps against both stones and bombers.

The p-spacers are handled by the Q^2 scan and the resistance to imp/stone enemies clears and one-shots. The pattern of bombing provides this resistance. There are five possibilities against a standard d-clear.

```
        spl #0
        mov bmb, >gate
        djn -1, >gate
```

1. Bomb hits the spl, decrement misses No real harm done
2. Bomb hits the mov, decrement misses Clear disabled
3. Bomb hits the djn, decrement hits spl, Clear 1/3 speed
4. Bomb misses, decrement hits mov. Maybe clear moving dat 0,0
5. Bomb misses, decrement hits djn. Clear slowed

In cases 2 and 3 we have an excellent chance to kill with our own d-clear which is entered after around 6000 cycles. In case 4 we should tie as the d-clear stops when the bomb reaches its own gate. In case 5 we have an even chance to win or lose. Case 1 often results in a loss. We may also hit the gate or the bomb with our bomb giving more chances to win or draw.

The double spl gives additional protection against d-clear. D-clear often misses adjacent locations with its bombs. The stone part is cleared later in the round and the imps have less time to reach the gate often resulting in a draw. Now, new clears are appearing in p-spacers which perform better against Newt (although not against Vain :-) A more effective clear may look like this:

```
gate    dat.f   #0,     #4000
        dat.f   #0,     last-gate+1
bmb     dat.f   #0,     last-gate+1
        spl.b   #0,     #0
        mov.i   bmb,    >gate
        mov.i   bmb,    >gate
        djn.f   -1,     >gate
```

Newt is not so effective against this warrior as decrementing the djn and bombing lines no longer really hamper it. Newt scores about 25/50/25 against this new clear. Bombing the djn line or the first line slows the clear. Newt enters its own clear after 6000 cycles and this gives chances to win. This clear is very tuned against Newt with the a-field decrement.
We could improve Newt against this new clear in a few ways.

1. Shorter bombing run entering clear earlier
2. Heavier imp so our imps do not reach the gate
3. A-field increment to more readily disable the clear.

I tried the last of these which was fairly effective.

```
stone   spl.b   #step, <-step   # swapped the two spl lines
```

```
        spl.b   #0,    <-step-1
        mov.i   }step-1, hit-step       # changed to point at -1
        add.f   stone, -1
hit     djn.f   -2,    <stone-step
        mov.i   cbmb,  >gate
        djn.f   -2,    >gate    # changed to -2
```

The clear could also optimize against this new form of Newt but I don't really think it is worth beating just one warrior badly. Besides, we can't expect to beat everything. I feel these changes weaken Newt against stones as now both top spls are vulnerable. A spl striking the hit line will no longer cause Newt to enter the perfect d-clear until part way through the bombing run. I think the a-field decrement is more effective against paper too. Consider:

```
        spl     @-1,    >x
        mov     }-1,    >-1

        spl     @1,     >x
        mov     }-1,    >-1

        spl     @0,     >x
        mov     }-2,    >-1

        spl     @0,     >x
        mov     }0,     >-1
```

It is just a vague feeling and an untested exercise for the reader.

Specialised p-spacer components such as p-clear can give Newt some problems. The solution is simple. Be the _best_ imp/stone on the hill. This way, when the other imp/stones drop off the hill and the specialists lose their prey, they also drop off the hill and Newt recovers. This just leaves papers and other imp/stones to worry about. When I wrote Newt, the hill contained seven papers and five imp/stones. As I write this, the hill has six imp/stones and seven papers (of sorts). It is important to do well against both of these classes.

Newt has a similar size/speed ratio to other imp/stones. It has imp-killing power with the d-clear and resistance to other d-clears and spl/dat bombs and decrements. The result is reasonable scores against other imp/stones, particularly those with no gate of their own. I think the d-clear bomb should have been <2667 as this works better against the medium 3 point imps found in many imp stones.

Papers are a real problem for imp/stones such as Newt. The main difficulty is the size of the warrior for the enemy Qscan. The stone and stone boot alone is 18 instructions. Add this to 12 lines to boot the imp-launch and that makes 30 lines on top of the QScan. Compare this to a typical paper that is about 11 lines long or 13 if a boot is included. This 15+ line difference means that the imp/stone does not score so well in the QScan shootout. Slimming the launch can reduce this problem a little.

I re-ordered the QScan for the hill version and computer-optimized it against the Gigolo QScan and Probe QScan. I believe this may have given some good scores against papers on the hill as they tend to have a very similar QScan order to these early Q^2 scans. Using a published QScan order in particular can be very dangerous.

Generally, the two ways for an imp/stone to beat a paper enemy are a long period of intense bombing like Gigolo or a stone suicide late in heel for a warrior. It is very dangerous to have the same QScan order as a published warrior.

While writing this article, I noticed the scores against papers were not so good as I remember. So saying, I present a new version of Newt with some of the ideas from the article.

* Imp launch entered earlier for heavier imp
* Imp launch unbooted for slimmer launch -> better QScan performance
* Imp launch decrement decoy further behind full decoy, better against

```
  one-shots
* Stone first spl points after end of stone for [minor] paper protection

and finally...

* QScan scans backwards for hopefully better score on Mt Olympus ;-)

;redcode-94 test
;name Newt v0.2
;author Ian Oversby
;strategy Q^2 -> Imp/Stone
;assert 1

gate1   equ     (init-7-dist)
pat     equ     3315
sval    equ     (spin+5220)
dist    equ     3

impy    equ     (imp+sep)
sep     equ     1100
st      equ     2667

QB EQU (start-550)
QS EQU (QD*2)
QD EQU -100

GAP EQU 12
REP EQU 8
REP2 EQU 2

datz EQU (table-3)

iboot   MOV.I imp, impy
spin    SPL.B   #st+1,  >prime
prime   MOV.I   impy,   impy
        ADD.F   spin,   jump
jump    JMP.B   impy-st-1, <-2200
imp     MOV.I   #st,    *0

for 8
 dat 0, 0
rof

         dat    10*QS, 2*QS ; can get 21 values from this table
table:   dat     4*QS, 1*QS ; and can also use the initial value
         dat    23*QS, 3*QS ; of fnd

qinc:    spl    #GAP,-GAP
tab:     add.a  table,table
slow:    add.a  @tab,fnd
fast:    add.ba *tab,@slow
which:   sne.i  datz,*fnd
         add.a  #QD,fnd
         mov.i  cbomb,*fnd
         add.ab fnd,fnd

fnd:    mov.i  QB,GAP/2
        add.f  qinc,fnd
 mov.i  cbomb,*fnd
 djn.b  fnd,#REP
 jmp    boot,}QS*13

start:
     ; WHICH
 seq.i  QB+QS*0,QB+QS*0+QD
 jmp    which,}QB+QS*0+QD/2

      ; FAST
  seq.i  QB+QS*1,QB+QS*1+QD
  jmp    fast,}QB+QS*1+QD/2
```

```
  seq.i  QB+QS*13,QB+QS*13+QD
  jmp    fast,{fast
  seq.i  QB+QS*2,QB+QS*2+QD
  jmp    fast,{tab
  seq.i  QB+QS*3,QB+QS*3+QD
  jmp    fast,}tab

     ; SLOW
  seq.i  QB+QS*4,QB+QS*4+QD
  jmp    >fast,}QB+QS*4+QD/2
  seq.i  QB+QS*5,QB+QS*5+QD
  jmp    slow,}QB+QS*5+QD/2

  seq.i  QB+QS*6,QB+QS*6+QD
  jmp    slow,{tab
  seq.i  QB+QS*7,QB+QS*7+QD
  jmp    slow,}tab
  seq.i  QB+QS*10,QB+QS*10+QD
  jmp    >fast,<tab
  seq.i  QB+QS*11,QB+QS*11+QD
  jmp    slow,<tab
  seq..i  QB+QS*12,QB+QS*12+QD
  djn.f  slow,tab
  seq.i  QB+QS*23,QB+QS*23+QD
  jmp    >fast,>tab
  seq.i  QB+QS*24,QB+QS*24+QD
  jmp    slow,>tab
  seq.i  QB+QS*17,QB+QS*17+QD
  jmp    slow,{fast

     ; TAB

  seq.i  QB+QS*8,QB+QS*8+QD
  jmp    <fast,}QB+QS*8+QD/2
  seq.i  QB+QS*9,QB+QS*9+QD
  jmp    tab,}QB+QS*9+QD/2

         seq.i  QB+QS*15,QB+QS*15+QD
  jmp    tab,<tab

  seq.i  QB+QS*16,QB+QS*16+QD
  jmp    tab,{tab
  seq.i  QB+QS*20,QB+QS*20+QD
  djn.f  <fast,tab

boot    MOV.I   cbomb,  @sptr
for 3
        MOV.I   <spos,  {sptr
rof
 spl.b iboot, <-1000
for 4
        MOV.I   <spos,  {sptr
rof

        SPL.B   *sptr,  <-200

sptr    DIV.F   #init+sval,     #init+sval-7-3

cbomb   DAT.F   #1, #3+hit-gate1
; 2 DATS
init    SPL.B   #0,     <stone-pat
stone   SPL.B   #pat,   <-pat
loop    MOV.I   {0+pat, hit-pat
        ADD.F   stone,  loop
hit     DJN.F   loop,   <stone-pat
        MOV.I   init-dist, >gate1
last    DJN.F   -1,     {gate1

spos    DAT.F   $0,     $0
```

```
for 10
        DAT.F   $0,     $0
rof

end start
```

Ian Oversby

Questions? Concerns? Comments? Complaints? Mail them to people who care.
Authors: Beppe Bezzi <giuseppe.bezzi@galactica.it>, Anton Marsden <amarsden@mcs.vuw.ac.nz>, Christian Schmidt <schmc003@goofy.zdv.Uni-Mainz.de> and Philip Kendall <pak21@cam.ac.uk>

Path: news-rocq.inria.fr!France.EU.net!news.bull.fr!nntp.bull.com!cam-news-feed5.bbnplanet.com!cam-news-hub1.bbnplanet.com!news.gtei.net!chippy.visi.com!news-out.visi.com!news.idt.net!netnews.com!newspeer1.nac.net!news.new-york.net!news.stormking.com!grumpy@xanther.digitald.uk.com
From: John Metcalf <grumpy@xanther.digitald.uk.com>
Newsgroups: rec.games.corewar
Subject: Core Warrior 70
Date: 5 Feb 1999 18:29:34 -0500
Organization: Storm King Ind. Inc.
Lines: 833
Sender: server@news.stormking.com
Distribution: world
Message-ID: <Pine.LNX.4.04.9902051725001.12341-100000@xanther.digitald.uk.com>
Reply-To: grumpy@xanther.digitald.uk.com
NNTP-Posting-Host: valhalla.stormking.com
Mime-Version: 1.0
Originator: corewar-l@stormking.com

```
    .xX$$x.
  .x$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 70 4 February, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
  ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
  http://www.koth.org/corewar-faq.html

The ftp site and mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars.html ;Stormking
  http://www.ncs.infi.net/~wtnewton/corewar ;Terry's web page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;Stormking
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the Stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi's hints in the first issues is available at:
  ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

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Welcome...

Apologies for the many weeks which have passed since last issue. Fortunately though, they have not been entirely uneventful. Ian Oversby's Autumn/Winter tournament has begun, Macrae has successfully destroyed the deadlock on the multi-warrior hill, and a selection of quality redcode has been published.

This issue - David Moore introduces the P^3 switcher and the code of Zooom, the current ’94nop king is revealed.

-- John Metcalf

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	45.5/	34.2/	20.2	Diamonds and more Rust	Christian Schmidt	156.8	3
2	39.1/	25.5/	35.4	Recovery	Ian Oversby	152.6	22
3	43.5/	36.8/	19.6	Recycled Bits	David Moore	150.3	40
4	45.7/	42.4/	11.9	Win!	David Moore	148.9	16
5	35.1/	26.8/	38.0	The Stormbringer	Christian Schmidt	143.4	32
6	34.5/	26.8/	38.6	Brigadeer	M Joonas Pihlaja	142.2	21
7	35.9/	30.6/	33.6	Vain	Ian Oversby	141.1	126
8	34.6/	28.4/	37.0	Three Queens and a King	Christian Schmidt	140.7	1
9	32.5/	24.3/	43.2	Fragility	John Metcalf	140.7	5
10	27.8/	15.7/	56.5	Fugitive	David Moore	140.0	80
11	34.7/	30.0/	35.3	Vigor	Ken Espiritu	139.4	114
12	37.6/	36.3/	26.1	Defender	Ian Oversby	138.8	34
13	40.6/	42.4/	17.0	Zooom...	John Metcalf	138.8	18
14	38.5/	38.3/	23.1	myVamp v3.7	Paulsson	138.7	27
15	38.0/	37.5/	24.5	Trefoil	Steve Gunnell	138.5	1
16	32.6/	27.2/	40.2	Newt	Ian Oversby	138.1	204
17	34.3/	30.8/	35.0	Fixed	Ken Espiritu	137.7	110
18	33.0/	28.2/	38.8	Shadow	Christian Schmidt	137.7	31
19	28.9/	20.1/	51.0	Three Men in a Boat	M Joonas Pihlaja	137.7	33
20	33.1/	29.6/	37.4	Benj’s Revene 1.0	Robert Macrae	136.6	28
21	39.7/	43.1/	17.2	Blurstone	M. J. Pihlaja	136.2	50
22	32.3/	29.5/	38.2	Tuesday Afternoon	John K W	135.1	54
23	41.8/	49.5/	8.7	He Scans Anew	P.Kline	134.1	4
24	37.7/	42.0/	20.3	Bee/7i	John Metcalf	133.3	2
25	33.1/	33.7/	33.2	Fire and Ice	David Moore	132.6	99

Age since last issue: 33 (13 last issue, 7 the issue before)
New warriors: 14 Turnover/age rate 42%
Average age: 46 (36 last issue, 34 the issue before)
Average score: 140 (138 last issue, 134 the issue before)
The top 25 warriors are represented by just 11 independent authors: Schmidt, Oversby and Moore with 4, Pihlaja and Metcalf with 3, Espiritu with two and the rest with one each.

Christian Schmidt claims first place with his Diamonds and more Rust, which is achieving 60%+ wins against stone/imps Newt, Vain and Brigadeer.

---

94 - What’s New (Sorted by rank and score)

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.4/	38.0/	17.6	Silver Talon 1.2	Edgar	150.7	0
2	44.7/	33.2/	22.1	Diamonds and more Rust	Christian Schmidt	156.1	0
2	34.7/	24.5/	40.8	The Stormbringer	Christian Schmidt	144.9	0
2	33.2/	22.8/	44.0	Brigadeer	M Joonas Pihlaja	143.5	0
3	34.1/	26.4/	39.5	Recovery	Ian Oversby	141.8	1
3	38.4/	36.6/	25.0	Digital Dragon	Christian Schmidt	140.2	0
5	40.0/	40.5/	19.6	Zooom...	John Metcalf	139.5	1
6	41.2/	44.3/	14.5	Win!	David Moore	138.2	0
6	40.5/	43.4/	16.1	Have No Pity	John Metcalf	137.6	1
9	41.6/	49.5/	8.8	He Scans Anew	P.Kline	133.8	1
9	28.0/	22.7/	49.3	Fragility	John Metcalf	133.3	1
9	31.3/	29.8/	38.9	Three Queens and a King	Christian Schmidt	132.8	0

10	36.4/ 39.8/ 23.8	myVamp v3.7	Paulsson	133.0	0
11	31.2/ 28.4/ 40.4	Benj's Revenge 1.0	Robert Macrae	133.9	1
11	35.3/ 38.5/ 26.1	Trefoil	Steve Gunnell	132.1	1
12	37.7/ 42.5/ 19.8	Erase	Ken Espiritu	132.8	1
15	24.4/ 18.0/ 57.6	Three Men in a Boat	M Joonas Pihlaja	130.8	1
??	??.?/ ??.?/ ??.?	Khayman	Ian Oversby	???.?	1
17	30.0/ 32.1/ 37.9	Liquid Fire	Christian Schmidt	127.8	1
19	35.6/ 42.5/ 21.9	Bee/7i	John Metcalf	128.7	1
20	35.6/ 43.2/ 21.2	Recycled Bits--	David Moore	128.0	1
21	34.8/ 41.7/ 23.5	BiShot v1.0	Christian Schmidt	127.9	1
21	22.0/ 17.9/ 60.1	Redemption	John Metcalf	126.2	1
22	34.7/ 42.5/ 22.9	Z-Shot	John Metcalf	126.8	1
22	30.4/ 34.4/ 35.1	bomber	dm	126.4	1
22	20.8/ 16.7/ 62.5	Glok	Ben Ford	124.9	0
23	26.1/ 27.2/ 46.7	The Yokozuna	Christian Schmidt	125.1	1
24	32.6/ 42.3/ 25.0	Z-Shot II	John Metcalf	123.0	1
25	32.8/ 42.6/ 24.6	Sand-Crawler	John Metcalf	122.9	1

Several strong new entries ensured warriors surviving from last issue have had a struggle to retain their rank. A few beginners have joined the elite.

---

94 - What's No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	27.4/ 30.1/ 42.5	Ultraviolet-B	Ken Espiritu	124.7	120
26	31.6/ 39.4/ 29.0	Digitalis 4	Christian Schmidt	123.8	73
26	22.1/ 20.5/ 57.4	Return Of Return Of The J	John K W	123.6	63
26	30.7/ 38.5/ 30.8	Shape	Christian Schmidt	123.0	39
26	33.9/ 44.3/ 21.8	Electric Head 2	Anton Marsden	123.4	34
26	32.7/ 40.9/ 26.4	The Body Guard	Ian Oversby	124.5	27
26	?.?/ ?.?/ ?.?	Alien	Christian Schmidt	?.?	26
26	??.?/ ??.?/ ??.?	Eraser	Ken Espiritu	???.?	23
26	34.6/ 44.6/ 20.8	Diamonds and Rust v2	Christian Schmidt	124.5	23
26	29.6/ 40.3/ 30.1	Digital Dragon	Christian Schmidt	118.9	18
26	35.7/ 47.5/ 16.7	Have No Pity	John Metcalf	123.9	16
26	??.?/ ??.?/ ??.?	Nine Seven Six	M R bremer	???.?	14
26	23.5/ 21.3/ 55.3	Redemption	John Metcalf	125.7	14
26	33.2/ 41.4/ 25.4	BiShot v1.0	Christian Schmidt	125.0	13
26	?.?/ ?.?/ ?.?	Silver Talon	Edgar	?.?	12
26	20.0/ 19.9/ 60.1	Glok	Ben Ford	120.2	11
26	34.3/ 47.4/ 18.3	Erase	Ken Espiritu	121.1	9
26	28.5/ 36.8/ 34.7	C I A	Anders Ivner	120.3	8
26	26.6/ 29.6/ 43.8	Gigolo	Core Warrior staff	123.6	7
26	29.9/ 36.1/ 34.0	Khayman	Ian Oversby	123.6	5
26	33.4/ 43.7/ 22.9	Recycled Bits--	David Moore	123.2	5
26	1.6/ 0.7/ 1.7	Liquid Fire	Christian Schmidt	6.5	5
26	30.7/ 45.8/ 23.5	Z-Shot	John Metcalf	115.7	4
26	29.7/ 43.5/ 26.8	Z-Shot II	John Metcalf	115.8	4
26	??.?/ ??.?/ ??.?	Tornado 4	Beppe Bezzi	???.?	3
26	??.?/ ??.?/ ??.?	Falcon v0.5	Ian Oversby	???.?	2
26	25.4/ 28.0/ 46.6	The Yokozuna	Christian Schmidt	122.9	2
26	29.5/ 35.8/ 34.7	bomber	dm	123.2	2
26	30.6/ 44.8/ 24.5	Sand-Crawler	John Metcalf	116.4	2

Ultraviolet is lost shortly after entering the New HoF. Old adversaries Digitalis and the Jedimp are also pushed off.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
16	32.6/ 27.2/ 40.2	Newt	Ian Oversby	138.1	204
7	35.9/ 30.6/ 33.6	Vain	Ian Oversby	141.1	126
11	34.7/ 30.0/ 35.3	Vigor	Ken Espiritu	139.4	114
17	34.3/ 30.8/ 35.0	Fixed	Ken Espiritu	137.7	110
25	33.1/ 33.7/ 33.2	Fire and Ice	David Moore	132.6	99
10	27.8/ 15.7/ 56.5	Fugitive	David Moore	140.0	80

Newt keeps on going, though is suffering heavy losses against a couple of new warriors. Ultraviolet is no more and Vain becomes the second oldest warrior. Fire and Ices holds a dangerously low rank and may not be around

for the next Core Warrior.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> Bomber
2	Impfinity v4g1	Planar	1993	Stone/imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	Oneshot
8	Evol Cap 6.6	John Wilkinson	1299	Stone/imp
9	quiz	Schitzo	1262	Scanner/bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/imp
15	Iron Gate 1.5	Wayne Sheppard	926	Scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	Scanner
18	Barrage	Anton Marsden	876	Qscan -> Paper
19	Blue Funk	Steven Morrell	869	Stone/imp
20	Flurry	Anton Marsden	835	Qscan -> P-warrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> Bomber
22	Blue Funk 3	Steven Morrell	766	Stone/imp
23	Night Train	Karl Lewin	755	Paper
24	Mirage 1.5	Anton Marsden	736	Scanner/bomber
25	Blizzard	Anton Marsden	713	Qscan -> Paper

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	373		Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357		Q^2 -> Stone/imp
5	unrequited love	kafka	346		Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345		Stone/imp
7	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Nine Seven Six	M R Bremer	232		Q^2 -> Stone/imp
10	Rosebud	Beppe	218		Stone/imp
11	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
12	Instant Wolf 3.4	Edgar	205		P-warrior
13	Newt	Ian Oversby	204	*	Q^2 -> Stone/imp
14	Goldfinch	P.Kline	201		P-warrior
15	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
16	Trident^2	John K W	195		Q^2 -> Stone/imp
17	ompega	Steven Morrell	189		Stone/imp
18	Frogz	Franz	172		Q^2 -> Paper
19	The Machine	Anton Marsden	164		Scanner
20	Memories	Beppe	152		Scanner
21	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
22	Electric Head	Anton Marsden	140		P-warrior
23	Tiberius 3.1	Franz	130		Q^2 -> Paper
24	Vain	Ian Oversby	126	*	Q^2 -> Stone/imp
25	Ultraviolet-B	Ken Espiritu	120		Q^2 -> Paper

Ultraviolet enters the Hall and stops at 24th while Newt gains another five places to 13th. New entry Vain returns Oversby to 5 warriors in the New HoF.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
coresize: 8000
max. processes: 8000

```
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	46.0/	34.3/	19.7	Spat the dummy.	Steve Gunnell (oh ye	157.8	50
2	43.2/	34.1/	22.8	Arsonic C	P._V._K.	152.2	67
3	43.7/	39.7/	16.6	Fat Man	A. S. Mehlos	147.8	64
4	41.2/	35.3/	23.4	No Time To Think	A. S. Mehlos	147.1	51
5	43.2/	39.3/	17.6	Reconnaissance v0.1	Ben Ford	147.0	15
6	40.7/	34.4/	24.8	Ice Pick Willie	Ben Ford	147.0	33
7	34.5/	23.4/	42.1	iWeasel	WFB/Ian Oversby	145.5	90
8	42.2/	39.7/	18.2	Death kiss with a dash of	Anders Rosendal	144.6	10
9	41.6/	38.7/	19.7	Security Purge	Ben Ford	144.5	4
10	42.6/	41.9/	15.5	Scanzonato	Franco Solerio	143.3	85
11	35.5/	28.2/	36.3	A man with a Gun	Ben Ford	142.8	35
12	32.4/	25.1/	42.5	Frusteration II	A. S. Mehlos	139.7	54
13	26.3/	14.7/	59.0	Redemption	John Metcalf	138.0	26
14	28.2/	19.1/	52.7	Glok	Ben Ford	137.3	34
15	40.3/	44.2/	15.5	Hunter	Ben Ford	136.4	38
16	29.8/	23.7/	46.5	ModerationRevisited	A. S. Mehlos	136.0	70
17	39.8/	44.0/	16.2	Sticky taped together 1.2	Steve Gunnell	135.6	61
18	38.1/	41.4/	20.5	Reconnaissance	Ben Ford	134.8	1
19	40.7/	47.7/	11.5	v15variation	Steve Gunnell	133.8	16
20	25.9/	18.3/	55.8	H-Bomb 9k	Josh Yeager	133.4	47
21	25.6/	18.3/	56.2	H-Bomb 9	Josh Yeager	132.9	48
22	30.5/	29.1/	40.5	Rocking-Chair 94 v0.25	Leonardo Humberto	131.9	45
23	24.3/	19.6/	56.1	15,18 v1.1	Joshua Houk	129.1	44
24	27.6/	27.3/	45.1	Two kinds of chairs	Leonardo Humberto	127.9	3
25	28.7/	31.2/	40.1	Kindly	Leonardo Humberto	126.2	2

The '94b hill has aged 103 since last issue, with several new players making an appearance. Camarena's SpiImp expired of old age, as did Stajp's StiY v1.0 and StiZ v1.0, Arsonic B by PVK, Cut n Paste by Howard, Weasel by WFB and Coleman's warriors Jam Major Zick 3, Hostile Takeover and Multiply or Drop??.

Current Status of the KOTH.ORG '94 No Pspace Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS '94 Draft, excluding ldp and stp
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	45/	38/	17	Zooom...	John Metcalf	152	53
2	44/	38/	18	Boys are Back in Town 1.1	Philip Kendall	151	78
3	47/	45/	8	He Scans Anew	P.Kline	149	4
4	38/	28/	34	Recovery	Ian Oversby	147	76
5	45/	45/	10	Win!	David Moore	145	51
6	38/	30/	32	Fixed	Ken Espiritu	145	136
7	28/	12/	59	The Fugitive	David Moore	144	155
8	28/	13/	58	_romanian_killah_	Costin Bontas rulez	144	45
9	36/	30/	34	Blacken	Ian Oversby	143	63
10	35/	28/	36	Vain	Ian Oversby	143	153
11	40/	38/	22	Floody River	P.Kline	142	102
12	36/	30/	33	The Stormbringer	Christian Schmidt	142	87
13	36/	31/	33	Baseline Plus	Ken Espiritu	141	134
14	43/	45/	12	Red Carpet	David Moore	140	94
15	33/	25/	42	Brigadeer	M Joonas Pihlaja	140	72
16	33/	27/	40	Gemini Dream	John K Wilkinson	139	159
17	39/	42/	19	The Machine	Anton Marsden	137	142
18	36/	37/	27	Liquid Fire	Christian Schmidt	135	49
19	34/	33/	33	Head or Tail	Christian Schmidt	134	124

20 37/ 41/ 22 Sharkrage Christian Schmidt 132 1

Now is the time of the scanners, which take four of the top five ranks.

Current Standings of the Oversby Autumn Corewar Tournament:

	'94	Tiny	Grey	Build	Multi	Total
Macrae	87.63	69.55	74.28	100.00	74.87	406.33
Pihlaja	98.66	100.00	100.00	x	84.82	383.48
Schmidt	99.46	70.55	75.41	77.34	50.26	373.02
.WFB	91.10	22.42	49.35	56.28	100.00	319.15
.Khuong	75.82	60.37	65.86	63.96	x	266.01
.Mehlos	71.22	29.45	76.11	76.23	x	253.01
Hale	99.12	66.52	18.68	60.92	x	245.24
Moore	100.00	63.67	62.29	x	x	225.96
.Gunnell	72.82	46.50	19.46	x	47.12	185.90
.Yeager	x	24.93	44.22	60.03	34.55	163.73
Kendall	90.04	35.48	3.21	x	x	128.73
.Duff	23.05	30.67	10.51	x	x	64.23

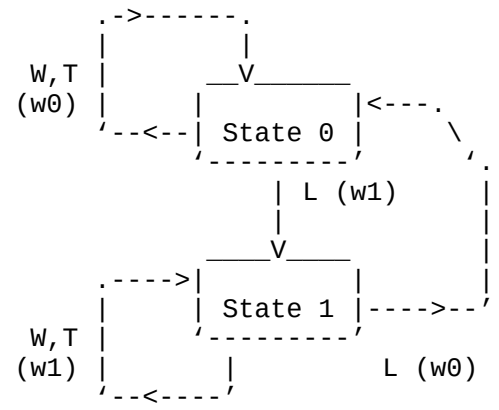
First place in the opening round was taken by Moore with his Recycled Bits, after which Pihlaja dominated. His Genetic Beef easily took top spot in the modified tiny round, and Quick Cooking further increased his lead when it performed best against the grey warrior. Assugg won the build a warrior round for Macrae, and finally, in the multi warrior round WFB's group of warriors triumphed.

With three more round to play, there is still time to enter. Remember, only the best 6 results count for veterans, or the best 7 for beginners. Check the tournament's home page for details:

http://www.geocities.com/TimesSquare/Realm/2443/

The Hint - The P^3 Switcher by David Moore

Redcoders often design their pspace-based switching routines in the form of a state-transition diagram:



L = loss
W = win
T = tie

w0 = strategy A (e.g. scissors)
w1 = strategy B (e.g. paper)

Each round gives the program a new chance to change its mode of operation, depending on the previous state and the result of the previous battle. In addition, there is some action (or strategy) associated with each transition between states:

State	Input	Next	Action
0	L	1	w1
0	W	0	w0
0	T	0	w0
1	L	0	w0
1	W	1	w1
1	T	1	w1

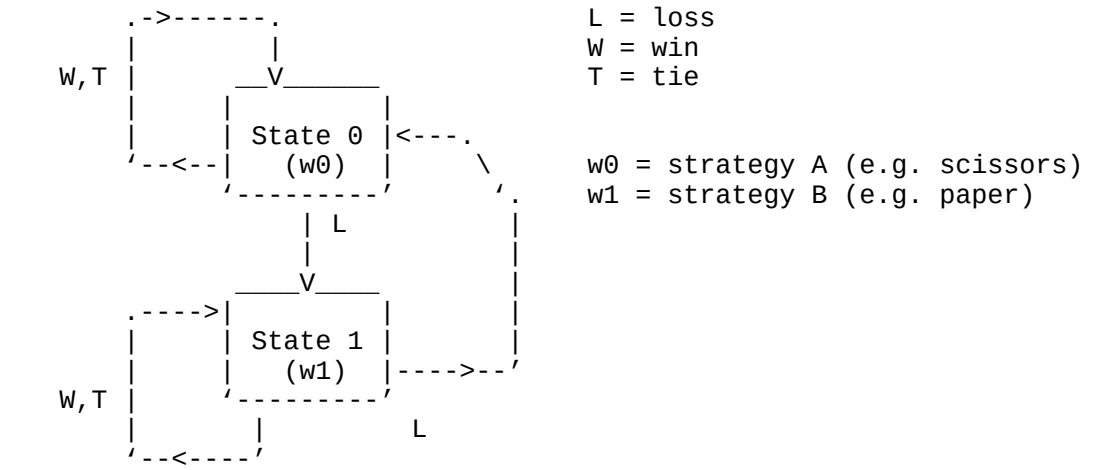
Note that this pspacer would run w0 upon all transitions to state 0, and that it would run w1 upon all transitions to state 1. Most interesting P^2 switchers execute the same program upon all transitions to the same state.

Can you see why?

If we assume that all transitions to a particular state run the same warrior, then we no longer need to specify an action for each transition; we simply specify an action for each state. That leads to a more compact representation of the table:

State	Action	L	W	T
0	w0	1	0	0
1	w1	0	1	1

The corresponding diagram becomes:



The switcher for Electric Head has that property. Specifically, Electric Head implemented the following state-transition table:

State	Action	L	W	T	
0	w0	1	0	1	<---- initial state
1	w0	2	0	2	
2	w0	3	0	3	
3	w1	4	3	3	
4	w1	5	3	4	
5	w1	6	4	5	
6	w2	7	6	0	
7	w3	8	7	7	
8	w3	9	7	8	
9	w3	3	8	9	

A P^3 switcher can implement the same table in less time and in less space than Electric Head’s original code:

```
think ldp.a      #0, in
      ldp.a #PSTATE, table
      mod.ba   *in, table
      stp.b  *table, #PSTATE

table jmp }0, 441 ; = (44*10) + 1 = (49*9) + 0 = (40*11) + 1 ;initial state
      dat w0, 882 ; = (88*10) + 2 = (98*9) + 0 = (80*11) + 2
      dat w0, 333 ; = (33*10) + 3 = (37*9) + 0 = (30*11) + 3
      dat w1, 894 ; = (89*10) + 4 = (99*9) + 3 = (81*11) + 3
      dat w1, 345 ; = (34*10) + 5 = (38*9) + 3 = (31*11) + 4
      dat w1, 346 ; = (34*10) + 6 = (38*9) + 4 = (31*11) + 5
      dat w2, 627 ; = (62*10) + 7 = (69*9) + 6 = (57*11) + 0
      dat w3, 898 ; = (89*10) + 8 = (99*9) + 7 = (81*11) + 7
      dat w3, 349 ; = (34*10) + 9 = (38*9) + 7 = (31*11) + 8
      dat w3,  53 ; = ( 5*10) + 3 = ( 5*9) + 8 = ( 4*11) + 9

      dat w3, 349 ; = (34*10) + 9 = (38*9) + 7 = (31*11) + 8 ;unreachable

in    dat 0, 10  ; must have non-zero b-field in the previous cell
      spl 1,  9
```

```
      spl 1, 11
```

For example, after a transition to state 4, the pspacer will remember the code 345. In the case of a loss, the next state will be decoded by 345 mod 10; after a win, the next state would be 345 mod 9; after a tie, the next state would be 345 mod 11. Each of these decodings gives the proper transition from one state (4) to the next (5, 3, or 4).

Note that we cannot specify different warriors for two different transitions to the same state. However, as we have seen before, that is a very soft restriction. Another restriction is that the 0th state must use the same warrior as the 1st state.

Now we show how to construct the codes that are used in the table. This requires some abstract algebra, but the results will be summarized below.

First, we must introduce some notation.

Operators listed from highest to lowest priority:

```
   gcd(a,b)   the greatest common divisor of a and b
   a =< b     a is less than or equal to b
   a >= b     a is greater than or equal to b
   a and b    logical and
   a -> b     a implies b (if a is true, then b is true)
```

"mod" will no longer refer to the MOD operation from redcode. Instead:

```
   a mod n            a modulo n
   a *' b (mod n)     the product of a and b modulo n
   a +' b (mod n)     the sum of a and b modulo n
   a == b (mod n)     a is congruent to b modulo n (also: n divides a-b)
```

I will borrow the % operation from the C language, which is similar to the MOD from redcode:

```
   a % b      the unique c such that 0 =< c < b  and  c == a (mod b)
```

One of the theoretical results requires some more notation:

```
   Z          the set of all integers
   Z mod n    the set of all congruence classes modulo n
   G x H      the group formed by the Cartesian product of groups G and H
```

Modular arithmetic should look familiar to Redcoders, since all arithmetic on the standard hills is done in Z mod 8000.

Examples:

```
   1 == 4 (mod 3)  ->  3*k = 1-4 for some integer k

   2 *' 3 == 1 (mod 5)

   (2 * 3) % 5 = 1

   gcd(3,3) = 3
   gcd(2,3) = 1
   gcd(2,4) = 2
```

We begin with a semi-formal description of the switcher:

```
   .-----------------------------------------------------.
   |  P^3 switcher                                       |
   |-----------------------------------------------------|
   |  r,s,t are positive integers                        |
   |                                                     |
   |  For each state in the table, there are non-negative |
   |  integers p,a,b,c such that p < CoreSize and        |
   |                                                     |
   |  a < r  and  p == a (mod r)  and                    |
```

```
|  b < s  and  p == b (mod s)  and                    |
|  c < t  and  p == c (mod t)                         |
'-----------------------------------------------------'
```

There will be different p,a,b,c for each state. However, since each state may be considered independently, we won't bother to put subscripts on those variables.

In the example above, r = 10, s = 9, and t = 11. Depending on the state, p could be 441, 882, 333, ..., or 53. In the 0th state, a = 1, b = 0, and c = 1.

To guarantee that we can compute any transition table, we need to choose r,s,t such that for all possible a,b,c, there is a value for p such that the above properties hold. In that case, there are r*s*t possible triplets (a,b,c). It would be nice if every p between 0 and r*s*t-1 resulted in a different triplet (p mod r, p mod s, p mod t). Then every possible triplet (a,b,c) could be computed by choosing one of the first r*s*t non-negative integers for p. That would guarantee that we can compute any transition table if r*s*t does not exceed CoreSize.

Using some results from group theory, we can make those guarantees true if gcd(r,s)=1 and gcd(r,t)=1 and gcd(s,t)=1. For ambitious mathematicians who want to prove that statement, two of the relevant theorems are:

   Z mod m x Z mod n is cyclic if and only if gcd(m,n)=1.

   Every finite cyclic group of order n is isomorphic to Z mod n.

To express any possible transition table with n states, we must be able to compute all triples (a,b,c) such that a<n, b<n, and c<n. Therefore, we should choose r,s,t such that r >= n, s >= n, and t >= n. If we do that, then we can assume that either r>n, s>n, or t>n (otherwise, either n=1, gcd(r,s)>1, gcd(r,t)>1, or gcd(s,t)>1).

The result is that we will have some extra states which are not reachable from the transitions specified by our n-state table. We should specify the transitions for those unreachable states just in case a lucky opponent brainwashes the switcher. That is why we added an extra table entry in the example from Electric Head. We chose the same transitions as state 8 since we hypothesized that Carbonite was the most brainwash-resistant component.

Since the size of the table will be the maximum value of r,s,t, we should choose r,s,t to minimize max{r,s,t}. Since r,s,t are at least as large as n, we can't achieve any result that is better than s=n, r=n+1, and t=n+2. In fact, if n is odd, then that particular assignment does satisfy all of the constraints. If n is even, then gcd(r,t) = gcd(n,n+2) = 2, so we are forced to look for larger r,s, or t. In that case, we can simply add one state to the table (to make n odd) to achieve the next best possible result.

That gives us the following rule for selecting r,s,t for an n-state table:

   If n is odd, then m = n+1.
   If n is even, then m = n+2.

   r = m, s = m-1, t = m+1.

Now that we have fixed r,s,t, we can compute the value p for each state given a,b,c. We use the following result:

```
 .------------.
 |  Theorem   |
 '------------'
```

Given a,b,c,m,n,i,j,p such that

   m = n+1 if n is odd
   m = n+2 if n is even

   0 =< a < m   and

```
   0 =< b < m-1  and
   0 =< c < m+1

   i = b+c-2*a

   j = (i+1+m)/2 if i is odd
   j = i/2       if i is even

   p = (j*(m-1)+b-a)*m+a
```

Then

```
   p == a (mod m)
   p == b (mod m-1)
   p == c (mod m+1)
```

```
 .-----------.
 |   Proof   |
 '-----------'
```

Suppose that i is odd.

```
   j = (i+1+m)/2
   ->    j = (i+1)/2 + m/2        (since m is even and i is odd)
   ->  2*j = (i+1) + m
   ->  2*j == i+1+m (mod m+1)
   ->  2*j == i +' m+1 (mod m+1)
   ->  2*j == i +' 0 (mod m+1)
   ->  2*j == i (mod m+1)
```

Suppose that i is even.

```
   j = i/2  ->  2*j = i  ->  2*j == i (mod m+1)
```

In either case, 2*j == i (mod m+1).

```
   2*j == i (mod m+1)
   ->          2*j == b+c-2*a (mod m+1)
   ->       j *' 2 == b+c-2*a (mod m+1)
   ->    j *' (-2) == 2*a-c-b (mod m+1)
   -> j *' (m+1-2) == 2*a-c-b (mod m+1)
   ->   j *' (m-1) == 2*a-c-b (mod m+1)
   ->      j*(m-1) == 2*a-c-b (mod m+1)
   ->  j*(m-1)+b-a == a-c (mod m+1)
```

Substitute k for j*(m-1)+b-a.

```
   k == a-c (mod m+1)
   ->            k*(-1) == c-a (mod m+1)
   ->         k *' (-1) == c-a (mod m+1)
   ->      k *' (m+1-1) == c-a (mod m+1)
   ->            k *' m == c-a (mod m+1)
   ->               k*m == c-a (mod m+1)
   ->             k*m+a == c (mod m+1)
   -> (j*(m-1)+b-a)*m+a == c (mod m+1)
   ->                 p == c (mod m+1)
```

This proves 1/3 of the theorem. Furthermore,

```
   k = j*(m-1)+b-a  ->  j*(m-1) = k-(b-a)
   ->                 k == b-a (mod m-1)
   ->              k*1 == b-a (mod m-1)
   ->            k *' 1 == b-a (mod m-1)
   ->      k *' (m-1+1) == b-a (mod m-1)
   ->            k *' m == b-a (mod m-1)
   ->               k*m == b-a (mod m-1)
   ->             k*m+a == b (mod m-1)
   -> (j*(m-1)+b-a)*m+a == b (mod m-1)
   ->                 p == b (mod m-1)
```

For the last part, we simply observe:

```
   p = k*m+a  ->  k*m = p-a  ->  p == a (mod m)
```

Thus concluding the proof of this theorem.

```
 .-----------.
 |  Summary  |
 '-----------'
```

In summary, to construct a table of n states:

```
   m = n+1 if n is odd
   m = n+2 if n is even

   For each state, choose integers a,b,c such that
      0 =< a < m    and
      0 =< b < m-1  and
      0 =< c < m+1

   i = b+c-2*a

   j = (i+1+m)/2  if i is even
   j = i/2        if i is odd

   p = (j*(m-1)+b-a)*m+a % m*(m-1)*(m+1)

   p % m   = a
   p % m-1 = b
   p % m+1 = c
```

```
 .-----------.
 |  Example  |
 '-----------'
```

For Electric Head, the number of states is n = 10. Normally, m = 12 to guarantee that all possible tables can be implemented. However, in this case, m = 10 will work if we choose to decode with m on loss, m-1 on win, and m+1 on tie. This implementation works because we know the particular a,b,c values for each state and they are within the bounds:

```
   0 =< a < 10  (a is the transition on loss)
   0 =< b <  9  (b is the transition on win)
   0 =< c < 11  (c is the transition on tie)
```

Now we must determine the p value for each state. For state 0,

```
   a = 1
   b = 0
   c = 1

   i = 0+1-2*1 = -1

   j = (-1+1+10)/2 = 5  (since i was odd)

   p = (5*(10-1)+0-1)*10+1 % 10*(10-1)*(10+1)
     =        (5*9-1)*10+1 % 10*9*11
     =                441 % 990
```

So p = 441 is the value that will actually appear in the redcode. We verify that it is indeed correct:

```
   441 % 10 = 1
   441 %  9 = 0
   441 % 11 = 1
```

Note that m*(m-1)*(m+1) = 990 does not exceed CoreSize = 8000. Since 20*19*21 = 7980, any table with 19 states can be implemented in a CoreSize of 8000. Of course, larger tables are possible with tricky coding.

