Chapter 1: About T34

Chapter 1 Overview

- ✓ Memory Layout
- ✓ Building + Running

Memory Layout

Old Fashion Computing is happy to unveil the T34 emulator! The T34 is an emulator of a simple accumulator-style architecture. The T34 stores 24-bit words. It supports up to 64 instructions, four addressing modes, and 4096 words of memory, ranging from 000 to FFF. Each word sores the most significant bit at the left, and the least significant bit at the right. Communication within memory is via two registers, MAR and MDR.

Building + Running

To run your T34 emulator, launch a terminal window, and find the directory containing T34.py. Then, enter the following command:

$ python3 T34.py myobject.obj

This will bring you to a menu. You have 4 options here. Entering 'D' or 'd' will give you a memory dump. Pressing 'P' or 'p' will give you a block of memory. Entering 'C' or 'c' will give you the program counter. Pressing 'Q' or 'q' will quit. All functions will be described in depth in the next chapter.

```
T-34 Emulator ~~~ Enter a command
P: Parse memory
D: Dump memory
C: Print Program Counter
Q: Quit
Selection:
```

Chapter 2: Functions

Chapter 2 Overview

- ✓ Memory Dump
- ✓ Parsing Memory
- ✓ Program Counter

Memory Dump

If you choose to memory dump, the program will look through all values in memory. If the values is not zero, the value will be printed. The left hand side will contain the address in memory, and the right side will contain the value stored. All output will be in hex.

```
0c4: 050404
0c5: 200800
0c6: 300800
0c7: 102840
0c8: 050c00
101: 000300
102: 000009
200: 000030
300: 000010
```

Parsing Memory

If you choose to parse memory, you will be asked where to start parsing memory from. Enter any valid integer between 0 and 4095. After this, you will be asked how many values in memory you would like to look at. This will be any non-zero integer. If the program would overstep its memory, it quits instead. The emulator will print the address of the value, the ADDR value, the OP value, and the AM value. Similar to the memory dump, all values will be in hex.

```
Please enter a valid memory location in hex
Selection: 0c5
How many values would you like
Selection: 5

     ADDR          OP     AM
0c5: 001000000000 100000 000000
0c6: 001100000000 100000 000000
0c7: 000100000010 100001 000000
0c8: 000001010000 110000 000000
0c9: 000000000000 000000 000000
```

Program Counter

If you choose to view the program counter, the emulator prints a single line containing the value in hex of the program counter.

```
PC: 196
```

Chapter 3: Miscellaneous

Chapter 3 Overview

- ✓ Object Files
- ✓ Testing

Object Files

The T34 emulator takes in exactly one object file. The file has many lines. Each line contains a starting address in memory. The next number is the number of sequential values to store. Finally, each line contains that many values. Each of those values will get stored in memory. The addresses and values are in hex, but the count of values is not. Each object file ends with a line that contains a single hex address. This address is the initial value for the program counter.

Testing

This T34 emulator system has been tested extensively. It confirms that at least one file is passed in to it. All following files are ignored. The input files passed in are assumed to be valid objects. Each user input in the program has been confirmed to keep asking the user for a value until the user supplies the correct type of data. Any time the program would attempt to access data that's outside of memory, the program skips it instead. All functions have been confirmed to return the correct data based on several test object files.