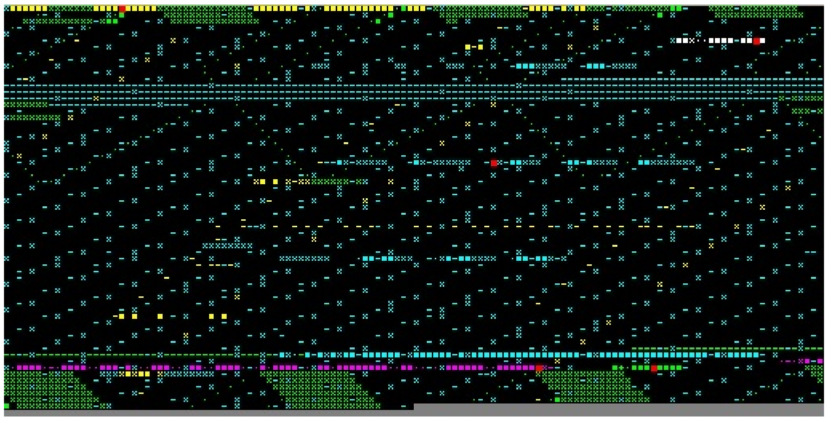
CoreWar - door version 0.7

This is a fork of CoreWar that is targeted as a door for Linux BBS's. Yes they still exist. If you have issues or need help go to The Synchronet BBS CoreWar Forum and post it there. This version locks down the game so it is safe to run as a BBS door, that is, it has no access outside target directory, and a text GUI is provided to make it easier for new players.

Download Release files at this site



Installing

This app requires the Perl scripting language. You will need to run the following commands before using it:

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cpan
install UI::Dialog
install Term::ReadKey
install Term::ANSIScreen
```

Game Play

At the beginning of a game, each battle program is loaded into memory at a random location, after which each program executes one instruction in turn. The goal of the game is to cause the processes of opposing programs to terminate (which happens if they execute an invalid instruction), leaving the victorious program in sole possession of the machine.

The earliest published version of Redcode defined only eight instructions. The ICWS-86 standard increased the number to 10 while the ICWS-88 standard increased it to 11. The currently used ICWS-94 standard has 16 instructions. However, Redcode supports a number of different addressing modes and (from ICWS-94) instruction modifiers which increase the actual number of operations possible to 7168. The Redcode standard leaves the underlying instruction representation undefined and provides no means for programs to access it. Arithmetic operations may be done on the two address fields contained in each instruction, but the only operations supported on the instruction codes themselves are copying and comparing for equality.

Constant instruction length and time

Each Redcode instruction occupies exactly one memory slot and takes exactly one cycle to execute. The rate at which a process executes instructions, however, depends on the number of other processes in the queue, as processing time is shared equally.

Circular memory
The memory is addressed in units of one instruction. The memory space (or core) is of finite size, but only relative addressing is used, that is, address 0 always refers to the currently executing instruction, address 1 to the instruction after it, and so on. The maximum address value is set to equal one less than the number of memory locations, and will wrap around if necessary. As a result, there is a one-to-one correspondence between addresses and memory locations, but it is impossible for a Redcode program to determine any absolute address. A process that encounters no invalid or jump instructions will continue executing successive instructions endlessly, eventually returning to the instruction where it started.

Low level multiprocessing
Instead of a single instruction pointer a Redcode simulator has a process queue for each program containing a variable number of instruction pointers which the simulator cycles through. Each program starts with only one process, but new processes may be added to the queue using the SPL instruction. A process dies when it executes a DAT instruction or performs a division by zero. A program is considered dead when it has no more processes left.

No external access
Redcode and the MARS architecture provide no input or output functions. The simulator is a closed system, with the only input being the initial values of the memory and the process queues, and the only output being the outcome of the battle, i.e., which programs had surviving processes. Of course, the simulator may still allow external inspection and modification of the memory while the simulation is running.

Strategy

Warriors are commonly divided into a number of broad categories, although actual warriors may often combine the behavior of two or more of these. Three of the common strategies (replicator, scanner and bomber) are also known as paper, scissors and stone, since their performance against each other approximates that of their namesakes in the well-known playground game.[3]

Paper (or replicator)
A replicator makes repeated copies of itself and executes them in parallel, eventually filling the entire core with copies of its code. Replicators are hard to kill, but often have difficulty killing their opponents. Replicators therefore tend to score a lot of ties, particularly against other replicators.

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A silk is a special type of very rapid replicator, named after Silk Warrior[4] by Juha Pohjalaine
n. Most modern replicators are of this type. Silk replicators use parallel execution to copy thei
r entire code with one instruction, and begin execution of the copy before it is finished.[5]
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Scissors (or scanner)
A scanner is designed to beat replicators. A scanner does not attack blindly, but tries to locate its enemy before launching a targeted attack. This makes it more effective against hard-to-kill opponents like replicators, but also leaves it vulnerable to decoys. A scanner usually bombs memory with SPL 0 instructions. This causes the enemy to create a huge number of processes which do nothing but create more processes, slowing down useful processes. When the enemy becomes so slow that it is unable to do anything useful, the memory is bombed with DAT instructions. Scanners are also generally more complex, and therefore larger and more fragile,

than other types of warriors.[6]

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A one-shot is a very simple scanner that only scans the core until it finds the first target, and
then permanently switches to an attack strategy, usually a core clear. Myrmidon[7] by Roy van Rij
n is an example of a oneshot.
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Stone (or bomber)

A bomber blindly copies a “bomb” at regular intervals in the core, hoping to hit the enemy. The bomb is often a DAT instruction, although other instructions, or even multi-instruction bombs, may be used. A bomber can be small and fast, and they gain an extra edge over scanning opponents since the bombs also serve as convenient distractions. Bombers are often combined with imp spirals to gain extra resiliency against replicators.

Vampire (or pit-trapper)

A vampire tries to make its opponent’s processes jump into a piece of its own code called a “pit”. Vampires can be based on either bombers or scanners. A major weakness of vampires is that they can be easily attacked indirectly, since they must by necessity scatter pointers to their code all over the core. Their attacks are also slow, as it takes an extra round for the processes to reach the pit. myVamp[8] by Paulsson is an example of a vampire.

Imp

Imps are named after the first ever published warrior, Imp[9] by A. K. Dewdney, a trivial one-instruction mobile warrior that continually copies its sole instruction just ahead of its instruction pointer. Imps are hard to kill but next to useless for offense. Their use lies in the fact that they can easily be spawned in large numbers, and may survive even if the rest of the warrior is killed.

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An imp ring (or imp spiral) consists of imps spaced at equal intervals around the core and execut
ing alternately. The imps at each arm of the ring/spiral copy their instruction to the next arm,
where it is immediately executed again. Rings and spirals are even harder to kill than simple imp
s, and they even have a (small) chance of killing warriors not protected against them. The number
of arms in an imp ring or spiral must be relatively prime with the size of the core.
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Quickscanner (or q-scan)

A quickscanner attempts to catch its opponent early by using a very fast unrolled scanning loop. Quickscanning is an early-game strategy, and always requires some other strategy as a backup. Adding a quickscanning component to a warrior can improve its score against long warriors such as other quickscanners. However, the unrolled scan can only target a limited number of locations, and is unlikely to catch a small opponent.

Core clear

A core clear sequentially overwrites every instruction in the core, sometimes even including itself. Core clears are not very common as stand-alone warriors, but are often used as an end-game strategy by bombers and scanners.

Redcode

Redcode is the programming language used in Core War. It is executed by a virtual machine known as a Memory Array Redcode Simulator, or MARS. The design of Redcode is loosely based on actual CISC assembly languages of the early 1980s, but contains several features not usually found in actual computer systems.

Both Redcode and the MARS environment are designed to provide a simple and abstract platform without the complexity of actual computers and processors. Although Redcode is meant to resemble an ordinary CISC assembly language, it differs in many ways from “real” assembly.