Now the rest is up to you. Good luck and happy P-spacing!

Extra Extra -
Zooom... by John Metcalf

Following in the great Core Warrior tradition of publishing warriors employing new techniques, here is Zooom...

Zooom is a scanner which uses the well known Mirage scan with a unique twist - the clear instruction is not included in the main loop until something is detected. This increases initial speed.

The constants have been chosen with care. The scan step is non-optimal, since better find-x values would result in the scanner detecting itself after fewer scans and switching to the dclear sooner.

The boot distance is optimal, ensuring Zooom doesn't detect it's boot routine until after 923 scans. Perhaps reducing this to 920 scans, to place Zooom closer to the decoy might improve it's performance against oneshots slightly ;-)

Testing showed dclear to be the best end-game strategy rather than switching to a dat bomb as Neverland did, or using a multi-pass clear. Anyway, without further ado, here's the code:

```
;redcode-94
;name Zooom...
;author John Metcalf

;strategy .5 scan -> .33 scan/.33 clear -> dclear
;strategy  v0.1 self modifying scan loop
;strategy   v0.2 irregular scan pattern
;strategy    v0.3 boot and tailored decoy

;assert CORESIZE==8000

     org   boot

;    [ Decoy ]
q    for   22
     for   2+(q%5==0||q%5==2||q%6==2||q%16==3)
     spl   #m*3039,  {m*3359
     rof
     spl   #0,       0       ; scanned
     rof

;    [ Boot ]
boot:
q    for   10
     mov   sGat+q-1,  >sGat
     rof
     jmp   @0,        bDis+m-sGat

bDis equ   (boot+3+923*step) ; optimal distance
step equ   1671              ; non-optimal
numb equ   2230              ; number of scans
cGat equ   (sGat-2)

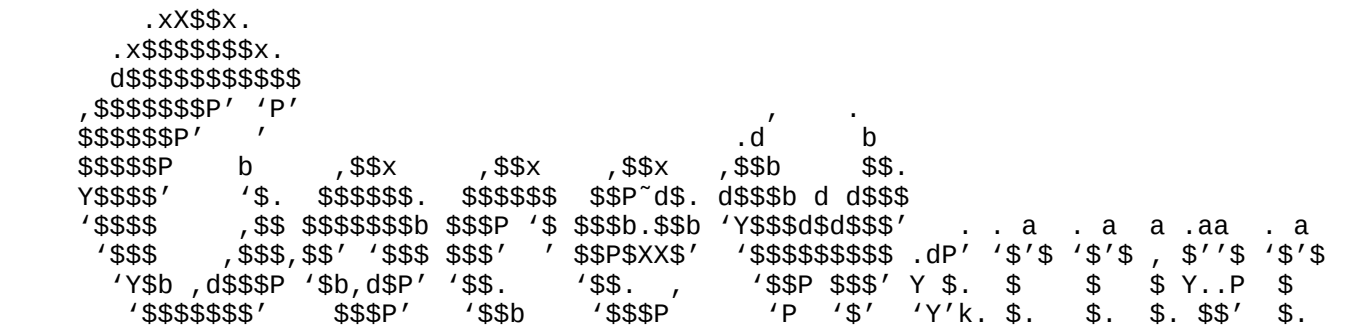
;    [ Scan ]
sGat:mov   }m,       *bDis   ; multi-function
     mov   sBmb,     >sGat
sLoo:sub   #step,    #step*numb
m:   jmz.f sLoo,     @sLoo   ; a-field mutates
     mov.b sLoo,     sGat
     jmn.a {m,       *sGat

;    [ Clear ]
sBmb:spl   0,        0
cLoo:mov   cBmb,     >cGat
     djn.f cLoo,     >cGat
```

```
cBmb:dat   <2667,    2-cGat
     end
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
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Path: news-rocq.inria.fr!jussieu.fr!pasteur.fr!oleane!news-raspail.gip.net!news-lond.gip.net!news.gsl.net!gip.net!nntp.news.xara.net!xara.net!news.maxwell.syr.edu!news-was.dfn.de!news-fra1.dfn.de!news.uni-mainz.de!marie.zdv.Uni-Mainz.DE!schmc003
From: Christian Schmidt <schmc003@marie.zdv.Uni-Mainz.DE>
Newsgroups: rec.games.corewar
Subject: Core Warrior 71 (better wrapped)
Date: Wed, 10 Mar 1999 10:23:12 +0100
Organization: Johannes Gutenberg-Universitaet Mainz, Germany
Lines: 673
Message-ID: <Pine.OSF.3.95.990310102132.14815A-100000@marie.zdv.Uni-Mainz.DE>
NNTP-Posting-Host: marie.zdv.uni-mainz.de
Mime-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII



Issue 71 8 March, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the ’94 draft hill, the beginner hill and the ’94 no-pspace hill. Coverage will follow where ever the action is. If you haven’t a clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available from:
  ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
  http://www.koth.org/corewar-faq.html

The ftp site and mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars.html ;Stormking
  http://www.ncs.infi.net/~wtnewton/corewar ;Terry’s web page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;Stormking
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the Stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi’s hints in the first issues is available at:
  ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

---

Welcome...

Everything has been very quiet since last issue, with the exception of some late activity on the Multi-Warrior hill. Kline has published a new scanner concept, Moore has retired and the tournament is drawing to a close, with just one more round to play.

No hint this issue, forgive me ;-). However, I hope you are happy with the long-awaited code to Fixed and also an improved Q^2.

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	42.0/	26.8/	31.3	Fixed	Ken Espiritu	157.2	3
2	45.7/	34.3/	20.0	Recycled Bits	David Moore	157.1	3
3	39.1/	23.6/	37.2	Spooky Wench	John Metcalf	154.6	3
4	42.6/	31.6/	25.7	The Conqueror	Christian Schmidt	153.6	3
5	45.4/	37.6/	17.1	Pattel's Virus	Ben Ford	153.2	3
6	39.4/	27.7/	32.9	The Stormbringer	Christian Schmidt	151.2	3
7	32.0/	15.8/	52.2	The Fugitive	David Moore	148.3	3
8	39.7/	32.7/	27.6	Fragility	John Metcalf	146.6	3
9	37.6/	28.8/	33.6	Freight Train v0.2	David Moore	146.4	3
10	39.7/	33.0/	27.3	Digital Dragon	Christian Schmidt	146.3	3
11	43.1/	39.9/	17.0	Silver Talon 1.2	Edgar	146.2	4
12	38.3/	32.2/	29.6	Twin	Christian Schmidt	144.4	3
13	36.4/	28.7/	34.9	Shadow	Christian Schmidt	144.1	3
14	32.2/	20.6/	47.1	Innocuous	John Metcalf	143.9	1
15	39.3/	36.5/	24.2	trefoil 23 226	Steve Gunnell	142.1	13
16	40.5/	39.1/	20.4	Galatea	Ben Ford	142.0	3
17	36.9/	34.4/	28.7	Strange Variations	John Metcalf	139.5	3
18	32.3/	27.9/	39.9	delay 0.02b 50	bjoern guenzel	136.7	3
19	41.8/	47.7/	10.6	Silccon	M. J. Pihlaja	135.8	13
20	40.1/	46.9/	13.0	Lost Again!	David Moore	133.3	3
21	37.0/	41.0/	22.0	trefoil 28 558	Steve Gunnell	133.0	3
22	40.1/	51.9/	8.1	Boing!	John Metcalf	128.3	3
23	36.1/	44.3/	19.5	Ice Pick Willie	Ben Ford	128.0	3
24	36.7/	46.4/	16.8	Reconnaissance	Ben Ford	127.1	3
25	31.2/	36.0/	32.8	Bond, James Bond	Ben Ford	126.3	2

Age since last issue: 69 (33 last issue, 13 the issue before)
New warriors: 25 Turnover/age rate 36%
Average age: 3 (46 last issue, 36 the issue before)
Average score: 143 (140 last issue, 138 the issue before)
The top 25 warriors are represented by just 9 independent authors: Schmidt, Ford and Moore with 5 each, Metcalf with 4, Gunnell with 2 and the rest with just one warrior each.

What can I say? The hill as it was has been destroyed, every one of our ancient adversaries unjustly deprived of everything it has achieved. It seems too, some of the most innovative and respected competitors have lost interest in Corewar as a result :-(

---

94 - What's New (Sorted by rank and score)

Considering the unusual circumstances and events since issue #70, the details normally collated in this section would be neither interesting or informative. This hill of Saturday, 6th February helps indicates what has taken place...

#	%W /	%L /	%T	Name	Author	Score	Age
1	49.3/	45.5/	5.2	Twenty-fiveZestyZenZebras	HotPinkMonopolyMoney	153.2	2
2	49.1/	45.2/	5.7	Twenty-fiveMisfitMuskrats	HoneydewHand-Grenade	153.1	6
3	48.9/	45.0/	6.1	Twenty5PuffyPlushPenguins	DodgerBlueWaterMelon	152.8	10
4	48.5/	45.6/	5.9	Twenty-fiveMadMightyMoose	LavenderBlushPerfume	151.5	23
5	48.0/	45.0/	7.0	TwentyfiveShortShadySheep	PeachPuffEveningGown	151.0	21
6	47.8/	45.6/	6.7	Twenty-fiveAlienAardvarks	ChartreuseEmbroidery	149.9	11
7	48.2/	46.8/	5.1	20+5BashfulBulliedBeavers	RosyBrownBakeryTruck	149.5	4
8	47.5/	45.6/	6.9	25ObnoxiousOrOldOstriches	FireBrickFireHydrant	149.5	9
9	47.4/	45.6/	7.0	25EcstaticEastEstonianEmu	GainsboroExpressRail	149.1	7
10	47.9/	46.8/	5.3	Twenty-fiveWetWileyWolves	BisqueWoodenSombrero	149.1	8

```
11  47.1/ 45.5/  7.4 Twenty-fiveSlipperySnakes CornSilkWoodenNickel 148.7    5
12  47.2/ 45.8/  7.1 25TinyTeflonTyrannosaurus OldLaceFancyFrippery 148.6    1
13  46.6/ 44.8/  8..6 20+5FlyingFightingFerrets MediumSeaGreenFrames 148.3   15
14  46.8/ 45.3/  7.9 Twenty-fiveDarkDrabDingos MintCreamBoxerShorts 148.2    3
15  47.9/ 48.0/  4.1 20+5FlyingFightingFerrets MediumSeaGreenFrames 147.8   16
16  48.4/ 49.2/  2.4 25MushyMid-MorningMaggots LemonChiffonDentures 147.6   20
17  47.3/ 47.2/  5.5 TwentyfiveSadSickSeagulls SaddleBrownPantyhose 147.3   14
18  48.1/ 50.1/  1.9 25AdvancedAerodynamicAnts PapayaWhipAftershave 146.0   25
19  47.8/ 50.1/  2.1 Twenty5LustfulLatexLlamas ForestGreenLongJohns 145.5   18
20  47.0/ 48.8/  4.2 25GorgeousGanglyGuerillas LightGoldenrodTuxedo 145.3   19
21  46.6/ 48.0/  5.4 20+5RotatingRubberRabbits DarkSalmonNinjaBlade 145.3   17
22  37.1/ 37.8/ 25.1 Win!                              David Moore 136.3   41
23  44.4/ 53.7/  1.9 25GiantGyroscopicGiraffes BurlyRoadKitchenSink 135.1   12
24  44.4/ 53.9/  1.6 Twenty-fiveJuicyJellyfish FloralWhiteShrubbery 135.0   13
25  44.3/ 53.9/  1.8 TwentyfiveWashed-upWhales CornflowerBlueFrames 134.7   22

David Moore wipes the hill with his handshaking warriors prior to announcing
his retirement from Corewar. Fixed, Vigor and Recovery were the last to be
pushed from the hill.
```

---

94 - What’s No More (Sorted by age)

#	%W /	%L /	%T	Name	Author	Score	Age
26	23.0/	23.3/	53.7	Newt	Ian Oversby	122.8	216
26	23.2/	20.3/	56.5	Vain	Ian Oversby	126.1	147
26	??.?/	??.?/	??.?	Vigor	Ken Espiritu	???.?	138
26	24.0/	18.7/	57.3	Fixed	Ken Espiritu	129.3	135
26	??.?/	??.?/	??.?	Fugitive	David Moore	???.?	102
26	30.0/	34.9/	35.1	Fire and Ice	David Moore	125.0	100
26	26.8/	28.5/	44.8	Tuesday Afternoon	John K W	125.1	58
26	35.0/	45.0/	20.1	Blurstone	M. J. Pihlaja	124.9	58
26	??.?/	??.?/	??.?	Recycled Bits	David Moore	???.?	58
26	??.?/	??.?/	??.?	The Stormbringer	Christian Schmidt	???.?	51
26	27.3/	27.5/	45.3	Shadow	Christian Schmidt	127.1	46
26	??.?/	??.?/	??.?	Recovery	Ian Oversby	???.?	45
26	??.?/	??.?/	??.?	Benj’s Revenge 1.0	Robert Macrae	???.?	45
26	21.0/	18.1/	60.9	Three Men in a Boat	M Joonas Pihlaja	123.9	42
26	30.7/	37.1/	32.2	Defender	Ian Oversby	124.2	39
26	32.7/	40.7/	26.5	myVamp v3.7	Paulsson	124.7	37
26	33.4/	40.5/	26.0	Zooom...	John Metcalf	126.4	34
26	26.0/	26.0/	48.0	Brigadeer	M Joonas Pihlaja	126.0	34
26	??.?/	??.?/	??.?	Diamonds and more Rust	Christian Schmidt	???.?	23
26	27.1/	28.9/	44.0	Three Queens and a King	Christian Schmidt	125.3	15
26	31.6/	38.2/	30.2	Trefoil	Steve Gunnell	125..0	12
26	24.2/	24.2/	51.6	Fragility	John Metcalf	124.2	12
26	38.8/	52.7/	8.6	He Scans Anew	P.Kline	124.9	10
26	34.7/	44.0/	21.3	Bee/7i	John Metcalf	125.4	4

:-(

---

94 - What’s Old

#	%W /	%L /	%T	Name	Author	Score	Age

Nothing old.

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> Bomber
2	Impfinity v4g1	Planar	1993	Stone/imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	Oneshot
8	Evol Cap 6.6	John Wilkinson	1299	Stone/imp
9	quiz	Schitzo	1262	Scanner/bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber

11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/imp
15	Iron Gate 1.5	Wayne Sheppard	926	Scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	Scanner
18	Barrage	Anton Marsden	876	Qscan -> Paper
19	Blue Funk	Steven Morrell	869	Stone/imp
20	Flurry	Anton Marsden	835	Qscan -> P-warrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> Bomber
22	Blue Funk 3	Steven Morrell	766	Stone/imp
23	Night Train	Karl Lewin	755	Paper
24	Mirage 1.5	Anton Marsden	736	Scanner/bomber
25	Blizzard	Anton Marsden	713	Qscan -> Paper

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior
15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner
20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper

Newt climbs a couple of places and halts at 11th. Vain climbs to 21st place before it too loses it’s *. New entries Vigor and Fixed claim ranks 24 and 25, shortly before they are forced off the hill... For the first time there are no active warriors in the new HoF.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	54.5/ 30.8/ 14.6	Pattel’s Virus	Ben Ford	178.2	5
2	48.3/ 38.5/ 13.2	redcode ragamuffin	Simon Wainwright	158.2	1
3	46.8/ 36.2/ 17.0	Spat the dummy.	Steve Gunnell (oh ye	157.3	63
4	43.5/ 35.3/ 21.2	Ice Pick Willie	Ben Ford	151.6	46
5	44.3/ 39.8/ 15.8	Reconnaissance v0.3	Ben Ford	148.9	6
6	41.1/ 33.8/ 25.1	Arsonic C	P._V._K.	148.4	80

7	44.1/ 41.3/ 14.6	Fat Man	A.S. Mehlos	146.9	77
8	42.6/ 41.0/ 16.5	Sticky taped together 1.2	Steve Gunnell	144.1	74
9	36.5/ 29.3/ 34.2	A man with a Gun	Ben Ford	143.6	48
10	40.9/ 38.6/ 20.6	No Time To Think	A. S. Mehlos	143.2	64
11	42.2/ 41.2/ 16.7	Scanzonato	Franco Solerio	143.2	98
12	30.7/ 18.5/ 50.8	Redemption	John Metcalf	142.9	39
13	34.2/ 28.2/ 37.6	ModerationRevisited	A. S. Mehlos	140.1	83
14	36.0/ 31.9/ 32.1	of mirth and merriment	Simon Wainwright	140.1	9
15	42.1/ 44.6/ 13.3	Hunter	Ben Ford	139.7	51
16	30.2/ 21.8/ 48.0	HardCore v0.2b	Simon Duff	138.6	3
17	40.1/ 42.1/ 17.8	Security Purge	Ben Ford	138.1	17
18	39.3/ 41.1/ 19.5	Reconnaissance	Ben Ford	137.5	14
19	33.0/ 28.9/ 38.0	Frusteration II	A. S. Mehlos	137.1	67
20	28.5/ 22.6/ 48.9	Quick Zeta	Leonardo Humberto	134.3	2
21	40.3/ 48.4/ 11.4	fatal lure of pMars	Simon Wainwright	132.1	7
22	26.7/ 23.4/ 49.9	H-Bomb 9	Josh Yeager	130.0	61
23	31.0/ 32.1/ 36.9	Rocking-Chair 94 v0.33	Leonardo Humberto	129.9	11
24	26.5/ 23.5/ 50.0	H-Bomb 9k	Josh Yeager	129.5	60
25	37.0/ 47.3/ 15.7	Death kiss with a dash of	Anders Rosendal	126.7	23

The beginners' hill has been pretty quiet since last issue, with only 13 successful challenges. IWeasel was the only warrior to have died of old age. Ford's new P^3 warrior dominates the hill with a 20 point lead.

Current Status of the KOTH.ORG '94 No Pspace Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS '94 Draft, excluding ldp and stp
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	38/ 27/ 35	The Stormbringer	Christian Schmidt	148	109
2	37/ 28/ 35	Baseline Plus	Ken Espiritu	146	156
3	37/ 29/ 34	Fixed	Ken Espiritu	146	158
4	37/ 28/ 35	Blacken	Ian Oversby	145	85
5	36/ 26/ 38	Vain	Ian Oversby	145	175
6	46/ 48/ 6	He Scans Alone	P.Kline	145	21
7	42/ 39/ 19	Boys are Back in Town 1.1	Philip Kendall	144	100
8	36/ 28/ 36	Recovery	Ian Oversby	144	98
9	43/ 44/ 12	Win!	David Moore	142	73
10	28/ 14/ 58	_romanian_killah_	Costin Bontas rulez	142	67
11	38/ 35/ 27	BiShot v1.0	Christian Schmidt	141	7
12	38/ 35/ 27	Liquid Fire	Christian Schmidt	140	71
13	27/ 14/ 59	The Fugitive	David Moore	140	177
14	42/ 45/ 13	Red Carpet	David Moore	140	116
15	44/ 49/ 8	He Scans Anew	P.Kline	139	26
16	38/ 38/ 24	Floody River	P.Kline	137	124
17	32/ 27/ 41	Brigadeer	M Joonas Pihlaja	137	94
18	34/ 32/ 34	Head or Tail	Christian Schmidt	136	146
19	29/ 23/ 48	Innocuous	John Metcalf	134	1
20	31/ 29/ 40	Gemini Dream	John K Wilkinson	133	181

Old KoTH Zooom was ;killed and the hilltop is now held by The Stormbringer closely followed by four more Q^2 warriors. Quite a difference from last issue where 4 of the top 5 were scanners - all with but 3 new warriors on the hill.

Current Standings of the Oversby Autumn Corewar Tournament:

	'94	Tiny	Grey	Build	Multi	Primo	rDist	Total
Schmidt	99.46	70.55	75.41	77.34	50.26	100.00	92.84	515.60
Macrae	87.63	69.55	74.28	100.00	74.87	95.32	54.47	501.65
Pihlaja	98.66	100.00	100.00	x	84.82	87.48	x	470.96
.WFB	91.10	22.42	49.35	56.28	100.00	56.47	x	375.62
.Khuong	75.82	60.37	65.86	63.96	x	x	42.71	308.72

```
.Gunnell :  72.82   46.50   19.46       x   47.12   87.95       x : 273.85
.Mehlos  :  71.22   29.45   76.11   76.23       x       x       x : 253.01
 Hale    :  99.12   66.52   18.68   60.92       x       x       x : 245.24
 Moore   : 100.00   63.67   62.29       x       x       x       x : 225.96
.Yeager  :      x   24.93   44.22   60.03   34.55       x       x : 163.73
 Metcalf :      x       x       x       x       x   39.96  100.00 : 139.96
 Kendall :  90.04   35.48    3.21       x       x       x       x : 128.73
.Duff    :  23.05   30.67   10.51       x       x       x       x :  64.23
```

First place in the primordial round was claimed by Schmidt with Pizza Vulcano, then Metcalf (better late than never) took first place in the penultimate round - restricted distance.

The final round will be similar to the typical ’94 draft rules, with an interesting twist. The coresize will be 8001 and the process limit 64. The deadline is Thursday 11th March, 23:59:59. Good luck!

Check the tournament’s home page for more details:

  http://www.geocities.com/TimesSquare/Realm/2443/

The Hint -

Extra Extra -
Fixed by Ken Espiritu

Among the warriors which have created much curiousity in the redcoding community are Ken Espiritu’s mystery papers, Vigor and Fixed. While some of us pondered the strange scores these alleged papers attained and suspected the strategy to be somewhat different, Espiritu was in possession of the secret of paper longevity.

Fixed is a warrior of two parts. First, a qscan which splits to two parallel attacks similar to Retro-Q^2, followed by a robust paper with silk-imps. In contrast to warriors using similar qscans, Fixed only launches one of the two papers it contains. However, this seems no less effective, and may introduce advantages against some scanners.

The paper is made up of three silk modules followed by silk-imps of the form mov.i #xxxx,}yyyy. The behaviour of these can be very interesting! Consider for example what happens when you overwrite an area of core where you have proccesses stunned by an opponent’s spl carpet. The initial results differ with the type of spl carpet. Is it spl 0,0 or spl #0,0 or spl #1,1?

Now, lets see how effective a few scanners are against the paper from Fixed. I removed the qscan from Fixed and decoys from the scanners to ensure a fair fight ;-)

WARRIOR	%W	%L	%T	Scan	Fixed	WARRIOR	%W	%L	%T	Scan	Fixed
HeScans T	61	27	12	195	93	HAL 9000	39	37	24	141	135
Tom Tack	52	37	11	167	122	Blur 2	36	35	29	137	134
Mini-HSA	52	38	10	166	124	HSA	39	45	16	133	151
Mirage 1.5	49	32	19	166	115	Win!	35	40	25	130	145
Tim Tack	48	38	14	158	128	Zooom...	35	45	20	125	155
7-11	45	38	17	152	131	Harmony	26	30	44	122	134
Syzygy 1.3	40	34	26	146	128	One Shot	26	39	35	113	152

Warriors with HSA-like carpet attacks perform well. Booting your scanner leaving a large spl decoy is another effective technique.

```
;redcode-94
;name Fixed
;author Ken Espiritu
;strategy qscan -> paper
;assert 1

       org start

gap    equ    (6)
```

```
rep    equ    (17)
rep2   equ    (13)
qd     equ    (100)
qs     equ    (-200)
qb     equ    (start-700)
flag   equ    (qbomb-100)
datz   equ    (start-200)

qbomb: dat    }gap,    }-gap
tab:   add.a  table,   table
slow:  add.ab @tab,    fnd
fast:  add.b  *tab,    @slow
which: sne.f  }datz,   @fnd
       add.ab #qd,     fnd
       spl    bmber2,  }qs*13   ; start primary bomber

bmber1:add.b  fnd,     fnd2     ; redundant bomber
loop1: mov.i  qbomb,   @fnd2    ; .5c, forward only
fnd2:  mov.i  qbomb,   >fnd-(gap*rep)/2+1
       add    #2*gap,  fnd2
       djn    loop1,   #rep
       jmn.b  qbomb,   flag     ; check flag

fixed1:spl    1,       }qb+qs*31
       spl    1,       }qb+qs*32
       spl    1,       }qb+qs*33
silk1a:spl    @0,      <131
       mov.i  }silk1a, >silk1a
silk1b:spl    @0,      }7502
       mov.i  }silk1b, >silk1b
silk1c:spl    @0,      }2430
       mov.i  }silk1c, >silk1c
       mov.i  #3555,   }-3190
       mov.i  #1832,   }1398
       mov.i  #-2840,  }570

       dat    }10*qs,  >2*qs    ; can get 21 values from this table
table: dat    >4*qs,   }1*qs    ; and can also use the initial value
       dat    }23*qs,  >3*qs    ; of fnd

start: seq.i  qb+qs*0, qb+qs*0+qd
       jmp    which,   }qb+qd/2
       seq.i  qb+qs*2, qb+qs*2+qd
       jmp    fast,    {tab
       seq.i  qb+qs*13,qb+qs*13+qd
       jmp    fast,    {fast
       seq.i  qb+qs*1, qb+qs*1+qd
       jmp    fast,    }qb+qs*1+qd/2
       seq.i  qb+qs*3, qb+qs*3+qd
       jmp    fast,    }tab

       seq.i  qb+qs*17,qb+qs*17+qd
       jmp    slow,    {fast
       seq.i  qb+qs*7, qb+qs*7+qd
       jmp    slow,    }tab
       seq.i  qb+qs*11,qb+qs*11+qd
       jmp    slow,    <tab
       seq.i  qb+qs*5, qb+qs*5+qd
       jmp    slow,    }qb+qs*5+qd/2
       seq.i  qb+qs*24,qb+qs*24+qd
       jmp    slow,    >tab
       seq.i  qb+qs*4, qb+qs*4+qd
       jmp    >fast,   }qb+qs*4+qd/2
       seq.i  qb+qs*10,qb+qs*10+qd
       jmp    >fast,   <tab
       seq.i  qb+qs*23,qb+qs*23+qd
       jmp    >fast,   >tab
       seq.i  qb+qs*6, qb+qs*6+qd
       jmp    slow,    {tab
       seq.i  qb+qs*12,qb+qs*12+qd
```

```
       djn.f  slow,    tab

       seq.i  qb+qs*28,qb+qs*28+qd
       jmp    tab,     >tab
       seq.i  qb+qs*9, qb+qs*9+qd
       jmp    tab,     }qb+qs*9+qd/2
       seq.i  qb+qs*20,qb+qs*20+qd
       djn.f  <fast,   tab
       seq.i  qb+qs*8, qb+qs*8+qd
       jmp    <fast,   }qb+qs*8+qd/2
       seq.i  qb+qs*21,qb+qs*21+qd
       jmp    tab,     {fast
       seq.i  qb+qs*15,qb+qs*15+qd
       jmp    tab,     <tab
       seq.i  qb+qs*27,qb+qs*27+qd
       jmp    <fast,   >tab
       seq.i  qb+qs*16,qb+qs*16+qd
       jmp    tab,     {tab
       seq.i  qb+qs*22,qb+qs*22+qd
       djn.f  tab,     tab
       seq.i  qb+qs*30,qb+qs*30+qd
       jmp    tab,     }tab

fixed2:spl    1,       }qb+qs*31
       spl    1,       }qb+qs*32
       spl    1,       }qb+qs*33
silk2a:spl    @0,      <131
       mov.i  }silk2a, >silk2a
silk2b:spl    @0,      }7502
       mov.i  }silk2b, >silk2b
silk2c:spl    @0,      }2430
       mov.i  }silk2c, >silk2c
       mov.i  #3555,   }-3190
       mov.i  #1832,   }1398
       mov.i  #-2840,  }570

       dat    }1,      >1
       dat    }1,      >1
qincr  dat    }-gap,   >2*gap

bmber2:add.ba fnd,     fnd
loop2: mov.i  qincr,   *fnd     ; primary bomber
       mov.i  qincr,   @fnd     ; .66c, bi-directional
fnd:   mov.i  2*-gap,  }qb
       add    qincr,   fnd
       djn    loop2,   #rep2
       jmp    fixed2,  >flag    ; set flag
       end
```

Extra Extra Extra -
Innocuous by John Metcalf

After fiercely resisting the temptation to join the authors of Q^2 warriors I finally yielded on the provision I didn’t re-use someone else’s code. At first I settled for a mini-Q^2 which scanned 13*2 locations. Since it seemed my warriors were (in my opinion) taking premature retirement, it became inevitable I would eventually have to write a full Q^2.

>From writing the mini-Q^2 I learnt how it is possible for more scan locations to be decoded in a faster time and how to remove a now unwanted add.ab fnd,fnd. Over the 24*2 scans of the new and improved Q^2 this results in an average speed increase of 1.2 cycles :-)

Since my testing has been somewhat curtailed by events which created some uncertainty over the level of the hill, I present the improved Q^2 here with only a simple, harmless paper - hence the name...

Anyway, here’s the code ready for you to use, abuse and improve as you wish:

```
;redcode-94
;name Innocuous
;author John Metcalf
;strategy Improved Q^2 -> Harmless Paper

;assert CORESIZE==8000

     org   qGo
     pstep1 equ  220 ; 1700
     pstep2 equ 6172 ; 4388
     pstep3 equ 3060 ; 4924
pGo: spl   1,       {qf+qs*3 ; harmless paper!
     spl   1,       {qf+qs*9
pap1:spl   @0,      {pstep1
     mov   }pap1,   >pap1
     mov   }pap1,   >pap1
pap2:spl   @0,      {pstep2
     mov   }pap2,   >pap2
     mov   {pap2,   {pap3
pap3:jmp   pstep3+1,>pstep3-3
     dat   >1,      }1

     for 23
     dat 0,0
     rof

     qf equ (pGo-200)        ; qscan constants
     qd equ (-101)
     qs equ (-201)

     qi equ (11)             ; qbomber constants
     qr equ (9)

     nop   {q_B,     {q_E
qP:  add   q_D,      q_B     ; decoder
qSlo:add   @qP,      @qLoo-1
qFas:add   *qP,      @qLoo-1
qSki:sne   >qf+qs*20,@qKil
     add   qDis,     qKil

qLoo:mov   qInc,     *qKil   ; .5c dat bomber
qKil:mov   qf,       @qf+5
     add.x qInc,     @qLoo-1
     djn   qLoo,     #qr
     jmp   pGo,      {qf+qs*27

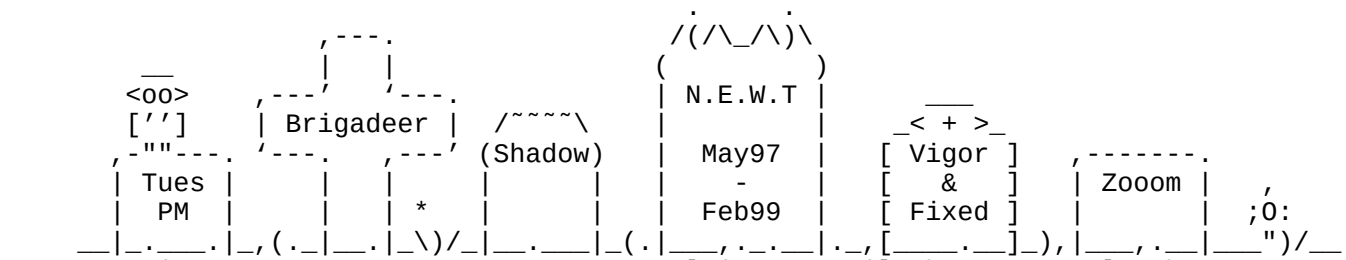
qDis:dat   qd,       qd
qInc:dat   {qi,      {-qi

q_A: dat   10*qs,    10*qs   ; Can get 23 values from this
q_B: dat   13*qs,    13*qs   ; table and can also use the
q_C: dat   6*qs,     6*qs    ; initial value of qKil.
q_D: dat   1*qs,     1*qs    ; (Traditional Q^2 comment!)
q_E: dat   4*qs,     4*qs

; [0/1 cycles]
qGo: seq   qf,       qd+qf        ; 0
     jmp   qSki,     {qd+qf-2
     seq   qf+qs*10, qd+qf+qs*10  ; A
     djn.a qFas,     {qFas
     seq   qf+qs*13, qd+qf+qs*13  ; B
     jmp   qFas,     {qFas
     seq   qf+qs*6,  qd+qf+qs*6   ; C
     jmp   qFas,     {qP
     seq   qf+qs,    qd+qf+qs     ; D
     jmp   qFas,     {qd+qf+qs-2
     seq   qf+qs*4,  qd+qf+qs*4   ; E
     jmp   qFas,     }qP
```

```
; [2 cycles]
     seq   qf+qs*14, qd+qf+qs*14  ; DB
     jmp   qSlo,     {qd+qf+qs*4-2
     seq   qf+qs*19, qd+qf+qs*19  ; CB
     jmp   qSlo,     {qP
     seq   qf+qs*17, qd+qf+qs*17  ; EB
     jmp   qSlo,     }qP
     seq   qf+qs*11, qd+qf+qs*11  ; DA
     jmp   qSlo,     <qP
     seq   qf+qs*7,  qd+qf+qs*7   ; DC
     jmp   qSlo,     >qP
     seq   qf+qs*26, qd+qf+qs*26  ; BB
     jmp   qSlo,     {qFas
     seq   qf+qs*5,  qd+qf+qs*5   ; DE
     jmp   qSlo,     {qSlo
     seq   qf+qs*16, qd+qf+qs*16  ; CA
     djn.f qSlo,     qP
     seq   qf+qs*23, qd+qf+qs*23  ; BA
     djn.a qSlo,     {qFas
     seq   qf+qs*2,  qd+qf+qs*2   ; DD
     djn.b qSlo,     {qSlo

