

JIF-8: A CHIP-8 Emulator

Built with Java and JavaFX

Team: The High Council



What is CHIP-8?

- Created by Joseph Weisbecker in the mid-1970s
- Not a real hardware platform, but a virtual machine
- Designed to make game programming easier on 8-bit microcomputers
- Popular for hobbyist computer systems like COSMAC VIP



Telmac 1800 running CHIP-8 game

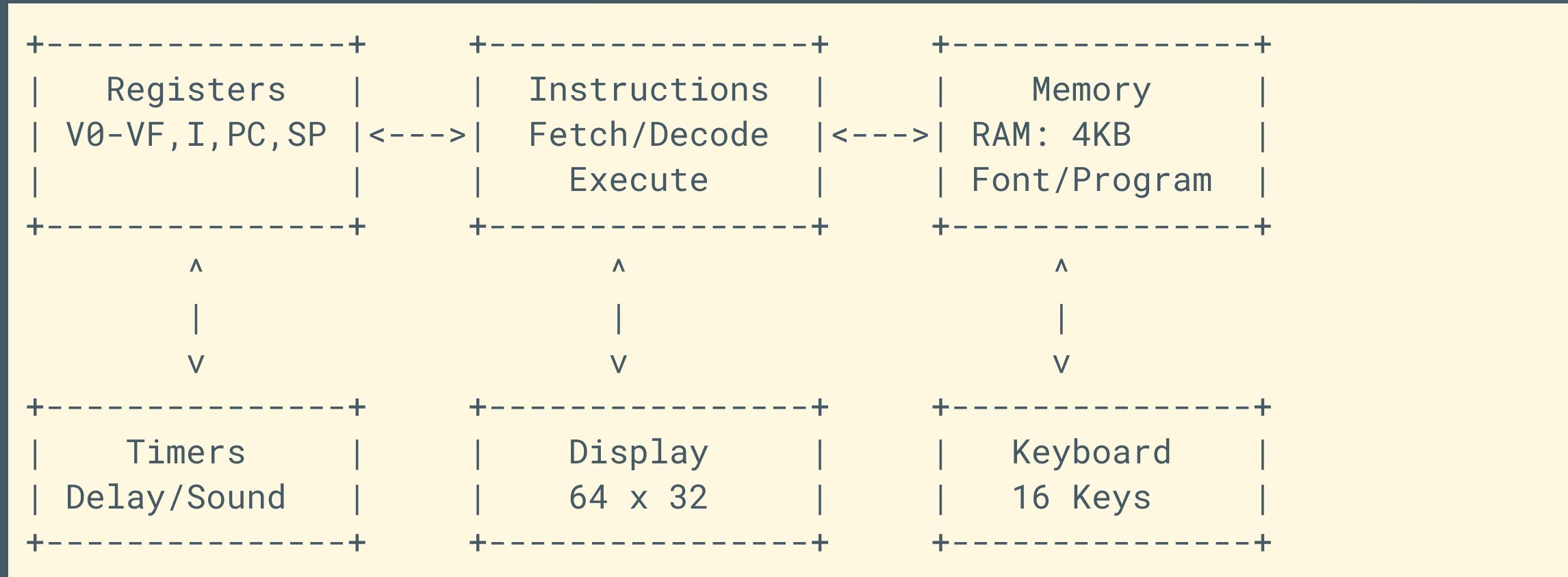
Historical Context

- Developed during the early days of video gaming (1970s)
- Predates popular systems like Atari 2600 (1977)
- One of the first platforms for hobbyist game development
- Ran on systems like:
 - COSMAC VIP (1977)
 - Telmac 1800 (1977)
 - ETI 660 (1981)

