The Company Company

EECS 348 - Calculator Application

Test Case

Version <2.0>

Revision History

Date	Version	Description	Author
<05/12/24>	<1.0>	<Testing the code of the Software>	<Sionne, Zeidan, Jett, K >
<11/12/24>	<2.0>	<Testing the code of the Software after new updates>	<Sionne, Zeidan, Jett, K, Meg>

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Test Case

1. Purpose

The purpose of this Test Case Specification Document for the EECS –348 Calculator application defines numerous test cases that check the application’s ability to handle basic, established functionalities of a typical calculator. The specifics of said functionalities have been stated in previous official documents and will be shown in the table below.

Test ID	**Test Description**	**Input**	**Expected Output**	**Actual Output**	**Status**
TC01	Simple addition	3 + 4	7	7	Pass
TC02	Simple subtraction	10 - 3	7	7	Pass
TC03	Multiplication and addition	3 + 4 * 2	11	11	Pass
TC04	Division and Parentheses	18 / (3 + 3)	3	3	Pass
TC05	Exponentiation	2 ^ 3	8	8	Pass
TC06	Modulo Operation	10 % 3	1	1	Pass
TC07	Nested Parentheses	((3 + 4) * 2) ^ 2	196	196	Pass
TC08	Division by Zero	10 / 0	Error: Division by Zero	Error: Division by Zero	Pass
TC09	Modulo by Zero	10 % 0	Error: Modulo by Zero	Error: Modulo by Zero	Pass
TC10	Invalid Input (Extra Operator)	3 * + 4	Error: Invalid expression: missing operands	Error: Invalid expression: missing operands	Pass
TC11	Missing Parentheses	(3 + 4 * 2	Error: Mismatched parentheses	Error: Mismatched parentheses	Pass
TC12	Complex Expression	3 + 4 * (2 ^ 3) % 5	5	5	Pass
TC13	Negative Numbers	-3 + 4	1	1	Pass
TC14	Leading with Nesting Parentheses	(2 + (3 * 4)) - 5	9	9	Pass
TC15	Parentheses Precedence	(3 + 4) * 2	14	14	Pass
TC16	Mixed Operators	4 * (3 + 2) % 7 - 1	5	***5***	Pass
TC17	Extraneous Parentheses on Valid Statement	(((2 + 3))) + (((1 + 2)))	Result: 8 > Error: Invalid expression: leftover operands	Result: 8 > Error: Invalid expression: leftover operands	Pass

TC18	Leftover Extraneous Parentheses	((5 * 2) - ((3 / 1) + ((4 % 3))))	6	6	Pass
TC19	Negation and Addition with Negated Parentheses	-(-(-3)) + (-4) + (+5)	-2	-2	Pass

2. Environmental needs

2.1.1 Hardware

The only characteristics and configurations required to execute this test would be a laptop or computer with internet access. Ensure that the laptop or computer used can download the main file with the Calculator Application's code from the project GitHub repository and handle software that can execute the code in its entirety.

2.1.2 Software

As for the software systems that would handle executing the code can either be internal or external. For example, internal systems that would suffice would be any form of IDE's (like Visual Studio Code), PowerShell (for Windows), Terminal app with Clang (for macOS), or on Linux with GCC or Clang. External systems that would have the ability to run it would be online compilers or emulators like OneCompiler, Programiz, or GDB Online. Any other software that has not been listed may be able to work; however, the ones that have been listed have been tested and will execute the code for the Calculator Application.

3. Special Procedural Requirements

There have been no known special procedural requirements that have been discovered that could impede the functionality of the code.

4. Intercase Dependencies

There are no such cases that require one test case to be run prior for another test case to be functional. However, there is one test case, TC12, where we use the "^" as opposed to the "**" format for exponentiation. This may not necessarily affect how a test case may function by a previous test case, but it is important to note for actually understanding how test cases that involve exponentiation might differ from other cases.