; [3 cycles]
     seq   qf+qs*15, qd+qf+qs*15  ; DDB
     jmp   qP,       {qd+qf+qs*4-2
     seq   qf+qs*12, qd+qf+qs*12  ; DDA
     jmp   qP,       <qP
     seq   qf+qs*8,  qd+qf+qs*8   ; DDC
     jmp   qP,       >qP
     seq   qf+qs*25, qd+qf+qs*25  ; CCB
     jmp   qP,       {qP
     seq   qf+qs*21, qd+qf+qs*21  ; EEB
     jmp   qP,       }qP
     seq   qf+qs*28, qd+qf+qs*28  ; DDBB
     jmp   qP,       {qFas
     seq   qf+qs*24, qd+qf+qs*24  ; DAB
     djn.a qP,       {qFas
     seq   qf+qs*22, qd+qf+qs*22  ; CCA
     djn.f qP,       qP
     jmp   pGo,      {qf+qs*27
     end
```



Questions? Concerns? Comments? Complaints? Mail them to people who care.
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Path: news-rocq.inria.fr!jussieu.fr!oleane!news-raspail.gip.net!news-lond.gip.net!news.gsl.net!gip.net!nntp.news.xara.net!xara.net!news.maxwell.syr.edu!news.new-york.net!news.ttsg.com!grumpy@xanther.digitald.uk.com
From: John Metcalf <grumpy@xanther.digitald.uk.com>
Newsgroups: rec.games.corewar
Subject: Core Warrior 72 (repost)
Date: 16 Apr 1999 07:25:13 -0400
Organization: TTSG
Lines: 800
Distribution: world
Message-ID: <Pine.LNX.4.04.9904160701030.6574-100000@xanther.digitald.uk.com>
Reply-To: grumpy@xanther.digitald.uk.com
NNTP-Posting-Host: odin.ttsg.com
X-Trace: odin.ttsg.com 924261913 28631 204.141.84.29 (16 Apr 1999 11:25:13 GMT)
X-Complaints-To: abuse@news.ttsg.com
NNTP-Posting-Date: 16 Apr 1999 11:25:13 GMT
Originator: corewar-l@koth.org

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 72 13 April, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
  ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
  http://www.koth.org/corewar-faq.html

The ftp site and mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars.html   ;Stormking
  http://www.ncs.infi.net/~wtnewton/corewar ;Terry's web page
  ftp://members.aol.com/ofechner/corewar   ;Fechner ftp site

Web pages are at:
  http://www.koth.org/   ;Stormking
  http://www.ecst.csuchico.edu/~pizza/koth   ;Pizza
  http://para.inria.fr/~doligez/corewar   ;Planar

Newbies should check the Stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi's hints in the first issues is available at:
  ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

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Welcome...

There has been very little activity either on the hills or in the newsgroup since last issue. However, Ian Oversby's tournament has reached a conclusion, with someone winning a copy of Ian's paper/stone, Recovery. Also, Macrae won the code for Mini-CLP by solving Kline's Challenge.

This issue, Christian Schmidt shows us how he constructed and optimized three of his multi-strategy warriors, Digital Dragon, Shadow and Stormbringer :-)

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	44.0/	31.6/	24.5	Recycled Bits	David Moore	156.4	13
2	37.8/	25.8/	36.4	Spooky Wench	John Metcalf	149.8	0
3	36.3/	24.9/	38.9	Puddleglum	John Metcalf	147.7	1
4	41.9/	37.5/	20.6	Pattel's Virus	Ben Ford	146.4	13
5	35.6/	25.6/	38.8	The Stormbringer	Christian Schmidt	145.5	13
6	28.1/	10.9/	61.0	The Fugitive	David Moore	145.2	13
7	35.7/	27.1/	37.2	Fixed	Ken Espiritu	144.2	13
8	34.9/	26.6/	38.4	Shadow	Christian Schmidt	143.3	10
9	42.7/	42.4/	14.9	Zooom...	John Metcalf	143.0	6
10	39.4/	36.3/	24.4	BiShot	Christian Schmidt	142.5	1
11	39.3/	40.9/	19.8	Silver Talon 1.2	Edgar	137.7	14
12	30.3/	23.1/	46.6	Even Less Innocuous	TeamQ3	137.5	2
13	30.0/	23.1/	47.0	Freight Train v0.2	David Moore	136.9	13
14	33.6/	31.3/	35.1	Twin	Christian Schmidt	135.9	13
15	29.9/	24.6/	45.5	Less Innocuous	Leonardo Humberto	135.2	3
16	34.2/	33.8/	32.1	Digital Dragon	Christian Schmidt	134.6	13
17	35.3/	36.3/	28.4	trefoil 23 226	Steve Gunnell	134.4	23
18	37.3/	40.6/	22.1	Galatea	Ben Ford	134.1	13
19	38.9/	43.9/	17.2	redcode ragamuffin	Simon Wainwright	133.9	4
20	27.0/	22.2/	50.7	Innocuous	John Metcalf	131.8	11
21	38.0/	46.2/	15.8	Have No Pity	John Metcalf	129.8	1
22	22.4/	15.6/	62.0	;strategy stone/paper	John Metcalf	129.2	5
23	28.2/	29.1/	42.7	Quicker Zeta	Leonardo Humberto	127.3	8
24	21.5/	15.7/	62.8	(2 x^2 + 3 x + 1) / 2	John Metcalf	127.3	4
25	34.0/	41.4/	24.5	trefoil 28 558	Steve Gunnell	126.7	13

Age since last issue: 10 (69 last issue, 33 the issue before)
New warriors: 11 Turnover/age rate 110%
Average age: 8 (3 last issue, 46 the issue before)
Average score: 138 (143 last issue, 140 the issue before)
The top 25 warriors are represented by just 10 independent authors: Metcalf with 7, Schmidt with 5, Moore with 3, Ford, Gunnell and Humberto with 2 each and everyone else with just one warrior.

Fixed, Pattel's Virus and Spooky Wench each had a short time as King before Recycled Bits claimed top spot. Still we have 10 warriors of the same age, down from 20 last issue.

---

94 - What's New (Sorted by rank and score)

#	%W /	%L /	%T	Name	Author	Score	Age
2	35.3/	27.0/	37.7	Spooky Wench	John Metcalf	143.5	0
2	33.3/	25.0/	41.6	Puddleglum	John Metcalf	141.6	0
7	35.7/	27.8/	36.6	Shadow	Christian Schmidt	143.6	0
7	36.1/	36.6/	27.3	BiShot	Christian Schmidt	135.6	0
9	26.7/	17.7/	55.7	Redemption	John Metcalf	135.7	0
11	26.0/	21.6/	52.4	Even Less Innocuous	TeamQ3	130.4	1
11	25.6/	20.9/	53.5	Less Innocuous	Leonardo Humberto	130.3	1
17	38.6/	45.7/	15.7	Zooom...	John Metcalf	131.6	1
18	21.6/	15.2/	63.2	;strategy stone/paper	John Metcalf	127.9	1
20	26.9/	25.9/	47.2	RabidWeasel 0.5	WFB	127.9	1
20	35.2/	46.1/	18.7	myVamp5.6?	Paulsson	124.3	0

20	18.2/ 13.8/ 68.0	(2 x^2 + 3 x + 1) / 2	John Metcalf	122.6	0
20	34.8/ 47.7/ 17.6	Have No Pity	John Metcalf	121.8	0
21	27.0/ 27.6/ 45.4	Quicker Zeta	Leonardo Humberto	126.4	1
22	36.3/ 52.1/ 11.6	quatrefoil 2 185	Steve Gunnell	120.5	1
25	34.3/ 48.4/ 17.3	redcode ragamuffin	Simon Wainwright	120.3	1

Very few new warriors. Shadow and Spooky Wench are updated.

---

94 - What's No More (Sorted by age)

#	%W /	%L /	%T	Name	Author	Score	Age
26	34.4/	50.9/	14.7	Silccon	M. J. Pihlaja	117.9	22
26	21.6/	24.7/	53.6	delay 0.02b 50	bjoern guenzel	118.5	13
26	1.4/	0.5/	2.1	The Conqueror	Christian Schmidt	6.3	12
26	0.4/	0.1/	3.5	Spooky Wench	John Metcalf	4.7	9
26	0.6/	0.8/	2.6	Fragility	John Metcalf	4.4	9
26	35.4/	50.5/	14.1	Lost Again!	David Moore	120.3	8
26	27.2/	35.7/	37.2	Bond, James Bond	Ben Ford	118.7	8
26	0.5/	1.4/	2.0	Strange Variations	John Metcalf	3.7	8
26	33.3/	48.5/	18.2	Reconnaissance	Ben Ford	118.0	7
26	20.2/	22.6/	57.2	RabidWeasel 0.5	WFB	117.9	7
26	32.0/	46.6/	21.4	Ice Pick Willie	Ben Ford	117.4	6
26	36.8/	55.0/	8.2	Boing!	John Metcalf	118.7	4
26	2.2/	0.6/	1.2	Redemption	John Metcalf	7.9	4
26	33.1/	47.0/	19.8	myVamp5.6?	Paulsson	119.3	3
26	1.4/	1.4/	1.3	Shadow	Christian Schmidt	5.3	3
26	34.5/	53.5/	12.0	quatrefoil 2 185	Steve Gunnell	115.5	2

Lots of ;killing occurred this month...

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age

Nothing old yet :-(

OLD HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Thermite II	Robert Macrae	2262	Qscan -> Bomber
2	Impfinity v4g1	Planar	1993	Stone/imp
3	Jack in the box	Beppe Bezzi	1620	P-warrior
4	Tornado 3.0	Beppe Bezzi	1567	Bomber
5	Torch t18	P.Kline	1539	Bomber
6	Chameleon	Myer R Bremer	1437	P-warrior
7	Frontwards v2	Steven Morrell	1420	Oneshot
8	Evol Cap 6.6	John Wilkinson	1299	Stone/imp
9	quiz	Schitzo	1262	Scanner/bomber
10	T.N.T.	Maurizio Vittuari	1204	Bomber
11	Grilled Octopus v0.5	David Boeren	1154	P-warrior
12	Hazy Shade II	John Wilkinson	1102	P-warrior
13	Stepping Stone	Kurt Franke	1049	Qscan -> Vampire
14	Rosebud	Beppe Bezzi	993	Stone/imp
15	Iron Gate 1.5	Wayne Sheppard	926	Scanner
16	T.N.T. pro	Maurizio Vittuari	925	Bomber
17	Agony II	Stefan Strack	912	Scanner
18	Barrage	Anton Marsden	876	Qscan -> Paper
19	Blue Funk	Steven Morrell	869	Stone/imp
20	Flurry	Anton Marsden	835	Qscan -> P-warrior
21	Thermite 1.0	Robert Macrae	802	Qscan -> Bomber
22	Blue Funk 3	Steven Morrell	766	Stone/imp
23	Night Train	Karl Lewin	755	Paper
24	Mirage 1.5	Anton Marsden	736	Scanner/bomber
25	Blizzard	Anton Marsden	713	Qscan -> Paper

NEW HALL OF FAME
* means the warrior is still active.

Pos	Name	Author	Age	Strategy

1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior
15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner
20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	55.7/ 28.6/ 15.8	Pattel's Virus	Ben Ford	182.7	20
2	49.4/ 31.8/ 18.8	Spat the dummy.	Steve Gunnell (oh ye	166.9	78
3	47.2/ 38.5/ 14.3	redcode ragamuffin	Simon Wainwright	155.9	6
4	32.3/ 16.3/ 51.3	Quicker Zeta	Leonardo Humberto	148.3	12
5	39.8/ 32.7/ 27.5	Arsonic C	P._V._K.	146.9	95
6	43.8/ 41.1/ 15.2	Fat Man	A.S. Mehlos	146.4	92
7	41.5/ 38.8/ 19.7	Sticky taped together 1.2	Steve Gunnell	144.3	89
8	34.9/ 27.2/ 37.9	A man with a Gun	Ben Ford	142.7	63
9	29.6/ 17.1/ 53.3	Redemption	John Metcalf	142.1	54
10	43.2/ 44.5/ 12.3	fatal lure of pMars	Simon Wainwright	142.0	22
11	39.0/ 36.8/ 24.3	No Time To Think	A. S. Mehlos	141.2	79
12	30.8/ 21.6/ 47.6	HardCore v0.2b	Simon Duff	140.0	18
13	39.5/ 39.3/ 21.2	Fire Master	P_.V_.K.	139.7	2
14	32.8/ 26.3/ 40.9	Frusteration II	A. S. Mehlos	139.3	82
15	30.4/ 24.1/ 45.4	ModerationRevisited	A. S. Mehlos	136.7	98
16	37.2/ 37.9/ 24.9	Red Sand	Ken Hubbard	136.6	1
17	32.1/ 30.1/ 37.9	of mirth and merriment	Simon Wainwright	134.1	24
18	26.9/ 19.8/ 53.3	Quick Zeta	Leonardo Humberto	134.0	17
19	32.9/ 34.9/ 32.2	Ground Zero	Ken Hubbard	130.9	5
20	24.4/ 20.2/ 55.4	H-Bomb 9	Josh Yeager	128.6	76
21	24.1/ 20.5/ 55.4	H-Bomb 9k	Josh Yeager	127.8	75
22	36.2/ 44.8/ 19.1	Death kiss with a dash of	Anders Rosendal	127.6	38
23	27.7/ 29.6/ 42.7	Rocking-Chair 94 v0.33	Leonardo Humberto	125.8	26
24	26.6/ 29.0/ 44.3	SandPaper	Leonardo Humberto	124.3	9
25	27.7/ 54.5/ 17.8	v15var 3 257	Steve Gunnell	100.9	3

15 successful challenges since last issue, and only Scanzonato perished of old age. The top five comprises a good cross-section of strategy: 2 p-space, a scanner, a paper and a bomber. Beginners might like to try submitting warriors to one or two of the alternative hills, which are easier to enter than you may think.

Current Status of the KOTH.ORG '94 No Pspace Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 250
instruction set: ICWS '94 Draft, excluding ldp and stp

#	%W/	%L/	%T	Name	Author	Score	Age
1	43/	37/	21	Boys are Back in Town 1.1	Philip Kendall	149	140
2	42/	39/	18	Zooom...	John Metcalf	145	14
3	26/	10/	64	_romanian_killah_	Costin Bontas rulez	142	107
4	33/	25/	42	Vain	Ian Oversby	141	215
5	25/	10/	65	The Fugitive	David Moore	141	217
6	35/	30/	35	Fixed	Ken Espiritu	140	198
7	34/	28/	38	The Stormbringer	Christian Schmidt	140	149
8	33/	25/	42	Recovery	Ian Oversby	140	138
9	34/	28/	39	Blacken	Ian Oversby	139	125
10	37/	35/	29	BiShot v1.0	Christian Schmidt	139	47
11	34/	30/	37	Spooky Wench	John Metcalf	137	2
12	33/	29/	38	Baseline Plus	Ken Espiritu	137	196
13	41/	44/	15	Win!	David Moore	137	113
14	29/	23/	47	Even Less Innocuous	TeamQ3	136	6
15	30/	25/	46	Brigadeer	M Joonas Pihlaja	135	134
16	32/	31/	37	Puddleglum	John Metcalf	134	1
17	34/	34/	31	Liquid Fire	Christian Schmidt	134	111
18	34/	34/	32	qTest	P.Kline	134	37
19	33/	34/	32	Digital Dragon	Christian Schmidt	132	16
20	27/	22/	52	ELI-8	John Metcalf	131	17

The no-pspace hill has aged by 40 successful challenges this month, with scanners now ruling the hill once again. Gemini Dream left the hill aged 182 and Fugitive becomes the oldest warrior. Centenarians Head or Tail, Floody River and Red Carpet also departed. 16 of the 20 warriors on this hill use some form of Qscan.

Current Standings of the Oversby Autumn Corewar Tournament:

	'94	Tiny	Grey	Build	Multi	Primo	rDist	c8001	Total
1 Pihlaja	98.66	100.00	100.00	x	84.82	87.48	x	100.00	570.80
2 Schmidt	99.46	70.55	75.41	77.34	50.26	100.00	92.84	x	515.02
3 Macrae	87.63	69.55	74.28	100.00	74.87	95.32	54.47	81.59	513.69
4 WFB	91.10	22.42	49.35	56.28	100.00	56.47	x	95.31	473.57
5 Khuong	75.82	60.37	65.86	63.96	x	x	42.71	15.56	323.47
6 Gunnell	72.82	46.50	19.46	x	47.12	87.95	x	x	270.06
7 Mehlos	71.22	29.45	76.11	76.23	x	x	x	x	252.99
8 Hale	99.12	66.52	18.68	60.92	x	x	x	x	245.24
9 Moore	100.00	63.67	62.29	x	x	x	x	x	225.97
10 Yeager	x	24.93	44.22	60.03	34.55	x	x	x	163.73
11 Metcalf	x	x	x	x	x	39.96	100.00	x	139.96
12 Kendall	90.04	35.48	3.21	x	x	x	x	x	128.27
13 Ford	x	x	x	x	x	x	x	70.92	70.92
14 Duff	23.05	30.67	10.51	x	x	x	x	x	63.57

Pihlaja wins the final round with Give it a Proper Name, and wins the tournament with 570 points out of a possible 600. Ford shows it is never too late to participate in these events...

Code for all warriors is now available from the tournament's homepage at:

http://www.geocities.com/TimesSquare/Realm/2443/

The Hint -
Optimizing Process Allocation in Parallel-Running Strategies
by Christian Schmidt

In this month's hint I would like to present a little known method to optimize warriors with two parallel-running strategies. For example, stone/papers, stone/imps and clear/imps. Everyone who has tried to build a stone/imp knows that one of the most important decisions is how long the spiral should be allowed to grow. With weak imps the fast running stone will easily beat a scanner, but will lose badly against an agressive paper. With strong imps the warrior will tie against paper, but due to the slowed down stone it loses against anti-imp scanners.

A good stone/imp is somewhere between these extremes. The most common ways to keep control over the time the imp spiral grows are:

a) the use of a fixed number of processes for the imp, as would be created by a jmp/add, vector or binary launcher,

b) to kill a continuous-imp launcher with a dat-bomb from the stone at a fixed time,

c) to delay the start of a continuous-imp launcher until a self-splitting stone has build up enough processes.

In all three methods the goal is to slow down and weaken the imp, so the stone runs faster. However, there is another possiblility. Instead of slowing down the imp, speed up the stone. Accelerate the stone by launching multiple processes into it.

As far as I know the first example of this technique involved in a stone/imp was Alien and in a clear/imp Justin Kao's Dust 0.7 and later Digitalis. In all cases the add/jmp-launcher starts both, the imp and the stone (Alien) or the d-clear (Dust, Digitalis). To introduce the faster and smaller continuous-imp launcher into this warriors the stone (or clear) must now launch separatly. Instead of a:

```
    jmp    stone    ;----> 1 process for the stone
```

it could be used for example:

```
    spl    stone
    jmp    stone    ;----> 2 processes for the stone
```

or maybe:

```
    spl    2
    spl    stone
    jmp    stone    ;----> 3 processes for the stone
```

Every combination is possible. One advatage is the relatively easy optimization of the ratio of processes in the stone and imp. An additional acceleration of the stone is possible by using a spl #0 instruction in front of it. This helps gain a lot of extra points... All of the discussed improvements are used for The Stormbringer, where the stone is Carbonite. The big advantage against other stone/imps is, that it is very small and extremly fast. The only disadvantage is that there is no real core-clear at the end of the bombing phase.

```
;redcode-94
;name The Stormbringer
;author Christian Schmidt
;strategy q^2 -> stone/imp
;assert 1

        org     start

QS      EQU (0-200)
QD      EQU (0+100)
QB      EQU (start-350)
CR      EQU (fnd-which)
datz    EQU (table-3)
```

```
GAP     equ     8
REP     equ     15
cBptr   equ     3001-2
impoff  equ     627
impsize equ     2667

qinc    dat     >(-1)*GAP*2, >GAP

        dat     9*QS,  1*QS
table:  dat     5*QS,  2*QS
        dat    13*QS, 17*QS

P:      add.f  table,table
slow:   add.ab *P,fnd
fast:   add.b  @P,@-1

which:  sne.i  datz,@fnd
        add.ab #QD,fnd

        add.ba  fnd,          fnd
qbo     mov.i   qinc,         @fnd
        mov.i   qinc,         *fnd
fnd     mov.i   (-1)*(GAP/2),@QB
        sub.x   qinc,         fnd
        djn.b   qbo,          #REP
        jmp     cBoot,        }-300

start:
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which, 0

        seq.i  QB+QS*2,QB+QS*2+QD
        jmp    fast, 0
        seq.i  QB+QS*1,QB+QS*1+QD
        jmp    fast, <P
        seq.i  QB+QS*17,QB+QS*17+QD
        jmp    fast, >P

        seq.i  QB+QS*7,QB+QS*7+QD
        jmp    slow, 0
        seq.i  QB+QS*6,QB+QS*6+QD
        jmp    slow, <P
        seq.i  QB+QS*22,QB+QS*22+QD
        jmp    slow, >P
        seq.i  QB+QS*11,QB+QS*11+QD
        jmp    slow, {P
        seq.i  QB+QS*15,QB+QS*15+QD
        jmp    slow, }P
        seq.i  QB+QS*10,QB+QS*10+QD
        djn.f  slow, P

        seq.i  QB+QS*5,QB+QS*5+QD
        jmp    >fast, 0
        seq.i  QB+QS*9,QB+QS*9+QD
        jmp    >fast, {P
        seq.i  QB+QS*13,QB+QS*13+QD
        jmp    >fast, }P

        seq.i  QB+QS*14,QB+QS*14+QD
        jmp    P, 0
        seq.i  QB+QS*8,QB+QS*8+QD
        jmp    P, <P
        seq.i  QB+QS*12,QB+QS*12+QD
        jmp    P, {P
        seq.i  QB+QS*32,QB+QS*32+QD
        jmp    P, }P
        seq.i  QB+QS*20,QB+QS*20+QD
        djn.f  P, P

        seq.i  QB+QS*4,QB+QS*4+QD
```

```
        jmp    }slow, 0
        seq.i  QB+QS*3,QB+QS*3+QD
        jmp    }slow, {P
        seq.i  QB+QS*19,QB+QS*19+QD
        jmp    }slow, }P
        seq.i  QB+QS*18,QB+QS*18+QD
        djn.f  <fast, P

        seq.i  QB+QS*36+CR,QB+QS*36+QD+CR
        jmp    }fast, 0

cBoot   spl     pump                    ;split to the imp launcher
        mov     cBomb,      cSp+cBptr+198
        mov     cSp-1,      cSp+cBptr-1
        mov     cSp,        cSp+cBptr
        mov     cSp+1,      cSp+cBptr+1
        mov     cSp+2,      cSp+cBptr+2
        mov     cSp+3,      cSp+cBptr+3
        spl     cSp2+cBptr,  {0         ;
        spl     cSp2+cBptr,  {0         ;
        jmp     cSp2+cBptr,  {0         ;--->3 processes for the stone

cSp2    spl     #0,         #0          ;---> extra boost for the stone
cSp     spl     #0,         <-1151+3
        mov     197,        cAd-(197*3500)
cAd     add.ab  {0,         }0
        djn.f   -2,         <-1151
cBomb   dat     >-1,        >1

   for  19-2
        dat     0,          0
   rof

pump     spl     #1,         >prime
prime    mov.i   imp,        impoff-4
         add.f   #impsize+1, ptr
ptr      jmp     pump+impoff-(impsize+1), >-200

imp      mov.i   #impsize,   *0
```

Using exactly the same method I created Digital Dragon (everybody will see the similarity to The Stormbringer ;-) with a d-clear. But instead of the 3pt imps I used here 13pt imp. I've used this because it gave the best results on the hill. Though it isn't as lethal as Digitalis 4, it loses much less against q^2 -> papers due to it's smaller size and faster launching.

```
;redcode-94
;name Digital Dragon
;author Christian Schmidt
;strategy q^2 -> d-clear + 13pt imps
;assert 1

        org     start

QS      EQU (0-200)
QD      EQU 100
QB      EQU (start-350)
CR      EQU (fnd-which)
datz    EQU (table-3)
GAP     equ     8
REP     equ     15
impoff  equ     627+200
impsize equ     5091
bptr1   equ     1800
```

```
qinc    dat     >(-1)*GAP*2, >GAP

        dat     9*QS,  1*QS
table:  dat     5*QS,  2*QS
        dat    13*QS, 17*QS

P:      add.f  table,table
slow:   add.ab *P,fnd
fast:   add.b  @P,@-1

which:  sne.i  datz,@fnd
        add.ab #QD,fnd

        add.ba  fnd,          fnd
qbo     mov.i   qinc,         @fnd
        mov.i   qinc,         *fnd
fnd     mov.i   (-1)*(GAP/2),@QB
        sub.x   qinc,         fnd
        djn.b   qbo,          #REP
        jmp     boot,         }-300

start:
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which, 0                ; 0

        seq.i  QB+QS*2,QB+QS*2+QD
        jmp    fast, 0                 ; E
        seq.i  QB+QS*1,QB+QS*1+QD
        jmp    fast, <P                ; D
        seq.i  QB+QS*17,QB+QS*17+QD
        jmp    fast, >P                ; F

        seq.i  QB+QS*7,QB+QS*7+QD
        jmp    slow, 0                 ; BE
        seq.i  QB+QS*6,QB+QS*6+QD
        jmp    slow, <P                ; BD
        seq.i  QB+QS*22,QB+QS*22+QD
        jmp    slow, >P                ; BF
        seq.i  QB+QS*11,QB+QS*11+QD
        jmp    slow, {P                ; AE
        seq.i  QB+QS*15,QB+QS*15+QD
        jmp    slow, }P                ; CE
        seq.i  QB+QS*10,QB+QS*10+QD
        djn.f  slow, P                 ; AD

        seq.i  QB+QS*5,QB+QS*5+QD
        jmp    >fast, 0                 ; B
        seq.i  QB+QS*9,QB+QS*9+QD
        jmp    >fast, {P                ; A
        seq.i  QB+QS*13,QB+QS*13+QD
        jmp    >fast, }P                ; C

        seq.i  QB+QS*14,QB+QS*14+QD
        jmp    P, 0                     ; BBEE
        seq.i  QB+QS*8,QB+QS*8+QD
        jmp    P, <P                    ; BDE
        seq.i  QB+QS*12,QB+QS*12+QD
        jmp    P, {P                    ; ADE
        seq.i  QB+QS*32,QB+QS*32+QD
        jmp    P, }P                    ; CEF
        seq.i  QB+QS*20,QB+QS*20+QD
        djn.f  P, P                     ; AADD

        seq.i  QB+QS*4,QB+QS*4+QD
        jmp    }slow, 0                 ; EE
        seq.i  QB+QS*3,QB+QS*3+QD
        jmp    }slow, {P                ; DE
        seq.i  QB+QS*19,QB+QS*19+QD
        jmp    }slow, }P                ; FE
        seq.i  QB+QS*18,QB+QS*18+QD
```

```
        djn.f  <fast, P                ; AA

        seq.i  QB+QS*36+CR,QB+QS*36+QD+CR
        jmp    }fast, 0                ; BBBBG

boot     spl    pump,        <-1000        ;split to the imp launcher
         mov    ptr,         bptr1
         mov    clrb,        bptr1
boot2    mov    {bptr3,      <bptr3
         mov    {bptr3,      <bptr3
         mov    {bptr3,      <bptr3
         spl    1                          ;\
         spl    @bptr3,      <-1001        ;/
         spl    @bptr3,      <-1000        ;\
         jmp    @bptr3,      <-1000        ; --> 6 processes for the d-clear

ptr      dat    0,           2150
clrb     dat    >2667,       25
clear    spl    #0,          >ptr-16
loop     mov    clrb-16,     >ptr-16
cc       djn.f  loop,        >ptr-16
bptr3    dat    cc+1,        boot2+bptr1+19

   for  19-2
        dat    0,          0
   rof

pump     spl     #1,         >prime
prime    mov.i   imp,        impoff-4
         add.f   #impsize+1, iptr
iptr     jmp     pump+impoff-(impsize+1), >-200

imp      mov.i   #impsize,   *0
```

Finally, with this method it is now also possible to combine a stone with a paper, in such a way, the stone dominates in the beginning until the paper becomes dominant. The first task is to find a 'pocket' for the stone, where it survives the paper until close to the end of the battle. To do this, run the paper alone and seach core to find the location of pockets of initial core. Now you must check in which of the pocket the stone will gain the most points, and what ratio of processes the stone needs. I found that the easiest way is to launch the stone is with the paper launcher. For Shadow I've used Paul Kline's RetinA, which gave by far the best results. Shape used for example my paper from Head or Tail.

```
;redcode-94
;name Shadow
;author Christian Schmidt
;strategy q^2 -> stone/paper
;strategy v3 modified stone, now faster
;strategy v3.1 better pocket for the stone
;assert 1

        org     start

QS      equ     (0-200)
QD      equ     100
QB      equ     (start-350)
CR      equ     (fnd-which)
datz    equ     (table-3)
GAP     equ     8
REP     equ     15
cBptr   equ     (1724-66);973
spcsz   equ     2381;2382
impsz   equ     (127*37) ;2794
```

```
qinc    dat     >(-1)*GAP*2, >GAP

        dat     9*QS,        1*QS
table:  dat     5*QS,        2*QS
        dat    13*QS,       17*QS

P:      add.f  table,       table
slow:   add.ab *P,          fnd
fast:   add.b  @P,          @-1

which:  sne.i  datz,        @fnd
        add.ab #QD,         fnd

        add.ba fnd,         fnd
qbo     mov.i  qinc,        @fnd
        mov.i  qinc,        *fnd
fnd     mov.i  (-1)*(GAP/2),@QB
        sub.x  qinc,        fnd
        djn.b  qbo,         #REP
        jmp    cBoot,       }-300

start:
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which, 0

        seq.i  QB+QS*2,QB+QS*2+QD
        jmp    fast, 0
        seq.i  QB+QS*1,QB+QS*1+QD
        jmp    fast, <P
        seq.i  QB+QS*17,QB+QS*17+QD
        jmp    fast, >P

        seq.i  QB+QS*7,QB+QS*7+QD
        jmp    slow, 0
        seq.i  QB+QS*6,QB+QS*6+QD
        jmp    slow, <P
        seq.i  QB+QS*22,QB+QS*22+QD
        jmp    slow, >P
        seq.i  QB+QS*11,QB+QS*11+QD
        jmp    slow, {P
        seq.i  QB+QS*15,QB+QS*15+QD
        jmp    slow, }P
        seq.i  QB+QS*10,QB+QS*10+QD
        djn.f  slow, P

        seq.i  QB+QS*5,QB+QS*5+QD
        jmp    >fast, 0
        seq.i  QB+QS*9,QB+QS*9+QD
        jmp    >fast, {P
        seq.i  QB+QS*13,QB+QS*13+QD
        jmp    >fast, }P

        seq.i  QB+QS*14,QB+QS*14+QD
        jmp    P, 0
        seq.i  QB+QS*8,QB+QS*8+QD
        jmp    P, <P
        seq.i  QB+QS*12,QB+QS*12+QD
        jmp    P, {P
        seq.i  QB+QS*32,QB+QS*32+QD
        jmp    P, }P
        seq.i  QB+QS*20,QB+QS*20+QD
        djn.f  P, P

        seq.i  QB+QS*4,QB+QS*4+QD
        jmp    }slow, 0
        seq.i  QB+QS*3,QB+QS*3+QD
        jmp    }slow, {P
        seq.i  QB+QS*19,QB+QS*19+QD
```

```
        jmp    }slow, }P
        seq.i  QB+QS*18,QB+QS*18+QD
        djn.f  <fast, P

        seq.i  QB+QS*36+CR,QB+QS*36+QD+CR
        jmp    }fast, 0

cBoot   spl     rStart,     <-1000          ;strat the paper
        mov     cBomb,      rCell1+cBptr+198
        mov     cSp-1,      rCell1+cBptr-1
        mov     cSp,        rCell1+cBptr
        mov     cSp+1,      rCell1+cBptr+1
        mov     cSp+2,      rCell1+cBptr+2
        mov     cSp+3,      rCell1+cBptr+3
        jmp     rCell1+cBptr-1,  <-400      ;----> 1 process for the stone

cSp2    spl     #0,         #0
cSp     spl     #0,         <-1151+3
        mov     197,        cAd-(197*3500)
cAd     add.ab  {0,         }0
        djn.f   -2,         <-1151
cBomb   dat     >-1,        >1

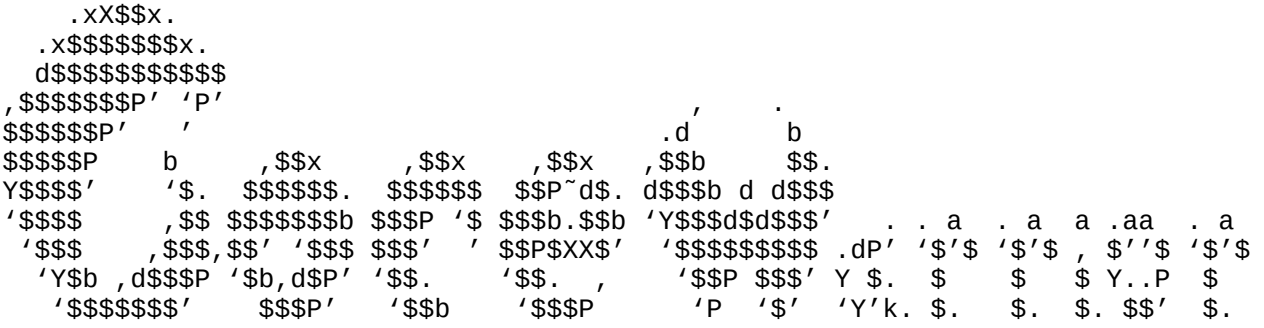
rStart  spl     2,          <400
        spl     1,          <400
        spl     1,          <400
cStart  spl     rCell1+cBptr-1,  <402       ;---> 6 processes for the stone

rCell1  spl     @0,         spcsz
        mov     }rCell1,    >rCell1
rCell2  spl     @0,         impsz
        mov     }rCell2,    >rCell2
        spl     rCell2,     {rCell2
        mov.i   #2*spcsz,   }-spcsz*1
        mov.i   #2*spcsz,   }-spcsz*1
        mov.i   #2*impsz,   }-impsz*1
```

I hope I have been able to show some new aspects of these interesting strategies.

Questions? Concerns? Comments? Complaints? Mail them to people who care.
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Article: 10277 of rec.games.corewar
Path: news-rocq.inria.fr!France.EU.net!chsun!news.eunet.ch!EU.net!news-peer1.sprintlink.net!news.sprintlink.net!news-peer.gip.net!news.gsl.net!gip.net!news.new-york.net!news.ttsg.com!grumpy@xanther.digitald.uk.com
From: John Metcalf <grumpy@xanther.digitald.uk.com>
Newsgroups: rec.games.corewar
Subject: Core Warrior 73
Date: 28 May 1999 08:12:22 -0400
Organization: TTSG
Lines: 634
Distribution: world
Message-ID: <Pine.LNX.4.10.9905281151460.6345-100000@xanther.digitald.uk.com>
Reply-To: grumpy@xanther.digitald.uk.com
NNTP-Posting-Host: odin.ttsg.com
X-Trace: odin.ttsg.com 927893542 5962 204.141.84.29 (28 May 1999 12:12:22 GMT)
X-Complaints-To: abuse@news.ttsg.com
NNTP-Posting-Date: 28 May 1999 12:12:22 GMT
Originator: corewar-l@koth.org



Issue 73 27 May, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the ’94 draft hill, the beginner hill and the ’94 no-pspace hill. Coverage will follow where ever the action is. If you haven’t a clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available from:
  ftp://rtfm.mit.edu/pub/usenet/news.answers/games/corewar-faq.Z
  http://www.koth.org/corewar-faq.html

The ftp site and mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars.html ;Stormking
  http://www.ncs.infi.net/~wtnewton/corewar ;Terry’s web page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;Stormking
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the Stormking page for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

A collection of Bezzi’s hints in the first issues is available at:
  ftp://ftp.volftp.vol.it/pub/pc/msdos/games/solutions/bbhints.zip

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Greetings...

Another quiet month for core war has passed, with little activity anywhere. J K Lewis has announced the Intelligent Warrior Tournament, with US$100 as first prize. The deadline is tommorrow, so if you haven't done so already, take a look at:

http://www.concentric.net/~liminal/IWT/index.html

This issue - the new Q^3 qscan and the code for Ian Oversby's aggressive paper/stone Recovery.

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	46.3/	33.0/	20.7	Recycled Bits	David Moore	159.6	29
2	47.6/	35.9/	16.5	Pattel's Virus	Ben Ford	159.3	29
3	46.5/	37.4/	16.1	Circle of Fire	John Metcalf	155.6	0
4	42.8/	32.1/	25.1	Spooky Wench	John Metcalf	153.5	16
5	42.2/	31.1/	26.7	The Stormbringer	Christian Schmidt	153.4	29
6	40.8/	31.7/	27.4	Puddleglum	John Metcalf	149.9	17
7	43.0/	36.6/	20.5	death by redcode	Simon Wainwright	149.4	8
8	39.9/	30.9/	29.2	Shadow	Christian Schmidt	148.8	26
9	40.0/	33.0/	27.0	Fixed	Ken Espiritu	147.1	29
10	37.3/	28.9/	33.9	Freight Train v0.2	David Moore	145.7	29
11	41.0/	36.9/	22.1	BiShot	Christian Schmidt	145.1	17
12	31.2/	18.4/	50.4	The Fugitive	David Moore	143.9	29
13	41.4/	41.1/	17.5	Silver Talon 1.2	Edgar	141.6	30
14	34.8/	28.8/	36.4	chained to the system	Simon Wainwright	140.8	15
15	44.9/	49.3/	5.7	Neon Spring	John Metcalf	140.5	13
16	40.6/	40.8/	18.6	Galatea	Ben Ford	140.4	29
17	37.3/	34.4/	28.3	Twin	Christian Schmidt	140.3	29
18	44.5/	48.8/	6.7	fatal lure of pMars	Simon Wainwright	140.1	4
19	34.1/	28.5/	37.4	Even Less Innocuous	TeamQ3	139.7	18
20	41.0/	42.5/	16.4	Nuke it! (V 0.4)	Silvio Sampietro	139.6	9
21	38.5/	37.9/	23.6	trefoil 23 226	Steve Gunnell	139.0	39
22	41.0/	43.9/	15.1	Boys are Back in Town 1.1	Philip Kendall	138.1	16
23	41.3/	45.7/	13.0	Zooom...	John Metcalf	136.9	22
24	42.9/	49.0/	8.1	.sS$Ss.sS$Ss.sS$Ss.sS$Ss.	Simon Wainwright	136.9	6
25	39.5/	43.7/	16.8	myBlur	Simon Wainwright	135.4	2

Age since last issue: 16 (10 last issue, 69 the issue before)
Days since last issue: 44 (36 last issue, 32 the issue before)
Average age: 19 (8 last issue, 3 the issue before)
Average score: 145 (138 last issue, 143 the issue before)

The top 25 warriors are represented by just 11 independent authors: Metcalf and Wainwright with 5, Schmidt with 4, Moore with 3, Ford with 2 and the remaining authors with one lonely warrior each. (10 authors last issue, 9 the issue before)

The hill still lacks equilibrium and several key players have still not returned. P-spacers are occupying the top three ranks and the numerous scanners lurk at the lower end of the hill.

---

94 - What's New (Sorted by rank and score)

#	%W /	%L /	%T	Name	Author	Score	Age
3	44.1/	39.2/	16.8	Circle of Fire	John Metcalf	149.0	0
4	41.3/	37.9/	20.8	death by redcode	Simon Wainwright	144.7	0
6	44.5/	48.3/	7.2	Neon Spring	John Metcalf	140.6	1

8	39.7/ 41.9/ 18.4	Boys are Back in Town 1.1	Philip Kendall	137.5	1
11	39.6/ 41.8/ 18.6	Nuke it! (V 0.4)	Silvio Sampietro	137.3	1
12	42.6/ 48.2/ 9.2	.sS$Ss.sS$Ss.sS$Ss.sS$Ss.	Simon Wainwright	136.9	1
13	42.4/ 49.4/ 8.2	fatal lure of pMars	Simon Wainwright	135.5	1
15	41.5/ 49.6/ 9.0	Shattered Glass v0.3	John Metcalf	133.3	1
16	32.9/ 32.9/ 34.2	Three Queens and a King	Christian Schmidt	133.0	1
16	30.3/ 29.9/ 39.8	Redemption	John Metcalf	130.8	0
18	32.6/ 33.4/ 34.1	Quickest Zeta	Leonardo Humberto	131.7	1
20	27.1/ 27.1/ 45.8	chained to the system	Simon Wainwright	127.2	1
24	37.5/ 43.9/ 18.7	myBlur	Simon Wainwright	131.0	1
25	34.7/ 41.8/ 23.5	Z-Shot	John Metcalf	127.7	1
25	38.5/ 50.7/ 10.8	)X(	John Metcalf	126.2	1

Players entering hill since last issue: 6 (7 last issue, 7 the issue before)
Average rank of new entries: 14 (14 last issue, 12 the issue before)

Wainwright uses Death by Redcode to demonstrate qscanning bombers are still an effective strategy.

---

94 - What's No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	33.4/ 41.1/ 25.5	Digital Dragon	Christian Schmidt	125.7	20
26	31.7/ 43.8/ 24.5	trefoil 28 558	Steve Gunnell	119.6	17
26	26.7/ 27.4/ 45.9	Innocuous	John Metcalf	126.0	16
26	31.3/ 33.7/ 35.0	Redemption	John Metcalf	128.8	12
26	29.0/ 31.7/ 39.3	Less Innocuous	Leonardo Humberto	126.2	12
26	36.7/ 46.1/ 17.2	redcode ragamuffin	Simon Wainwright	127.4	10
26	26.2/ 31.7/ 42.1	Quicker Zeta	Leonardo Humberto	120.7	10
26	39.9/ 50.9/ 9.3	Shattered Glass v0.3	John Metcalf	128.9	8
26	18.7/ 18.7/ 62.6	;strategy stone/paper	John Metcalf	118.6	8
26	31.2/ 32.7/ 36.1	Three Queens and a King	Christian Schmidt	129.6	5
26	32.5/ 35.9/ 31.6	Quickest Zeta	Leonardo Humberto	129.1	5
26	18.7/ 17.6/ 63.7	(2 x^2 + 3 x + 1) / 2	John Metcalf	119.8	5
26	1.7/ 1.5/ 0.9	Have No Pity	John Metcalf	5.8	3
26	34.0/ 42.5/ 23.5	Z-Shot	John Metcalf	125.5	2
26	37.8/ 51.6/ 10.6	)X(	John Metcalf	123.9	2

Digital Dragon and Trefoil leave the hill, so now the number of warriors of the magic age is reduced to 8.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age

Nothing yet - maybe next issue?

The Extended New Hall of Fame:
* indicates the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior
15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner

20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper
26	Tiberius 3.1	Franz	130	Q^2 -> Paper
27	Ultraviolet-B	Ken Espiritu	120	Q^2 -> Paper
28	obvious to those who k	Robert Macrae	117	Q^2 -> Paper
29	Solomon v0.8	Ian Oversby	116	Stone and scanner
30	CC Paper 3.3	Franz	107	Q^2 -> Paper
31	mrb-test	M R Bremer	106	*Unknown*
32=	T.N.T. pro	Maurizio Vittuari	105	Bomber
32=	Pulp v0.5	Ian Oversby	105	Q^2 -> Paper
34	Fugitive	David Moore	102	Q^2 -> Paper/imp
35	Vengeance	Robert Hale	101	Q^2 -> Stone/imp
36=	Jack in the box II	Beppe Bezzi	100	P-warrior
36=	Fire and Ice	David Moore	100	P-warrior
38	Oblivion	Ian Sutton	99	P-warrior
39	Silver Talon 1.2	Edgar	93	Scanner
40	Bodge 1	Robert Macrae	85	Q^2 -> Scanner
41	Inferno 2.4	Philip Kendall	84	Qscan -> Bomber
42=	Test	Anton Marsden	83	*Unknown*
42=	NCC-1701-A	Philip Kendall	83	P-warrior
44	RetroQ	Paul Kline	82	Q^2 -> Paper
45	Tornado 4	Beppe Bezzi	78	Bomber
46	He Scans Again	Paul Kline	76	Scanner
47	Digitalis 4	Christian Schmidt	73	Q^2 -> Clear/imp
48	Taking Names	Paul Kline	68	Scanner
49	Red Baron	Christian Schmidt	64	P-warrior
50	Blain	Nimon	63	*Unknown*

Now increased to 50 ranks, the New HoF should be much easier to enter.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	54.7/ 28.9/ 16.4	Pattel's Virus	Ben Ford	180.6	33
2	51.3/ 32.8/ 15.8	Nuke it! (V 0.4)	Silvio Sampietro	169.8	5
3	48.7/ 37.5/ 13.8	redcode ragamuffin	Simon Wainwright	159.8	19
4	45.6/ 32.2/ 22.2	death by redcode	Simon Wainwright	159.1	4
5	46.4/ 34.5/ 19.0	Spat the dummy.	Steve Gunnell (oh ye	158.4	91
6	46.1/ 38.1/ 15.8	Nuke it! (V 0.2)	Silvio Sampietro	154.0	7
7	36.4/ 20.4/ 43.2	Quickest Zeta	Leonardo Humberto	152.3	3
8	32.9/ 20.3/ 46.8	Quicker Zeta	Leonardo Humberto	145.6	25
9	30.9/ 19.2/ 49.8	Redemption	John Metcalf	142.6	67
10	42.4/ 43.5/ 14.1	fatal lure of pMars	Simon Wainwright	141.2	35
11	36.2/ 33.4/ 30.5	Silken Half Life	Dale Neal	139.0	11
12	35.2/ 32.9/ 31.9	Silken Half Life v4.0	Dale Neal	137.4	8
13	37.9/ 39.5/ 22.5	Fire Master	P_.V_.K.	136.3	15
14	34.0/ 33.0/ 33.0	of mirth and merriment	Simon Wainwright	134.9	37
15	33.8/ 32.9/ 33.2	Silken Half Life v3.0	Dale Neal	134.8	9
16	27.7/ 22.5/ 49.8	Quick Zeta	Leonardo Humberto	132.8	30
17	35.4/ 39.6/ 25.0	No Time To Think	A. S. Mehlos	131.2	92
18	30.9/ 31.0/ 38.1	A man with a Gun	Ben Ford	130.7	76
19	27.3/ 23.9/ 48.7	HardCore v0.2b	Simon Duff	130.7	31
20	31.2/ 33.5/ 35.3	Frusteration II	A. S. Mehlos	128.9	95
21	35.0/ 44.9/ 20.1	Death kiss with a dash of	Anders Rosendal	125.1	51
22	23.5/ 22.1/ 54.4	H-Bomb 9	Josh Yeager	124.8	89
23	32.1/ 40.4/ 27.5	Red Sand	Ken Hubbard	123.7	14

```
24  33.3/ 44.9/ 21.8                Crossbow          Ken Hubbard 121.7   13
25  26.8/ 33.4/ 39.9           quatrefoil 133        Steve Gunnell 120.2    1
```

ModerationRevisited, Fat Man, Arsonic C and Sticky Taped Together 1.2 all retired at age 100 in the 13 challenges which have passed since last issue. I noticed my jmp #0 warrior scored a large number of draws against some warriors, and even some wins...

Current Status of the KOTH.ORG ’94 No Pspace Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS ’94 Draft, excluding ldp and stp
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	42/	26/	32	The Stormbringer	Christian Schmidt	157	167
2	43/	32/	24	BiShot v1.0	Christian Schmidt	155	65
3	39/	29/	32	Blacken	Ian Oversby	149	143
4	38/	27/	35	Vain	Ian Oversby	149	233
5	41/	33/	26	Liquid Fire	Christian Schmidt	149	129
6	46/	44/	11	Win!	David Moore	148	131
7	38/	28/	34	Recovery	Ian Oversby	147	156
8	38/	29/	34	Baseline Plus	Ken Espiritu	147	214
9	43/	40/	17	Zooom...	John Metcalf	146	32
10	43/	41/	16	Boys are Back in Town 1.1	Philip Kendall	145	158
11	37/	32/	30	Spooky Wench	John Metcalf	142	20
12	35/	27/	38	Brigadeer	M Joonas Pihlaja	142	152
13	36/	31/	32	Fixed	Ken Espiritu	141	216
14	28/	17/	54	_romanian_killah_	Costin Bontas rulez	139	125
15	45/	51/	4	Neon Spring	John Metcalf	139	15
16	27/	17/	56	The Fugitive	David Moore	138	235
17	42/	49/	8	t5	John Metcalf	136	3
18	32/	28/	40	Quickest Zeta	Leonardo Humberto	136	9
19	41/	50/	9	t8	John Metcalf	133	1
20	39/	48/	13	t7	John Metcalf	131	4

18 successful challenges push Stormbringer back up to king. Liquid Fire climbs up 12 places and The Fugitive drops down 11.

The Hint -
The Q^3 Qscan by Leonardo Humberto and John Metcalf

On occasions in the redcode world, a group of players will come together to work co-operatively on a new warrior. One of these rare occasions has led to a new qscan both faster _and_ smaller than the commonly used Q^2, which we present here as Q^3.

The concept of the Q^3 decoder is at the heart of these improvements. It uses a pair of multiplications to achieve 27 scans, compared to a trio of additions and possibly a number leaking table references which a Q^2 would use. There are also several smaller improvements concealed within the code :-)

Puddleglum is a Paper/Stone using Q^3 which currently performs well on the ’94 hill. As with most Paper/Stone warriors, his main weakness is against oneshots. As you probably guessed Puddleglum is named in honour of the famous Narnian marsh-wiggle!

Hopeless tweakers may like to start by changing A to 14 and C to 19 and adjusting the appropriate scans - remember the scan order can make a huge difference to the resulting score too...

```
;redcode-94
;name Puddleglum
```

```
;author John Metcalf
;strategy Q^3 -> Paper/Stone
;assert CORESIZE==8000

     org qGo

     pStep1 equ  220
     pStep2 equ 6172
     pStep3 equ 3060
     sBoot equ (pap1+6645)     ; 'pocket'

pGo: spl   1,       {pap1+1190
     mov   {sGo,    {sPos
     spl   1,       {pap1+2735
     mov   {sGo,    {sPos
     spl   sBoot,   {pap1+2955
sPos:spl   sBoot+6, {pap1+4760

pap1:spl   @0,      {pStep1    ; harmless paper! (Innocuous)
     mov   }pap1,   >pap1
     mov   }pap1,   >pap1
pap2:spl   @0,      {pStep2
     mov   }pap2,   >pap2
     mov   {pap2,   {pap3
pap3:jmp   pStep3+1,>pStep3-3
     dat   }1,      >1

     sStep equ 3039
     sTime equ 3357

sGo: spl   #6,       0
     spl   #0,       0         ; aggressive stone (Spooky Wench?!)
sLp: mov   sBmb,     @sP
sSel:add   #sStep,   sP
sP:  djn.f sLp,      {sSel-sStep*sTime
sBmb:dat   2,        >1

     for   13
     dat   0,0
     rof

     qf equ qKil
     qs equ 100
     qd equ 4000
     qi equ 7
     qr equ 11

     dat   15,          10         ; A,D
qTab:dat   7,           4          ; B,E
     dat   13,          11         ; C,F
qBmb:dat   {qi*qr-10,   {1

;    -+)>] 0/1 cycles [(<+-

qGo: seq   qd+qf+qs,    qf+qs      ; 1
     jmp   qSki,        {qd+qf+qs+qi
     seq   qd+qf+7*qs,  qf+7*qs    ; B
     jmp   qFas,        {qd+qf+7*qs+qi
     seq   qd+qf+6*qs,  qf+6*qs    ; B-1
     jmp   qFas,        {qTab
     seq   qd+qf+8*qs,  qf+8*qs    ; B+1
     jmp   qFas,        }qTab
     seq   qd+qf+13*qs, qf+13*qs   ; C
     jmp   qFas,        }qFas
     seq   qd+qf+14*qs, qf+14*qs   ; A-1
     djn.a qFas,        {qFas
     seq   qd+qf+15*qs, qf+15*qs   ; A
     jmp   qFas,        {qFas

;    -+>)] 2 cycles [(<+-
```

```
     seq   qd+qf+4*qs,  qf+4*qs    ; E
     jmp   >qFas,       {qd+qf+4*qs+qi
     seq   qd+qf+3*qs,  qf+3*qs    ; E-1
     jmp   >qFas,       <qTab
     seq   qd+qf+5*qs,  qf+5*qs    ; E+1
     jmp   >qFas,       >qTab
     seq   qd+qf+9*qs,  qf+9*qs    ; D-1
     djn.b >qFas,       {qSlo
     seq   qd+qf+10*qs, qf+10*qs   ; D
     jmp   >qFas,       {qSlo
     seq   qd+qf+11*qs, qf+11*qs   ; F
     jmp   >qFas,       }qSlo
     seq   qd+qf+18*qs, qf+18*qs   ; B*E+1-B-E
     djn.f qSlo,        qTab
     seq   qd+qf+21*qs, qf+21*qs   ; B*E-B
     jmp   qSlo,        <qTab
     seq   qd+qf+24*qs, qf+24*qs   ; B*E-E
     jmp   qSlo,        {qTab
     seq   qd+qf+32*qs, qf+32*qs   ; B*E+E
     jmp   qSlo,        }qTab
     seq   qd+qf+35*qs, qf+35*qs   ; B*E+B
     jmp   qSlo,        >qTab
     seq   qd+qf+39*qs, qf+39*qs   ; C*E-C
     djn.b qSlo,        }qFas
     seq   qd+qf+52*qs, qf+52*qs   ; C*E
     jmp   qSlo,        }qFas
     seq   qd+qf+56*qs, qf+56*qs   ; A*E-E
     djn.a qSlo,        {qFas
     seq   qd+qf+60*qs, qf+60*qs   ; A*E
     jmp   qSlo,        {qFas
     seq   qd+qf+63*qs, qf+63*qs   ; B*D-B
     djn.b qSlo,        {qSlo
     seq   qd+qf+66*qs, qf+66*qs   ; B*F-F
     djn.a qSlo,        }qSlo
     seq   qd+qf+70*qs, qf+70*qs   ; B*D
     jmp   qSlo,        {qSlo
     seq   qd+qf+77*qs, qf+77*qs   ; B*F
     jmp   qSlo,        }qSlo
     sne   qd+qf+28*qs, qf+28*qs   ; B*E
     jmz   pGo,         qd+qf+28*qs-10  ; Free Scan :-)

qSlo:mul.b qTab,        qKil       ; decode
qFas:mul.ab qTab,       @qSlo
qSki:sne   >3456,       @qKil
     add   #qd,         qKil
qLoo:mov   qBmb,        @qKil      ; .5c negative bomber, scores better
qKil:mov   qBmb,        *qs        ; overall than a bi-directional
     sub   #qi,         qKil
     djn   qLoo,        #qr
     jmp   pGo,         >4567
     end
```

Extra Extra -
Recovery by Ian Oversby

Recovery appeared on the hill sometime around October last year and was rarely seen outside the top three ranks until every warrior was wiped from the hill in the February massacre.

Joonas Pihlaja, who won the code for Recovery as 1st prize in Ian’s tournament has kindly shared the code with us. An aggressive paper (Pulp 0.5) and a small quick stone with core-clear are combined in Recovery to create a warrior which scores much differently from the typical defensive paper/stone - as can be seen in the test results below. (As usual qscans removed)

```
          :     Recovery     :    Puddleglum    :      Shadow      :
          : %W %L %T Sca Pap : %W %L %T Sca Pap : %W %L %T Sca Pap :
Z-Shot    : 81 11  8 251  41 : 37 24 39 150 111 : 57 24 19 190  91 : 591
```

```
P-Swing   : 58 30 12 186 102 : 49 26 25 172 103 : 46 36 18 156 126 : 514
Phantasm  : 47 37 16 157 127 : 54 28 18 180 102 : 51 30 19 172 109 : 509
Sleep     : 47 39 14 155 131 : 38 34 28 142 130 : 64 19 18 210  75 : 507
HAL 9000  : 44 32 24 156 120 : 37 23 40 151 109 : 54 16 30 192  78 : 499
Scan Man  : 53 31 16 175 109 : 45 30 25 160 115 : 45 26 29 164 107 : 499
One Shot  : 53 35 12 171 117 : 45 36 19 154 127 : 50 33 17 167 116 : 492
Sharkrage : 41 38 21 144 135 : 35 26 39 144 117 : 54 17 29 191  80 : 479
BiShot    : 42 29 29 155 116 : 45 24 31 166 103 : 43 36 21 150 129 : 471
Harmony2  : 49 36 15 162 123 : 43 39 18 147 135 : 40 31 29 149 122 : 458
Win!      : 50 46  4 154 142 : 40 50 10 130 160 : 49 36 15 162 123 : 446
myZizzor  : 52 26 22 178 100 : 28 40 32 116 152 : 40 35 25 145 130 : 439
sTalon1.2 : 42 39 19 145 136 : 32 40 28 124 148 : 50 34 16 166 118 : 435
myVamp3.7 : 39 47 14 131 155 : 37 37 26 137 137 : 36 32 32 140 128 : 408
Blur 2    : 25 62 13  88 199 : 42 41 17 143 140 : 46 29 25 163 112 : 394
Torch t18 : 35 34 31 136 133 : 30 27 43 133 124 : 23 28 49 118 133 : 387
Mirage1.5 : 44 49  7 139 154 : 33 56 11 110 179 : 31 56 13 106 181 : 355
HSA       : 42 54  4 130 166 : 46 46  8 146 146 : 18 72 10  64 226 : 340
Memories  : 40 58  2 122 176 : 32 61  7 103 190 : 31 57 12 105 183 : 330
Benj'sRev : 16 21 63 111 126 :  7  3 90 111  99 :  2  2 96 102 102 : 324
Fixed     :  4  8 88 100 112 :  2  4 94 100 106 :  0  2 98  98 104 : 298
```

Recovery demonstrates a clear advantage against paper - while all three paper/stone warriors are easily beaten by a oneshot.

```
;redcode-94
;name Recovery
;author Ian Oversby
;strategy Q^2 -> Paper/Stone
;strategy v0.2 An alternative stone
;assert 1

QB EQU (start-350)
QS EQU (QD*2)
QD EQU -100

GAP EQU 12
REP EQU 8
REP2 EQU 2

pdist   equ     2450

datz EQU        (table-3)
first   equ     (table-5)
datone  equ     bomba

half    equ     2692
full    equ     (2*half)
gate    equ     (inc-3200)

init    spl.b   #0,     #0
inc     spl.b   #0,     <gate
loop    mov.i   bmb,    @ptr
        add.ab  #full,  ptr
ptr     mov.i   bmb,    @full-1
        djn.f   loop,   <gate
bmb     dat.f   >1,     #half
; bmb   dat.f   #half,  >1

for 15
        dat.f   $0,     $0
rof

         dat    10*QS, 2*QS ; can get 21 values from this table
table:   dat     4*QS, 1*QS ; and can also use the initial value
         dat    23*QS, 3*QS ; of fnd

qinc:    spl    #GAP,-GAP
tab:     add.a  table,table
slow:    add.a  @tab,fnd
```

```
fast:    add.ba *tab,@slow
which:   sne.i  datz,*fnd
         add.a  #QD,fnd
         mov.i  datone,*fnd
         add.ab fnd,fnd

fnd:    mov.i  QB,GAP/2
        add.f  qinc,fnd
        mov.i  datone,*fnd
        djn.b  fnd,#REP
        jmp    boot,}QS*13

start:
           ; WHICH
        seq.i  QB+QS*0,QB+QS*0+QD
        jmp    which,}QB+QS*0+QD/2

            ; FAST
         seq.i  QB+QS*1,QB+QS*1+QD
         jmp    fast,}QB+QS*1+QD/2

         seq.i  QB+QS*13,QB+QS*13+QD
         jmp    fast,{fast
         seq.i  QB+QS*2,QB+QS*2+QD
         jmp    fast,{tab
         seq.i  QB+QS*3,QB+QS*3+QD
         jmp    fast,}tab

           ; SLOW
         seq.i  QB+QS*4,QB+QS*4+QD
         jmp    >fast,}QB+QS*4+QD/2
         seq.i  QB+QS*5,QB+QS*5+QD
         jmp    slow,}QB+QS*5+QD/2

         seq.i  QB+QS*6,QB+QS*6+QD
         jmp    slow,{tab
         seq.i  QB+QS*7,QB+QS*7+QD
         jmp    slow,}tab
         seq.i  QB+QS*10,QB+QS*10+QD
         jmp    >fast,<tab
         seq.i  QB+QS*11,QB+QS*11+QD
         jmp    slow,<tab
         seq.i  QB+QS*12,QB+QS*12+QD
         djn.f  slow,tab
         seq.i  QB+QS*23,QB+QS*23+QD
         jmp    >fast,>tab
         seq.i  QB+QS*24,QB+QS*24+QD
         jmp    slow,>tab
         seq.i  QB+QS*17,QB+QS*17+QD
         jmp    slow,{fast

           ; TAB

         seq.i  QB+QS*8,QB+QS*8+QD
         jmp    <fast,}QB+QS*8+QD/2
for 0
         seq.i  QB+QS*9,QB+QS*9+QD
         jmp    tab,}QB+QS*9+QD/2

         seq.i  QB+QS*15,QB+QS*15+QD
         jmp    tab,<tab

         seq.i  QB+QS*16,QB+QS*16+QD
         jmp    tab,{tab
         seq.i  QB+QS*20,QB+QS*20+QD
         djn.f  <fast,tab
rof
boot    spl.b   init,   <-1100
        spl.b   init,   <-1208
        spl.b   init,   <-1316
```

```
        jmp.b   paper,  <-1425

for 15
        dat.f   $0,     $0
rof

paper   spl.b   1,      <-1500
        spl.b   1,      <-1608
        spl.b   1,      <-1716
silk    spl.b   @0,     <117
        mov.i   }-1,    >-1
silk1   spl.b   @0,     <771
        mov.i   }-1,    >-1
        mov.i   bomba,  }3307
        mov.i   {silk1, <silk2
silk2   jmp.b   @0,     <748
bomba   dat.f   <2667,  <5334

end start
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
Authors: Beppe Bezzi <giuseppe.bezzi@galactica.it>, Anton Marsden <anton@paradise.net.nz>, Philip Kendall <pak21@cam.ac.uk> and John Metcalf <grumpy@digitald.uk.com>

From news-rocq!jussieu.fr!fu-berlin.de!newshub.northeast.verio.net!news.new-york.net!news.ttsg.com!grumpy@xanther.digitald.uk.com Fri Jul 30 11:22:56 1999
Article: 10476 of rec.games.corewar
Path: news-rocq!jussieu.fr!fu-berlin.de!newshub.northeast.verio.net!news.new-york.net!news.ttsg.com!grumpy@xanther.digitald.uk.com
From: John Metcalf <grumpy@xanther.digitald.uk.com>
Newsgroups: rec.games.corewar
Subject: Core Warrior 74
Date: 29 Jul 1999 17:35:06 -0400
Organization: TTSG
Lines: 586
Distribution: world
Message-ID: <Pine.LNX.4.10.9907291715030.27234-100000@xanther.digitald.uk.com>
Reply-To: grumpy@xanther.digitald.uk.com
NNTP-Posting-Host: odin.ttsg.com
X-Trace: odin.ttsg.com 933284106 15858 204.141.84.29 (29 Jul 1999 21:35:06 GMT)
X-Complaints-To: abuse@news.ttsg.com
NNTP-Posting-Date: 29 Jul 1999 21:35:06 GMT
Originator: corewar-l@koth.org
Xref: news-rocq rec.games.corewar:10476

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 74 27 July, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
  http://www.koth.org/corewar-faq.html
  http://homepages.paradise.net.nz/~anton/cw/corewar-faq.html

The ftp site and it's mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars ;pMARS home page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;KOTH
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the above pages for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

Greetings...

A timely flurry of activity has occurred since last issue, with even the alternative (and secret) hills receiving at least a successful submission or two.

The '94 hill has been the scene of many a battle for control, whether

you perceive the opponents to be veterans and new players, p-spacers and pure warriors, or even magic age warriors and recent submissions.

The deadline for the IWT has been extended, so if you haven't done so already, find out how to enter at the tournament's home page:

http://www.concentric.net/~liminal/IWT/index.html

A guide from getting started through to submitting a warrior to one of the hills is now available on Philip Kendall's corewar page:

http://www.kendalls.demon.co.uk/pak21/corewar/index.html

This issue - Ben Ford shares his code for WingShot, and Ken Espiritu reveals his stone/imp Baseline Plus.

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	42.5/ 34.7/ 22.8	Digitalis 5	Christian Schmidt	150.2	15
2	41.4/ 35.0/ 23.6	Self-Modifying Code	Ben Ford	147.8	18
3	36.1/ 26.7/ 37.2	Vain	Ian Oversby	145.4	19
4	36.3/ 27.5/ 36.3	The Stormbringer	Christian Schmidt	145.1	72
5	37.4/ 29.8/ 32.8	Stonewashed	Christian Schmidt	145.0	12
6	34.5/ 24.2/ 41.3	One Step Beyond	John Metcalf	144.8	33
7	39.6/ 36.5/ 23.9	Recycled Bits	David Moore	142.7	72
8	32.4/ 22.4/ 45.2	Glass	Ben Ford	142.4	11
9	40.5/ 39.1/ 20.4	Stranger	John Metcalf	142.0	29
10	40.8/ 40.0/ 19.2	Snowman	John Metcalf	141.6	16
11	42.9/ 44.2/ 13.0	Qshot	Christian Schmidt	141.5	2
12	36.8/ 33.3/ 29.9	The Outsider	Simon Wainwright	140.2	36
13	39.4/ 39.1/ 21.5	Rubble	P.Kline	139.7	7
14	39.3/ 39.0/ 21.8	death by redcode	Simon Wainwright	139.6	51
15	31.7/ 24.2/ 44.1	Alive and K(qu)icking Zet	Leonardo H. Liporati	139.2	28
16	32.0/ 24.8/ 43.2	Slippery Eels	Ben Ford	139.1	14
17	34.2/ 29.7/ 36.1	Icepick	Ben Ford	138.7	13
18	38.6/ 38.7/ 22.7	Draken Fire	Ben Ford	138.6	30
19	37.1/ 35.9/ 26.9	Pitch Shifter	Christian Schmidt	138.3	26
20	28.2/ 18.3/ 53.5	No More Innocuous	Leonardo H. Liporati	138.2	4
21	36.9/ 36.0/ 27.1	Serenade to a Cuckoo	WFB	137.7	1
22	32.9/ 28.2/ 38.9	Icen	Ben Ford	137.6	20
23	36.5/ 36.3/ 27.1	PC	WFB	136.7	2
24	38.1/ 39.5/ 22.4	WingShot	Ben Ford	136.6	40
25	38.4/ 41.2/ 20.4	Circle of Fire	John Metcalf	135.6	43

Age since last issue: 43 (16 last issue, 10 the issue before)
Days since last issue: 61 (44 last issue, 36 the issue before)
Average age: 24 (19 last issue, 8 the issue before)
Average score: 141 (145 last issue, 138 the issue before)

The top 25 warriors are represented by just 9 independent authors: Ford with 7, Schmidt with 5, Metcalf with 4, Wainwright, Liporati and WFB with 2 and the remainder with a single warrior each. (11 authors last issue, 10 the issue before)

Only four warriors survive since last issue as some powerful warriors are unleashed and the hill stabilises. Three authors have been either using or testing Q^4 scans using sne/seq/jmp technology. The full implications of this remains to be seen.

Perhaps, the Q^4 will cause the demise of the q-scan! Afterall they are smaller than older qscans, and will gradually push them from the hill. However, their advantage also works against them - having a smaller memory footprint means a Q^4 battling another Q^4 will score less hits and consequently less points. The hill will be held in the icy grasp of p-spacers and scanners once again :-)

---

94 - What's New (Sorted by rank and score)

#	%W / %L / %T	Name	Author	Score	Age
1	46.9/ 35.2/ 17.9	Toki	Christian Schmidt	158.7	1
1	42.5/ 32.8/ 24.6	Digitalis 5	Christian Schmidt	152.2	1
1	41.8/ 35.0/ 23.2	Self-Modifying Code	Ben Ford	148.6	1
1	34.2/ 22.3/ 43.5	One Step Beyond	John Metcalf	146.1	0
1	39.2/ 33.0/ 27.8	The Outsider	Simon Wainwright	145.4	0
1	32.6/ 20.0/ 47.4	Alive and K(qu)icking Zet	Leonardo H. Liporati	145.1	1
1	34.0/ 25.1/ 40.9	Vain	Ian Oversby	143.0	1
1	40.1/ 37.3/ 22.6	Rubble	P.Kline	142.9	0
2	42.4/ 43.2/ 14.4	Shapechanger	Christian Schmidt	141.6	1
3	46.4/ 41.7/ 11.9	+,_,+'~'+,_,+'~'+,_,+'~'+	John Metcalf	151.1	0
3	35.1/ 29.1/ 35.8	Stonewashed	Christian Schmidt	141.1	1
4	38.4/ 38.4/ 23.3	Stranger	John Metcalf	138.3	1
5	39.2/ 40.9/ 20.0	Snowman	John Metcalf	137.5	1
5	35.6/ 35.6/ 28.8	Pitch Shifter	Christian Schmidt	135.5	1
6	28.7/ 21.3/ 50.0	Glass	Ben Ford	136.2	1
7	35.7/ 35.2/ 29.1	Dry Ice v0.1	Ben Ford	136.2	1
8	41.4/ 38.4/ 20.1	WingShot	Ben Ford	144.5	1
8	33.5/ 29.8/ 36.7	Ant Factory	Christian Schmidt	137.3	1
8	41.5/ 45.6/ 12.9	Qshot	Christian Schmidt	137.3	0
8	30.4/ 24.4/ 45.2	Slippery Eels	Ben Ford	136.4	1
9	27.3/ 19.9/ 52.9	Redemption	John Metcalf	134.7	0
11	34.0/ 34.1/ 31.9	Codename: Veronica	Ben Ford	134.0	1
11	25.8/ 17.9/ 56.3	No More Innocuous	Leonardo H. Liporati	133.6	1
12	32.1/ 30.2/ 37.8	Icepick	Ben Ford	134.0	1
12	42.4/ 52.2/ 5.3	Whooops!	John Metcalf	132.6	1
13	22.8/ 14.0/ 63.2	Reepicheep	John Metcalf	131.7	1
14	36.1/ 38.4/ 25.5	Draken Fire	Ben Ford	133.7	1
16	40.4/ 45.1/ 14.6	C^3	Christian Schmidt	135.6	1
16	28.4/ 27.2/ 44.4	Icen	Ben Ford	129.5	1
17	35.6/ 41.3/ 23.2	Goidaskilernian Bleatons	John Metcalf	129.9	0
18	36.9/ 43.0/ 20.0	Security Purge v0.3	Ben Ford	130.9	1
18	29.8/ 30.4/ 39.9	Recovery	Ian Oversby	129.2	1
19	32.3/ 31.8/ 35.9	PlumBoom	Christian Schmidt	132.8	1
20	28.8/ 28.5/ 42.6	Methuselah	Simon Wainwright	129.1	0
22	33.9/ 37.4/ 28.7	Root Vegtable	John Metcalf	130.4	1
23	34.7/ 38.0/ 27.2	Serenade to a Cuckoo	WFB	131.4	1
24	34.8/ 38.7/ 26.5	PC	WFB	130.9	1

Players entering hill since last issue: 8 (6 last issue, 7 the issue before)
Average rank of new entries: 9 (14 last issue, 14 the issue before)

Almost every participant since last issue has had a warrior enter as KoTH, though the congratulations are reserved for WFB who has just this week moved up from the beginners' hill.

---

94 - What's No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	23.1/ 19.0/ 57.9	The Fugitive	David Moore	127.3	70
26	30.1/ 35.2/ 34.7	Fixed	Ken Espiritu	125.0	54
26	34.2/ 43.8/ 22.0	Pattel's Virus	Ben Ford	124.6	52
26	34.0/ 41.9/ 24.2	Galatea	Ben Ford	126.0	51
26	35.4/ 43.6/ 21.0	Silver Talon 1.2	Edgar	127.1	50
26	30.7/ 35.1/ 34.2	Puddleglum	John Metcalf	126.4	49
26	32.3/ 39.6/ 28.1	trefoil 23 226	Steve Gunnell	125.0	49
26	30.1/ 32.9/ 37.0	Shadow	Christian Schmidt	127.4	45
26	32.4/ 36.4/ 31.2	Twin	Christian Schmidt	128.3	44
26	29.7/ 34.4/ 35.9	Spooky Wench	John Metcalf	124.9	42
26	24.7/ 27.9/ 47.4	Even Less Innocuous	TeamQ3	121.5	42

26	27.1/	29.6/	43.3	Freight Train v0.2	David Moore	124.6	40
26	26.2/	27.7/	46.1	chained to the system	Simon Wainwright	124.7	33
26	33.1/	42.1/	24.8	BiShot	Christian Schmidt	124.2	26
26	37.2/	49.4/	13.3	Zooom...	John Metcalf	125.1	24
26	26.3/	30.0/	43.7	Methuselah	Simon Wainwright	122.6	24
26	30.9/	36.7/	32.4	Codename: Veronica	Ben Ford	125.1	21
26	37.7/	47.3/	15.0	+,_,+'~'+,_,+'~'+,_,+'~'+	John Metcalf	128.0	20
26	35.5/	48.6/	15.9	Boys are Back in Town 1.1	Philip Kendall	122.4	20
26	38.7/	55.1/	6.2	Neon Spring	John Metcalf	122.3	20
26	33.0/	42.9/	24.1	Toki	Christian Schmidt	123.1	12
26	1.7/	1.9/	0.5	Nuke it! (V 0.4)	Silvio Sampietro	5.5	12
26	38.3/	49.5/	12.2	Shapechanger	Christian Schmidt	127.0	11
26	29.4/	32.3/	38.4	PlumBoom	Christian Schmidt	126.4	11
26	38.3/	54.2/	7.5	fatal lure of pMars	Simon Wainwright	122.4	10
26	35.6/	49.5/	15.0	C^3	Christian Schmidt	121.7	10
26	39.3/	52.5/	8.2	.sS$Ss.sS$Ss.sS$Ss.sS$Ss.	Simon Wainwright	126.2	9
26	28.9/	31.7/	39.4	Recovery	Ian Oversby	126.1	9
26	1.3/	1.6/	1.1	Redemption	John Metcalf	4.9	9
26	41.3/	52.8/	5.9	Whooops!	John Metcalf	129.9	8
26	31.9/	38.4/	29.7	Dry Ice v0.1	Ben Ford	125.4	8
26	34.5/	43.3/	22.1	Goidaskilernian Bleatons	John Metcalf	125.8	7
26	21.1/	17.9/	61.1	Reepicheep	John Metcalf	124.2	6
26	1.7/	1.6/	0.7	The Pendragon	Christian Schmidt	5.8	5
26	34.5/	44.7/	20.8	Security Purge v0.3	Ben Ford	124.4	4
26	30.5/	36.9/	32.6	Root Vegtable	John Metcalf	124.2	4
26	36.7/	46.2/	17.0	myBlur	Simon Wainwright	127.3	3

The scanners were amoung the first to go, causing Toki to drop off the hill from KoTH within 12 challenges.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
4	36.3/	27.5/	36.3	The Stormbringer	Christian Schmidt	145.1	72
7	39.6/	36.5/	23.9	Recycled Bits	David Moore	142.7	72
14	39.3/	39.0/	21.8	death by redcode	Simon Wainwright	139.6	51

The Stormbringer and Recycled Bits are still going strong, though RB has slipped down several ranks since last issue.

The Extended New Hall of Fame:
* indicates the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior
15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner
20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper
26	Tiberius 3.1	Franz	130	Q^2 -> Paper

27	Ultraviolet-B	Ken Espiritu	120	Q^2 -> Paper
28	obvious to those who k	Robert Macrae	117	Q^2 -> Paper
29	Solomon v0.8	Ian Oversby	116	Stone and scanner
30	CC Paper 3.3	Franz	107	Q^2 -> Paper
31	mrb-test	M R Bremer	106	*Unknown*
32=	T.N.T. pro	Maurizio Vittuari	105	Bomber
32=	Pulp v0.5	Ian Oversby	105	Q^2 -> Paper
34	Fugitive	David Moore	102	Q^2 -> Paper/imp
35	Vengeance	Robert Hale	101	Q^2 -> Stone/imp
36=	Jack in the box II	Beppe Bezzi	100	P-warrior
36=	Fire and Ice	David Moore	100	P-warrior
38	Oblivion	Ian Sutton	99	P-warrior
39	Silver Talon 1.2	Edgar	93	Scanner
40	Bodge 1	Robert Macrae	85	Q^2 -> Scanner
41	Inferno 2.4	Philip Kendall	84	Qscan -> Bomber
42=	Test	Anton Marsden	83	*Unknown*
42=	NCC-1701-A	Philip Kendall	83	P-warrior
44	RetroQ	Paul Kline	82	Q^2 -> Paper
45	Tornado 4	Beppe Bezzi	78	Bomber
46	He Scans Again	Paul Kline	76	Scanner
47	Digitalis 4	Christian Schmidt	73	Q^2 -> Clear/imp
48=	The Stormbringer	Christian Schmidt	72*	Q^2 -> Stone/imp
48=	Recycled Bits	David Moore	72*	P-warrior
50	Taking Names	Paul Kline	68	Scanner

Recycled Bits and The Stormbringer enter the ENHoF at last :-) Neither Shadow or Puddleglum survived long enough - who will write the first stone/paper to make it into the Hall?

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	57.9/	31.3/	10.7	Nuke it!	Silvio Sampietro	184.5	30
2	44.1/	26.6/	29.3	PC	WFB	161.5	2
3	47.3/	36.6/	16.1	Neverland II	John Metcalf	158.1	1
4	37.4/	18.5/	44.1	Quickest Zeta	Leonardo Humberto	156.4	33
5	40.9/	29.5/	29.6	Silken Half Life v4.0	Dale Neal	152.3	38
6	41.5/	30.8/	27.8	Silken Half Life	Dale Neal	152.1	41
7	45.2/	38.7/	16.1	da mutant	Paul-V Khuong	151.7	11
8	34.3/	18.6/	47.1	Quicker Zeta	Leonardo Humberto	150.0	55
9	45.6/	41.3/	13.1	Nuke it! (V 0.2)	Silvio Sampietro	149.8	37
10	33.4/	18.4/	48.2	Redemption	John Metcalf	148.3	97
11	32.5/	19.7/	47.9	Quick Zeta	Leonardo Humberto	145.2	60
12	40.7/	37.6/	21.7	FireMaster 2	P._V._K.	143.8	7
13	38.7/	35.1/	26.1	Arsonic C	P._V._K.	142.4	9
14	31.9/	21.9/	46.2	HardCore v0.2b	Simon Duff	141.9	61
15	40.6/	40.0/	19.4	Fire Master	P_.V_.K.	141.2	45
16	39.9/	39.0/	21.2	1 shot bomber 0.1	P._V._K.	140.8	10
17	41.2/	42.1/	16.8	Wild-Fire	P_.V_.K./John Metcal	140.3	12
18	39.5/	40.7/	19.8	Mel the Great	Ken Hubbard	138.3	13
19	37.6/	38.2/	24.2	Red Sand	Ken Hubbard	136.9	44
20	31.2/	30.7/	38.1	Radio Flyer	Ken Hubbard	131.7	16
21	31.0/	33.0/	36.0	quatrefoil 133	Steve Gunnell	128.9	31
22	39.8/	50.6/	9.6	UltiBomber	P._V._K.	128.9	8
23	36.8/	46.9/	16.2	Death kiss with a dash of	Anders Rosendal	126.8	81
24	27.6/	45.5/	26.9	RedRace 1	Dave Hillis	109.7	24
25	30.7/	55.9/	13.4	QaMa	Anonymous	105.6	6

Frusteration II, No Time To Think, Spat the Dummy and H-Bomb 9 all achieved retirement, the hill having aged 30 since last issue. Wainwright and Ford

killed off their warriors making life for beginners a little easier...

Current Status of the KOTH.ORG '94 No Pspace Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS '94 Draft, excluding ldp and stp
```

#	%W/	%L/	%T	Name	Author	Score	Age
1	42/	35/	23	WingShot	Ben Ford	149	17
2	36/	26/	38	Vain	Ian Oversby	145	252
3	36/	27/	38	The Stormbringer	Christian Schmidt	144	186
4	42/	41/	17	Zooom...	John Metcalf	143	51
5	35/	28/	36	Blacken	Ian Oversby	142	162
6	42/	42/	17	Boys are Back in Town 1.1	Philip Kendall	142	177
7	27/	13/	60	_romanian_killah_	Costin Bontas rulez	142	144
8	34/	28/	38	Ant Factory	Christian Schmidt	141	10
9	45/	50/	5	Neon Spring	John Metcalf	141	34
10	43/	45/	12	Win!	David Moore	141	150
11	36/	32/	32	The Outsider	Simon Wainwright	141	15
12	33/	26/	42	Icen	Ben Ford	140	9
13	38/	38/	24	myVamp v3.7	Paulsson	139	4
14	33/	28/	39	Recovery	Ian Oversby	138	175
15	34/	30/	36	Icepick	Ben Ford	138	8
16	26/	14/	60	The Fugitive	David Moore	138	254
17	40/	43/	16	Qshot	Christian Schmidt	138	2
18	37/	36/	27	PC	WFB	137	1
19	28/	20/	52	Redemption	John Metcalf	137	14
20	29/	22/	49	Fourth Step	Leonardo H. Liporati	136	3

An age of 19 since last issue brings about the demise of four aged warriors, Liquid Fire (age 140), Brigadeer (169), Baseline Plus (232) and Fixed (235). Once again a balance of scanners and stone/imps possess the top few ranks.

Extra Extra -
WingShot by Ben Ford

Currently King of both the no-pspace and tiny hills, and recently atop Pizza's 94 hill, clearly WingShot is a warrior currently out-performing other warriors of it's type. The combination of a Bi-Shot style clear and a .8c scan proves effective in several environments, though like most oneshots it suffers against CLP-type components such as the one used in Kline's Rubble.

```
;redcode-94
;name WingShot
;author Ben Ford
;strategy 0.80c BiShot-style oneshot
;assert !(CORESIZE%10) && (MAXLENGTH>=20)

start   equ     oscn
oinc    equ     10
omod    equ     10
oset    equ     (omod*((MAXLENGTH+MINDISTANCE)/omod)-1)
odif    equ     (omod*((CORESIZE/2)/omod))
otic    equ     (CORESIZE/omod)

optr    spl     {oset,  >odif+oset-3
        dat     {10,    >odif
ospl    spl     #10,    <-MINDISTANCE
oclr    mov     ospl,   }optr
        mov     ospl,   >optr
obmb    djn.a   oclr,   <ospl

        dat     0,      0       ; scanned hi
```

```
        dat     0,      0
        dat     0,      0
        dat     0,      0       ; scanned lo

ofnd    sub.f   #-oinc,  optr
oscn    sne.i   *optr,  @optr
        sub.x    ofnd,  @ofnd
        sne.i   *optr,  @optr
        djn      ofnd,  #otic
        djn.f    ospl,  @oscn

end     start
```

Extra Extra Extra -
Baseline Plus by Ken Espiritu

Until the recent rise of a more powerful Q^3 and Q^4 scanners, Baseline had enjoyed a strong position on the ’94nop hill along with Espiritu’s Fixed. Both warriors were finally pushed off, aged 232 (Baseline) and 235 (Fixed) two or three days ago, victims of the the eternal stuggle to produce stronger, faster and smaller code.

However, despite not containing the latest in q-scanning technology, Baseline is certainly not out of date, as evidenced in the body of the warrior - the stone/imp.

The imp launcher is re-worked to damage as much core as possible as it goes about it’s duties. A simple improvement perhaps, but one which I’ve seldom seen used.

```
st      equ     (2667)
spin:   spl.b   #0,       >prime
        sub.f   #-st-1,   jump
prime:  mov.i   impy,     impy
jump:   djn.f   impy-st-1,<-100
impy:   mov.i   #st,      *0
```

The four line stone is one of the most unique I have seen. It’s bombs via indirection, and sptr combines with pt to further increase core colouring. Finally, as an added bonus a simple core-clear takes place.

```
stepa   equ     (214)
inc:    spl     #stepa,   >-stepa
pt:     mov.i   {stepa,   {1-stepa
        add.f   inc,      pt
sptr:   djn.f   @sptr,    {pt
```

Without further ado, here below lies the complete code...

```
;redcode-94
;name Baseline Plus
;author Ken Espiritu
;strategy qscan -> imp/stone
;strategy re-worked imp launcher code
;assert 1

org start

sdist   equ     (-2321)
idist   equ     (1500)
gap     equ     (6)
rep     equ     (17)
rep2    equ     (13)
qd      equ     (100)
qs      equ     (-200)
qb      equ     (start-700)
flag    equ     (qbomb-100)
datz    equ     (start-200)

qbomb:  dat     }gap,     }-gap
```

```
tab:   add.a  table,   table
slow:  add.ab @tab,    fnd
fast:  add.b  *tab,    @slow
which: sne.f  }datz,   @fnd
       add.ab #qd,     fnd
       spl    bmber2,  }qs*13   ; start primary bomber

bmber1:add.b  fnd,     fnd2     ; redundant bomber
loop1: mov.i  qbomb,   @fnd2    ; .5c, forward only
fnd2:  mov.i  qbomb,   >fnd-(gap*rep)/2+1
       add    #2*gap,  fnd2
       djn    loop1,   #rep
       jmn.b  qbomb,   flag     ; check flag
       jmp    sboot,    }-2000

stepa  equ    (214)
st     equ    (2667)

spin:  spl.b  #0,      >prime
       sub.f  #-st-1,  jump
prime: mov.i  impy,    impy
jump:  djn.f  impy-st-1,<-100
impy:  mov.i  #st,     *0

iboot: mov.i  <idest,  {idest
       for 4
       mov.i  <idest,  {idest
       rof
       spl    *idest,  >1000+qs*2
idest: div.x  #idist,  #impy-idest+1

       dat    }10*qs,  >2*qs    ; can get 21 values from this table
table: dat    >4*qs,   }1*qs    ; and can also use the initial value
       dat    }23*qs,  >3*qs    ; of fnd

stone: spl    #0,      #0
inc:   spl    #stepa,  >-stepa
pt:    mov.i  {stepa,  {1-stepa
       add.f  inc,     pt
sptr:  djn.f  @sptr,   {pt

start: seq.i  qb+qs*0, qb+qs*0+qd
       jmp    which,   }qb+qd/2
       seq.i  qb+qs*2, qb+qs*2+qd
       jmp    fast,    {tab
       seq.i  qb+qs*13,qb+qs*13+qd
       jmp    fast,    {fast
       seq.i  qb+qs*1, qb+qs*1+qd
       jmp    fast,    }qb+qs*1+qd/2
       seq.i  qb+qs*3, qb+qs*3+qd
       jmp    fast,    }tab

       seq.i  qb+qs*17,qb+qs*17+qd
       jmp    slow,    {fast
       seq.i  qb+qs*7, qb+qs*7+qd
       jmp    slow,    }tab
       seq.i  qb+qs*11,qb+qs*11+qd
       jmp    slow,    <tab
       seq.i  qb+qs*5, qb+qs*5+qd
       jmp    slow,    }qb+qs*5+qd/2
       seq.i  qb+qs*24,qb+qs*24+qd
       jmp    slow,    >tab
       seq.i  qb+qs*4, qb+qs*4+qd
       jmp    >fast,   }qb+qs*4+qd/2
       seq.i  qb+qs*10,qb+qs*10+qd
       jmp    >fast,   <tab
       seq.i  qb+qs*23,qb+qs*23+qd
       jmp    >fast,   >tab
       seq.i  qb+qs*6, qb+qs*6+qd
       jmp    slow,    {tab
```

```
       seq.i  qb+qs*12,qb+qs*12+qd
       djn.f  slow,    tab

       seq.i  qb+qs*28,qb+qs*28+qd
       jmp    tab,     >tab
       seq.i  qb+qs*9, qb+qs*9+qd
       jmp    tab,     }qb+qs*9+qd/2
       seq.i  qb+qs*20,qb+qs*20+qd
       djn.f  <fast,   tab
       seq.i  qb+qs*8, qb+qs*8+qd
       jmp    <fast,   }qb+qs*8+qd/2
       seq.i  qb+qs*21,qb+qs*21+qd
       jmp    tab,     {fast
       seq.i  qb+qs*15,qb+qs*15+qd
       jmp    tab,     <tab
       seq.i  qb+qs*27,qb+qs*27+qd
       jmp    <fast,   >tab
       seq.i  qb+qs*16,qb+qs*16+qd
       jmp    tab,     {tab
       seq.i  qb+qs*22,qb+qs*22+qd
       djn.f  tab,     tab
       seq.i  qb+qs*30,qb+qs*30+qd
       jmp    tab,     }tab

sboot: spl    iboot,   >1000+qs*9
       for 5
       mov.i  <bdest,  {bdest
       rof
       spl    *bdest,  >1000+qs*10
bdest: div.x  #sdist,  #sptr-bdest+1
qincr: dat    }-gap,   >2*gap

bmber2:add.ba fnd,     fnd
loop2: mov.i  qincr,   *fnd     ; primary bomber
       mov.i  qincr,   @fnd     ; .66c, bi-directional
fnd:   mov.i  2*-gap,  }qb
       add    qincr,   fnd
       djn    loop2,   #rep2
       jmp    sboot,   >flag    ; set flag
       end
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
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Article: 10613 of rec.games.corewar
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From: John Metcalf <grumpy@xanther.digitald.uk.com>
Newsgroups: rec.games.corewar
Subject: Core Warrior 75
Date: 2 Sep 1999 20:12:35 -0400
Organization: TTSG
Lines: 893
Distribution: world
Message-ID: <Pine.LNX.4.10.9909022312090.2609-100000@xanther.digitald.uk.com>
Reply-To: grumpy@xanther.digitald.uk.com
NNTP-Posting-Host: odin.ttsg.com
X-Trace: odin.ttsg.com 936317556 1859 204.141.84.29 (3 Sep 1999 00:12:36 GMT)
X-Complaints-To: abuse@news.ttsg.com
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Originator: corewar-l@koth.org
Xref: news-rocq rec.games.corewar:10613

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$$
,$$$$$$P' 'P'                              ,    .
$$$$$P'   '                              .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 75 2 September, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
  http://www.koth.org/corewar-faq.html
  http://homepages.paradise.net.nz/~anton/cw/corewar-faq.html

The ftp site and it's mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars ;pMARS home page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;KOTH
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the above pages for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

Greetings...

This issue contains the results of the IWT and the code for Kline's SnooPy. The hint this issue shows how Khuong's nPaper became a warrior which shot to KotH on the '94nop hill. Enjoy...

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W /	%L /	%T	Name	Author	Score	Age
1	43.3/	34.4/	22.2	Recycled Bits	David Moore	152.2	97
2	35.2/	18.6/	46.3	Jade	Ben Ford	151.8	20
3	41.4/	34.8/	23.8	Self-Modifying Code	Ben Ford	148.1	43
4	45.1/	42.4/	12.5	Qshot	Christian Schmidt	147.8	27
5	41.4/	38.0/	20.5	Snowman	John Metcalf	144.8	41
6	41.9/	39.8/	18.3	SnooPy	P.Kline	144.0	23
7	29.2/	15.6/	55.2	Return of the Fugitive	David Moore	142.9	24
8	34.8/	26.9/	38.3	Stonewashed	Christian Schmidt	142.7	37
9	34.3/	27.2/	38.6	One Step Beyond	John Metcalf	141.4	58
10	41.6/	42.0/	16.5	goonie	David Moore	141.2	18
11	32.4/	24.4/	43.1	nPaper II	Paul-V Khuong	140.4	0
12	36.8/	33.6/	29.7	The Endless Knot	John Metcalf	139.9	4
13	35.5/	31.0/	33.5	The Stormbringer	Christian Schmidt	139.9	97
14	43.4/	47.5/	9.1	QHSA	Ken Espiritu	139.3	8
15	39.3/	39.5/	21.2	Stranger	John Metcalf	139.2	54
16	38.2/	37.5/	24.3	Draken Fire	Ben Ford	138.9	55
17	38.7/	39.3/	22.0	death by redcode	Simon Wainwright	138.0	76
18	31.2/	24.8/	44.0	Slippery Eels	Ben Ford	137.6	39
19	27.7/	18.5/	53.7	No More Innocuous	Leonardo H. Liporati	136.9	29
20	32.0/	27.3/	40.6	Icen	Ben Ford	136.7	45
21	32.7/	29.5/	37.8	Sword'n'shield	Christian Schmidt	135.9	8
22	30.6/	26.0/	43.4	EvoP	Ken Espiritu	135.2	3
23	30.7/	26.5/	42.8	Exor	Ken Espiritu	134.9	12
24	38.6/	43.2/	18.2	myBlur2	Paulsson	134.1	8
25	37.7/	45.4/	16.8	TheFlyOnTheWall	Christian Schmidt	130.0	0

Age since last issue: 25 (43 last issue, 16 the issue before)
Days since last issue: 37 (61 last issue, 44 the issue before)
Average age: 33 (24 last issue, 19 the issue before)
Average score: 141 (141 last issue, 145 the issue before)

The top 25 warriors are represented by just 10 independent authors: Ford and Schmidt with 5 each, Metcalf with 4, Moore and Espiritu with 3 and the remaining 5 authors with just one warrior each. (9 authors last issue, 11 the issue before)

The scanners are returning to the hill in new unexpected forms... MyBlur's scan loop contains several processes to implement an airBag technique. QHSA uses a 'quasi-1c scan' to great effect against Return of the Fugitive, against which Moore's own 3-shot scanner (Goonie) also scores well.

---

94 - What's New (Sorted by rank and score)

#	%W /	%L /	%T	Name	Author	Score	Age
1	37.8/	32.0/	30.2	Am I alive?	Christian Schmidt	143.6	1
1	35.0/	28.1/	36.8	The Pendragon	Christian Schmidt	141.9	1
1	28.3/	17.6/	54.1	Jade	Ben Ford	139.0	1
2	41.9/	41.5/	16.6	SnooPy	P.Kline	142.3	1
2	26.0/	13.0/	61.0	Return of the Fugitive	David Moore	139.1	1
3	40.6/	40.6/	18.7	goonie	David Moore	140.6	0
7	38.2/	39.8/	22.0	The Endless Knot	John Metcalf	136.5	0
8	43.2/	48.0/	8.8	QHSA	Ken Espiritu	138.4	0
8	30.3/	24.4/	45.2	nPaper II	Paul-V Khuong	136.3	1
12	29.4/	26.3/	44.3	Exor	Ken Espiritu	132.5	1
14	38.3/	44.2/	17.5	myBlur2	Paulsson	132.4	0
16	35.8/	41.5/	22.7	Men-An-Tol-4	John Metcalf	130.0	0

17	33.5/ 35.4/ 31.2	Electrum	John Metcalf	131.5	1
18	28.8/ 28.4/ 42.8	Sword'n'shield	Christian Schmidt	129.2	1
20	28.8/ 26.7/ 44.5	EvoP	Ken Espiritu	130.9	1
23	31.7/ 35.3/ 33.1	Baby One Moore Time	Phooey	128.0	1
25	34.3/ 42.7/ 23.0	F B I	Ken Espiritu	125.8	1
25	34.7/ 47.6/ 17.7	TheFlyOnTheWall	Christian Schmidt	121.8	0

Players entering hill since last issue: 9 (8 last issue, 6 the issue before)
Average rank of new entries: 11 (9 last issue, 14 the issue before)

Schmidt and Ford both claim 1st place with their new entries. The Pendragon is a curious variation on the stone/imp. Jade contains a Q^4 -> Stone/imp which seems to be the only imp warrior immune to Khuong's nPaper... Moore's Fugitive returns stronger than ever.

---

94 - What's No More (Sorted by age)

#	%W /	%L /	%T	Name	Author	Score	Age
26	30.6/	37.8/	31.6	The Outsider	Simon Wainwright	123.5	51
26	34.1/	43.0/	22.9	Circle of Fire	John Metcalf	125.1	48
26	35.9/	41.6/	22.5	WingShot	Ben Ford	130.1	41
26	34.2/	41.6/	24.2	Digitalis 5	Christian Schmidt	126.9	40
26	25.4/	25.6/	49.0	Alive and K(qu)icking Zet	Leonardo H. Liporati	125.2	40
26	29.2/	34.7/	36.1	Vain	Ian Oversby	123.7	36
26	25.2/	25.4/	49.4	Glass	Ben Ford	124.9	32
26	31.3/	37.7/	30.9	Pitch Shifter	Christian Schmidt	124.9	30
26	27.2/	33.0/	39.8	Icepick	Ben Ford	121.3	21
26	32.4/	36.1/	31.5	Am I alive?	Christian Schmidt	128.7	16
26	33.4/	42.1/	24.6	Rubble	P.Kline	124.7	9
26	31.3/	38.4/	30.3	Serenade to a Cuckoo	WFB	124.2	8
26	31.1/	39.3/	29.6	PC	WFB	122.9	8
26	2.0/	0.9/	1.2	The Pendragon	Christian Schmidt	7.1	6
26	30.7/	35.9/	33.5	Baby One Moore Time	Phooey	125.5	5
26	31.8/	35.5/	32.8	Electrum	John Metcalf	128.1	3
26	32.6/	42.1/	25.4	Men-An-Tol-4	John Metcalf	123.1	3
26	34.3/	43.3/	22.4	F B I	Ken Espiritu	125.4	2

Am I Alive? drops off the hill from KotH in 15 challenges - though not quite quickly enough to beat Toki's 12 last issue.

---

94 - What's Old

#	%W /	%L /	%T	Name	Author	Score	Age
1	43.3/	34.4/	22.2	Recycled Bits	David Moore	152.2	97
13	35.5/	31.0/	33.5	The Stormbringer	Christian Schmidt	139.9	97
17	38.7/	39.3/	22.0	death by redcode	Simon Wainwright	138.0	76
9	34.3/	27.2/	38.6	One Step Beyond	John Metcalf	141.4	58
16	38.2/	37.5/	24.3	Draken Fire	Ben Ford	138.9	55
15	39.3/	39.5/	21.2	Stranger	John Metcalf	139.2	54

Recycled Bits continues to perform well.

The Extended New Hall of Fame:
* indicates the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior

15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner
20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper
26	Tiberius 3.1	Franz	130	Q^2 -> Paper
27	Ultraviolet-B	Ken Espiritu	120	Q^2 -> Paper
28	obvious to those who k	Robert Macrae	117	Q^2 -> Paper
29	Solomon v0.8	Ian Oversby	116	Stone and scanner
30	CC Paper 3.3	Franz	107	Q^2 -> Paper
31	mrb-test	M R Bremer	106	*Unknown*
32	T.N.T. pro	Maurizio Vittuari	105	Bomber
=	Pulp v0.5	Ian Oversby	105	Q^2 -> Paper
34	Fugitive	David Moore	102	Q^2 -> Paper/imp
35	Vengeance	Robert Hale	101	Q^2 -> Stone/imp
36	Jack in the box II	Beppe Bezzi	100	P-warrior
=	Fire and Ice	David Moore	100	P-warrior
38	Oblivion	Ian Sutton	99	P-warrior
39	Recycled Bits	David Moore	97*	P-warrior
=	The Stormbringer	Christian Schmidt	97*	Q^2 -> Stone/imp
41	Silver Talon 1.2	Edgar	93	Scanner
42	Bodge 1	Robert Macrae	85	Q^2 -> Scanner
43	Inferno 2.4	Philip Kendall	84	Qscan -> Bomber
44	Test	Anton Marsden	83	*Unknown*
=	NCC-1701-A	Philip Kendall	83	P-warrior
46	RetroQ	Paul Kline	82	Q^2 -> Paper
47	Tornado 4	Beppe Bezzi	78	Bomber
48	death by redcode	Simon Wainwright	76*	Q^2 -> Bomber
=	He Scans Again	Paul Kline	76	Scanner
50	Digitalis 4	Christian Schmidt	73	Q^2 -> Clear/imp

Congratulations to Wainwright whose Death By Redcode gains him access to the Hall of Fame. Recycled Bits and The Stormbringer climb 9 ranks.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	54.3/ 34.4/ 11.3	Nuke it!	Silvio Sampietro	174.3	46
2	44.3/ 25.3/ 30.5	PC	WFB	163.3	18
3	39.1/ 19.3/ 41.6	Quickest Zeta	Leonardo Humberto	158.9	49
4	41.9/ 29.0/ 29.1	Silken Half Life v4.0	Dale Neal	154.7	54
5	44.6/ 36.3/ 19.1	da mutant	Paul-V Khuong	152.9	27
6	36.3/ 20.1/ 43.6	Quicker Zeta	Leonardo Humberto	152.6	71
7	41.0/ 30.3/ 28.6	Silken Half Life	Dale Neal	151.7	57
8	45.8/ 40.4/ 13.8	Nuke it! (V 0.2)	Silvio Sampietro	151.2	53
9	43.5/ 39.2/ 17.3	B-52 #001	A.S. Mehlos	147.8	1
10	32.4/ 22.8/ 44.8	Quick Zeta	Leonardo Humberto	142.0	76
11	37.9/ 35.7/ 26.4	Arsonic C	P._V._K.	140.1	25
12	41.3/ 43.5/ 15.2	Neverland II	John Metcalf	139.2	17
13	37.0/ 37.5/ 25.5	FireMaster 2	P._V._K.	136.6	23
14	39.1/ 41.9/ 19.0	Wild-Fire	P_.V_.K./John Metcal	136.2	28
15	37.8/ 40.6/ 21.7	Mel the Great	Ken Hubbard	135.0	29
16	28.3/ 21.8/ 49.9	HardCore v0.2b	Simon Duff	134.7	77
17	35.8/ 38.3/ 25.9	Red Sand	Ken Hubbard	133.2	60

18	36.7/ 40.2/ 23.2	1 shot bomber 0.1	P._V._K.	133.2	26
19	36.9/ 40.8/ 22.3	Simpsons4Ever v0.4	Maurice Fernández	133.1	3
20	36.3/ 39.6/ 24.1	Fire Master	P_.V_.K.	133.0	61
21	32.4/ 32.6/ 35.0	Radio Flyer	Ken Hubbard	132.2	32
22	24.9/ 18.9/ 56.1	Caladan	Ingo S Kacza	131.0	2
23	40.2/ 50.1/ 9.7	UltiBomber	P._V._K.	130.4	24
24	31.4/ 32.9/ 35.8	quatrefoil 133	Steve Gunnell	129.9	47
25	35.1/ 43.0/ 21.9	Simpsons4Ever v0.3	Maurice Fernández	127.2	5

Redemption retired, and Death Kiss almost made it, dropping off aged 96 :-(Welcome to the new players - the two currently on the hill and the three or four who haven't quite made it yet.

Current Status of the KOTH.ORG '94 No Pspace Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS '94 Draft, excluding ldp and stp
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	39/ 21/ 41	nPaper II	Paul-V Khuong	157	2
2	46/ 40/ 14	Zooom...	John Metcalf	151	138
3	46/ 42/ 12	aTest 4	P.Kline	151	1
4	35/ 21/ 44	Jade	Ben Ford	149	71
5	36/ 25/ 38	Omnibus	John Metcalf	148	11
6	45/ 42/ 13	Boys are Back in Town 1.1	Philip Kendall	147	264
7	46/ 45/ 10	Win!	David Moore	146	237
8	36/ 26/ 38	Icen	Ben Ford	146	96
9	45/ 45/ 10	Qshot	Christian Schmidt	145	8
10	37/ 28/ 35	Ant Factory	Christian Schmidt	145	97
11	38/ 32/ 30	The Pendragon	Christian Schmidt	144	75
12	38/ 31/ 31	Blacken	Ian Oversby	144	249
13	34/ 26/ 40	EvoP	Ken Espiritu	142	4
14	43/ 44/ 14	goonie	David Moore	142	64
15	39/ 37/ 25	PC	WFB	140	88
16	40/ 39/ 22	Napalm	Ken Espiritu	140	51
17	41/ 41/ 18	Men-An-Tol-7	John Metcalf	140	20
18	35/ 31/ 33	Recovery	Ian Oversby	139	262
19	39/ 41/ 19	K5000R	Christian Schmidt	138	6
20	41/ 45/ 14	myBlur2(3)	Paulsson	137	18

In the 87 successful challenges since last issue a total of 12 warriors have left this hill - including the warriors which held 1st, 2nd and 3rd ranks. Vain (age 330), The Fugitive (274), The Stormbringer (262) and Romanian Killah (218) all perished... Khuong's nPaper dominates the hill, see this issue's hint for more details.

Current Status of the Koenigstuhl Recursive ICWS '94 Draft Hill:

Koenigstuhl is an infinite hill similar to Planar's Mount Olympus and can be found on Christoph C. Birk's Core War page:

http://andromeda.ociw.edu/COREWAR/

Below we show the top 20 of a total 1066 warriors:

1	Zooom...	John Metcalf	174.69
2	The Machine	Anton Marsden	174.29
3	Silver Talon 1.2	Edgar	173.50
4	Phantasm 50	Robert Macrae	172.91
5	Newt	Ian Oversby	172.86
6	Scan Man	David van Dam	172.67
7	Fixed	Ken Espiritu	172.26
8	The Question	David Moore	172.19
9	Recovery	Ian Oversby	171.92

10	The Bloodhound	Ian Sutton	171.67
11	The Stormbringer	Christian Schmidt	171.57
12	Baseline Plus	Ken Espiritu	171.44
13	Boys are Back in Town 1.1	Philip Kendall	171.23
14	Alien	Christian Schmidt	170.25
15	Recycled Paper	Planar	169.99
16	Forty	Anton Marsden	169.87
17	Head or Tail	Christian Schmidt	168.92
18	Digitalis 4	Christian Schmidt	168.89
19	Gigolo	Core Warrior staff	168.76
20	myBlur2	Paulsson	167.55

Many recently published warriors hold positions in the top 20 ranks, though Newt is still the top rating stone/imp. Other recent entries in the top 100 are Puddleglum (29th), WingShot (30th), Shadow (31st), Sharkrage (47th), Icepick (49th), Digital Dragon (52nd), Burning Water (62nd) and Z-Shot (80th).

Also to be found on the same page are the Koenigstuhl ’88 Hill of which Freight Train is the King with a lead of 13 points over 2nd place, and the Open Hill (’94 Draft + P-Space) where Pattel’s Virus recently became KotH.

The Intelligent Warrior Tournament (1999) RESULTS!

In what would later be called an amazing display of corewar programming power, eight programmers battled it out for control of the RedOS. In the end only one would be crowned King.

In a tournament filled with both luck and skill, the eight Warriors would fight over RedOS registers, attempting to enter a higher score in their own register than their opponent could. The fighting would be fierce and started out with a round robin to determine who would move on to the Knock Out rounds. Only four would survive this grueling test.

The contestants were as follows:

```
;redcode-94
;name silly & slow
;author Ryan Coleman
;strategy Set my score to 7999!
;strategy set his score to 0
;strategy then spl bomb

;redcode-iwt99
;name Inconspicuous
;author John Metcalf
;strategy .8c scan -> spl carpet -> alter values

;redcode-94
;author Robert Macrae
;name   Bride of :-=
;       [or, Better Late Than Never...]
;strategy 0.66 Vamp, Decoy and Pit

;redcode
;name Reverse Vampire
;author Josh Yeager
;strategy Find RedOS, then copy self over middle of it.
;strategy Hopefully, opponent won’t hit me because he thinks I’m the OS!
;strategy Also, any proccesses the OS has will be running me!

;redcode-94
;name Quick Thinking
;author Ben Ford
;strategy qscan -> HSAish scanner
;strategy
;strategy instead of bombing, qscan sets starting values for scanner
;strategy scanner based on HSA, added part to set my score properly
;strategy also never switches to dat-bombing (stun everything but me!)
;strategy
```

```
;strategy beats test warrior (and simple improvements) 80%+
;strategy better than nothing, I suppose someone could try to take
;strategy advantage of 'flaws' in the hsa engine

;redcode-94
;name Mine v0.3
;author John K Wilkinson
;strategy my entry. this is mine. hence the name.

;redcode-94
;name StupidWarrior
;author Planar

;redcode-94
;name Starving Hacker
;author David Moore
;strategy Score 1 point :-)  Optimized for single-elimination combat.
```

The round robin featured single combat between each competitor. Position was randomly assigned by a coin toss (terribly high tech.) The chart below shows the results of the round robin portion.

	Coleman	Metcalf	Macrae	Yeager	Ford	Wilkinson	Doligez	Moore
Coleman	X X X	0*	-1	0*	-7980	1	1	-1
Metcalf	0*	X X X	-1	0	-7980	0	0	-1
Macrae	1	1	X X X	1	1	5623	1	3
Yeager	0*	0	-1	X X X	-7980	-7998	0	-1
Ford	7980	7980	-1	7980	X X X	7980	7980	-1
Wilkinson	-1	0	-5623	7998	-7980	X X X	7998	-1
Doligez	-1	0	-1	0	-7980	-7998	X X X	0
Moore	1	1	-3	1	1	1	0	X X X

* denotes a fight where the RedOS died.

Total Scores (Round Robin)

39899	Ford	-7980	Coleman
5631	Macrae	-7982	Metcalf
2391	Wilkinson	-15980	Yeager
2	Moore	-15980	Doligez

With the round robin finished we came to the four Warrior Knock Out! As we can see, Ben Ford's entry "Quick Thinking" is clearly the odds on favorite having scored so highly in the round robin. Macrae and Moore both entered "dumber" programs that cleared core with sequential clears, hoping to trade score for speed that might help in the Knock Out portion of the tourney. Wilkinson's "Mine v0.3" was a jmp stunner/scanner with bootstrap.

The first battle was between Ben Ford's "Quick Thinking" and David Moore's "Starving Hacker". Ben had lost in the round robin to "Starving Hacker" and was looking to take the battle to Moore's quicker program. Unfortunately for Ben, Moore's attack was too fast and he fell. Having easily dominated the round robin, "Quick Thinking" was ironically beaten by a quicker program. (Note: Ben had, in my opinion, on of the best programs written and might had taken it all had the rules been slightly different.)

The second battle was going to be one of the most contentious. Macrae's "Bride of :-=" would face third place "Mine v0.3". The battle took four rounds to decide as the score was a tie the first three tries. In the end, "Mine v0.3" was triumphant.

The stage was set for the final round:

Our MAIN EVENT...

```
;name Starving Hacker                    ;name Mine v0.3
;author David Moore                      ;author John K Wilkinson
```

The first battle lit up the screen with green and yellow pixels as the two programs battle furiously for control of the registers. Fighting with all their might, they fought the first round to a tie! The tie breaker was decided early when Moore's "Starving Hacker" was struck squarely with a jmp bomb from "Mine v0.3". The rest was clean up and John K. Wilkinson's program did this brilliantly.

The winner of the 1999 Intelligent Warrior Tournament is:

John K. Wilkinson!

Congratulations to John and thanks to all the contestants for taking the time to code what was a hard fought battle. I'm glad that this competitions winner was a program of some size and that it needed a bit of intelligence to win. The warriors will be displayed on the website soon.

Side Note:
I welcome feedback on this tournament and what could be done to make it more interesting for the programmers. It was my hope to reward complexity of strategy and it seems to have worked in most cases. Feel free to send me an email at <jklewis@umich.edu> or start a thread on r.g.c.

The tournament's homepage can be found at:

http://www.concentric.net/~liminal/IWT/index.html

The Hint - Improving a Beginner's Warrior by Paul-V Khuong and John Metcalf

Once again this hint will follow the development process of a warrior. This time the warrior is Paul's nPaper and our aim is to improve it sufficiently to allow it to gain a place on Pizza's '94 draft hill. Here is the original:

```
;redcode-94nop
;name nPaper
;author Paul-V Khuong
;strategy Paper
;assert CORESIZE==8000

     pStep1 equ 3944
     pStep2 equ 2616
     pStep3 equ -624

     x equ -373
     y equ 1915
     z equ -287

     spl   1
     spl   1
     spl   1
pap1:spl   @0,     <pStep1
     mov   }pap1,  >pap1
pap2:spl   @0,     {pStep2
     mov   }pap2,  >pap2
     mov.i #1,     }1
     mov   {x,     <y
     mov   {pap2,  {pap3
pap3:djn.f pStep3, <z
```

As with most papers, nPaper is based on the typical silk replication concept. However, the methods of attack are particularly interesting:

1) The bomb which nPaper throws is a kind of silk-imp. Mov.i #1,}1 combines with the mov {x,<y line to bomb two strips of memory with itself.

2) Instead of the commonplace jmp pStep3, nPaper uses a rarely seen djn.f pStep3,<?. Since there are 8 processes and only 6 lines to copy, nPaper is still effective even if a couple of proccesses happen to fall out of the warrior when the djn.f meets it's arch-enemy - dat 1,1.

We agreed to carry out our testing on KOTH's '94nop hill, since it returns challenge results a little faster than Pizza. The original version of nPaper scores 100.32 - losing to scanners and tying against everything else.

What we need to do is take a close look at each section of the paper and see how it interacts with some typical opponents...

The mov.i #1,}1 silk-imp bomb which Paul has created tends to act similarly to a standard imp while in empty core, carrying any enemy processes executing it forward to the next section of code. The mov.i #1,{1 bomb of Fugitive doesn't have this disadvantage and against a-driven imps it should help convert a few ties into wins.

As a consequence of changing to Fugitive's bomb, we need to change the line following the bomb to mov x,<y. Let us test this theory against the hill...

nPaper now scores 118.61 and as expected shows an improvement against the Stone/imps on the hill, with the exception of Jade which we suspect may use standard b-driven imps. Also, a small increase in score was observed against the majority of scanners.

#W	#L	#T	Opponent	#W	#L	#T	Opponent
86	15	149	The Stormbringer	0	9	241	Jade
78	12	160	The Pendragon	65	37	148	Vain
60	24	166	Blacken	53	41	156	PC

Do the advantages of the djn.f attack outweigh the disadvantages? Simply replacing the djn with a jmp scores worse, 117.47. However, jmz has been used successfully in a number of papers (including the classics Mice and Molerat) to determine if a pointer which should be zero has been somehow corrupted. Let us then try a couple of variants of this technique:

```
     mov   {pap2,  {pap3 ; scores 123.62
pap3:jmz.a pStep3, *0

     mov   {pap2,  <pap3 ; scores 122.76
pap3:jmz.a @0,     pStep3
```

A substantial improvement. Of the two variants we tested, the former appears to score higher by almost a point. However, against most warriors the two versions scored about the same. The exception is against myBlur - the former scores 148.4 and the latter 115.2 :-)

Having improved the attack, we now need to concentrate on ways in which the replication mechanism might be improved... Our first idea was to reduce the number of processes the paper requires from 8 to 6, by including an extra copy instruction in the first silk launcher as Macrae describes in his text accompanying Benj's Revenge (CW64). However, since this scored a mere 116.25 points; it appears this technique isn't suited to nPaper. (Can you think why?)

Instead we opted for simply booting a second copy of the paper half way around core for a score of 127.12. Now let us see how much we can improve on this score by optimizing the steps.

First the dumb brute force method was tried. A simple program generates copies of the paper with random constants. These are then battled against a small selection of warriors to see which scores the highest. After testing over 200 sets of constants, we had a warrior capable of scoring 127.41 points on '94nop.

An alternative approach is needed... Perhaps we could improve the steps by making random small tweaks to the steps we currently have. A program

was written to change one or two constants at a time by a small multiple of 8... After testing over 100 tweaks, we found one which could score 128.08 on the hill.

Our final attempt at optimization proved a little more successful. We replaced the two bombing instructions with nops and optimized the three replication constants using the DBF (dumb brute force) method. Next, the highest scoring set of pSteps were chosen and the nops were replaced with the bombing instructions. The bombing steps x and y were then optimized using DBF which left us with a warrior scoring 132.88 :-) NPaper now scores even more spectacularly against those annoying stone/imps:

#W	#L	#T	Opponent	#W	#L	#T	Opponent
152	2	96	The Stormbringer	2	4	244	Jade
131	7	112	The Pendragon	113	24	113	Vain
83	10	170	Blacken	82	23	145	PC

Since nPaper is now capable of entering the lower end of both the ’94nop and ’94 draft hills, we have fulfilled our original criterion. However, we still haven’t added a qscan which is traditionally included in a paper warriors.

>From previous experience, we know how effective mini-qscans can be. Therefore we chose to employ a Q^3 trimmed down to scan fewer locations. A short series of test submissions showed the score seemed to peak at 33 scans, which we can implement in 3 table entries. We also put the unused b-fields to use decrementing pockets of core.

```
;redcode-94
;name nPaper II
;author Paul-V Khuong
;strategy MiniQ^3 -> Paper
;assert CORESIZE==8000

     org qGo

     pStep1 equ 560
     pStep2 equ 2680
     pStep3 equ -1120

     x equ -3781
     y equ -2013

pGo: spl   1,      >424
     spl   1,      {761
     spl   1,      {933
     mov   {pap1,  {pBoo
pBoo:spl   pEnd+4000,{2093
pap1:spl   @pEnd,  <pStep1
     mov.i }pap1,  >pap1
pap2:spl   @0,     {pStep2
     mov.i }pap2,  >pap2
     mov.i #1,     {1
     mov   x,      <y
     mov.i {pap2,  <pap3
pap3:jmz.a @0,     pStep3
pEnd:

     a for 45
     dat   0,0
     rof

     qf equ qKil
     qs equ (qd*2)
     qd equ 107
     qi equ 7
     qr equ 11

;    -+)>] 0/1 cycles [(<+-
```

```
qGo: seq   qd+qf+qs,    qf+qs      ; 1
     jmp   qSki,        {qd+qf+qs+qi
     seq   qd+qf+6*qs,  qf+6*qs    ; B
     jmp   qFas,        {qd+qf+6*qs+qi
     seq   qd+qf+5*qs,  qf+5*qs    ; B-1
     jmp   qFas,        <qBmb
     seq   qd+qf+7*qs,  qf+7*qs    ; B+1
     jmp   qFas,        >qBmb
     seq   qd+qf+9*qs,  qf+9*qs    ; A-1
     djn   qFas,        {qFas
     seq   qd+qf+10*qs, qf+10*qs   ; A
     jmp   qFas,        {qFas

;    -+>)] 2 cycles [(<+-

     seq   qd+qf+3*qs,  qf+3*qs    ; C
     jmp   >qFas,       {qd+qf+3*qs+qi
     seq   qd+qf+2*qs,  qf+2*qs    ; C-1
     jmp   >qFas,       {qSlo
     seq   qd+qf+4*qs,  qf+4*qs    ; C+1
     jmp   >qFas,       }qSlo
     seq   qd+qf+12*qs, qf+12*qs   ; B*C-B
     jmp   qSlo,        {qSlo
     seq   qd+qf+15*qs, qf+15*qs   ; B*C-C
     jmp   qSlo,        <qBmb
     seq   qd+qf+21*qs, qf+21*qs   ; B*C+C
     jmp   qSlo,        >qBmb
     seq   qd+qf+24*qs, qf+24*qs   ; B*C+B
     jmp   qSlo,        }qSlo
     seq   qd+qf+27*qs, qf+27*qs   ; A*C-C
     djn   qSlo,        {qFas
     seq   qd+qf+30*qs, qf+30*qs   ; A*C
     jmp   qSlo,        {qFas
     sne   qd+qf+18*qs, qf+18*qs   ; B*C
     jmz.f pGo,         qd+qf+18*qs-10

qSlo:mul.ab #3,         qKil       ; C=3
qFas:mul.b qBmb,        @qSlo
qSki:sne   >3456,       @qKil
     add   #qd,         qKil
qLoo:mov   qBmb,        @qKil
qKil:mov   qBmb,        *qs
     sub   #qi,         qKil
     djn   qLoo,        #qr
     jmp   pGo,         >10        ; A=10
qBmb:dat   {qi*qr-10,   {6         ; B=6
     end
```

So how does our final version score? King of the ’94nop and in the top ten on the ’94 draft :-) On entering the ’94nop hill it scored 40%+ wins against 11 of the warriors - 50%+ against 7. However, it would not surprise us to see a few more b-driven imps appearing on the hills...

 1 36/ 22/ 42 nPaper II Paul-V Khuong 151 1

Extra Extra - SnooPy by Paul Kline

You may remember Alladin’s Cave, onetime leader on Pizza’s 94 hill. I thought it might still have some potential and started working on a replacement, using the same base components and changing over to a p^3 switcher. I really could not get it going however, the one-shot scanner just is no longer strong enough and AC would end up carouseling the various parts against stronger opponents. This is one of the problems with p-programming, if you do not have a good ’stopper’ in there, you end up rotating weaker opponents and give up way too many losses.

So I went looking for some good code, especially something that would perform well against stone-imps and strong silks. The modern stone-imps seem to be structured similarly, a small stone with core wipe and a small imp-pump that is spaced far away from the stone. Both are hard to find by

scanning, and a core-clear takes too long to kill them together. My approach was to try a quick one-pass something that would stun at least one of the parts with spl's, followed by a dclear. That way the dclear would have more time to do its job, and the imp-spiral would not grow too long.

I went through a number of Torch and vamp variations, but finally settled on a Blur attack, one scanning pass and a dclear. It works pretty well against stone-imps and not so well against stronger silks. Additional stunning would be useful but to kill s-i's you have to start dclear-ing early, or you will not have time to kill all the spl's and the imp.

Other p-spacers can be expected to try a simple stone which is deadly against scanners, so I added a paper component. After much diddling I selected a variation on an old theme of mine, which is a non-silk replicator with a lot of imp-deadly dat-bombing. This version kills s-i's like Rosebud and Blue Funk about 50% of the time, but is mainly guaranteed to at least get a tie. It also effectively kills a class of non-looping silk replicators. Because they do not loop, they act like simple hopper generators, once all the generators are dead, the hoppers are quite vulnerable. CC Paper is a good example.

To protect the replicator against HSA and f-scan attacks I added a Wimp, which is just a JMP #0,#0 program that is invisible to them.

For a little more punch against certain opponents I included the one-shot dclear component from Alladin's Cave.

SnooPy is a good all-round performer, so far no programs on the hill are killing it badly and it is not killing anything else badly either (except one new one :-). Some challengers are giving up nearly 90% losses however, which is interesting. I think what is happening is that while SnooPy does a 16-byte forward scan in 3 steps (actually a 10 and a 6), the opponent is doing a backward scan with a smaller step or at a slower rate. I described this situation in an old Push Off article and it is fatal to the slower program. Other than that I can not explain such a high ratio.

The p-code drives the trio on successive losses from scan to paper to one-shot and round again. The only variation is that if the paper gets a tie it returns to the scanner, which works quite well when the opponent is a replicator or imp.

```
;redcode-94
;name SnooPy
;author P.Kline
;assert CORESIZE == 8000
;strategy blurish scanner, paper, oneshot-clear
;strategy did i mention a wimp?

w0 EQU vBoot
w1 EQU slPaper
w2 EQU cBoot
PSTATE EQU 278

wimp      jmp    #0        ,#0     ; frustrate HSA-types, used with paper
     for 15
         dat 0,0
     rof
clGate    jmp    OsClear,OsClear-6 ; one-shot to a dat-clear
clIncr    dat    13     ,13
OsClear   add    clIncr ,clGate
          sne.x  *clGate,@clGate
          djn.f  OsClear,<-1500
clSpl     spl    #0     ,<clGate
          mov    clBomb ,>clGate
          djn.f  -1     ,>clGate
clBomb    dat    <5535  ,1-clGate
          dat    0,0
btClear   jmp    1000   ,clGate+10-btV
```

```
       for 5
          dat 0,0
       rof
think   ldp.a    #0      ,in
        ldp.a    #PSTATE ,table
        mod.ba   *in     ,table
        stp.b    *table  ,#PSTATE

                         ; S  L W T
table   jmp }0   ,0441   ; 00 1 0 0
        dat #w0  ,0154   ; 01 2 0 1 ; w0 = scanner
        dat #w0  ,0163   ; 02 3 2 1 ; w1 = paper
        dat #w0  ,0092   ; 03 4 1 2 ; w2 = one-shot/clear
        dat #w1  ,0102   ; 04 6 4 3
        dat #w2  ,0446   ; 05 6 5 5
        dat #w2  ,0362   ; 06 2 5 2
        dat #w2  ,0362   ; 07 2 5 2
        dat #w2  ,0362   ; 08 2 5 2

in      dat  0,8  ; must have non-zero b-field in the previous cell
        dat  0,7
        dat  0,9

cBoot     mov    btClear  ,btV     ; boot one-shot or scanner
vBoot
     a for 10
          mov    <btV     ,{btV
       rof
btV       jmp    vPtr+10+16*150     ,vPtr+10

       for 10
          dat 0,0
       rof

vStep     equ    16
vGate     equ    (vPtr-3)
Snoop

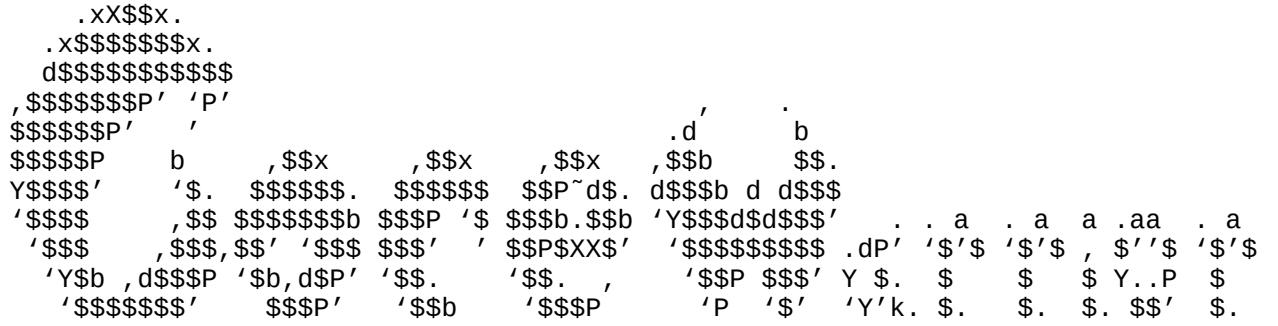
vPtr      mov    vScan    ,6000    ; Blur-type scanner
vNext     mov    vIncr    ,>vPtr
vScan     seq    vStep-6  ,vStep
          mov.ab vScan    ,vPtr
          add    vIncr    ,vScan
          djn    vNext    ,#7900/16
vIncr     spl    #vStep   ,#vStep
          mov    vClr     ,>vGate
          djn.f  -1       ,>vGate
vClr      dat    <2667    ,2-vGate
     for 8
         dat 0,0
     rof
slPaper  spl   wimp
         spl   1 ,{1000
         spl   1 ,{2000
         spl   1 ,{3000
p1s      mov   p1b,>8              ; imp- and stone-killing paper
p1c      mov   <p1s,<p1n           ; pretty good at killing silks too
p1n      spl   @p1n,>-1356
         mov   p1b,<p1n
         mov   p1b,<-1000
         mov   p1b,>200
         jmn.f @0,>p1s
p1b      dat   <2667,<5334

         end   think
```

"History has pretty well established that no program is going to last forever, publishing accelerates the demise yet advances the game."

Beppe Bezzi <giuseppe.bezzi@galactica.it>, Philip Kendall <pak21@cam.ac.uk>,
Anton Marsden <anton@paradise.net.nz>, John Metcalf <grumpy@digitald.uk.com>
and Christian Schmidt <schmidt@chiral.apchem.nagoya-u.ac.jp>

From news-rocq!jussieu.fr!fu-berlin.de!server1.netnews.ja.net!hgmp.mrc.ac.uk!pegasus.csx.cam.ac.uk!not-for-mail Wed Dec 15 15:40:23 1999
Article: 11072 of rec.games.corewar
Path: news-rocq!jussieu.fr!fu-berlin.de!server1.netnews.ja.net!hgmp.mrc.ac.uk!pegasus.csx.cam.ac.uk!not-for-mail
From: Philip Kendall <pak@ast.cam.ac.uk>
Newsgroups: rec.games.corewar
Subject: Core Warrior 76
Date: 14 Dec 1999 16:28:15 +0000
Organization: University of Cambridge, England
Lines: 684
Sender: pak@cass52.hoyle.star.fleet
Message-ID: <ye83dt5sd0g.fsf@cass52.hoyle.star.fleet>
NNTP-Posting-Host: cass52.ast.cam.ac.uk
X-Newsreader: Gnus v5.5/Emacs 20.2
Xref: news-rocq rec.games.corewar:11072



Issue 76 12 December, 1999

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the ’94 draft hill, the beginner hill and the ’94 no-pspace hill. Coverage will follow where ever the action is. If you haven’t a clue what I’m talking about then check out these five-star internet locals for more information:

FAQs are available from:
  http://www.koth.org/corewar-faq.html
  http://homepages.paradise.net.nz/~anton/cw/corewar-faq.html

The ftp site and it’s mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars ;pMARS home page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;KOTH
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the above pages for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

Greetings...

Apologies for the length of time passed since last issue. Fortunately however, plenty of fascinating redcode has been published. New entries on Koenigstuhl’s ’94 Hill include Jade (16th), nPaper II (19th) and Goonie (20th). Interestingly, Ian Oversby has the only two non-scanners in the top ten with Newt (4th) and Recovery (10th).

-- John Metcalf

Current Status of the Internet Pizza Server ICWS ’94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W / %L / %T	Name	Author	Score	Age
1	40.9/ 33.7/ 25.4	Origami Harquebus	mjp	148.0	11
2	36.4/ 29.7/ 33.8	Vilex	Ken Espiritu	143.1	15
3	41.0/ 39.5/ 19.6	SnooPy	P.Kline	142.5	10
4	38.4/ 35.5/ 26.0	Self-Modifying Code	Ben Ford	141.4	63
5	30.1/ 19.9/ 50.1	Wintermute	John Metcalf	140.3	4
6	29.1/ 18.4/ 52.5	Jade	Ben Ford	139.8	40
7	31.7/ 24.7/ 43.6	Digital Dream	Christian Schmidt	138.7	0
8	38.1/ 37.5/ 24.4	Recycled Bits	David Moore	138.7	117
9	26.5/ 14.8/ 58.7	Return of the Fugitive	David Moore	138.3	44
10	26.0/ 14.5/ 59.5	Cinammon	John Metcalf	137.5	13
11	30.5/ 23.7/ 45.7	Stonewashed	Christian Schmidt	137.4	57
12	28.0/ 19.3/ 52.8	Jaguar	Christian Schmidt	136.7	14
13	38.8/ 41.2/ 20.0	Snowman	John Metcalf	136.4	61
14	34.2/ 32.6/ 33.1	Am I alive?	Christian Schmidt	135.8	16
15	26.2/ 17.7/ 56.0	Stylized Euphoria	Ken Espiritu	134.7	7
16	27.7/ 21.5/ 50.8	EvoP 3	Ken Espiritu	134.0	20
17	35.6/ 37.8/ 26.7	Trefoil the original	Steve Gunnell	133.4	8
18	37.7/ 42.1/ 20.2	myBlur2	Paulsson	133.3	28
19	28.1/ 23.0/ 48.9	nPaper II	Paul-V Khuong	133.3	20
20	25.4/ 17.8/ 56.8	Safety in Numbers	Ken Espiritu	133.1	14
21	29.7/ 26.6/ 43.7	Trefoil b	Steve Gunnell	132.9	0
22	27.0/ 21.2/ 51.8	Exor	Ken Espiritu	132.7	20
23	30.6/ 28.9/ 40.5	The Stormbringer	Christian Schmidt	132.4	117
24	40.2/ 48.6/ 11.2	Kenshin c	Steve Gunnell	131.8	0
25	37.6/ 45.6/ 16.7	Qshot	Christian Schmidt	129.7	0

Age since last issue: 20 (25 last issue, 43 the issue before)
Days since last issue: 101 (37 last issue, 61 the issue before)
Average age: 28 (33 last issue, 24 the issue before)
Average score: 137 (141 last issue, 141 the issue before)
Average movement: -4.2 (-0.4 last issue, -8.3 the issue before)
Warriors surviving: 9 (13 last issue, 4 the issue before)

The top 25 warriors are represented by just 10 independent authors: Schmidt with 6, Espiritu with 5, Gunnell and Metcalf with 3 each, Moore and Ford with 2, and the remaining four authors with a single warrior. (10 authors last issue, 9 the issue before)

Pihlaja returns to the 94 hill, claiming a strong hold on top rank with his Origami Harquebus scanner/paper. Only myBlur successfully gains rank since last issue - moving up 6 places... The average movement for the 9 warriors which survive in the same version since last issue is down 4.2 ranks.

The top four positions are held by pspacers. Only Paulsson and Khuong maintain a presence on the ’94 hill without one. Maybe scanners would do well to include brainwashing, since they suffer more than most...

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94 - What’s New (Sorted by rank and score)

#	%W / %L / %T	Name	Author	Score	Age
1	38.7/ 35.6/ 25.6	Origami Harquebus	mjp	141.9	1
3	39.9/ 37.8/ 22.3	Vile	Ken Espiritu	142.0	1
3	37.3/ 33.8/ 28.9	Am I alive?	Christian Schmidt	140.9	1
3	29.8/ 21.1/ 49.1	Wintermute	John Metcalf	138.5	1
4	35.7/ 32.3/ 32.0	Vilex	Ken Espiritu	139.1	0
7	41.3/ 44.1/ 14.6	Stalker	P.Kline	138.6	0
7	29.9/ 22.6/ 47.5	Exor	Ken Espiritu	137.3	0
7	29.8/ 22.9/ 47.3	EvoP 3	Ken Espiritu	136.7	0
9	39.9/ 43.6/ 16.5	Ignominy	Ian Sutton	136.2	1

9	28.8/ 22.6/ 48.6	Baseline Deluxe	Ken Espiritu	135.0	1
10	38.2/ 43.3/ 18.5	Jinx	Christian Schmidt	133.0	0
11	28.4/ 21.7/ 49.9	Jaguar	Christian Schmidt	135.1	1
11	26.4/ 18.2/ 55.4	Safety in Numbers	Ken Espiritu	134.7	0
11	25.6/ 18.3/ 56.1	Stylized Euphoria	Ken Espiritu	132.9	1
12	29.3/ 28.1/ 42.6	Trefoil b	Steve Gunnell	130.4	0
13	24.1/ 16.2/ 59.7	Cinammon	John Metcalf	132.0	1
16	37.2/ 42.9/ 19.9	SnooPy	P.Kline	131.5	0
18	38.4/ 49.7/ 11.9	Kenshin c	Steve Gunnell	127.1	0
19	34.2/ 38.7/ 27.1	Trefoil the original	Steve Gunnell	129.6	1
21	38.2/ 49.7/ 12.1	Kenshin	Steve Gunnell	126.8	1
22	26.8/ 27.5/ 45.6	Trefoil a	Steve Gunnell	126.1	1
23	37.7/ 47.3/ 15.0	ping pong	Steve Gunnell	128.1	1
23	27.5/ 28.9/ 43.6	Digital Dream	Christian Schmidt	126.2	0
24	36.8/ 45.2/ 17.9	Eraser II	Ken Espiritu	128.4	1
24	26.2/ 26.8/ 47.0	Experimental	John Metcalf	125.6	1
25	35.0/ 48.2/ 16.8	Qshot	Christian Schmidt	121.7	0

Players entering hill since last issue: 7 (9 last issue, 8 the issue before)
Average rank of new entries: 13 (11 last issue, 9 the issue before)

Some interesting ideas make up for the lack of hill activity. Amoung the more unusual are a self-modifying imp launcher, anti-Carbonite and delayed imps. Undoubtedly, there will be some interesting tricks in several of the other new warriors too... For an anti-Carb p-space component, Pihlaja's back-tracker from Quick Cooking makes a good starting point.

