**Operational**

The system shall be able to

1. Load programs
2. Read the contents of the memory
3. Write the contents of the memory
4. Load the contents of the memory
5. Store the contents of the accumulator to memory
6. Add
7. Subtract
8. Divide
9. Multiply
10. Branch
11. Branch Neg
12. Branch Zero
13. Halt
14. Halt execution when the user presses the “Halt” button

**Errors**

The system shall

1. Detect and halt execution if an invalid error code occurs
2. Display error messages
3. Detect infinite loops and halt execution after 1000 iterations

**Gui**

The system shall be able to:

1. Display errors
2. Modify memory register
3. Input user data
4. Execute when the user presses the “Run” button
5. Display the accumulator
6. Display the memory
7. Display the results

**Non-Functional**

* They system shall execute instructions with minimal delay (less than 100ms per instruction)
* The system shall prevent crashes by handling all user input errors and execution exceptions gracefully
* The system will give the same result if the same set of instructions is typed in