Team SRS Document

Functional Requirements

1. UVSim shall provide a GUI for user BasicML code input and program output.
2. The user shall be able to select and open a text file from their file directory.
3. The GUI shall display BasicML code from a user-selected text file.
4. The user shall be able to edit BasicML code in a GUI text box.
5. The user shall be able to save BasicML code in a GUI text box to their file directory.
6. The user shall be able to run BasicML code from the GUI.
7. UVSim shall load BasicML code from the GUI into memory registers.
8. The user shall be able to change the GUI background color.
9. The user shall be able to change the GUI widget color.
10. The user shall be able to open additional GUI windows to run multiple programs at once.
11. UVSim shall execute read operations, prompting the user to input values for specific memory registers via the GUI.
12. UVSim shall execute write operations, displaying the value stored at a specific memory register via a GUI output box.
13. UVSim shall execute load operations, loading the value from a memory register into the accumulator.
14. UVSim shall execute store operations, storing the value of the accumulator into a specific register in memory.
15. UVSim shall add the integer value from a specific memory register to the value of the accumulator variable.
16. UVSim shall subtract the integer value from a specific memory register from the value of the accumulator variable.
17. UVSim shall multiply the value of the accumulator by the integer value from a specific memory register.
18. UVSim shall divide the value of the accumulator by the integer value from a specific memory register.
19. UVSim shall branch to a specific location in memory if the accumulator is positive.
20. UVSim shall branch to a specific location in memory if the accumulator is negative.

21. UVSim shall branch to a specific location in memory if the accumulator is zero.
22. UVSim shall display the final accumulator value upon halting a BasicML program.
23. UVSim shall run BasicML programs that contain 250 lines or less.
24. UVSim shall run Basic ML programs that contain either 4 or 6-digit words.
25. UVSim shall display an error message if the BasicML program does not execute.
26. UVSim shall handle memory register overflow errors by truncating register values that are larger than 6 digits.

Nonfunctional requirements:

1. UVSim shall be implemented in the Python coding language.
2. UVSim's GUI shall be implemented with the Python tkinter package.
3. UVSim shall be supported on any platform that supports Python version 3.10.11.
4. UVSim's GUI shall use a dark green background color by default.
5. UVSim's GUI shall use a white widget color by default.