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94 - What's No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	32.0/ 40.8/ 27.2	death by redcode	Simon Wainwright	123.2	91
26	32.5/ 40.6/ 26.9	Stranger	John Metcalf	124.3	73
26	27.9/ 27.8/ 44.3	One Step Beyond	John Metcalf	127.9	67
26	32.5/ 38.7/ 28.8	Draken Fire	Ben Ford	126.2	63
26	28.6/ 29.9/ 41.5	Icen	Ben Ford	127.4	50
26	20.8/ 18.6/ 60.5	No More Innocuous	Leonardo H. Liporati	123.1	49
26	26.4/ 26.3/ 47.3	Slippery Eels	Ben Ford	126.5	42
26	37.2/ 47.7/ 15.1	Qshot	Christian Schmidt	126.8	34
26	1.6/ 2.3/ 0.1	SnooPy	P.Kline	4.9	33
26	36.7/ 46.8/ 16.5	goonie	David Moore	126.7	29
26	35.4/ 46.8/ 17.8	Stalker	P.Kline	124.0	15
26	31.7/ 36.2/ 32.1	The Endless Knot	John Metcalf	127.2	14
26	39.5/ 51.4/ 9.1	QHSA	Ken Espiritu	127.6	12
26	0.5/ 0.5/ 3.0	Exor	Ken Espiritu	4.5	12
26	2.6/ 1.3/ 0.1	Jinx	Christian Schmidt	7.8	11
26	29.1/ 31.0/ 39.9	Sword'n'shield	Christian Schmidt	127.3	10
26	36.4/ 46.5/ 17.1	Ignominy	Ian Sutton	126.3	10
26	2.0/ 1.3/ 0.7	Vile	Ken Espiritu	6.6	5
26	25.8/ 25.2/ 49.0	Baseline Deluxe	Ken Espiritu	126.4	4
26	35.7/ 48.8/ 15.5	ping pong	Steve Gunnell	122.5	3
26	1.5/ 1.7/ 0.9	Trefoil a	Steve Gunnell	5.2	3
26	0.3/ 0.5/ 3.1	EvoP	Ken Espiritu	4.1	3
26	26.5/ 27.5/ 46.0	Experimental	John Metcalf	125.6	2
26	37.6/ 50.3/ 12.0	Kenshin	Steve Gunnell	124.9	2
26	35.6/ 46.5/ 18.0	Eraser II	Ken Espiritu	124.6	2
26	35.1/ 47.3/ 17.6	TheFlyOnTheWall	Christian Schmidt	122.9	1

Wainwright, Liporati and Sutton leave the hill completely.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
8	38.1/ 37.5/ 24.4	Recycled Bits	David Moore	138.7	117
23	30.6/ 28.9/ 40.5	The Stormbringer	Christian Schmidt	132.4	117
4	38.4/ 35.5/ 26.0	Self-Modifying Code	Ben Ford	141.4	63
13	38.8/ 41.2/ 20.0	Snowman	John Metcalf	136.4	61
11	30.5/ 23.7/ 45.7	Stonewashed	Christian Schmidt	137.4	57

The age gap between the ancient duo and the rest of the pack becomes even larger, though Stormbringer isn't looking as healthy as it once was.

The Extended New Hall of Fame: * indicates the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior
15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner
20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper
26	Tiberius 3.1	Franz	130	Q^2 -> Paper
27	Ultraviolet-B	Ken Espiritu	120	Q^2 -> Paper
28	Recycled Bits	David Moore	117*	P-warrior
=	The Stormbringer	Christian Schmidt	117*	Q^2 -> Stone/imp
=	obvious to those who k	Robert Macrae	117	Q^2 -> Paper
31	Solomon v0.8	Ian Oversby	116	Stone and scanner
32	CC Paper 3.3	Franz	107	Q^2 -> Paper
33	mrb-test	M R Bremer	106	*Unknown*
34	T.N.T. pro	Maurizio Vittuari	105	Bomber
=	Pulp v0.5	Ian Oversby	105	Q^2 -> Paper
36	Fugitive	David Moore	102	Q^2 -> Paper/imp
37	Vengeance	Robert Hale	101	Q^2 -> Stone/imp
38	Jack in the box II	Beppe Bezzi	100	P-warrior
=	Fire and Ice	David Moore	100	P-warrior
40	Oblivion	Ian Sutton	99	P-warrior
41	Silver Talon 1.2	Edgar	93	Scanner
42	death by redcode	Simon Wainwright	91	Q^2 -> Bomber
43	Bodge 1	Robert Macrae	85	Q^2 -> Scanner
44	Inferno 2.4	Philip Kendall	84	Qscan -> Bomber
45	Test	Anton Marsden	83	*Unknown*
=	NCC-1701-A	Philip Kendall	83	P-warrior
47	RetroQ	Paul Kline	82	Q^2 -> Paper
48	Tornado 4	Beppe Bezzi	78	Bomber
49	He Scans Again	Paul Kline	76	Scanner
50	Digitalis 4	Christian Schmidt	73	Q^2 -> Clear/imp
=	Stranger	John Metcalf	73	Q^3 -> Bomber

Death by redcode reaches rank 42, it’s final resting place. Another qscanning bomber, Stranger, only just scrapes into the HoF with an age equal to the age of Digitalis. The two remaining active warriors climb 11 places to reach 28th.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.

rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	58.1/	34.2/	7.7	Nuke it!	Silvio Sampietro	182.0	80
2	55.2/	33.9/	10.9	Grand Mal 1.0	Ransom Smith	176.4	15
3	45.2/	24.2/	30.6	PC	WFB	166.3	52
4	48.7/	38.1/	13.3	Golden Gun	Ken Hubbard	159.3	17
5	49.0/	41.1/	9.9	Forgotten Lore	Simon Duff	157.0	31
6	45.9/	36.1/	17.9	the boy’s a time bomb	aCM	155.7	8
7	47.6/	39.9/	12.5	Gomjabbar V	Ingo S Kacza	155.3	12
8	45.6/	39.1/	15.3	da mutant	Paul-V Khuong	152.1	61
9	43.4/	35.5/	21.1	jollyblu	aCM	151.3	16
10	45.3/	44.3/	10.4	Nuke it! (V 0.2)	Silvio Sampietro	146.2	87
11	44.1/	43.1/	12.8	Wild-Fire	P_.V_.K./John Metcal	145.1	62
12	36.2/	27.7/	36.1	Quickest Zeta	Leonardo Humberto	144.7	83
13	43.8/	43.8/	12.4	B-52 #001	A.S. Mehlos	143.8	35
14	43.9/	44.0/	12.1	Neverland II	John Metcalf	143.7	51
15	41.3/	39.0/	19.7	Arsonic C	P._V._K.	143.6	59
16	45.5/	47.5/	7.0	Kenshin d	Steve Gunnell	143.4	3
17	41.0/	40.7/	18.3	FireMaster 2	P._V._K.	141.4	57
18	38.9/	36.5/	24.6	DiHydrogen Monoxide	Josh Yeager	141.2	14
19	40.9/	41.1/	18.1	Simpsons4Ever v0.4	Maurice Fern\201 ndez	140.7	37
20	38.2/	36.5/	25.3	Silken Half Life v4.0	Dale Neal	139.8	88
21	31.3/	24.6/	44.0	2stoned	aCM	138.0	22
22	29.9/	22.7/	47.4	Caladan II	Ingo S Kacza	137.2	34
23	37.2/	40.3/	22.5	Silken Half Life	Dale Neal	134.1	91
24	39.8/	48.1/	12.1	Gomjabbar IV	Ingo S Kacza	131.5	13
25	23.4/	57.3/	19.3	x12	Herve Lepaisant	89.5	1

After an age of 34 since last issue, Nuke It! still dominates. Hardcore and Quicker Zeta both retired, and Quick Zeta almost made it, dropping off age 99.

Current Status of the KOTH.ORG ’94 No Pspace Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 250
instruction set: ICWS ’94 Draft, excluding ldp and stp

#	%W/	%L/	%T	Name	Author	Score	Age
1	36/	20/	44	Uninvited	John Metcalf	151	6
2	45/	42/	13	Stalker	P.Kline	149	39
3	36/	26/	38	Experimental	John Metcalf	146	10
4	35/	24/	41	Omnibus	John Metcalf	146	63
5	32/	19/	48	Jade	Ben Ford	146	123
6	44/	43/	14	Eraser II	Ken Espiritu	145	11
7	43/	42/	15	Zooom...	John Metcalf	145	190
8	33/	21/	47	nPaper II	Paul-V Khuong	144	54
9	36/	28/	35	Blacken	Ian Oversby	144	301
10	32/	20/	48	Jaguar	Christian Schmidt	143	41
11	32/	21/	47	EvoP 3	Ken Espiritu	143	50
12	43/	43/	14	Boys are Back in Town 1.1	Philip Kendall	143	316
13	43/	44/	14	Jinx	Christian Schmidt	142	17
14	43/	45/	12	Win!	David Moore	142	289
15	45/	48/	8	Kenshin	Steve Gunnell	142	9
16	28/	15/	57	Cinammon	John Metcalf	141	19
17	32/	27/	41	Icen	Ben Ford	137	148
18	32/	28/	40	Ant Factory	Christian Schmidt	137	149
19	41/	45/	14	Qshot	Christian Schmidt	136	60
20	42/	49/	9	htest	P.Kline	135	1

Four old warriors met their end during the 52 successful challenges since last issue, Recovery (280), PC (134), The Pendragon (120) and goonie (108). Only Blacken climbed, moving up a mere 3 ranks. For the 10 warriors which

survive from last issue, the average loss of rank is 5 places.

Tournament Results - Ilmari's Mini Tournament #2:

Ilmari's Mini Tournament #2 is over. The 22 competitiors each consisted of just 4 redcode instructions, intended to battle for supremacy in an 80 cell 'teenie-weenie' core.

And the winner was - Dave Hillis with his h1_36.red - which amazingly was created using a genetic algorithm. This illustrates how effective redcode evolved in the correct environment can be.

#	Score	%W	%L	%T	Strat	Name	Author
1	6882	67.6	21.1	11.2	clear	h1_36.red	Dave Hillis
2	5716	54.9	31.9	13.1	clear	R-clear	Ken Espiritu
3	5690	55.6	34.1	10.2	clear	Petit Mal	Ransom Smith
4	5634	54.0	32.7	13.1	clear	00 Clear	Christian Schmidt
5	5577	50.5	27.4	22.0	paper	invicta	John Lewis
6	5273	52.6	41.1	6.1	stone	Philosopher's Stone	John Metcalf
7	5134	47.7	35.7	16.4	clear	Target Practice	Brian Haskin
8	4924	47.6	42.0	10.2	clear	Those Lovely Banana...	mjp
9	4912	46.9	41.0	11.9	clear	pumpkin 4x	Simon Wainwright
10	4876	41.8	31.8	26.3	stone	Little scare	Beppe Bezzi
11	4318	35.9	37.5	26.4	stone	Obvious	Leonardo H. Liporati
12	4308	28.8	23.6	47.4	imp	Ring Thing	Simon Duff
13	4109	33.8	39.8	26.3	s/imp	MyGunIsQuick	P.Kline
14	4037	39.6	53.5	6.7	scan	Red Carpet	Robert Macrae
15	3892	28.4	35.6	35.8	paper	IMT#2_w2	Herve Lepaisant
16	3889	28.3	35.7	35.8	paper	Nano Paper III	Maurice Fernandez
17	3771	26.5	35.7	37.6	p/imp	Chihuahua Chalupa	David Moore
18	3621	29.5	46.4	24.0	clear	hehehe	Anders Rosendal
19	3562	30.0	49.2	20.6	clear	Mini-Me	WFB
20	3078	30.2	64.7	4.9	clear	Dumb_Luck	Kevin Brunelle
21	2732	10.1	35.1	54.7	stone	A Little Something	Planar
22	2307	16.9	61.9	21.1	clear	Evolved	C.Stubbs

The strategies in the table above provide the most minimal details and in several cases are over-simplified. However, reading through the source reveals interesting techniques plentiful.

Thanks to Ilmari for conceiving and hosting a superb tournament. Check out the tournament homepage at:

http://www.sci.fi/~iltzu/corewar/imt2

Extra Extra -
Safety In Numbers by Ken Espiritu

Paper launched imp spirals are not new. They have been successfully used before on the Hill. Some early examples include Diehard and theMystery. More modern versions include Terkonit and the Fugitive.

There are many ways to launch imp spirals via paper: carrying an imp spiral launcher in the paper (Diehard), binary launching the paper (theMystery, Terkonit) or using steps in the paper which form imp spirals (the Fugitive). I chose binary launching since it gives the most flexibility in chosing the steps for the replicator. The problem with binary launch is that the paper spends a lot of time at boot up, since it needs to boot 2 copies into core before it can create imp spirals for 3-point imps.

Initially, the idea was to improve a paper I made a long time ago called Bashful, which was an 8 process binary launched paper. One problem with it was it was very susceptible to scanner attacks. By using lower processes, scanners become less of a problem since the paper spends less time at each location in core - which creates more decoys for the scanner to attack. Also, spl carpets are less effective at stunning since only 4 processes are caused to split versus 8. The problem is stones can more readily kill the paper since the paper is longer and has more vulnerable instructions. Since the paper is splitting very rapidly, it takes time before the child can get its turn, and while it is waiting the stone could damage the replicator

causing it to die when it's turn comes. By using imp spirals, destruction of the replicator section doesn't hurt the imp spirals formed.

At first I tried to use as few processes as possible, so I attempted to use just 3 processes. This didn't score very well and it seemed it didn't bomb enough; it was getting a very high amount of ties. Next I went to 4 processes and as I needed an extra instruction in the paper, I chose to use the anti-imp and anti-djn bomb from the Fugitive (mov.i #1, {1). This bomb is very good at killing a-field driven imps such as mov.i #2667, *0. You may wonder would the bomb we are carrying affect our own imps? Yes, but the carpet bombs laid down typically avoid hitting our own imps. Also the bomb forces any type of djn whether it be djn.a, djn.b, or djn.f to fall through, causing stones which use djn to lose built up processes, or drop processes into their end game strategy. It also causes coreclears to drop through if djn is used for loop back to the clear.

To understand binary launching we first must look at how a simple imp spiral can be formed. Below is code to start a 3 process 3-point imp spiral:

```
        spl   first
        spl   last

middle  jmp   imp+2667*1     ;process 1
last    jmp   imp+2667*2     ;process 2
first   nop   0              ;process 0

imp     mov.i #0, 2667
```

What we see is that all processes must be started at the same time and in the correct sequence. Order of execution is imp+2667*0, imp+2667*1, imp+2667*2, imp+2667*3, imp+2667*4, etc. So to make a paper launching version we must place the paper at the proper locations also and start it in the correct sequence.

```
p equ 3                      ;3 processes
        spl   1
        mov.i {0, #0         ;same as mov.i -1, #0
        mov   <middle, {middle
        spl   first
        spl   last

middle  jmp   2667*1+top+p, top+p  ;processes 3-5
last    jmp   2667*2+top+p, top+p  ;processes 6-8
first   mov   <last,   {last       ;processes 0-2

top     spl   @top,    >1234
        mov   }top,    >top
imp     mov.i #0, 2667
```

Finally computer optimization was used to optimize both the bombing step and paper's step constants. The optimization was performed by using a mini-hill tournament which has variants of the paper which were scored against each other by using modern scanners, one-shots and incendiary bombers as opponents. After a couple of days of computation time, papers were outputted based on score and age, and are tested on the real Hills.

Some improvements to this paper are the use of the decrements in the spl b-fields in conjunction with the first carpet bomb run to create a decoy to set off one-shots. Later, I added the new mini-q^3 that was published in nPaper (Core Warrior 75), I also adjusted the q^3 constants to give it the best score possible on the Hill with the paper.

Below is the code for Safety in Numbers:

```
;redcode-94
;name Safety in Numbers
;author Ken Espiritu
;strategy q^3 -> imp/paper
;strategy binary launched imp spirals
;assert 1
```

```
org qGo

p equ 4
stepa equ -3604
stepb equ -2748
bstep equ -1306
istep equ 2667

pGo     spl 1, {imp+bstep+1+2*0       ; 4 processes
        spl 1, {imp+bstep+1+2*1
        mov {top, {middle
        mov {top, {middle
        mov <last, {last
        spl first, {imp+bstep+1+2*2
        spl last, {imp+bstep+1+2*3

middle  jmp istep*1+top+p*2, {imp+bstep+1+2*4
last    jmp istep*2+top+p*2,top+p*2
first   mov <last, {last

top     spl @top+p*2, {stepa
        mov }top, >top
        mov }top, >top
second  spl @0, >stepb
        mov }second, >second
        mov.i #1, {1
imp     mov.i #bstep, istep

for 41
        dat 0,0
rof

qf equ qKil
qs equ (qd*3)
qd equ 100
qi equ 7
qr equ 11

;    -+)>] 0/1 cycles [(<+-

qGo     seq   qd+qf+qs,    qf+qs      ; 1
        jmp   qSki,        {qd+qf+qs+qi
        seq   qd+qf+6*qs,  qf+6*qs    ; B
        jmp   qFas,        {qd+qf+6*qs+qi
        seq   qd+qf+5*qs,  qf+5*qs    ; B-1
        jmp   qFas,        <qBmb
        seq   qd+qf+7*qs,  qf+7*qs    ; B+1
        jmp   qFas,        >qBmb
        seq   qd+qf+9*qs,  qf+9*qs    ; A-1
        djn   qFas,        {qFas
        seq   qd+qf+10*qs, qf+10*qs   ; A
        jmp   qFas,        {qFas

;    -+>)] 2 cycles [(<+-

        seq   qd+qf+3*qs,  qf+3*qs    ; C
        jmp   >qFas,       {qd+qf+3*qs+qi
        seq   qd+qf+2*qs,  qf+2*qs    ; C-1
        jmp   >qFas,       {qSlo
        seq   qd+qf+4*qs,  qf+4*qs    ; C+1
        jmp   >qFas,       }qSlo
        seq   qd+qf+12*qs, qf+12*qs   ; B*C-B
        jmp   qSlo,        {qSlo
        seq   qd+qf+15*qs, qf+15*qs   ; B*C-C
        jmp   qSlo,        <qBmb
        seq   qd+qf+21*qs, qf+21*qs   ; B*C+C
        jmp   qSlo,        >qBmb
        seq   qd+qf+24*qs, qf+24*qs   ; B*C+B
        jmp   qSlo,        }qSlo
        seq   qd+qf+27*qs, qf+27*qs   ; A*C-C
```

```
        djn   qSlo,        {qFas
        seq   qd+qf+30*qs, qf+30*qs   ; A*C
        jmp   qSlo,        {qFas
        sne   qd+qf+18*qs, qf+18*qs   ; B*C
        jmz.f pGo,         qd+qf+18*qs-10

qSlo    mul.ab #3,         qKil       ; C=3
qFas    mul.b qBmb,        @qSlo
qSki    sne   }imp+bstep+1+2*5, @qKil
        add   #qd,         qKil
qLoo    mov   qBmb,        @qKil
qKil    mov   qBmb,        *qs
        sub   #qi,         qKil
        djn   qLoo,        #qr
        jmp   pGo,         >10        ; A=10
qBmb    dat   {qi*qr-10,   {6         ; B=6
        end
```

Extra Extra Extra -
Wintermute by John Metcalf

Wintermute represents the final incarnation of the stone/imp Spooky Wench, more lately known as One Step Beyond. Briefly then, Spooky Wench employed a full Q^3 and a-driven imps; One Step Beyond simply moved to a miniQ^3 and finally Wintermute changed to b-driven imps. Some improvement or other has been made to the boot code with each new version - which now utilises 5 parallel processes to copy the imp-launcher and stone.

The stone is similar in concept to the much used Carbonite, but has been designed to slow djn.f streams and d-clears with it’s dat 1,>1 bomb. The imp-launcher is almost identical to those typically used, having only one small improvement. 7-point imps are also used.

The miniQ^3 is the same as the one which nPaper II uses, with a simple alteration - the loop has been adjusted so the first of the 22 bombs is placed not on the instruction found by the scan, but where-ever this instruction’s a-field points. This has shown a slight improvement in performance against certain p-space and qscanning warriors. (Why?)

Anyhow, here is the code:

```
;redcode-94
;name Wintermute
;author John Metcalf
;strategy MiniQ^3 -> Stone/Imp
;assert CORESIZE==8000

     org qGo

     sBoot equ (sPtr+2093)
     iBoot equ (sBoot-sStep)

pGo: spl   2,           >-200      ; 5 processes
     spl   2,           >-350
     spl   1,           {-500
     mov   <sBmb,       {iPos      ; launch imp
     mov   <sPtr,       {sPos      ; launch stone
sPos:djn   sBoot+5,     #5         ; 4 processes for the stone
iPos:jmp   iBoot+5,     >-550      ; and 1 process for the imp

     sStep equ 3039
     sTime equ 3357

     spl   #0,          0
sLp: mov   sBmb,        @sP
sSel:add   #sStep,      sP
sP:  djn.f sLp,         {sSel-sStep*sTime
sBmb:dat   2,           >6         ; used as boot pointer for imp

     iStep equ 1143                ; 7-point imps
```

```
iPmp:spl   #iImp,       >-20
     sub.f #-iStep-1,   iJmp
sPtr:mov   iImp,        }iPmp      ; used as boot pointer for stone
iJmp:jmp   iImp-2*(iStep+1),>iImp+2*iStep-1
iImp:mov.i #iStep/2,    iStep

     for   41
     dat   0,0
     rof

     qf equ qKil
     qs equ (qd*2)
     qd equ 100
     qi equ 7
     qr equ 11

;    -+)>] 0/1 cycles [(<+-

qGo: seq   qd+qf+qs,    qf+qs      ; 1
     jmp   qSki,        {qd+qf+qs+qi
     seq   qd+qf+6*qs,  qf+6*qs    ; B
     jmp   qFas,        {qd+qf+6*qs+qi
     seq   qd+qf+5*qs,  qf+5*qs    ; B-1
     jmp   qFas,        <qBmb
     seq   qd+qf+7*qs,  qf+7*qs    ; B+1
     jmp   qFas,        >qBmb
     seq   qd+qf+9*qs,  qf+9*qs    ; A-1
     djn   qFas,        {qFas
     seq   qd+qf+10*qs, qf+10*qs   ; A
     jmp   qFas,        {qFas

;    -+>)] 2 cycles [(<+-

     seq   qd+qf+3*qs,  qf+3*qs    ; C
     jmp   >qFas,       {qd+qf+3*qs+qi
     seq   qd+qf+2*qs,  qf+2*qs    ; C-1
     jmp   >qFas,       {qSlo
     seq   qd+qf+4*qs,  qf+4*qs    ; C+1
     jmp   >qFas,       }qSlo
     seq   qd+qf+12*qs, qf+12*qs   ; B*C-B
     jmp   qSlo,        {qSlo
     seq   qd+qf+15*qs, qf+15*qs   ; B*C-C
     jmp   qSlo,        <qBmb
     seq   qd+qf+21*qs, qf+21*qs   ; B*C+C
     jmp   qSlo,        >qBmb
     seq   qd+qf+24*qs, qf+24*qs   ; B*C+B
     jmp   qSlo,        }qSlo
     seq   qd+qf+27*qs, qf+27*qs   ; A*C-C
     djn   qSlo,        {qFas
     seq   qd+qf+30*qs, qf+30*qs   ; A*C
     jmp   qSlo,        {qFas
     sne   qd+qf+18*qs, qf+18*qs   ; B*C
     jmz.f pGo,         qd+qf+18*qs-10

qSlo:mul.ab #3,         qKil       ; C=3
qFas:mul.b qBmb,        @qSlo
qSki:sne   >3456,       @qKil
     add   #qd,         qKil
qKil:mov   qBmb,        *qs
     sub   #qi,         qKil
     mov   qBmb,        @qKil
     djn   qKil,        #qr
     jmp   pGo,         >10        ; A=10
qBmb:dat   {qi*qr-10,   {6         ; B=6
     end
```

and Christian Schmidt <schmidt@chiral.apchem.nagoya-u.ac.jp>

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[Credit to John Metcalf for writing this. I'm just posting it -- Phil]

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                              ,    .
$$$$$P'   '                              .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
'$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$  , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 77 13 April, 2000

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
  http://www.koth.org/corewar-faq.html
  http://homepages.paradise.net.nz/~anton/cw/corewar-faq.html

The ftp site and it's mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars   ;pMARS home page
  ftp://members.aol.com/ofechner/corewar   ;Fechner ftp site

Web pages are at:
  http://www.koth.org/   ;KOTH
  http://www.ecst.csuchico.edu/~pizza/koth   ;Pizza
  http://para.inria.fr/~doligez/corewar   ;Planar

Newbies should check the above pages for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

Welcome to issue 77...

Time has passed slowly since last issue, with little sign of activity on the hills. However, there are clearly a couple of outstanding projects in progress, as evidenced by some interesting test results returned by both Pizza and Koth.

Pihlaja has revealed the secrets of Origami Harquebus, which still

dominates Pizza's '94 hill by 5 points. Other excellent code published includes Kline's Stalker...

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	42.0/	33.9/	24.1	Origami Harquebus	mjp	150.0	23
2	39.7/	34.2/	26.1	Self-Modifying Code	Ben Ford	145.1	75
3	37.3/	29.9/	32.8	Vilex	Ken Espiritu	144.7	27
4	30.7/	20.2/	49.1	Wintermute	John Metcalf	141.2	16
5	29.7/	19.1/	51.3	Jade	Ben Ford	140.2	52
6	38.7/	37.3/	24.0	Recycled Bits	David Moore	140.2	129
7	28.1/	16.9/	55.1	Tie Factory	Christian Schmidt	139.3	1
8	27.2/	15.6/	57.2	Stylized Euphoria	Ken Espiritu	138.7	19
9	29.5/	20.9/	49.6	nPaper II	Paul-V Khuong	138.1	32
10	43.3/	48.6/	8.2	Iron Curtain 3	Ken Espiritu	138.0	3
11	26.3/	16.1/	57.6	Cinammon	John Metcalf	136.6	25
12	29.3/	22.2/	48.5	Stonewashed	Christian Schmidt	136.4	9
13	25.0/	13.9/	61.0	Return of the Fugitive	David Moore	136.1	56
14	29.5/	23.6/	46.9	Unlucky Redcoder	John Metcalf	135.4	5
15	30.9/	26.9/	42.2	The Stormbringer	Christian Schmidt	134.9	129
16	32.0/	29.4/	38.5	Trefoil f	Steve Gunnell	134.6	7
17	35.7/	37.6/	26.7	Trefoil the original	Steve Gunnell	133.7	20
18	27.9/	22.3/	49.9	EvoP 3	Ken Espiritu	133.5	32
19	39.8/	46.2/	14.0	Friction	Ken Espiritu	133.3	7
20	30.4/	27.6/	42.0	Trefoil c	Steve Gunnell	133.2	12
21	27.7/	22.6/	49.7	Exor	Ken Espiritu	132.9	32
22	37.6/	42.7/	19.7	SnooPy	P.Kline	132.6	22
23	27.2/	22.5/	50.4	Jaguar	Christian Schmidt	131.8	26
24	39.2/	48.1/	12.8	Resurrection	Ken Espiritu	130.2	4
25	36.6/	43.0/	20.5	myBlur2	Paulsson	130.2	40

Age since last issue: 12 (20 last issue, 25 the issue before)
Days since last issue: 121 (101 last issue, 37 the issue before)
Average age: 34 (28 last issue, 33 the issue before)
Average score: 137 (137 last issue, 141 the issue before)
Average movement: -1.5 (-4.2 last issue, -0.4 the issue before)
Warriors surviving: 18 (9 last issue, 13 the issue before)

The top 25 warriors are represented by just 10 independent authors: Espiritu with 7, Schmidt with 4, Metcalf and Gunnell with 3 each, Ford and Moore with 2 and the others with just one warrior each. (10 authors last issue, 10 the issue before)

Snoopy drops 19 places from 3rd; nPaper climbs 10 places to 9th.

---

94 - What's New (Sorted by rank and score)

#	%W /	%L /	%T	Name	Author	Score	Age
5	25.7/	18.0/	56.2	Tie Factory	Christian Schmidt	133.4	1
7	39.6/	46.2/	14.2	Friction	Ken Espiritu	133,1	1
8	41.9/	49.8/	8.3	Iron Curtain	Ken Espiritu	134.0	1
15	35.3/	41.5/	23.2	Combatra	David Moore	129.1	1
15	29.1/	31.0/	39.9	Trefoil f	Steve Gunnell	127.3	0
16	26.1/	24.8/	49.1	Unlucky Redcoder	John Metcalf	127.4	1
19	27.9/	29.3/	42.8	Trefoil e	Steve Gunnell	126.5	1
23	37.0/	49.3/	13.8	Resurrection	Ken Espiritu	124.6	1

25	35.6/ 46.8/ 17.6	Spat the dummy II	Steve Gunnell	124.5	1
25	27.2/ 31.1/ 41.7	Skaven	Christian Schmidt	123.4	1
25	35.9/ 48.8/ 15.4	vamp/scan test 7	Ken Espiritu	122.9	1

Players entering hill since last issue: 5 (7 last issue, 9 the issue before)
Average rank of new entries: 17 (13 last issue, 11 the issue before)

Moore demonstrates p-space can be used for more than just p-switching, with Combatra, his boot distance calculator. Schmidt's brainwashing paper achieves some excellent scores, suffering only against one of Espiritu's new scanners.

---

94 - What's No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	34.4/ 45.2/ 20.4	Snowman	John Metcalf	123.7	64
26	21.4/ 19.6/ 59.0	Safety in Numbers	Ken Espiritu	123.3	23
26	29.7/ 36.0/ 34.3	Am I Alive?	Christian Schmidt	123.4	22
26	25.8/ 30.1/ 44.1	Digital Dream	Christian Schmidt	121.4	10
26	32.2/ 43.5/ 24.3	Combatra	David Moore	120.8	3
26	1.9/ 1.6/ 0.6	Trefoil e	Steve Gunnell	6.1	3
26	35.2/ 47.8/ 17.0	Qshot	Christian Schmidt	122.5	2
26	26.6/ 31.1/ 42.3	Skaven	Christian Schmidt	122.2	2
26	34.7/ 47.7/ 17.6	Spat the dummy II	Steve Gunnell	121.8	2
26	35.0/ 49.3/ 15.7	vamp/scan test 7	Ken Espiritu	120.7	2
26	37.9/ 50.9/ 11.2	Kenshin c	Steve Gunnell	124.9	1

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
6	38.7/ 37.3/ 24.0	Recycled Bits	David Moore	140.2	129
15	30.9/ 26.9/ 42.2	The Stormbringer	Christian Schmidt	134.9	129
2	39.7/ 34.2/ 26.1	Self-Modifying Code	Ben Ford	145.1	75
12	29.3/ 22.2/ 48.5	Stonewashed	Christian Schmidt	136.4	69
13	25.0/ 13.9/ 61.0	Return of the Fugitive	David Moore	136.1	56
5	29.7/ 19.1/ 51.3	Jade	Ben Ford	140.2	52

Stormbringer climbs a few ranks out of the danger zone.

The Extended New Hall of Fame: * indicates the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber
2	Blur 2	Anton Marsden	396	Scanner
3	Damage Incorporated	Anton Marsden	373	Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357	Q^2 -> Stone/imp
5	unrequited love	kafka	346	Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345	Stone/imp
7	Gigolo	Core Warrior staff	332	Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275	P-warrior
9	Nine Seven Six	M R Bremer	232	Q^2 -> Stone/imp
10	Rosebud	Beppe	218	Stone/imp
11	Newt	Ian Oversby	216	Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214	Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205	P-warrior
14	Goldfinch	P.Kline	201	P-warrior
15	Simple v0.4b	Ian Oversby	197	QScan -> Stone/imp
16	Trident^2	John K W	195	Q^2 -> Stone/imp
17	ompega	Steven Morrell	189	Stone/imp
18	Frogz	Franz	172	Q^2 -> Paper
19	The Machine	Anton Marsden	164	Scanner
20	Memories	Beppe	152	Scanner
21	Vain	Ian Oversby	147	Q^2 -> Stone/imp
22	Head or Tail	Christian Schmidt	142	Q^2 -> Paper
23	Electric Head	Anton Marsden	140	P-warrior
24	Vigor	Ken Espiritu	138	Q^2 -> Paper
25	Fixed	Ken Espiritu	135	Q^2 -> Paper
26	Tiberius 3.1	Franz	130	Q^2 -> Paper

27	Recycled Bits	David Moore	129	*	P-warrior
=	The Stormbringer	Christian Schmidt	129	*	Q^2 -> Stone/imp
29	Ultraviolet-B	Ken Espiritu	120		Q^2 -> Paper
30	obvious to those who k	Robert Macrae	117		Q^2 -> Paper
31	Solomon v0.8	Ian Oversby	116		Stone and scanner
32	CC Paper 3.3	Franz	107		Q^2 -> Paper
33	mrb-test	M R Bremer	106		*Unknown*
34	T.N.T. pro	Maurizio Vittuari	105		Bomber
=	Pulp v0.5	Ian Oversby	105		Q^2 -> Paper
36	Fugitive	David Moore	102		Q^2 -> Paper/imp
37	Vengeance	Robert Hale	101		Q^2 -> Stone/imp
38	Jack in the box II	Beppe Bezzi	100		P-warrior
=	Fire and Ice	David Moore	100		P-warrior
40	Oblivion	Ian Sutton	99		P-warrior
41	Silver Talon 1.2	Edgar	93		Scanner
42	death by redcode	Simon Wainwright	91		Q^2 -> Bomber
43	Bodge 1	Robert Macrae	85		Q^2 -> Scanner
44	Inferno 2.4	Philip Kendall	84		Qscan -> Bomber
45	Test	Anton Marsden	83		*Unknown*
=	NCC-1701-A	Philip Kendall	83		P-warrior
47	RetroQ	Paul Kline	82		Q^2 -> Paper
48	Tornado 4	Beppe Bezzi	78		Bomber
49	He Scans Again	Paul Kline	76		Scanner
50	Self-Modifying Code	Ben Ford	75	*	P-warrior

Recycled Bits and The Stormbringer continue to make slow progress, climbing just a single place. We welcome Ben Ford to the Hall of Fame with his Self Modifying Code.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
maximum age: At age 100, warriors are retired.
rounds fought: 200
instruction set: ICWS ’94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	45.5/	18.8/	35.7	PC	WFB	172.3	85
2	42.4/	28.0/	29.5	DiHydrogen Monoxide	Josh Yeager	156.8	47
3	46.7/	37.3/	16.0	Grand Mal 1.0	Ransom Smith	156.2	48
4	45.2/	35.1/	19.7	Golden Gun	Ken Hubbard	155.2	50
5	32.0/	13.3/	54.7	Arkenstone	John Morahan	150.7	2
6	40.1/	32.6/	27.3	jollyblu	aCM	147.6	49
7	32.1/	16.8/	51.0	Caladan II	Ingo S Kacza	147.5	67
8	42.7/	39.2/	18.1	Gomjabbar V	Ingo S Kacza	146.1	45
9	27.2/	8.8/	64.0	PimpKing 1.0	Simon Duff	145.5	32
10	31.0/	18.2/	50.8	2stoned	aCM	143.7	55
11	37.4/	31.2/	31.4	Mob Boyz	Simon Duff	143.5	33
12	42.6/	42.0/	15.4	Forgotten Lore	Simon Duff	143.2	64
13	44.8/	46.4/	8.8	Kenshin d	Steve Gunnell	143.1	36
14	44.5/	47.8/	7.7	Mini	John Metcalf	141.3	1
15	40.9/	41.5/	17.6	Wild-Fire	P_.V_.K./John Metcal	140.4	95
16	25.4/	12.5/	62.1	Fangorn	John Morahan	138.3	6
17	40.4/	43.6/	16.0	Neverland II	John Metcalf	137.2	84
18	37.5/	38.7/	23.8	da mutant	Paul-V Khuong	136.2	94
19	36.7/	38.1/	25.2	Arsonic C	P._V._K.	135.2	92
20	36.9/	39.0/	24.1	the boy’s a time bomb	aCM	134.8	41
21	37.0/	40.0/	23.0	Freeze 1.3	David Houston	134.0	13
22	36.8/	40.1/	23.1	FireMaster 2	P._V._K.	133.5	90
23	34.6/	37.9/	27.5	Freeze 2.0	David Houston	131.4	29
24	30.4/	48.0/	21.5	pop1.red	----------	112.9	7
25	23.0/	38.6/	38.4	Imp2000	Dave Hillis	107.3	8

Silken Half Life, Quickest Zeta and Nuke it! all retired during the 33

successful challenges since last issue.

Current Status of the KOTH.ORG '94 No Pspace Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 250
instruction set: ICWS '94 Draft, excluding ldp and stp

#	%W/ %L/ %T	Name	Author	Score	Age
1	45/ 42/ 13	Stalker	P.Kline	147.7	136
2	34/ 20/ 47	Uninvited	John Metcalf	147.3	103
3	35/ 24/ 41	Omnibus	John Metcalf	146.6	160
4	33/ 20/ 48	Jade	Ben Ford	145.7	220
5	43/ 42/ 14	Zooom...	John Metcalf	144.7	287
6	36/ 28/ 35	Blacken	Ian Oversby	144.6	398
7	43/ 42/ 15	Eraser II	Ken Espiritu	144.0	108
8	34/ 25/ 40	Experimental	John Metcalf	143.8	107
9	44/ 47/ 9	Kenshin	Steve Gunnell	142.4	106
10	31/ 21/ 48	Jaguar	Christian Schmidt	141.9	138
11	43/ 44/ 13	Boys are Back in Town 1.1	Philip Kendall	141.6	413
12	32/ 22/ 46	nPaper II	Paul-V Khuong	141.4	151
13	43/ 45/ 12	vamp/scan test b1	Ken Espiritu	140.8	66
14	30/ 19/ 51	Tie Factory	Christian Schmidt	140.6	2
15	42/ 44/ 14	Jinx	Christian Schmidt	139.3	114
16	31/ 22/ 47	EvoP 3	Ken Espiritu	139.1	147
17	27/ 16/ 58	Cinammon	John Metcalf	137.9	116
18	44/ 50/ 7	Iron Curtain test	Ken Espiritu	137.3	1
19	32/ 28/ 40	Ant Factory	Christian Schmidt	136.9	246
20	31/ 27/ 42	Icen	Ben Ford	134.2	245

The hill ages 97 with seemingly perpetual testing, helping Boys are Back in Town become the first warrior to pass the age of 400. Win! perishes, age 322.

Extra Extra - Midget by Chip Wendell

Breaking from the great Core Warrior tradition of publishing warriors employing innovative new techniques, presented below is Midget, a warrior of interest to Core War historians...

Midget somehow became lost in time. We know of it's existence from Dewdney's report (Scientific American, Jan 1987) of the first annual Core War tournament. Now, thanks to Ian D Bartholomew, the code for Midget has been recovered, as have all missing finalists from this tournament.

As you will have no doubt suspected, Midget is based on Dwarf. However, there are important improvements which have since become commonplace. For example, the distance between zero bombs is 28. The highest common factor of this and coresize is 4. Every fourth location will therefore be bombed but the larger step size finds larger opponents much sooner than a step of 4 would. Midget is the first known warrior to exploit this fact.

One problem many early warriors face is the changes which have occurred to redcode since Dewdney's first specifications. Midget has suffered in this repsect. Originally, Midget's zero bombs would have been fatal if they were place on an enemy program; this is no longer the case.

Another interesting change to redcode is the CMP instruction. This originally functioned as skip if not equal; currently it performs skip if equal. This affects warriors such as Gemini.

Anyhow, here's the code for Midget. Watch also for the other five missing finalists (including Commando :-) appear on Koenigstuhl sometime soon.

```
;redcode
```

```
;name Midget
;author Chip Wendell
;strategy 3rd place in ICWST'86
;assert 1
START   ADD     #-28   ,3
        MOV     #0     ,@2
        JMP     -2
        DAT     #-980
        END     START
```

Examples of famous warriors still missing include Scanner by David Jones, mentioned in Dewdney's first Core War article (Scientific American, May 1984) as the first self-repairing program. Also lost are almost all of the warriors which competed in the ICWS Tournaments of 1991 and 1992.

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A. K. Dewdney's Core War articles, as published in Scientific American, are available on the WWW at http://www.koth.org/info/sciam

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Extra Extra Extra - Cinammon by John Metcalf

Cinammon is a paper/imp which produces imps with two different techniques. Imp-ring forming paper steps are chosen to generate 3-point rings, while mirrored-imps are created by binary-launching the paper.

To create a paper which forms 3 point imp-rings (which have an imp-step of 2667) we need to find paper steps which ensure when an imp is executed, it is followed at least sometimes by processes executing at imp+2667 and imp+2667*2.