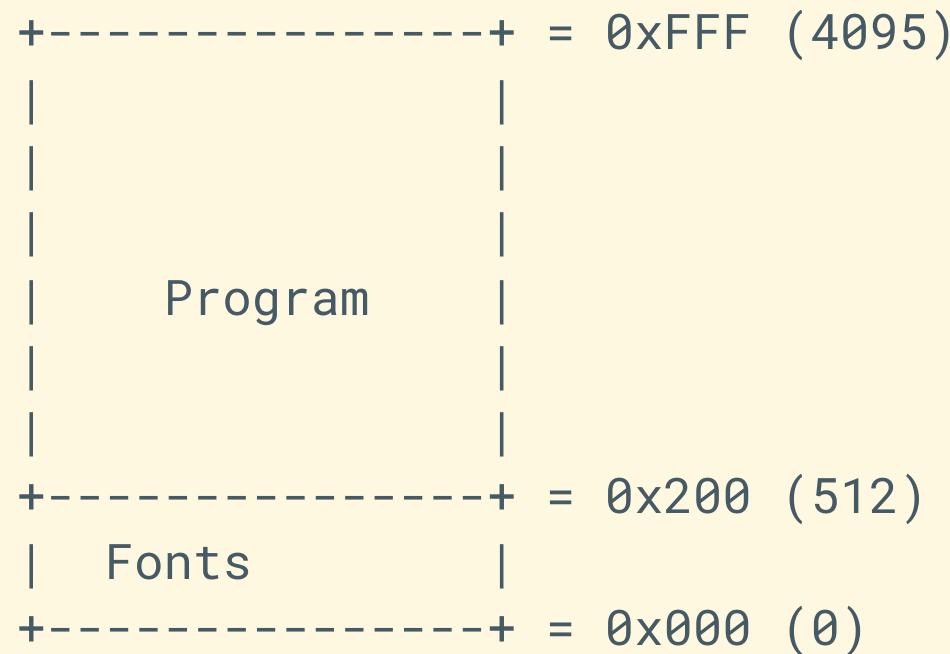
CHIP-8 Specifications

- Memory: 4KB (4,096 bytes)
- Display: 64x32 monochrome pixels
- 16 8-bit registers (V0 to VF)
- 16-bit index register (I)
- 16-level stack
- 16-key hexadecimal keypad
- 35 instructions

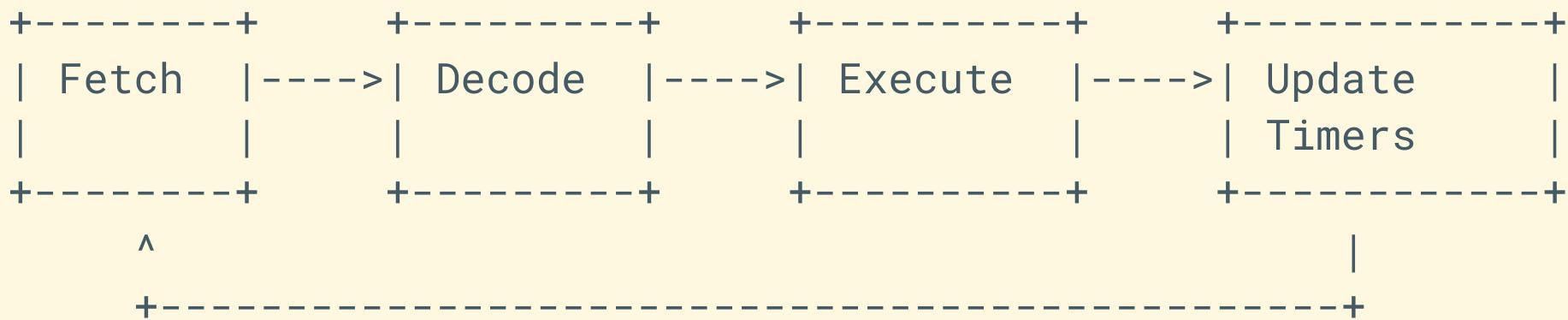
CPU Architecture Detail



Memory Layout



Instruction Flow



Design Patterns Used

1. Factory Pattern

- `InstructionFactory` creates different instruction objects
- Decouples instruction creation from execution

2. Command Pattern

- Each instruction is a separate class
- Encapsulates execution logic

Debugging Features

- Register state visualization
- Memory viewer
- Stack viewer
- Pause/Resume support

Demo Time!

- Running ROMs
- Debugger usage
- Game demonstration

Thank you!

GitHub Repository:
github.com/hulxv/jif-8

