

Requirements

Functional

1. The system shall have a graphical user interface with the program counter, accumulator, memory, and output values displayed on the screen.
2. The system shall be a standalone desktop application.
3. The system shall not require an internet connection to function.
4. The system shall run as a native application on every machine for which it is compelled (eg. it shall not be an Electron.js wrapper around a browser running a web app).
5. The system shall accept and execute the full range of the UVSim instruction set architecture.
6. Upon initialization of the UVSim software, the program shall ask the user for the program they wish to execute.
7. The system shall accept user input through a terminal in the GUI.
8. The system shall accept a user-provided file path that points to a UVSim program for loading and executing.
9. The system shall load the user-designated program into memory and begin execution automatically and immediately.
10. The system shall display an error message upon reaching an invalid instruction and terminate.
11. The system shall truncate over- / underflowing integer values before saving them to memory.
12. The system shall terminate execution immediately upon reaching a HALT instruction.

13. The system shall not accept programs that contain more than 100 memory addresses.
14. The system shall display the final state of the virtual machine upon termination of the program.
15. The system shall accept additional user programs without altering any contents of memory, if desired by the user.

Non-functional

1. The system shall support the Mac, Linux, and Windows operating systems.
2. The system shall initialize and be available for user input in under three seconds.
3. The system shall only accept the UVSim instruction set architecture.