If we take a simple silk copy copy, we can create a diagram showing where and when each process is executed, as described by David Moore's article in Core Warrior #68:

```
        spl     2       ; 5 parallel processes
        spl     2
        spl     1
pap1:   spl     @0,     X
        mov     }pap1,  >pap1           ; copy
pap2:   spl     @0,     Y
        mov     }pap2,  >pap2           ; copy
imp:    mov.i   #0,     2667
```

	0	1	2	3	4	5	6
0	0	1	2	3	4!		
1				2+Y	3+Y	4+Y!	
2					2+2Y	3+2Y	4+2Y!
3						2+3Y	3+3Y
4							2+4Y
5		X	1+X	2+X	3+X	4+X!	
6					2+X+Y	3+X+Y	4+X+Y!
7						2+X+2Y	3+X+2Y
8							2+X+3Y
9			2X	1+2X	2+2X	3+2X	4+2X!
10						2+2X+Y	3+2X+Y
11							2+2X+2Y
12				3X	1+3X	2+3X	3+3X
13							2+3X+Y
14					4X	1+4X	2+4X
15						5X	1+5X

Each row in the table represents an individual copy of the paper. Each entry shows where a process is executing at any given time. Processes are executed in column order; each entry will be executed in turn, top to bottom, repeated once for each parallel process the paper has. This is followed by the same procedure in each subsequent column.

To make a paper which generates 3 point imp-rings, we select 3 positions which

we will refer to as R, S and T, sharing the same column in the table, each lower (and consequently executed later) than the previous. Position R should be where an imp is executed, as indicated by an exclamation mark in the table.

Now, all we require are values for X and Y providing a solution, if one exists, to the following equations, where R, S and T are substituted with their corresponding entries in the table:

```
S = R + 2667                (2667 is the imp-step for 3 point rings in
T = S + 2667                 a coresize of 8000, since 2667*3 = 8001)
```

For example, after selecting the processes at rows 0, 1 and 2 of column 4, we can show Y must be equal to 2668 for imp-rings to form. This is the sequence employed by Return of the Fugitive:

```
(3+Y)  =  (4)  + 2667
(2+2Y) = (3+Y) + 2667     ->  Y = 2668
```

By selecting the processes at rows 2, 6 and 9 of column 6, we show Y must be equal to X - 2667 for imp-rings to form. This sequence is used by both The Fugitive and Cinammon:

```
(4+X+Y) =  (4+2Y) + 2667
(4+2X)  = (4+X+Y) + 2667  ->  Y = X - 2667
```

At least 4 other sequences which allow imp-rings to form exist. However, these appear to be less effective than the two illustrated above, which were chosen for use by David Moore in his two Fugitives.

Cinammon expands on this simple paper/imp, with the addition of a 3rd silk copier, a silk-imp and a binary-launched mirrored-imp. A mini-Q^3 has also been added, as has a wimp.

The decision to add a wimp was not taken without careful consideration. While the score improves against certain scanners and p-spacers, it suffers a slight decrease against many other warriors. Notable examples include Friction and Eraser.

The wimp is placed in an area of core which isn't overwritten by the paper. To ease the process of finding these core pockets I used a CDB macro which lists the location of all pockets of at least 5 memory units. I'm certain you can improve on the macro below:

```
pockets=&l0~!!~if1>a+b~!!~m_p~!1~&l+1~if0<x=.~!
_p=!!~&l+1~if1>a+b~!~&l-1~if.-x>3~ca.-x+1,x
```

OPTIMIZATION:

To optimize Cinammon, I wished to improve on the simple slow Dumb Brute Force method I have used in the past. The mini-hill technique is popular and has produced good results. In the end though, I opted for the quicker to implement Improved Brute Force:

* proceeding as with Dumb Brute Force, we test the paper with random steps against a selection of warriors,

* if the test paper scores below a carefully chosen value against one particular opponent, we abandon the steps without further testing,

* if the paper scores well overall, we test similar steps during the next round of tests. In this instance, similar steps were chosen by changing just one step - by adding a large factor of coresize.

One small problem has troubled me in the past. PMars uses a random number generator to determine the distance between warriors in each round. Over 200 rounds there are usually some duplicate distances. Presuming we wish to avoid these, we can either modify pMars or select a suitable -F number.

Once again I opted for the easiest approach, and looked for a -F number without either duplicate or consecutive distances over 200 rounds. There are just

four, 1306, 2204, 4864 and 7293 - one of which I selected to use during optimization. (What drawbacks are there to this solution?)

After a couple of hours runtime on an i486, several potentially good sets of steps were revealed. The top three of these were tested against Pizza's '94 hill before the steps used in the warrior below were finally selected:

```
;redcode-94
;name Cinammon
;author John Metcalf
;strategy Mini-Q^3 -> Paper/Imps and Wimp
;assert CORESIZE==8000

     pStep1 equ 6405                    ; computer optimized against scans
     pStep2 equ 4240                    ; from HSA, Snoopy & Recycled Bits
     pStep3 equ (pStep2-2667)
     wBoot  equ (pap1+5373)             ; pocket to place wimp, distance
                                        ; particularly effective against
     org qGo                            ; Recycled Bits scan :-)

ppGo:mov   {pap1,       {bb             ; binary launch
     mov   {pap1,       {bb
bb:  spl   pap1+4000+12,{qf+25*qs

pap1:spl   @12,         >pStep1
     mov   }pap1,       >pap1
     mov   }pap1,       >pap1           ; copy
pap2:spl   @0,          >pStep2
     mov   }pap2,       >pap2           ; copy
pap3:spl   @0,          >pStep3
     mov   }pap3,       >pap3           ; copy

     mov.i #-2669,      }4000-pStep3    ;   silk-imp
     mov.i #-pStep2,    2667            ; standard-imp
     mov.i #4001,       *0              ; mirrored-imp

     for 40
     dat 0,0
     rof

wimp:jmp   #0,          #0

     qf equ qKil
     qs equ 222
     qd equ 322
     qi equ 7
     qr equ 11

qGo: seq   qd+qf+qs,    qf+qs       ; 1
     jmp   qSki,        {qd+qf+qs+qi
     seq   qd+qf+6*qs,  qf+6*qs     ; B
     jmp   qFas,        {qd+qf+6*qs+qi
     seq   qd+qf+5*qs,  qf+5*qs     ; B-1
     jmp   qFas,        <qBmb
     seq   qd+qf+7*qs,  qf+7*qs     ; B+1
     jmp   qFas,        >qBmb
     seq   qd+qf+9*qs,  qf+9*qs     ; A-1
     djn   qFas,        {qFas
     seq   qd+qf+10*qs, qf+10*qs    ; A
     jmp   qFas,        {qFas

     seq   qd+qf+3*qs,  qf+3*qs     ; C
     jmp   >qFas,       {qd+qf+3*qs+qi
     seq   qd+qf+2*qs,  qf+2*qs     ; C-1
     jmp   >qFas,       {qSlo
     seq   qd+qf+4*qs,  qf+4*qs     ; C+1
     jmp   >qFas,       }qSlo
     seq   qd+qf+12*qs, qf+12*qs    ; B*C-B
     jmp   qSlo,        {qSlo
     seq   qd+qf+15*qs, qf+15*qs    ; B*C-C
```

```
     jmp   qSlo,        <qBmb
     seq   qd+qf+21*qs, qf+21*qs   ; B*C+C
     jmp   qSlo,        >qBmb
     seq   qd+qf+24*qs, qf+24*qs   ; B*C+B
     jmp   qSlo,        }qSlo
     seq   qd+qf+27*qs, qf+27*qs   ; A*C-C
     djn   qSlo,        {qFas
     seq   qd+qf+30*qs, qf+30*qs   ; A*C
     jmp   qSlo,        {qFas
     sne   qd+qf+18*qs, qf+18*qs   ; B*C
     jmz.f pGo,         qd+qf+18*qs-10

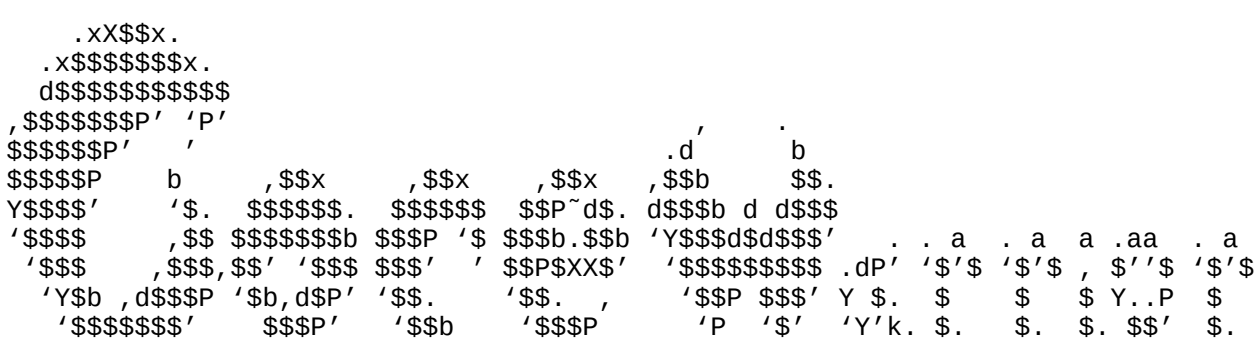
qSlo:mul   #3,          qKil       ; C=3
qFas:mul.b qBmb,        @qSlo
qSki:sne   >qf+23*qs,   >qKil
     add   #qd,         qKil
qLoo:mov   *qKil,       <qKil
qKil:mov   qBmb,        }qs
     sub   #qi-1,       @qLoo
     djn   qLoo,        #qr

pGo: spl   }0,          >qf+29*qs  ; 6 parallel processes and 1
     spl   0,           }qf+28*qs  ; stray process for the wimp
     djn   ppGo,        #1
     mov   wimp,        {1
     djn.f wBoot+1,     #10        ; A=10
qBmb:dat   {qi*qr-10,   {6         ; B=6
     end
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
Beppe Bezzi <giuseppe.bezzi@galactica.it>, Philip Kendall <pak21@cam.ac.uk>,
Anton Marsden <anton@paradise.net.nz>, John Metcalf <grumpy3039@hotmail.com>
and Christian Schmidt <schmidt@chiral.apchem.nagoya-u.ac.jp>

From news-rocq!univ-lyon1.fr!nmaster.kpnqwest.net!blackbush.xlink.net!newsfeed01.sul.t-online.de!newsfeed00.sul.t-online.de!t-online.de!diablo.theplanet.net!unlisys!news.snafu.de!fu-berlin.de!server1.netnews.ja.net!pegasus.csx.cam.ac.uk!not-for-mail Fri Nov 10 13:50:02 2000
Article: 11922 of rec.games.corewar
Path: news-rocq!univ-lyon1.fr!nmaster.kpnqwest.net!blackbush.xlink.net!newsfeed01.sul.t-online.de!newsfeed00.sul.t-online.de!t-online.de!diablo.theplanet.net!unlisys!news.snafu.de!fu-berlin.de!server1.netnews.ja.net!pegasus.csx.cam.ac.uk!not-for-mail
From: Philip Kendall <pak@ast.cam.ac.uk>
Newsgroups: rec.games.corewar
Subject: Core Warrior 78
Date: 10 Nov 2000 11:42:20 +0000
Organization: University of Cambridge, England
Lines: 780
Sender: pak@cass52.hoyle.star.fleet
Message-ID: <ye8u29gvysj.fsf@cass52.hoyle.star.fleet>
NNTP-Posting-Host: cass52.ast.cam.ac.uk
X-Newsreader: Gnus v5.5/Emacs 20.2
Xref: news-rocq rec.games.corewar:11922

[Credits for this should go to John Metcalf and David Moore as I'm
just posting it -- Phil]



Issue 78 7 November, 2000

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star internet locals for more information:

FAQs are available from:
  http://www.koth.org/corewar-faq.html
  http://homepages.paradise.net.nz/~anton/cw/corewar-faq.html

The ftp site and it's mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars ;pMARS home page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;KOTH
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the above pages for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

Greetings...

It has been absolutely ages since last issue and hill activity has been minimal. Fortunately the past few months have not been uneventful - JKW has finally shared the code for Return of the Jedimp and organised the

Koth Fall Corewar Tournament (Kofacoto).

This issue, David Moore shows us how Combatra, his boot-distance works and also we have the code for KafuFFLe, a defensive paper/stone.

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:
coresize: 8000
max. processes: 8000
duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
minimum distance: 100
rounds fought: 200
instruction set: ICWS '94 Draft

#	%W /	%L /	%T	Name	Author	Score	Age
1	48.9/	41.0/	10.0	Shapeshifter	Michal Janeczek	156.8	4
2	45.7/	46.4/	7.9	Razor	Michal Janeczek	145.0	5
3	39.8/	34.7/	25.5	Self-Modifying Code	Ben Ford	144.8	93
4	36.2/	29.0/	34.8	Vilex	Ken Espiritu	143.4	45
5	32.6/	23.5/	44.0	Uninvited	John Metcalf	141.7	16
6	38.9/	36.9/	24.2	Recycled Bits	David Moore	140.9	147
7	31.5/	23.5/	45.0	Mini Digitalis	Christian Schmidt	139.6	0
8	40.0/	41.1/	18.9	Combatra	David Moore	138.8	5
9	39.6/	40.8/	19.5	G2	David Moore	138.5	0
10	37.8/	37.3/	24.9	Origami Harquebus	mjp	138.2	41
11	28.5/	19.2/	52.3	Tie Factory	Christian Schmidt	137.8	19
12	25.2/	12.9/	61.9	Cinammon	John Metcalf	137.6	18
13	29.4/	21.4/	49.3	nPaper II	Paul-V Khuong	137.4	50
14	39.5/	42.2/	18.3	Pitbull	Christian Schmidt	136.7	9
15	36.7/	37.4/	25.9	Trefoil the original	Steve Gunnell	135.9	38
16	27.8/	21.3/	50.8	Jade	Ben Ford	134.3	70
17	37.5/	41.0/	21.5	CrazyShot	Christian Schmidt	134.0	8
18	37.9/	41.9/	20.2	Ultima	Christian Schmidt	133.9	12
19	26.3/	19.4/	54.3	Stylized Euphoria	Ken Espiritu	133.2	37
20	24.9/	16.7/	58.4	Cinammon	John Metcalf	133.0	43
21	27.5/	22.2/	50.3	EvoP 3	Ken Espiritu	132.9	50
22	24.6/	17.6/	57.8	Return of the Fugitive	David Moore	131.6	74
23	25.7/	20.2/	54.1	The Dark One	Christian Schmidt	131.2	2
24	26.6/	22.4/	50.9	Exor	Ken Espiritu	130.9	50
25	27.6/	26.5/	45.9	Wintermute	John Metcalf	128.7	34

Age since last issue: 18 (12 last issue, 20 the issue before)
Days since last issue: 209 (121 last issue, 101 the issue before)
Average age: 34 (34 last issue, 28 the issue before)
Average score: 138 (137 last issue, 137 the issue before)
Average movement: -6.0 (-1.5 last issue, -4.2 the issue before)
Warriors surviving: 14 (18 last issue, 9 the issue before)

The top 25 warriors are represented by just 9 independent authors: Schmidt with 6, Espiritu, Moore and Metcalf with 4, Janeczek and Ford with 2. The remaining three authors have just 1 warrior each. (10 authors last issue, 10 the issue before)

Shapeshifter dominates the hill by nearly 12 points, utilising a P^3 -> dodger/stone/scanner to great effect. Janeczek's other warrior, a HSA-like scanner by the name of Razor holds second place. Only Trefoil gains rank - Wintermute drops furthest, from 4th to 25th.

---

94 - What's New (Sorted by rank and score)

#	%W /	%L /	%T	Name	Author	Score	Age
1	47.2/	42.2/	10.6	Shapeshifter	Michal Janeczek	152.2	1
1	44.8/	46.8/	8.4	Razor	Michal Janeczek	142.8	0
2	39.3/	39.0/	21.7	Pitbull	Christian Schmidt	139.5	1
4	23.4/	12.6/	64.0	Cinammon	John Metcalf	134.2	1
5	37.3/	41.9/	20.8	Behemot	Michal Janeczek	132.7	0

5	38.4/ 44.7/ 16.9	Brainstorm	Michal Janeczek	132.2	1
6	26.0/ 21.2/ 52.8	Uninvited	John Metcalf	130.9	1
7	36.5/ 40.4/ 23.0	CrazyShot	Christian Schmidt	132.6	1
8	28.9/ 25.3/ 45.7	Mini Digitalis	Christian Schmidt	132.5	0
8	35.8/ 41.3/ 22.9	Combatra 2667	David Moore	130.4	1
9	37.0/ 41.7/ 21.3	G2-b	David Moore	132.2	1
10	35.8/ 41.9/ 22.4	Ultima	Christian Schmidt	129.6	0
12	22.5/ 17.3/ 60.2	KafuFFLe	John Metcalf	127.7	1
14	36.6/ 44.6/ 18.8	goonie lite	David Moore	128.6	0
17	32.9/ 36.5/ 30.7	test	dm	129.3	1
17	18.2/ 13.4/ 68.4	Seven	John Metcalf	122.9	1
18	37.5/ 48.1/ 14.5	Nothing New...	Leonardo H. Liporati	126.9	1
18	34.2/ 42.5/ 23.3	Combatra	David Moore	125.9	0
18	35.8/ 48.0/ 16.2	Burn Paper, Stomp Imps	David Moore	123.6	1
19	25.1/ 21.8/ 53.1	The Dark One	Christian Schmidt	128.3	1
25	28.4/ 33.3/ 38.3	Ultima	Christian Schmidt	123.5	1
25	19.8/ 18.7/ 61.4	Maya	John Metcalf	120.9	1

Players entering hill since last issue: 5 (5 last issue, 7 the issue before)
Average rank of new entries: 11 (17 last issue, 13 the issue before)

Michal Janeczek makes an impressive hill debut. Activity has been scarce, where is everyone?

---

94 - What's No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	25.2/ 29.3/ 45.5	The Stormbringer	Christian Schmidt	121.1	142
26	22.4/ 25.7/ 51.9	Stonewashed	Christian Schmidt	119.1	78
26	33.1/ 44.3/ 22.6	myBlur2	Paulsson	121.9	41
26	21.2/ 22.7/ 56.1	Jaguar	Christian Schmidt	119.6	36
26	32.3/ 44.0/ 23.7	SnooPy	P.Kline	120.6	27
26	28.9/ 33.8/ 37.4	Trefoil f	Steve Gunnell	123.9	25
26	35.2/ 49.7/ 15.1	Friction	Ken Espiritu	120.7	19
26	24.6/ 27.9/ 47.5	Trefoil c	Steve Gunnell	121.3	16
26	36.6/ 53.5/ 9.9	Iron Curtain 3	Ken Espiritu	119.8	14
26	0.6/ 0.6/ 2.8	KafuFFLe	John Metcalf	4.7	9
26	22.5/ 24.3/ 53.1	Unlucky Redcoder	John Metcalf	120.8	8
26	18.8/ 19.3/ 62.0	Seven	John Metcalf	118.3	7
26	36.1/ 50.2/ 13.7	Resurrection	Ken Espiritu	122.0	6
26	1.9/ 1.7/ 0.4	Ultima	Christian Schmidt	6.2	5
26	1.5/ 2.3/ 0.2	Combatra 2667	David Moore	4.6	5
26	35.8/ 51.0/ 13.2	Nothing New...	Leonardo H. Liporati	120.7	4
26	18.3/ 18.5/ 63.2	Maya	John Metcalf	118.1	4
26	2.0/ 1.1/ 0.8	test	dm	6.9	3
26	34.8/ 47.3/ 17.9	goonie lite	David Moore	122.4	2
26	35.0/ 49.4/ 15.6	Burn Paper, Stomp Imps	David Moore	120.6	2

Paulsson, Kline and Liporati leave the hill completely. Schmidt's oldest three warriors are pushed off.

---

94 - What's Old

#	%W / %L / %T	Name	Author	Score	Age
6	38.9/ 36.9/ 24.2	Recycled Bits	David Moore	140.9	147
3	39.8/ 34.7/ 25.5	Self-Modifying Code	Ben Ford	144.8	93
22	24.6/ 17.6/ 57.8	Return of the Fugitive	David Moore	131.6	74
16	27.8/ 21.3/ 50.8	Jade	Ben Ford	134.3	70
13	29.4/ 21.4/ 49.3	nPaper II	Paul-V Khuong	137.4	50
21	27.5/ 22.2/ 50.3	EvoP 3	Ken Espiritu	132.9	50
24	26.6/ 22.4/ 50.9	Exor	Ken Espiritu	130.9	50

P-warriors Recycled Bits and Self-Modifying Code look as healthy as always. Who will be next to enter the Hall of Fame? Will Return of the Fugitive survive the next 4 challenges?

The Extended New Hall of Fame: * indicates the warrior is still active.

Pos	Name	Author	Age	Strategy
1	Probe	Anton Marsden	403	Q^2 -> Bomber

2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	373		Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357		Q^2 -> Stone/imp
5	unrequited love	kafka	346		Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345		Stone/imp
7	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Nine Seven Six	M R Bremer	232		Q^2 -> Stone/imp
10	Rosebud	Beppe	218		Stone/imp
11	Newt	Ian Oversby	216		Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205		P-warrior
14	Goldfinch	P.Kline	201		P-warrior
15	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
16	Trident^2	John K W	195		Q^2 -> Stone/imp
17	ompega	Steven Morrell	189		Stone/imp
18	Frogz	Franz	172		Q^2 -> Paper
19	The Machine	Anton Marsden	164		Scanner
20	Memories	Beppe	152		Scanner
21	Recycled Bits	David Moore	147	*	P-warrior
=	Vain	Ian Oversby	147		Q^2 -> Stone/imp
23	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
=	The Stormbringer	Christian Schmidt	142		Q^2 -> Stone/imp
25	Electric Head	Anton Marsden	140		P-warrior
26	Vigor	Ken Espiritu	138		Q^2 -> Paper
27	Fixed	Ken Espiritu	135		Q^2 -> Paper
28	Tiberius 3.1	Franz	130		Q^2 -> Paper
29	Ultraviolet-B	Ken Espiritu	120		Q^2 -> Paper
30	obvious to those who k	Robert Macrae	117		Q^2 -> Paper
31	Solomon v0.8	Ian Oversby	116		Stone and scanner
32	CC Paper 3.3	Franz	107		Q^2 -> Paper
33	mrb-test	M R Bremer	106		*Unknown*
34	T.N.T. pro	Maurizio Vittuari	105		Bomber
=	Pulp v0.5	Ian Oversby	105		Q^2 -> Paper
36	Fugitive	David Moore	102		Q^2 -> Paper/imp
37	Vengeance	Robert Hale	101		Q^2 -> Stone/imp
38	Jack in the box II	Beppe Bezzi	100		P-warrior
=	Fire and Ice	David Moore	100		P-warrior
40	Oblivion	Ian Sutton	99		P-warrior
41	Self-Modifying Code	Ben Ford	93	*	P-warrior
=	Silver Talon 1.2	Edgar	93		Scanner
43	death by redcode	Simon Wainwright	91		Q^2 -> Bomber
44	Bodge 1	Robert Macrae	85		Q^2 -> Scanner
45	Inferno 2.4	Philip Kendall	84		Qscan -> Bomber
46	Test	Anton Marsden	83		*Unknown*
=	NCC-1701-A	Philip Kendall	83		P-warrior
48	RetroQ	Paul Kline	82		Q^2 -> Paper
49	Tornado 4	Beppe Bezzi	78		Bomber
=	Stonewashed	Christian Schmidt	78		Q^3 -> Paper/stone

Stormbringer perishes, sharing it’s final resting place with Head or Tail.
Stonewashed creeps onto the bottom of the hill displacing He Scans Again,
before it too perishes.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS ’94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	51.9/ 24.7/ 23.4	MorphinMerlin	Jeremy K	179.2	25
2	52.4/ 33.6/ 14.0	Grand Mal 1.1	Ransom Smith	171.2	27
3	46.9/ 34.0/ 19.1	Seek&Destroy	Ayan Chakrabarti	159.8	4

4	50.7/ 42.1/ 7.3	Kenshin d	Steve Gunnell	159.3	84
5	46.8/ 34.5/ 18.7	Golden Gun	Ken Hubbard	159.1	98
6	45.9/ 36.3/ 17.8	Gomjabbar V	Ingo S Kacza	155.6	93
7	39.7/ 26.8/ 33.5	DiHydrogen Monoxide	Josh Yeager	152.6	95
8	41.9/ 32.4/ 25.8	the boy’s a time bomb	aCM	151.4	89
9	41.6/ 32.5/ 25.9	jollyblu	aCM	150.6	97
10	28.7/ 9.2/ 62.1	PimpKing 1.0	Simon Duff	148.2	80
11	32.8/ 20.8/ 46.4	Hyper Advanced (read: sux	Josef Jahn	144.8	16
12	42.6/ 40.7/ 16.8	Even More Advanced (read:	Josef Jahn	144.5	31
13	40.9/ 38.5/ 20.6	Advanced Spooner	Josef Jahn	143.4	29
14	39.7/ 37.8/ 22.5	Chaos	John Morahan	141.5	39
15	29.1/ 19.3/ 51.6	Arkenstone	John Morahan	138.9	50
16	41.0/ 43.1/ 16.0	Heatseeker	John Morahan	138.8	48
17	35.3/ 33.3/ 31.5	Mob Boyz	Simon Duff	137.3	81
18	27.2/ 19.7/ 53.0	Simpleton	Ayan Chakrabarti	134.7	8
19	39.1/ 43.6/ 17.3	Remorseless	Ayan Chakrabarti	134.6	5
20	23.4/ 16.6/ 59.9	Fangorn	John Morahan	130.2	54
21	28.3/ 32.3/ 39.4	Toofan	Ayan Chakrabarti	124.3	9
22	28.3/ 36.0/ 35.7	VelvetFist	Ayan Chakrabarti	120.7	6
23	34.2/ 48.8/ 17.0	h1_1.red	Dave Hillis	119.6	28
24	35.4/ 55.8/ 8.7	Mini	John Metcalf	115.1	49
25	17.2/ 48.8/ 34.0	Pinky And The Brain	Simon Glanville	85.7	1

In the 48 successful challenges since last issue, 8 warriors have achieved retirement, 2stoned, Forgotten Lore, Caladan II, PC, Wild-Fire, da mutant, Arsonic C and FireMaster 2.

Current Status of the KOTH.ORG ’94 No Pspace Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS ’94 Draft, excluding ldp and stp
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	48/ 37/ 15	Behemot	Michal Janeczek	159.8	33
2	46/ 42/ 12	Eraser II	Ken Espiritu	150.3	167
3	46/ 42/ 13	G2	David Moore	149.5	2
4	46/ 42/ 12	Jinx	Christian Schmidt	149.1	173
5	38/ 28/ 34	Mini Digitalis	Christian Schmidt	148.6	1
6	46/ 44/ 10	Stalker	P.Kline	148.1	195
7	39/ 32/ 29	Blacken	Ian Oversby	145.9	457
8	45/ 44/ 11	Pitbull	Christian Schmidt	145.8	43
9	37/ 28/ 36	Omnibus	John Metcalf	145.3	219
10	44/ 43/ 12	Zooom...	John Metcalf	145.1	346
11	35/ 24/ 41	nPaper II	Paul-V Khuong	144.8	210
12	34/ 25/ 41	Jade	Ben Ford	143.8	279
13	45/ 46/ 10	vamp/scan test b1	Ken Espiritu	143.6	125
14	33/ 23/ 44	Uninvited	John Metcalf	142.5	162
15	31/ 23/ 46	The Dark One	Christian Schmidt	139.8	3
16	31/ 22/ 48	Tie Factory	Christian Schmidt	139.6	61
17	31/ 23/ 45	Jaguar	Christian Schmidt	139.6	197
18	40/ 42/ 18	CrazyShot	Christian Schmidt	139.0	42
19	33/ 28/ 39	Experimental	John Metcalf	138.3	166
20	43/ 49/ 8	Kenshin	Steve Gunnell	136.7	165

Old timer Boys are Back in Town perishes age 441, allowing Blacken to claim title of oldest warrior. Also gone are Ant Factory (268), Icen (246) and Evop 3 (199). Janeczek has a firm grip on the hilltop, this time with his MiniQ^3 -> Stun Bomber.

Current standings of Kofacoto:

	#1	#2	#3	#4	Total
Janeczek :	1000	850	764	1000	: 3614
Moore :	968	402	1000	886	: 3256
Hillis :	342	214	454	79	: 1089
Yeager :	562	253	200	.	: 1015

Liporati :	728	1000	749	397	: 2874	Pihlaja :	895	.	.	.	:	895
Macrae :	989	486	636	757	: 2868	Nevermind :	.	374	256	.	:	630
Kline :	922	488	579	878	: 2867	Chakrabarti :	574	31	.	.	:	605
Schmidt :	724	444	973	620	: 2761	Adamowski :	81	67	405	.	:	553
Paulsson :	977	282	529	935	: 2723	Khuong :	538	.	.	.	:	538
Ford :	629	74	447	586	: 1736	Metcalf :	.	.	478	.	:	478
Gunnell :	755	245	424	230	: 1654	Kacza :	345	.	.	.	:	345
Guenzel :	713	686	.	.	: 1399	Ankerl :	30	197	.	.	:	227
Karonen :	672	185	327	.	: 1184	Chin :	138	41	.	5	:	184
Stefan :	652	247	.	195	: 1094							

The preliminary rounds are over with the highest ranking 8 competitors going forward to the playoffs. Janeczek claims victory in both the White Warrior and Hostage rounds. Liporati takes first place in the ’88lp Multi-Warrior, while Moore discovers Black Box’s p-space weakness to succeed in the Black Warrior round.

For the latest tournament info, check out the tournament’s home page at:

http://www.koth.org/kofacoto

Extra Extra - Combatra by David Moore

Redcode warriors may start with 100 instructions, but when the scanners come looking, nobody wants to be that big. Therefore, they often bootstrap a sub-program away from their original code.

A while back in the Redcode Maniac’s Tournament, Paul Kline capitalized on this behavior in an intriguing way. Knowing the boot distances of his scheduled opponents, his program SnowDust could search for the enormous glob of unused code left by his opponents, and then adjust to attack precisely the location of the booted module. Paul won that round by a landslide.

That’s a fine strategy if we know our enemy, but what if we don’t have a handy table to look up its intimate details? In the ’94 hill competition, we must find out during the battle. That can be hard work, but once those secrets are learned, pspace allows us to remember and exploit them.

We can locate the boot code simply by scanning for it. However, learning where the warrior actually fights is harder. Scanning for it is impossible because executed instructions look just like non-executed ones. We have to trick its processes into code that conveniently reveals its hideout.

What if that code was a smart bomb like this:

```
     Bomb    MOV.A #MyCode-Bomb, MyCode
               ...
     MyCode  STP.AB #0, #PspaceLocation
```

At the end of the round, if MyCode is non-zero then we know where the opponent hides. Wheee!

In fact, that is how my warrior Combatra works:

```
;strategy Start each battle with a few quick scans. If nothing
;strategy is found, then run either a core clear or a bomber.
;strategy Otherwise, assume that Combatra found the opponent’s
;strategy original 100 instructions. Probe to discover where its
;strategy processes run. Remember where everything is. Compute
;strategy the bootstrap distance. Later, a scanner finds the enemy
;strategy simply by locating its enormous boot code.
```

Combatra destroys many of the same warriors that SnowDust was designed to beat: Probe, Gigolo, Impish, CIA, blue candle, and Torch.

However, its scores can vary wildly between battles of 200. Combatra’s opportunistic scan might locate the enemy in the first battle, or in the 100th. Furthermore, when fighting a multi-component warrior, such as an imp/stone like The Stormbringer, the scores will differ depending on which

part is probed first. For example, Combatra may happily take advantage of Stormbringer's imps, not realizing that greater rewards could be achieved if it could find the stone. In fact, Stormbringer's imp launcher happens to be positioned precisely 112*98 steps before its stone, so it is a great decoy to fool the process finder. Perhaps a different design would be less susceptible to decoys. One such alternative is included here for your amusement (below the main warrior).

Perhaps a better boot-finding program could be made by hacking existing warriors instead of by requiring two specialized components. That might flatten some of the score fluctuations.

An interesting phenomenen influenced the developement of Combatra. A quick bomber can brainwash a pspacer even without using STP bombs. The brainwash happens when the pspacer references data that has been bombed. For example, consider this code typical of modern pspacers:

```
        STP.B  *table, #Pstate
table   JMP        }1,  441
state1  DAT     boot1,  882
```

If either table or state1 is bombed, then the pspacer will store junk data instead of its intended data. This will happen to a P^3 switcher like SnooPy during 5/7900 of battles with a quick bomber like Cinammon. In 200 rounds, there is an 11.9% chance that SnooPy will be brainwashed at least once. This effect increases dramatically for slower pspacers. It's tolerable for SnooPy, a machine that changes state quickly, but it can't be ignored by a long-term strategist like Combatra.

One way to reduce problems is to keep the data inside of your executable instructions as much as possible. Instead of:

```
     STP.AB *pointer, #Pspace
```

try to put the data directly into the STP instruction:

```
     STP.AB #1, #Pspace
```

Here's the code:

```
;redcode-94
;name Combatra
;author David Moore
;strategy Start each battle with a few quick scans. If nothing
;strategy is found, then run either a core clear or a bomber.
;strategy Otherwise, assume that Combatra found the opponent's
;strategy original 100 instructions. Probe to discover where its
;strategy processes run. Remember where everything is. Compute
;strategy the bootstrap distance. Later, a scanner finds the enemy
;strategy simply by locating its enormous boot code.
;assert CORESIZE==8000 && MAXLENGTH==100

org start

;-----------------------------------------------------------------------
; the core clear is used either alone or with the scanner

cgate   dat    -1,  sFirst
        dat <5334, <2667
        dat    -1,  12
clear   spl #3891,  sScan  ; spl #3891, 18
        mov    -1, >cgate
        mov   *-1, >cgate
        djn.a  -2,  cgate
        djn.a  -3, *-1

        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0  ; scanned
```

```
sDiff   equ    65 ; difference between sScan and cgate after boot
sStep   equ    98
sFirst  equ  1283

; Boot the scanner to take advantage of the magic number

sBoot   mov  <away, <where
        ldp.a #pBoot, sStore
        mov  <away, <where
        mov  >clear, >sJump
        djn -2, #7
sJump   djn.f start+dist-3+sDiff+1, #start+dist-3+sDiff

sScan   add.ab #sStep+1, @2
        jmz.f  sScan, <sScan-sDiff
        jmz.f  sScan, <sScan-sDiff    ; ignore the loners
        spl (-3-sDiff)+3, <(-3-sDiff) ; write over what I just found
        djn.a  #6, #4                 ; after about 12 SPLs, change
sStore  add.ab #0, -5-sDiff           ; attack to hit booted opponent
        dat 0,0

;-----------------------------------------------------------------------
; bomber taken from Kline's Floody River and hacked

bstep   equ 7829
btime   equ  863
btime2  equ  420

bomb    spl #bstep*2, -bstep
        mov {(bomb-2)+bstep*btime2, @3-(bstep*2)*btime
        mov   bomb, @-1
        add.x bomb,  -2
        djn.f -3, {-(bstep*2)*(btime-1)  ; hit by SPL to start clear
        mov    2, >bomb-3
        djn.f -1, >bomb-3
        dat <2667, 6-bomb

;-----------------------------------------------------------------------
; Did I find something last time?

check   ldp.a #pTroll, tab
        add.a   #5,  tab  ; ignore small numbers
tab     slt.ab  #0, #11
        jmp compute,  9   ; (yes, go compute the boot distance)
        jmp bBoot,   10   ; (no, keep trolling)

; Compile all of my information into one nice number

compute ldp.a #pQuick, diff
diff    sub.a  #0, tab
        add.a #((start-qPtr)+tDist+5-6)-11-196, tab
        stp.ab tab, #pBoot
        stp.ab #6, #pMode  ; run scanner next time
        jmp boot, 0  ; I'm too slow to risk booting everything now

        dat 0,0
        dat 0,0
        dat 0,0
        dat 0,0  ; scanned

pMode   equ 271  ; overall strategy (code for one of the 11 states)
pBoot   equ 292  ; opponent's bootstrap distance

; intermediate results used to compute pBoot
pQuick  equ 433  ; what cell was quickscanned
pTroll  equ 454  ; what cell was occupied by the opponent

start   ldp.a #0, tab
        ldp.a #pMode, state
```

```
        mod.ba *tab,state; current;  next      loss       win       tie
        stp.b *1, #pMode ;  state ; state      ----       ---       ---
state   jmp     }0, 472  ; 0 check; 472= 42*11+ 10 = 52*9+ 4 = 47*10+ 2
        spl #check, 472  ; 1 check; 472= 42*11+ 10 = 52*9+ 4 = 47*10+ 2
        spl #bBoot, 472  ; 2 bomb ; 472= 42*11+ 10 = 52*9+ 4 = 47*10+ 2
        spl #sBoot, 943  ; 3 scan ; 943= 85*11+  8 =104*9+ 7 = 94*10+ 3
        spl #bBoot,  qA  ; 4 bomb ;3874=352*11+  2 =430*9+ 4 =387*10+ 4
qTable  spl #cBoot,  qB  ; 5 clear;2705=245*11+ 10 =300*9+ 5 =270*10+ 5
        spl #sBoot,  qC  ; 6 scan ;1536=139*11+  7 =170*9+ 6 =153*10+ 6
        spl #sBoot, 267  ; 7 scan ; 267= 24*11+  3 = 29*9+ 6 = 26*10+ 7
        spl #sBoot, 768  ; 8 scan ; 768= 69*11+  9 = 85*9+ 3 = 76*10+ 8
        spl #sBoot, 849  ; 9 scan ; 849= 77*11+  2 = 94*9+ 3 = 84*10+ 9
        jmp #cBoot, 455  ;10 clear; 455= 41*11+  4 = 50*9+ 5 = 45*10+ 5

;-----------------------------------------------------------------------
; program intended to "troll" the enemy into revealing its location

tStep  equ 98
tTime  equ 2448

troll  mov    @0, *5
       add.f   3,  4
       jmz.a  -2,  1
       stp.ab #0, #pTroll
       jmp  #tStep, <-tStep
       ; this bomb causes my foe to report its location to me
       mov.a #(-2-tStep*tTime), -2-(-2-tStep*tTime)

; quickscan got something! (presumably boot code)

tDist   equ  2100 ; difference between start and troll after boot

tBoot   mov <tJump, {tJump
        mov <tJump, {tJump
        djn -2, #3
qCalc   mul.ba qTable, qPtr   ; compute the scanned location
qPtr    sne     qX, datZero
        add.a #qDiff, qPtr
        stp.ab qPtr, #pQuick  ; remember where I found it
        stp.ab  #1,  #pMode   ; next time, check the results
        stp.ab  #0,  #pTroll  ; forget previous troll now
tJump   djn.f start+tDist+6, #troll+6  ; start trolling

bAway   dat -3, bomb-(clear-3)

        dat 0,0
datZero dat 0,0
        dat 0,0
        dat 0,0  ; scanned

bBoot   add.f bAway, away  ; converts clear boot into bomber boot

; note: changing the distance between qTable and qPtr affects
; both the quickscan and the pspace!

qX      equ 5072
qInv    equ 6831  ; inverse of qX-1 (such that (qX-1)*qInv==1)
qDiff   equ 5983
qA      equ (((qX+(qTable-qPtr)-2)*qInv)%CORESIZE)
qB      equ (((qX+(qTable-qPtr)-1)*qInv)%CORESIZE)
qC      equ (((qX+(qTable-qPtr)-0)*qInv)%CORESIZE)

cBoot   sne qPtr+(qA-0)*qX, qDiff+qPtr+(qA-0)*qX
        seq      <qTable-1, qDiff+qPtr+(qA-1)*qX
        jmp          tBoot, {qCalc
        sne qPtr+(qC-0)*qX, qDiff+qPtr+(qC-0)*qX
        seq      <qTable+1, qDiff+qPtr+(qC-1)*qX
        jmp          tBoot, }qCalc
        sne qPtr+(qB-0)*qX, qDiff+qPtr+(qB-0)*qX
        seq      <qTable+0, qDiff+qPtr+(qB-1)*qX
```

```
where   jmp          tBoot, start+dist+5

dist    equ 6942  ; distance between start and clear after boot

boot    mov <away, <where
        mov <away, <where
        mov <away, <where
        mov <away, <where
        djn -4, #2
away    djn.f start+dist, #clear+5

end
```

- -

```
;redcode-94
;name Process Finder
;author David Moore
;assert CORESIZE==8000

first equ 4104 ; 3585 ; 2587
fstep equ  911 ; 6727 ; 7699

PFIND equ 250

;bomb that writes back to fstore
fbomb  mov.a #first,  fstore-first

find   spl    #fstep , -fstep
fstore stp.ab #0     ,#PFIND
       add     find  , fbomb
       mov     fbomb ,*fbomb
       jmp     -2    , 0

end find
```

Extra Extra Extra - KafuFFLe by John Metcalf

KafuFFLe is a warrior formed from two strategies commonly found running in parallel. KafuFFLe is an example of a defensive paper/stone, such as Shadow or Puddleglum. Take a look at Oversby’s Recovery for an example of an aggressive paper/stone.

The creation of KafuFFLe’s paper was inspired by one of Liporati’s tiny hill papers, which is effective though only 7 lines long. Whether any similarity exists between the two remains to be seen. The paper here is a low process silk-imp.

KafuFFLe uses a .5c stone which mutates into a clear by self-bombing. This happens in a similar way to the classic stone Carbonite. The stone’s djn co-operates with the bombing to build a decoy twice as fast.

It need not be tricky to uncover some decent constants for a paper/stone. For KafuFFLe, I followed the traditional method of finding constants for the paper by brute force, then placing the stone in each ’pocket’ of untouched core in turn, testing to see which was most effective. However, comparable results can be obtained by adding a second stage of brute force to decide where to place the stone.

Anyhow, here’s the code:

```
;redcode-94
;name KafuFFLe
;author John Metcalf
;strategy Mini-Q^3 -> Paper/Stone
;assert CORESIZE==8000

     pBoot equ pGo+501
     sBoot equ pBoot-755           ; still tweaking!

     org qGo
pGo: spl   1,        >sBoot-2619
```

```
     mov   <sFrm,    {sPos
     spl   1,        >sBoot+2759
     mov   <sFrm,    {sPos
sPos:spl   sBoot+6,  >sBoot-3494   ; launch stone

     mov   {pap1,    {pPos
     mov   {pap1,    {pPos
pPos:djn.f pBoot+8,  <sBoot-1666   ; launch paper

     pStep1 equ 1312
     pStep2 equ 3692
     pStep3 equ 5323               ; still tweaking!

