CHIP-8 Emulator

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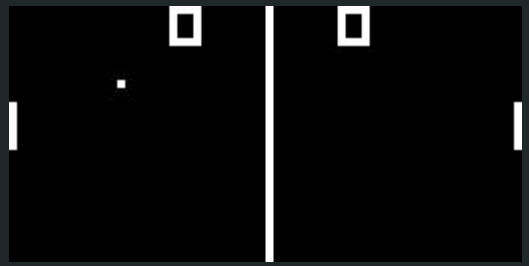
CHIP-8

- Interpreted programming language
- Developed by Joseph Weisbecker
- Initially used on the COSMAC VIP and Telmac 1800 8-bit microcomputers in the 1970’s
- Programs ran on CHIP-8 virtual machines
- Allowed early video games to be more easily programmed



Famous CHIP-8 Video Games

Many iconic video games of the 1970’s and 1980’s were written in CHIP-8

- Pong
- Space Invaders
- Tetris
- Pac-Man

Other popular applications included

- Conway’s Game of Life

Emulation vs Virtualization

Emulation:

- Simulates complete hardware in software
- Software fills in for hardware
- Allows one type of OS to run applications for a different OS

Virtualization:

- Simulates part of a computers hardware
- Normally faster than emulation 78
- Uses a hypervisor as a “middleman” between an OS and the hardware
- Run multiple OS’s simultaneously on one system.

CHIP-8 Computer Hardware and Virtual Machine

- CHIP-8 was most commonly implemented on 4K machines
- These machines had 4096 memory locations in all, which were all 8 bits
- The CHIP-8 interpreter occupied 512 bytes of memory on the machines
- CHIP-8 has 16 8-bit registers
- In CHIP-8, stack only used for storing return addresses of routines when called
- CHIP-8 has two timers, both counting down at 60 hertz
    - Delay Timer: Used for timing events of games
    - Sound Timer: Used for sound effects
- Display resolution: 64X32 pixels with monochrome color
- CHIP-8 graphics are drawn to the screen by drawing sprites, 8 pixels wide and 1-15 pixels in height

CHIP-8 Implementation

Technologies used in creating our CHIP-8 emulator:

- C#
- XML
- JSON
- CHIP-8
- Visual Studio
- Windows Forms
- Git (hub)

C# is the programming language that we used to create the CHIP-8 emulator. XML and JSON files are used for handling of project dependencies. The CHIP-8 files refer to the game Roms themselves; they contain the code for games.

Demo time...

References

https://en.wikipedia.org/wiki/CHIP-8

https://chip-8.com/