SRS

Functional Requirements

1. The program shall have a tool to select a file for the UVSim.
2. The system shall validate each instruction format according to the UVSim instruction set architecture guidelines.
3. The program should have a start button, to start the simulation.
4. When prompted for input, the program must have a defined and visible area to add input when prompted, loading it into an address.
5. Based on the instruction provided, the system shall perform arithmetic operations (addition, subtraction, multiplication, division) on the accumulator register and the value retrieved from memory.
6. If the branch condition is met, the system shall update the instruction pointer to the specified memory location.
7. The system shall halt program execution when a halt instruction is encountered, indicating the end of program execution.
8. The program must read the words in memory line-by-line unless a branch operation performs a jump.
9. In case of encountering invalid instructions or memory addresses, the system shall display descriptive error messages indicating the nature of the error and its location in the program.
10. The program shall have a memory that can store up to 100 words.

11. The system shall provide real-time feedback to the user, displaying the result of each operation executed.
12. Throughout program execution, the system shall maintain a current address pointer, indicating the address of the instruction being executed.
13. The system shall ensure sequential execution of program instructions, moving to the next instruction after each operation is completed.
14. During input operations, the system shall provide clear instructions to the user, guiding them on the format and type of input expected.
15. The program should have a defined and visible area to display the defined operation when a write operation is executed.

Non-Functional Requirements

1. The system's user interface shall be designed following principles of minimalism, with intuitive controls and concise instructions to facilitate ease of use.
2. The system's response time to user interactions shall be under 1 second, ensuring efficient execution of instructions and a seamless user experience.
3. The system's reliability shall be demonstrated by achieving at least 99.9% uptime during continuous operation, ensuring consistent and accurate execution of programs.
4. The program shall take no more than 20 minutes to be installed.