pap1:spl   @0+8,     <pStep1       ; paper (Nomad)
     mov   }pap1,    >pap1
     mov   }pap1,    >pap1
pap2:spl   @0,       <pStep2
     mov   }pap2,    >pap2
     mov   {pap2,    <pap3
pap3:spl   *pStep3-4,>pStep3
     mov.i #pStep2-pStep3+1,}pStep3-1

     for 36
     dat 0,0
     rof

     sStp equ 703
     sTim equ 1183

sFrm:spl   #0,       #0+6          ; stone (Uninvited)
sLp: mov   sBmb,     @sPtr
sSel:sub.x #sStp*2,  @sLp
sPtr:mov   {3582,    }sSel+2*sStp*sTim
     djn.f @sSel,    }sPtr
sBmb:dat   <sStp,    >1

     qf equ qKil                   ; Mini-Q^3
     qs equ 222
     qd equ 322
     qi equ 7
     qr equ 11

qGo: seq   qd+qf+qs,    qf+qs      ; 1
     djn.f qSki,        {qd+qf+qs+qi
     seq   qd+qf+6*qs,  qf+6*qs    ; B
     djn.f qFas,        {qd+qf+6*qs+qi
     seq   qd+qf+5*qs,  qf+5*qs    ; B-1
     jmp   qFas,        <qBmb
     seq   qd+qf+7*qs,  qf+7*qs    ; B+1
     jmp   qFas,        >qBmb
     seq   qd+qf+9*qs,  qf+9*qs    ; A-1
     djn   qFas,        {qFas
     seq   qd+qf+10*qs, qf+10*qs   ; A
     jmn   qFas,        {qFas

     seq   qd+qf+3*qs,  qf+3*qs    ; C
     djn.f >qFas,       {qd+qf+3*qs+qi
     seq   qd+qf+2*qs,  qf+2*qs    ; C-1
     jmn   >qFas,       {qSlo
     seq   qd+qf+4*qs,  qf+4*qs    ; C+1
     jmn   >qFas,       }qSlo
     seq   qd+qf+12*qs, qf+12*qs   ; B*C-B
     jmn   qSlo,        {qSlo
     seq   qd+qf+15*qs, qf+15*qs   ; B*C-C
     jmp   qSlo,        <qBmb
     seq   qd+qf+21*qs, qf+21*qs   ; B*C+C
     jmp   qSlo,        >qBmb
     seq   qd+qf+24*qs, qf+24*qs   ; B*C+B
     jmn   qSlo,        }qSlo
     seq   qd+qf+27*qs, qf+27*qs   ; A*C-C
```

```
     djn   qSlo,         {qFas
     seq   qd+qf+30*qs, qf+30*qs   ; A*C
     jmn   qSlo,         {qFas
     sne   qd+qf+18*qs, qf+18*qs   ; B*C
     jmz.f pGo,          qd+qf+18*qs-10

qSlo:mul   #3,           qKil       ; C=3
qFas:mul.b qBmb,         @qSlo
qSki:sne   >qf+23*qs,    >qKil
     add   #qd,          qKil
qLoo:mov   *qKil,        <qKil
qKil:mov   qBmb,         }qs
     sub   #qi-1,        @qLoo
     djn   qLoo,         #qr
     djn.f pGo,          <10        ; A=10
qBmb:dat   {qi*qr-10,    {6         ; B=6
     end
```

Errata

In Core Warrior 70, the summary of the P^3 result incorrectly switched "even" and "odd". The correct text for lines 705-6 should read:

```
   j = (i+1+m)/2  if i is odd
   j = i/2        if i is even
```

Questions? Concerns? Comments? Complaints? Mail them to people who care.
Beppe Bezzi <giuseppe.bezzi@galactica.it>, Philip Kendall <pak21@cam.ac.uk>,
Anton Marsden <anton@paradise.net.nz>, John Metcalf <grumpy3039@hotmail.com>
and Christian Schmidt <schmidt@mail.uni-mainz.de>

From news-rocq!jussieu.fr!fu-berlin.de!server1.netnews.ja.net!pegasus.csx.cam.ac.uk!not-for-mail Mon Feb 26 10:54:03 2001
Article: 12281 of rec.games.corewar
Path: news-rocq!jussieu.fr!fu-berlin.de!server1.netnews.ja.net!pegasus.csx.cam.ac.uk!not-for-mail
From: pak@ast.cam.ac.uk (Philip Kendall)
Newsgroups: rec.games.corewar
Subject: Core Warrior 79
Date: 23 Feb 2001 17:45:01 -0000
Organization: Institute of Astronomy/Royal Greenwich Observatory, Cambridge
Lines: 732
Message-ID: <9767it$a3j@cass30>
NNTP-Posting-Host: cass30.ast.cam.ac.uk
Xref: news-rocq rec.games.corewar:12281

[As usual, written by John Metcalf, so kudos to him -- Phil]

```
    .xX$$x.
  .x$$$$$$$x.
  d$$$$$$$$$$
,$$$$$$P' 'P'                                ,    .
$$$$$P'   '                                .d     b
$$$$P    b     ,$$x     ,$$x    ,$$x   ,$$b     $$.
Y$$$$'    '$.  $$$$$$.  $$$$$$  $$P~d$. d$$$b d d$$$
'$$$$     ,$$ $$$$$$$b $$$P '$ $$$b.$$b 'Y$$$d$d$$$'   . . a  . a  a .aa  . a
 '$$$    ,$$$,$$' '$$$ $$$'  ' $$P$XX$'  '$$$$$$$$$ .dP' '$'$ '$'$ , $''$ '$'$
  'Y$b ,d$$$P '$b,d$P' '$$.    '$$.  ,    '$$P $$$' Y $.  $    $   $ Y..P  $
   '$$$$$$$'    $$$P'   '$$b    '$$$P      'P  '$'  'Y'k. $.   $.  $. $$'  $.
```

Issue 79 19 February, 2001

Core Warrior is a newsletter promoting the game of corewar. Emphasis is placed on the most active hills - currently the '94 draft hill, the beginner hill and the '94 no-pspace hill. Coverage will follow where ever the action is. If you haven't a clue what I'm talking about then check out these five-star Internet locals for more information:

FAQs are available from:
  http://www.koth.org/corewar-faq.html
  http://homepages.paradise.net.nz/~anton/cw/corewar-faq.html

The ftp site and it's mirrors are at:
  ftp://ftp.csua.berkeley.edu/pub/corewar
  ftp://ftp.inria.fr/INRIA/Projects/para/doligez/cw/mirror
  ftp://www.koth.org/corewar

pMARS itself is also available from:
  http://www.koth.org/pmars ;pMARS home page
  ftp://members.aol.com/ofechner/corewar ;Fechner ftp site

Web pages are at:
  http://www.koth.org/ ;KOTH
  http://www.ecst.csuchico.edu/~pizza/koth ;Pizza
  http://para.inria.fr/~doligez/corewar ;Planar

Newbies should check the above pages for the FAQ, language specification, guides, and tutorials. Post questions to rec.games.corewar. All new players are infinitely welcome!

Greetings...

The three months since last issue have been an interesting time, showing Corewar is very much alive and well. I hope you enjoy this issue, which contains code for Certain Abuse and Enough is Enough...

-- John Metcalf

Current Status of the Internet Pizza Server ICWS '94 Draft Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	33.8/ 21.7/ 44.5	Olivia	Ben Ford	146.0	8
2	32.8/ 23.4/ 43.9	Uninvited	John Metcalf	142.2	42
3	32.6/ 23.5/ 43.8	Quicksilver	Michal Janeczek	141.7	24
4	30.7/ 19.9/ 49.4	nPaper II	Paul-V Khuong	141.6	76
5	26.6/ 13.0/ 60.4	Mini Return Of The Jedimp	John K W	140.1	19
6	43.7/ 47.6/ 8.7	Razor	Michal Janeczek	139.9	6
7	38.1/ 37.4/ 24.5	Wizard 13	John Metcalf	138.9	7
8	24.7/ 10.7/ 64.6	The PhantIMP Menance	Ben Ford	138.8	9
9	38.9/ 39.3/ 21.7	Behemot	Michal Janeczek	138.5	5
10	28.4/ 19.0/ 52.6	KafuFFLe	John Metcalf	137.9	24
11	28.1/ 19.4/ 52.5	Tie Factory	Christian Schmidt	136.8	45
12	26.6/ 17.1/ 56.2	Cinammon	John Metcalf	136.1	44
13	28.6/ 21.6/ 49.8	Fifth Third	Ben Ford	135.7	11
14	31.7/ 28.4/ 39.9	Vilex	Ken Espiritu	135.0	71
15	36.6/ 38.9/ 24.5	Combatra	David Moore	134.3	31
16	25.3/ 16.3/ 58.3	Return of the Fugitive	David Moore	134.3	100
17	36.9/ 39.5/ 23.6	test	Paulsson	134.3	3
18	25.7/ 19.5/ 54.8	The Dark One	Christian Schmidt	131.9	28
19	32.2/ 33.0/ 34.8	Keyser Soze	Anton Marsden	131.3	4
20	28.3/ 25.5/ 46.2	Brigadeer	M Joonas Pihlaja	131.1	15
21	31.8/ 33.5/ 34.7	Recount	P.Kline	130.1	1
22	34.4/ 38.7/ 26.9	Ultima	Christian Schmidt	130.1	38
23	25.2/ 20.7/ 54.1	test	JKW	129.8	17
24	39.3/ 48.9/ 11.8	Shapeshifter	Michal Janeczek	129.7	30
25	31.8/ 36.6/ 31.7	Carme	Zul Nadzri	127.0	2

Age since last issue: 26 (18 last issue, 12 the issue before)
Days since last issue: 104 (209 last issue, 121 the issue before)
Average age: 26 (34 last issue, 34 the issue before)
Average score: 136 (138 last issue, 137 the issue before)
Average movement: -2.2 (-6.0 last issue, -1.5 the issue before)
Warriors surviving: 10 (14 last issue, 18 the issue before)

The top 25 warriors are represented by 13 independent authors - a number unmatched since CW66: 4 each for Metcalf and Janeczek, 3 each for Ford and Schmidt, and 2 each for Wilkinson and Moore. Each of the remaining 7 authors has just 1 warrior. (9 authors last issue, 10 the issue before)

Olivia has held the top of the hill since it appeared; the p-spacers have lost their grasp.

---

94 - What's New (Sorted by rank and score)

#	%W / %L / %T	Name	Author	Score	Age
1	61.1/ 35.7/ 3.2	Certain Abuse v02	Dave Hillis	186.5	0
1	50.8/ 46.0/ 3.2	Is this a game of chance?	Dave Hillis	155.6	1
1	47.3/ 45.7/ 7.0	Not the way I play it. No	Dave Hillis	148.9	1
1	27.4/ 10.6/ 62.0	Mini Return Of The Jedimp	John K W	144.2	1
1	31.2/ 19.2/ 49.6	Olivia	Ben Ford	143.2	1
1	28.7/ 19.0/ 52.3	Fifth Third	Ben Ford	138.5	1
1	23.9/ 9.7/ 66.4	The PhantIMP Menance	Ben Ford	138.1	0
2	37.5/ 36.6/ 25.8	Wizard 13	John Metcalf	138.4	1
4	33.7/ 21.4/ 44.9	Quicksilver	Michal Janeczek	146.1	0
4	36.9/ 40.2/ 22.9	Behemot	Michal Janeczek	133.6	1
4	41.6/ 51.3/ 7.1	Razor	Michal Janeczek	131.8	1
5	34.7/ 32.6/ 32.7	2 Crazy	Christian Schmidt	136.7	1
6	25.8/ 18.3/ 55.9	H-Bomb	JKW	133.3	0
11	24.3/ 16.6/ 59.1	test	JKW	132.1	1
12	25.3/ 19.6/ 55.2	KafuFFLe	John Metcalf	130.9	1
12	36.6/ 42.8/ 20.6	one shot	M Joonas Pihlaja	130.5	1
13	34.8/ 40.1/ 25.1	test	Paulsson	129.6	1

14	30.2/ 32.4/ 37.4	Keyser Soze	Anton Marsden	128.0	1
15	30.5/ 30.5/ 39.1	High Times v1.3	JKW	130.5	0
16	25.4/ 22.7/ 51.9	All In 2	Robert Macrae	128.1	1
18	25.4/ 25.3/ 49.3	Brigadeer	M Joonas Pihlaja	125.6	1
22	21.0/ 18.9/ 60.1	test	JKW	123.1	1
22	30.1/ 37.3/ 32.6	Carme	Zul Nadzri	122.9	1
22	29.2/ 35.5/ 35.3	Recount	P.Kline	122.9	1
24	29.1/ 34.5/ 36.4	The Magician	Christian Schmidt	123.8	1
24	31.4/ 41.2/ 27.4	The IMPerial Destroyer	Christian Schmidt	121.6	1
25	17.1/ 9.7/ 73.3	Black Box	JKW	124.5	1

Players entering hill since last issue: 12 (5 last issue, 5 the issue before)
Average rank of new entries: 10 (11 last issue, 17 the issue before)

Hillis debuts on the ’94 hill with the highest score we’ve seen in a long time. Schmidt hasn’t failed to have a warrior under What’s New since CW60, quite an achievement. Despite Pizza being down (twice), it’s been pretty busy since last issue.

---

94 - What’s No More (Sorted by age)

#	%W / %L / %T	Name	Author	Score	Age
26	29.0/ 39.8/ 31.2	Recycled Bits	David Moore	118.2	164
26	29.4/ 39.7/ 30.9	Self-Modifying Code	Ben Ford	119.1	108
26	23.4/ 23.9/ 52.7	Jade	Ben Ford	122.9	75
26	23.7/ 25.7/ 50.6	EvoP 3	Ken Espiritu	121.6	71
26	30.7/ 38.5/ 30.8	Trefoil the original	Steve Gunnell	123.0	56
26	24.0/ 25.7/ 50.3	Exor	Ken Espiritu	122.3	52
26	0.5/ 0.1/ 3.4	Cinammon	John Metcalf	4.9	45
26	31.8/ 41.8/ 26.4	Origami Harquebus	mjp	121.9	44
26	23.8/ 21.4/ 54.8	Stylized Euphoria	Ken Espiritu	126.3	43
26	24.1/ 30.3/ 45.6	Wintermute	John Metcalf	117.8	35
26	29.9/ 41.8/ 28.3	G2	David Moore	118.1	24
26	26.6/ 33.0/ 40.3	High Times v1.3	JKW	120.2	21
26	38.2/ 54.4/ 7.4	Razor	Michal Janeczek	121.9	19
26	26.1/ 35.3/ 38.6	2 Crazy	Christian Schmidt	116.8	18
26	34.6/ 44.7/ 20.7	Pitbull	Christian Schmidt	124.5	16
26	22.1/ 24.7/ 53.2	Mini Digitalis	Christian Schmidt	119.6	16
26	34.1/ 44.5/ 21.5	CrazyShot	Christian Schmidt	123.7	12
26	37.7/ 55.2/ 7.1	Not the way I play it. No	Dave Hillis	120.2	9
26	21.5/ 24.2/ 54.4	All In 2	Robert Macrae	118.7	9
26	33.2/ 45.6/ 21.1	one shot	M Joonas Pihlaja	120.9	8
26	21.9/ 26.5/ 51.6	H-Bomb	JKW	117.3	8
26	36.6/ 56.6/ 6.8	Certain Abuse v02	Dave Hillis	116.6	7
26	18.7/ 19.9/ 61.4	test	JKW	117.5	4
26	36.6/ 51.6/ 11.7	Win!	David Moore	121.7	3
26	30.1/ 43.0/ 26.9	The IMPerial Destroyer	Christian Schmidt	117.2	3
26	13.9/ 12.0/ 74.1	Black Box	JKW	115.9	3
26	28.3/ 35.3/ 36.4	The Magician	Christian Schmidt	121.3	2

Dave Hillis beats Schmidt’s record - his Certain Abuse which entered the hill as KotH falls off the hill completely in just 7 challenges, easily topping Toki’s 12. Not satisfied with this he then breaks his own record, setting a new record of 5.

Recycled Bits and Self-Modifying Code are finally knocked from the hill, leaving their mark in the Hall of Fame.

---

94 - What’s Old

#	%W / %L / %T	Name	Author	Score	Age
16	25.3/ 16.3/ 58.3	Return of the Fugitive	David Moore	134.3	100
4	30.7/ 19.9/ 49.4	nPaper II	Paul-V Khuong	141.6	76
14	31.7/ 28.4/ 39.9	Vilex	Ken Espiritu	135.0	71
11	28.1/ 19.4/ 52.5	Tie Factory	Christian Schmidt	136.8	45

Even with the loss of RotF, Moore is still the author of the oldest warrior, a title he has either held, or joinly held, since CW72. nPaper II appears to be effective even without a-driven imps to take advantage of :-)

The Extended New Hall of Fame: * indicates the warrior is still active.

Pos	Name	Author	Age		Strategy
1	Probe	Anton Marsden	403		Q^2 -> Bomber
2	Blur 2	Anton Marsden	396		Scanner
3	Damage Incorporated	Anton Marsden	373		Q^2 -> Bomber
4	Return Of The Jedimp	John K W	357		Q^2 -> Stone/imp
5	unrequited love	kafka	346		Q^2 -> Paper
6	Impish v0.2	Ian Oversby	345		Stone/imp
7	Gigolo	Core Warrior staff	332		Q^2 -> Stone/imp
8	Falcon v0.3	Ian Oversby	275		P-warrior
9	Nine Seven Six	M R Bremer	232		Q^2 -> Stone/imp
10	Rosebud	Beppe	218		Stone/imp
11	Newt	Ian Oversby	216		Q^2 -> Stone/imp
12	Q^2 Miro	Anders Ivner	214		Q^2 -> Scanner/bomber
13	Instant Wolf 3.4	Edgar	205		P-warrior
14	Goldfinch	P.Kline	201		P-warrior
15	Simple v0.4b	Ian Oversby	197		QScan -> Stone/imp
16	Trident^2	John K W	195		Q^2 -> Stone/imp
17	ompega	Steven Morrell	189		Stone/imp
18	Frogz	Franz	172		Q^2 -> Paper
19	The Machine	Anton Marsden	164		Scanner
=	Recycled Bits	David Moore	164		P-warrior
21	Memories	Beppe	152		Scanner
22	Vain	Ian Oversby	147		Q^2 -> Stone/imp
23	Head or Tail	Christian Schmidt	142		Q^2 -> Paper
=	The Stormbringer	Christian Schmidt	142		Q^2 -> Stone/imp
25	Electric Head	Anton Marsden	140		P-warrior
26	Vigor	Ken Espiritu	138		Q^2 -> Paper
27	Fixed	Ken Espiritu	135		Q^2 -> Paper
28	Tiberius 3.1	Franz	130		Q^2 -> Paper
29	Ultraviolet-B	Ken Espiritu	120		Q^2 -> Paper
30	obvious to those who k	Robert Macrae	117		Q^2 -> Paper
31	Solomon v0.8	Ian Oversby	116		Stone and scanner
32	Self-Modifying Code	Ben Ford	108		P-warrior
33	CC Paper 3.3	Franz	107		Q^2 -> Paper
34	mrb-test	M R Bremer	106		*Unknown*
35	T.N.T. pro	Maurizio Vittuari	105		Bomber
=	Pulp v0.5	Ian Oversby	105		Q^2 -> Paper
37	Fugitive	David Moore	102		Q^2 -> Paper/imp
38	Vengeance	Robert Hale	101		Q^2 -> Stone/imp
39	Return of the Fugitive	David Moore	100	*	Q^4 -> Paper/imp
=	Jack in the box II	Beppe Bezzi	100		P-warrior
=	Fire and Ice	David Moore	100		P-warrior
42	Oblivion	Ian Sutton	99		P-warrior
43	Silver Talon 1.2	Edgar	93		Scanner
44	death by redcode	Simon Wainwright	91		Q^2 -> Bomber
45	Bodge 1	Robert Macrae	85		Q^2 -> Scanner
46	Inferno 2.4	Philip Kendall	84		Qscan -> Bomber
47	Test	Anton Marsden	83		*Unknown*
=	NCC-1701-A	Philip Kendall	83		P-warrior
49	RetroQ	Paul Kline	82		Q^2 -> Paper
50	Tornado 4	Beppe Bezzi	78		Bomber
=	Stonewashed	Christian Schmidt	78		Q^3 -> Paper/stone

Recycled Bits and Self-Modifying Code reach their final resting place, leaving Return of the Fugitive as the only active warrior in the ENHoF.

The ??? Hall of Fame: * indicates the warrior is still active.

1	Recycled Bits	David Moore	164		P-warrior
2	The Stormbringer	Christian Schmidt	142		Q^2 -> Stone/imp
3	Self-Modifying Code	Ben Ford	108		P-warrior
4	Return of the Fugitive	David Moore	100	*	Q^4 -> Paper/imp
5	death by redcode	Simon Wainwright	91		Q^2 -> Bomber
6	Stonewashed	Christian Schmidt	78		Q^3 -> Paper/stone
7	nPaper II	Paul-V Khuong	76	*	MiniQ^3 -> Paper
8	Jade	Ben Ford	75		Q^4 -> Stone/imp
9	Stranger	John Metcalf	73		Q^3 -> Bomber
10	Vilex	Ken Espiritu	71	*	P-Warrior

=	EvoP 3	Ken Espiritu	71		Q^3 -> Paper/imp
12	The Fugitive	David Moore	70		MiniQ^2 -> Paper/imp
13	One Step Beyond	John Metcalf	67		MiniQ^3 -> Stone/imp
14	Snowman	John Metcalf	64		P-warrior
15	Draken Fire	Ben Ford	63		Q^3 -> Bomber
16	Trefoil the original	Steve Gunnell	56		P-warrior
17	Fixed	Ken Espiritu	54		Qscan -> Paper
18	Pattel's Virus	Ben Ford	52		P-warrior
=	Exor	Ken Espiritu	52		Q^3 -> Paper
20	The Outsider	Simon Wainwright	51		QScan -> Stone/imp
=	Galatea	Ben Ford	51		Q^2 -> P-warrior
22	Icen	Ben Ford	50		Q^3 -> Paper
=	Silver Talon 1.2	Edgar	50		Scanner
24	No More Innocuous	Leonardo Liporati	49		Q^4 -> Paper
=	trefoil 23 226	Steve Gunnell	49		P-warrior
=	Puddleglum	John Metcalf	49		Q^3 -> Paper/stone
27	Circle of Fire	John Metcalf	48		P-warrior
28	Tie Factory	Christian Schmidt	45	*	Q^3 -> Paper
=	Shadow	Christian Schmidt	45		Q^2 -> Paper/stone
30	Cinammon	John Metcalf	44	*	MiniQ^3 -> Paper/imp/wimp
=	Twin	Christian Schmidt	44		P-warrior
=	Origami Harquebus	mjp	44		P-warrior
33	Stylized Euphoria	Ken Espiritu	43		Q^4 -> Paper/imp
34	Uninvited	John Metcalf	42	*	MiniQ^3 -> Stone/imp
=	Slippery Eels	Ben Ford	42		Q^3 -> Paper
=	Even Less Innocuous	TeamQ3	42		Q^3 -> Paper
=	Spooky Wench	John Metcalf	42		Q^3 -> Stone/imp
38	myBlur2	Paulsson	41		Scanner
=	WingShot	Ben Ford	41		Oneshot
40	Digitalis 5	Christian Schmidt	40		Q^3 -> Clear/imp
=	Alive and K(qu)icking	Leonardo Liporati	40		MiniQ^3 -> Paper
=	Freight Train v0.2	David Moore	40		'88 Q^2 -> Stone/imp
43	Ultima	Christian Schmidt	38	*	P-warrior
44	Vain	Ian Oversby	36		Q^2 -> Stone/imp
=	Jaguar	Christian Schmidt	36		Q^3 -> Stone/imp
46	Wintermute	John Metcalf	35		MiniQ^3 -> Stone/imp
47	Qshot	Christian Schmidt	34		Q^2 -> Oneshot
48	SnooPy	P.Kline	33		P-warrior
=	chained to the system	Simon Wainwright	33		*Unknown*
50	Glass	Ben Ford	32		Q^4 -> Paper

Many of you have suggested the HoF be replaced. 2 years have passed since the '94 hill was completely wiped. Perhaps now would be a suitable time to create a HoF based on the hill since that time (CW71).

What should we call this new HoF? Suggestions please.

Current Status of the Internet Pizza Server Beginner Hill:

Hill Specs:
```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
      maximum age: At age 100, warriors are retired.
    rounds fought: 200
  instruction set: ICWS '94 Draft
```

#	%W / %L / %T	Name	Author	Score	Age
1	50.5/ 21.4/ 28.0	MorphinMerlin	Jeremy K	179.7	35
2	54.6/ 30.6/ 14.7	Grand Mal 1.1	Ransom Smith	178.6	37
3	55.5/ 35.8/ 8.7	Kenshin d	Steve Gunnell	175.2	94
4	48.6/ 30.4/ 21.0	Seek&Destroy	Ayan Chakrabarti	166.9	14
5	46.5/ 34.0/ 19.5	Even More Advanced (read:	Josef Jahn	159.0	41
6	44.9/ 31.5/ 23.6	Advanced Spooner	Josef Jahn	158.4	39
7	42.9/ 28.8/ 28.4	the boy's a time bomb	aCM	157.0	99
8	45.0/ 36.1/ 18.9	Heatseeker	John Morahan	153.9	58
9	33.6/ 15.4/ 51.0	Hyper Advanced (read: sux	Josef Jahn	151.8	26
10	40.9/ 30.9/ 28.1	Chaos	John Morahan	150.9	49

11	29.7/ 8.7/ 61.6	PimpKing 1.0	Simon Duff	150.7	90
12	41.5/ 36.5/ 22.0	Remorseless	Ayan Chakrabarti	146.4	15
13	28.0/ 10.5/ 61.5	Watcher	John Metcalf	145.5	7
14	27.9/ 17.4/ 54.7	Simpleton	Ayan Chakrabarti	138.3	18
15	34.4/ 30.7/ 34.9	Mob Boyz	Simon Duff	138.0	91
16	27.7/ 18.3/ 54.0	Arkenstone	John Morahan	137.2	60
17	23.6/ 14.9/ 61.5	Fangorn	John Morahan	132.4	64
18	30.2/ 29.0/ 40.8	VelvetFist	Ayan Chakrabarti	131.3	16
19	28.8/ 29.3/ 41.9	Toofan	Ayan Chakrabarti	128.2	19
20	34.3/ 57.0/ 8.7	Mini	John Metcalf	111.6	59
21	29.4/ 48.4/ 22.2	h1_1.red	Dave Hillis	110.5	38
22	18.4/ 27.0/ 54.6	Jolly Jumper 10	Stefan Foerster	109.8	2
23	18.7/ 33.2/ 48.1	KGB 4	Stefan Foerster	104.2	1
24	18.2/ 55.5/ 26.3	Crazy	Lukasz Anforowicz	80.9	4
25	14.0/ 56.4/ 29.6	Pinky And The Brain	Simon Glanville	71.6	8

10 successful challenges since issue 78 brings about retirement for 5 warriors: Golden Gun, Gomjabbar V, DiHydrogen Monoxide and jollyblu.

Current Status of the KOTH.ORG ’94 No Pspace Hill:

Hill Specs:

```
         coresize: 8000
   max. processes: 8000
         duration: after 80,000 cycles, a tie is declared.
max. entry length: 100
 minimum distance: 100
    rounds fought: 250
  instruction set: ICWS ’94 Draft, excluding ldp and stp
```

#	%W/ %L/ %T	Name	Author	Score	Age
1	37/ 23/ 40	Olivia	Ben Ford	152.4	84
2	38/ 26/ 37	Quicksilver	Michal Janeczek	149.6	118
3	37/ 24/ 39	Uninvited	John Metcalf	149.4	38
4	44/ 39/ 18	Behemot	Michal Janeczek	148.8	179
5	34/ 20/ 47	The Dark One	Christian Schmidt	147.7	149
6	34/ 20/ 47	nPaper II	Paul-V Khuong	147.5	356
7	40/ 34/ 26	Recount	P.Kline	146.8	41
8	44/ 41/ 15	Eraser II	Ken Espiritu	146.0	313
9	37/ 30/ 33	Blacken	Ian Oversby	145.0	603
10	44/ 43/ 14	G2-b	David Moore	144.6	142
11	46/ 47/ 7	He Scans Alone	P.Kline	144.0	40
12	34/ 24/ 42	Jade	Ben Ford	143.6	425
13	43/ 43/ 14	Stalker	P.Kline	143.2	341
14	42/ 42/ 15	Jinx	Christian Schmidt	142.2	319
15	25/ 11/ 64	The Phantom Menace	Anton Marsden	139.3	56
16	29/ 20/ 51	KafuFFLe	John Metcalf	139.2	39
17	35/ 34/ 30	Keyser Soze	Anton Marsden	136.0	57
18	38/ 42/ 20	myBlur	Paulsson	134.3	21
19	22/ 24/ 54	jam test 3	John Metcalf	120.7	22
20	36/ 52/ 12	Hyperclear 4+	Steve Gunnell	119.6	1

146 successful challenges brings an end to the hill career of 12 warriors, including 10 with three figures ages: Zooom (441), Omnibus (327), Jaguar (269), Uninvited (249), vamp/scan test b1 (214), Experimental (196), Kenshin (166), Pitbull (134), CrazyShot (127) and Tie Factory (127).

The hilltop is held exclusively by stones - similarly to Pizza’s ’94 hill.

Current Status of the Koenigstuhl Recursive ICWS ’94 Draft Hill:

Koenigstuhl is a collection of infinite hills found on Christoph C. Birk’s Core War page. Several other hills are there also, including the recently constructed limited process, tiny and huge hills:

http://andromeda.ociw.edu/COREWAR/

Below we show the top 20 of a total 1133 warriors:

rank	name	author	score (style)

1	Quicksilver	Michal Janeczek	174.01 (94)
2	Silver Talon 1.2	Edgar	170.81 (94)
3	The Machine	Anton Marsden	170.31 (94)
4	Zooom...	John Metcalf	169.09 (94)
5	G2	David Moore	168.73 (94)
6	Boys are Back in Town 1.1	Philip Kendall	168.35 (94)
7	Newt	Ian Oversby	167.73 (94)
8	Phantasm 50	Robert Macrae	166.51 (94)
9	Jade	Ben Ford	166.39 (94)
10	Scan Man	David van Dam	166.17 (94)
11	Fixed	Ken Espiritu	165.85 (94)
12	Forty	Anton Marsden	165.55 (94)
13	Recovery	Ian Oversby	165.51 (94)
14	The Bloodhound	Ian Sutton	165.36 (94)
15	The Stormbringer	Christian Schmidt	165.31 (94)
16	nPaper II	Paul-V Khuong	165.22 (94)
17	Digitalis 4	Christian Schmidt	164.99 (94)
18	The Question	David Moore	164.97 (94)
19	Baseline Plus	Ken Espiritu	164.75 (94)
20	myVamp5.4	Paulsson	164.19 (94)

Quicksilver storms into 1st place - the first non-scanner to hold the position.

Final standings of Kofacoto:

Kofacoto is over. Congratulations to all who participated, and thanks to JKW and TTSG Internet Services, without whom this would never have happened.

Round 5: (’94)

Battle 1: Macrae beats Kline
Battle 2: Moore beats Paulsson
Battle 3: Janeczek beats Ford
Battle 4: Schmidt beats Liporati

Round 6: (’94x large)

Battle 1: Janeczek beats Schmidt
Battle 2: Macrae beats Moore

Round 7: (’88)

Janeczek played ’]enigma[’, Macrae played ’LaterAtNight’. Macrae’s Quick Scan + Nightfall Paper suceeds against Janeczek’s Paper + Imps: 14 wins, 1 loss and 985 draws.

1st: $500 won by Robert Macrae
2nd: $250 won by Michal Janeczek
3rd: $100 won by David Moore

For full details of each round, and some great comments by Robert Macrae, check out the tournament’s home page at:

http://www.koth.org/kofacoto

KOFACOTO was sponsored by TTSG Internet Services

Extra Extra - Certain Abuse by Dave Hillis

The idea for the abusive warriors came from my work using genetic algorithms to evolve core warriors, but not in the way you might guess. When I modified the corewars evolver program, RedRace, to work in a warming simulation I was surprised at how odd bugs and flaws in the simulation program seemed to jump out at me. My favorite was when the weak defending forces evolved to exploit a quirk in the rules that let them win, if they all died very quickly.

The Easter Egg Hypothesis: complex software system are likely to contain flaws or vulnerabilities which are hidden from plain sight. They can avoid detection for a long time because they fall within psychological blind spots. They only seem obvious in hindsight. Co-evolutionary simulation can help find these problems by leading one to focus on important aspects of the

system that common sense says should be ignored.

The gimmick behind the abusive warriors is the fact that the hills at KOTH and PIZZA use -F numbers and so the "random" warrior locations are easily predicted. Certain Abuse, below, was designed to be strong as a challenger but helpless as a defender: the "expiration date" effect.

Later warriors in the series were equally strong challenging or defending, but didn't last much longer because they only worked well against certain kinds of warriors.

Pizza's -F number was calculated by sending a number of probe warriors to the hill. An exhaustive search was then used to find an -F number whose results against published warriors were identical to those returned by Pizza. Later, I discovered Nathan Green describes a hand-shaking method for calculating the -F number in Core Warrior #30.

After Certain Abuse's outing on the hills, a patch was created for pMars to prevent future exploitation of -F numbers.

Here's the code you've been waiting for:

```
;redcode-94
;name Certain Abuse
;author Dave Hillis
;strategy - Takes advantage of the fact that the 94 hill and the
;strategy - Beginners hill both used -F 4000. It uses a P-space
;strategy - round counter and a look-up table to tell where the
;strategy - second warrior will be loaded into core. This version
;strategy - is only effective when challenging the hill. To fight
;strategy - as a defender, you have to use the negatives of the
;strategy - table values. The program is optimized to kill the
;strategy - published warriors that were on the 94 hill.
;assert CORESIZE==8000

  org START
counter equ #-109
off     equ 100
wrap    equ 87
target1 equ target2-1
target2 equ thecnt

START
thecnt  ldp    counter,  #0       ; increment a round counter
        add    #1,       thecnt
        stp.b  thecnt,   counter
        add.ba thecnt,   bomber
        slt.ab #wrap,    thecnt
        jmp    bomber
        add.a  #-wrap,   bomber
        mov.x  *bomber,  *bomber

bomber  mov.i  b-1,      target1
        add.f  target1,  target2

; target2 and target1 hold the start and end points of the other warrior.
; Attack it by shuffling lines from both ends working towards the middle

attack  mov.i  }target2, {target1
        mov.i  {target1, }target2
        djn.b  attack,   #121
b
spl.i #4000+off,<4994+off ; The abuse table. The A
mov.i #3398+off,<4539+off ; fields hold the address
mov.i #1376+off,<7816+off ; where the second warrior
mov.i #5987+off,<2824+off ; will be loaded for the
mov.i #5790+off,<2940+off ; first 87 rounds. The B
mov.i #3395+off,<2733+off ; fields hold the next 87
mov.i #5616+off,<1379+off ; rounds. Too bad there
mov.i # 814+off,<7391+off ; isn't more space.
```

```
mov.i #7121+off,<2951+off
mov.i #5830+off,< 931+off ; If he's still alive, I'm
mov.i #3869+off,<7713+off ; in big trouble. The table
mov.i #3471+off,<1780+off ; also serves as a weak
mov.i #7762+off,<7881+off ; secondary attack.
mov.i #2070+off,<2024+off
mov.i #6979+off,<2084+off ; After the 174 addresses
mov.i #2079+off,<1846+off ; in the table have been
mov.i #4453+off,<5856+off ; attacked, Certain Abuse
mov.i # 550+off,<6438+off ; over-runs the table and
mov.i #1679+off,<1828+off ; becomes suicidal for the
mov.i #2659+off,< 824+off ; remaining 26 rounds.
mov.i #4787+off,<3687+off
mov.i #7122+off,< 975+off ; If I'm brainwashed, I'm
mov.i # 883+off,<7598+off ; dead :-(
mov.i #7790+off,<1584+off
mov.i #3545+off,<6654+off ; 1. Can you find a small
mov.i #3796+off,<5890+off ; tweak which makes CA no
mov.i #2095+off,<4361+off ; longer suicidal?
mov.i # 641+off,<6573+off
mov.i #3683+off,<1985+off ; 2. Can you rewrite CA in
mov.i #6044+off,<5245+off ; less instructions? This
mov.i #5408+off,<2925+off ; would leave extra space
mov.i #6589+off,<4831+off ; to store addresses.
mov.i #4857+off,<6367+off
mov.i #1223+off,< 197+off ; The best answers received
mov.i #4383+off,<1682+off ; will appear in the next
mov.i #6986+off,<4269+off ; issue of Core Warrior.
mov.i #5201+off,<6114+off
mov.i #2305+off,<3660+off
mov.i #3504+off,<2859+off
mov.i #7537+off,<2207+off
mov.i #5916+off,<7442+off
mov.i #5407+off,<6033+off
mov.i #6594+off,< 763+off
mov.i #1368+off,<3047+off
mov.i #6857+off,<6168+off
mov.i #4688+off,<6931+off
mov.i #7356+off,<1920+off
mov.i #3598+off,< 936+off
mov.i #5554+off,<4051+off
mov.i #3339+off,<4276+off
mov.i #6573+off,<5107+off
mov.i #4775+off,<2222+off
mov.i #4278+off,<1909+off
mov.i #6361+off,<5736+off
mov.i #7292+off,<1549+off
mov.i # 725+off,< 885+off
mov.i #3918+off,<2196+off
mov.i #4530+off,<3107+off
mov.i #5390+off,<4534+off
mov.i # 938+off,<5850+off
mov.i #1410+off,<2977+off
mov.i #1401+off,<5795+off
mov.i #4866+off,<7546+off
mov.i #4106+off,<5453+off
mov.i # 738+off,<4532+off
mov.i #1270+off,<1729+off
mov.i #6140+off,<5937+off
mov.i #6405+off,<2776+off
mov.i #6037+off,<1089+off
mov.i #4151+off,<5250+off
mov.i # 852+off,<4742+off
mov.i #5383+off,<5278+off
spl.i #3697+off,<2274+off
mov.i # 634+off,<6877+off
mov.i #7482+off,<6348+off
mov.i #7415+off,<4642+off
mov.i #1340+off,< 915+off
mov.i #1324+off,<3501+off
```

```
mov.i #2170+off,<6361+off
mov.i #4755+off,<6072+off
mov.i #2057+off,<5768+off
mov.i #4292+off,<5303+off
mov.i #1737+off,<6608+off
mov.i #7174+off,<1307+off
mov.i #6066+off,<6804+off
spl.i #1563+off,<1276+off
mov.i #6238+off,<1774+off
end
```

Extra Extra Extra - Enough is Enough! by John Metcalf

P-spacers seem to be having a hard time at the moment, while the hill is packed with defensive warriors. Enough is Enough is a p-spacer, which hopes to score well against either a defensive or agressive hill.

A tried and tested, age old formula is uses by EiE: switch between a paper and scanner. Other successful warriors using this technique include Fire and Ice, and Origami Harquebus.

The paper uses a similar principle to nPaper, but is aimed against stone/imps with b-driven imps such as Quicksilver, Uninvited etc. This is not a general purpose paper, and was never designed to perform well against scanners.

The scanner combines Zooom's speed up trick with a scanner somewhat alike to the one found in Recycled Bits. A step of 903 is chosen to hopefully perform well against either 3 or 7 point imps in silk/imps.

The switcher is a P^3 multi-boot. The stp instruction is left as late as possible so the warrior is less prone to accidental brainwashing, by a q-scanner for example. The scanner is played if the paper loses often. If the paper ties regularly, the scanner is given a 1 round trial to decide whether it should be played or not.

The paper component scores 35% wins, 60% ties against Quicksilver. The scanner scores 21% wins and 8% ties. Enough is Enough scores 34% wins and 49% ties. In this case, the switcher is effective 9 times out of 10.

The paper component scores 2% wins and 94% ties against Safety in Numbers. The scanner scores 41% wins and 31% ties. Enough is enough scores 31% wins and 48% ties. The switcher is effective 8 times out of 10.

So here it is:

```
;redcode-94
;name Enough is enough!
;author John Metcalf
;strategy had enough of tweaking the scanner and switcher :-(
;strategy p-switcher, switch between scan and paper
;assert (CORESIZE==8000)

        org    pThink

; -=> Switcher <=-

        paper  equ (silk-silk)
        scan   equ (silk-sAtk)
        wSize  equ 9

pThink: ldp.a  {pBoot-323,     #1
        ldp.a  <pBoot-322,     pVect    ; pKey equ -1
        add.a  pThink,         pMod
pMod:   mod.a  #5,             pVect
        sub.x  *pVect,         @pBoot-wSize+2

        for    wSize
        mov    <pBoot,         {pBoot
        rof
```

```
pBoot:  spl    }wSize,         #silk+wSize
        stp.a  pBoot,          #1
                                       ; State Lose5  Win6  Tie7
pVect:  dat    #paper,  <-104  -210*3   ;   (0)     4     2     6
        dat    #paper,  #-50   -210*11  ;   (1)     0     2     1
        dat    #paper,  #-176  -210*29  ;   (2)     1     2     1
        dat    #scan,   #-185  -210*12  ;   (3)     0     5     3
        dat    #scan,   #-53   -210*23  ;   (4)     3     5     4
        dat    #scan,   #-89   -210*21  ;   (5)     4     5     5
        dat    #scan,   #-167  -210*17  ;   (6)     2     5     6

; -=> Scanner <=-

        sStp   equ 903

sAtk:   mul.x  {sJmp-1,        }sAlt
sPtr:   slt.ba #9,             #0
        mov.b  @3,             sAtk
sAdj:   mov    sSpl,           >sAtk
sAdd:   add    #sStp,          sPtr
sJmp:   jmz.f  sAdd,           @sPtr
sAlt:   jmn    sAtk,           sPtr
        jmp    sAdj,           }sAdj
sSpl:   spl    #0,             {0

; -=> Paper <=-

        pStep1 equ 2852
        pStep2 equ 5213
        x      equ 6580
        y      equ 2951

silk:   spl    *0,             >1803
        spl    1,              >3109
        spl    1,              {2506
pap1:   spl    @0,             >pStep1
        mov.i  }pap1,          >pap1
        mov.i  #y,             <1
        mov    -1,             {x
        mov.i  {pap1,          <pap2
pap2:   djn.f  @0,             >pStep2
        end
```

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