15 Functional Requirements:

1. The system shall parse the contents of an inputted test file, extracting BasicML instructions formatted as signed 4-digit numbers.
2. The system shall extract the operation defined by the first two digits of the word and perform it accordingly.
3. The system shall extract the memory location as defined by the last two digits of the word, determining the memory address where the operation should be applied or from where data should be accessed.
4. The system shall have a 100-word memory, which are referenced by their location numbers.
5. The system shall load the extracted instructions into the main memory, starting at position 00.
6. The system shall incorporate an accumulator into which operations shall be loaded into before executing and will store the result of.
7. The system shall handle overflow words (5+ digits) by only utilizing the first 4 given digits of the word.
8. The system shall implement the LOAD operation, defined as 20 in BasicML vocabulary, which shall transfer data from the specified memory location into the accumulator.
9. The system shall implement the STORE operation, defined as 21 in BasicML vocabulary, which shall transfer data from the accumulator into the specified location in memory.
10. The system shall implement the READ operation, defined as 10 in BasicML vocabulary, which shall write a word from the keyboard into the specified location in memory.
11. The system shall implement the WRITE operation, defined as 11 in BasicML vocabulary, which shall write a word from the specified location in memory to the screen.
12. The system shall implement the ADD operation, defined as 30 in BasicML vocabulary, which shall add a word from the specified location in memory to the word currently stored in the accumulator.
13. The system shall implement the SUBTRACT operation, defined as 31 in BasicML vocabulary, which shall subtract a word in the specified location in memory from the word currently in the accumulator.
14. The system shall implement the DIVIDE operation, defined as 32 in BasicML vocabulary, which shall divide the word in the accumulator by the word in the specified location in memory.
15. The system shall implement the MULTIPLY operation, defined as 33 in BasicML vocabulary, which shall multiply the word in the specified memory location to the word in the accumulator.
16. The system shall implement the BRANCH operation, defined as 40 in BasicML vocabulary, which shall unconditionally branch to the specified location in memory and continue execution.
17. The system shall implement the BRANCHNEG operation, defined as 41 in BasicML vocabulary, which shall branch to the specified location in memory if the word in the accumulator is negative.
18. The system shall implement the BRANCHZERO operation, defined as 42 in BasicML vocabulary, which shall branch to the specified location in memory if the word in the accumulator is zero.
19. The system shall implement the HALT operation, defined as 43 in BasicML vocabulary, which shall stop execution of the program.

3 Non-functional requirements:

1. The system shall take no longer than 5 seconds to output string prompts.
2. The system interface must be a GUI with descriptions of the buttons and functionalities.
3. The system shall display word prompts that specify the actions the user must take.