Functional Requirements:

1. Load Programs: The UVSim should let users load BasicML programs into the computer's memory from a file.
2. Step-by-Step Execution: The UVSim should run the BasicML programs step by step.
3. The system shall determine which method to run for each line of code.
4. Memory Management: The UVSim should handle the computer's memory, load and store..
5. Decision Making: The UVSim should have instructions that let users change the program's flow based on certain conditions or values in memory. For example, jump to a different current working location in memory
6. Handling Errors: The UVSim should be able to detect and deal with errors properly. It should display messages to users when they do something wrong.
7. Stopping Programs: The UVSim should allow users to stop a program with the halt command, so they can end it and start over if needed
8. No more than 5 seconds of latency on any operation
9. Instruction Set Expansion: The UVSim should support the addition of new BasicML instructions, allowing users to extend the functionality of the virtual machine beyond the existing operations
10. Program Storage: The UVSim should provide a mechanism for users to load BasicML programs from external files.
11. Error Logging: The UVSim should log errors and exceptions encountered during program execution.
12. A user shall be able to input numbers into the GUI when necessary
13. The system shall display program output to the GUI
14. Program Debugging: The UVSim should provide debugging through the test file. This makes it so that the file can be running as expected, even after updates.
15. Program Visualization: The UVSim should offer a visual representation of the program execution, displaying the current instruction, memory, and accumulator.

Non-Functional Requirements:

1. Easy to Use: UVSim's GUI should be easy to understand and use, with clear buttons and labels so that all people can navigate it without much trouble.
2. Fast Performance: The UVSim should run programs quickly, not taking too long to respond to user actions, so people can see results without waiting a long time.
3. GUI Must be color-blind accessible