CS 1621 Deliverable 1

Requirements:

1. **~~FUN-STEP~~** ~~- The system shall allow the user to step one opcode at a time, appropriately updating the stack and output, by pressing the Step button.~~
2. **~~FUN-STOP~~** ~~- When no program is being executed, the Stop button shall be disabled. When a program is being executed, the Stop button shall be enabled. Upon clicking the Stop button, the currently running program shall stop execution.~~
3. **~~FUN-TIME~~** ~~- If the "Options..Time program" option is checked, then after program execution has completed, the system shall inform the user how long, in microseconds, the program took to execute. If the "Options..Time Program" option is not checked, the user shall not be informed.~~
4. **~~FUN-TRACE~~** ~~- If and only if a program is being executed, the system shall display a cursor on the current opcode indicating that is being executed. This cursor should start displaying immediately after starting execution of a program on the first opcode, and will do so no matter if started via Run, Walk, Mosey, or Step. It shall not appear when a program is not being executed.~~
5. **PERF-EXECUTION-TIME** - On any given computer, the system shall be able to complete execution of a reference FizzBuzz implementation (i.e., the one listed in the README.md file of the JBefunge repository), in less than 30 seconds (30,000,000 microseconds) using the "Run" command (as opposed to "Walk" or "Mosey").

**FUN-STEP**

IDENTIFIER: TEST-STEP-BUTTON

DESCRIPTION: This test verifies that the stack and output are updated each time the user presses the Step button.

PRECONDITIONS: The user must have presented a valid program that compiles and runs.

EXECUTION STEPS: Click on Step button to execute stepping one opcode at a time.

POSTCONDITIONS: The graphical interface should show any updates to the stack and output textbox areas.

IDENTIFIER: TEST-VALID-STEP

DESCRIPTION: This test checks to make sure that upon pressing the Step button, the stack and output are updated by only one opcode.

PRECONDITIONS: The user must have presented a valid program that compiles and runs.

EXECUTION STEPS: Click on Step button to execute stepping one opcode at a time.

POSTCONDITIONS: The graphical interface should not show more than one update to the stack and output textbox areas, respectively.

**FUN-STOP**

IDENTIFIER: TEST-DISABLED-STOP

DESCRIPTION: This test verifies that the Stop button is disabled when no program is currently being executed.

PRECONDITIONS: There should currently be no program running.

EXECUTION STEPS: Look at the graphical interface provided for the user. Click on the Stop button.

POSTCONDITIONS: The button labeled Stop should be disabled, and the user should be unable to click on that button.

IDENTIFIER: TEST-ENABLED-STOP

DESCRIPTION: This test verifies that the Stop button is enabled when a program is being currently executed.

PRECONDITIONS: A program must currently be running or executing.

EXECUTION STEPS: Look at the graphical interface provided for the user. Click on the Stop button.

POSTCONDITIONS: The button labeled Stop should be enabled, and the user should be able to click on that button.

IDENTIFIER: TEST-STOP-BUTTON

DESCRIPTION: This test should verify that the Stop button successfully stops the execution of the currently running program.

PRECONDITIONS: A program must currently be running or executing.

EXECUTION STEPS: Look at the graphical interface provided for the user. Click on the Stop button.

POSTCONDITIONS: The button labeled Stop should be enabled, and the user should be able to click on that button. Once the Stop button has been clicked, the program should immediately stop executing.

**FUN-TIME**

IDENTIFIER: TEST-TIME-CHECKED

DESCRIPTION: This tests checks that the system will produce a message to the user with how long it took the program to execute (in microseconds), so long as the “Options… Time Program” option is checked.

PRECONDITIONS: N/A

EXECUTION STEPS: Under the Options tab, click on Test Program. A checkmark should appear next to the text, indicating that the option has been checked off. Run a program.

POSTCONDITIONS: After the program execution completes, the system shall produce a message to the user with details on how long, in microseconds, the program took to execute.

IDENTIFIER: TEST-TIME-UNCHECKED

DESCRIPTION: This tests checks that the system will not produce a message to the user with how long it took the program to execute (in microseconds), if the “Options… Time Program” option is not checked.

PRECONDITIONS: N/A

EXECUTION STEPS: Do not click on Test Program, which can be found under the Options tab. Run a program.

POSTCONDITIONS: After the program execution completes, the system should not produce a message to the user with details on how long the program took to execute.

**FUN-TRACE**

IDENTIFIER: TEST-DISPLAY-CURSOR

DESCRIPTION: This test verifies that a cursor will be displayed on the current opcode if and only if a program is being executed.

PRECONDITIONS: A program must not be currently running.

EXECUTION STEPS: Execute a program and step through using the Step button.

POSTCONDITIONS: Immediately upon pressing Step, a cursor should appear on the current opcode, indicating that it is being executed.

IDENTIFIER: TEST-NO-CURSOR

DESCRIPTION: This test verifies that a cursor will not be displayed if a program is not being executed.

PRECONDITIONS: A program must not be currently running.

EXECUTION STEPS: Execute a program and step through using the Step button. Press the Stop button.

POSTCONDITIONS: The cursor should disappear from the currently opcode and no longer be visible.

IDENTIFIER: TEST-CHECK-CURSOR

DESCRIPTION: This test checks to see if the cursor appears no matter if the program starts via Run, Walk, Mosey, or Step.

PRECONDITIONS: A program must not currently be running.

EXECUTION STEPS: Immediately upon pressing Run, a cursor should appear on the current opcode, indicating that it is being executed. Press Stop to stop the program. Repeat the process by choosing Walk, Mosey, and Step, respectively. Make sure to press Stop before choosing a different option.

POSTCONDITIONS: The program should immediately display a cursor on the current opcode, regardless of whether you initiate the program by clicking Run, Walk, Mosey, or Step.

**PERF-EXECUTION-TIME**

IDENTIFIER: TEST-EXECUTION-TIME

DESCRIPTION: This test checks to see if a complete execution of a FizzBuzz implementation executes in less than 30 seconds using the Run command.

PRECONDITIONS: Must have a correct implementation of FizzBuzz that correctly runs and executes. The “Options…Time Checked” option should be checked.

EXECUTION STEPS: The FizzBuzz program should be executed by clicking on the “Run” button.

POSTCONDITIONS: The system should provide a message to the user containing the time, in microseconds, it took for the program to run. This number should be less than 30 seconds (or 30,000,000 microseconds) and not any number higher.

**DEFECTS:**

SUMMARY: Cursor still pops up when program is not being executed  
DESCRIPTION:

REPRODUCTION STEPS:  
EXPECTED BEHAVIOR:  
OBSERVED BEHAVIOR:  
SEVERITY:  
IMPACT: