Team8 Co

Calc.Co

Test Case

Version <1.0>

Revision History

Date	Version	Description	Author
<10/12/2024>	<1.0>	<Working>	<Group>

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Test Case

1. Purpose

This Test Case Specification document for CalcCo defines a test case for an item that should be tested.

Test case ID	TC01
Test case description	Verify Addition
Test case data	3+4
Expected Result	7
Actual Result	7
Pass/Fail	Pass

Test case ID	TC02
Test case description	Subtraction with Parenthesis
Test case data	8-(5-2)
Expected Result	5
Actual Result	5
Pass/Fail	Pass

Test case ID	TC03
Test case description	Multiplication and Division
Test case data	10 * 2 / 5

Expected Result	4
Actual Result	4
Pass/Fail	Pass

Test case ID	TC04
Test case description	Exponentiation
Test case data	2**3
Expected Result	8
Actual Result	8
Pass/Fail	Pass

Test case ID	TC05
Test case description	Mixed Operators 4 * (3 + 2) % 7 - 1
Test case data	5
Expected Result	5
Actual Result	5
Pass/Fail	Pass

Test case ID	TC6
Test case description	Complex Addition with Extraneous Parentheses
Test case data	(((2 + 3))) + (((1 + 2)))

Expected Result	8
Actual Result	8
Pass/Fail	Pass

Test case ID	TC07
Test case description	Mixed Operators with Extraneous Parentheses
Test case data	((5*2)-((3/1)+((4%3))))
Expected Result	6
Actual Result	6
Pass/Fail	Pass

Test case ID	TC08
Test case description	Nested Parentheses with Exponents
Test case data	(((2 ** (1 + 1)) + ((3 - 1) ** 2)) / ((4 / 2) % 3))
Expected Result	4
Actual Result	4
Pass/Fail	Pass

Test case ID	TC09
Test case description	Combination of Extraneous and Necessary Parentheses
Test case data	(((((5 - 3))) * (((2 + 1))) + ((2 * 3))))

Expected Result	12
Actual Result	12
Pass/Fail	Pass

Test case ID	TC10
Test case description	Extraneous Parentheses with Division
Test case data	((9+6))/((3*1)/(((2+2)))-1)
Expected Result	-60
Actual Result	-60
Pass/Fail	Pass

Test case ID	TC11
Test case description	Combining Unary Operators with Arithmetic Operations
Test case data	+(-2) * (-3) – ((-4) / (+5))
Expected Result	6.8
Actual Result	6.8
Pass/Fail	Pass

Test case ID	TC12
Test case description	Unary Negation and Addition in Parentheses:
Test case data	-(+1) + (+2)

Expected Result	1
Actual Result	1
Pass/Fail	Pass

Test case ID	TC13
Test case description	Decimal Numbers
Test case data	3.5 + 2.25
Expected Result	5.75
Actual Result	5.75
Pass/Fail	Pass

Test case ID	TC14
Test case description	Power of Zero
Test case data	0**5
Expected Result	0
Actual Result	0
Pass/Fail	Pass

Test case ID	TC15
Test case description	Combining Unary Operators with Parentheses
Test case data	-(+2)*(+3)-(-4)/(-5)

Expected Result	-6.8
Actual Result	-6.8
Pass/Fail	Pass

Test case ID	TC16
Test case description	Unary Negation and Exponentiation
Test case data	+2 ** (-3)
Expected Result	0.125
Actual Result	0.125
Pass/Fail	Pass

Test case ID	TC01-A
Test case description	Unmatched Parenthesis
Test case data	2*(4+3-1
Expected Result	Error: The parentheses are not properly matched
Actual Result	Error: The parentheses are not properly matched
Pass/Fail	Pass

Test case ID	TC02-A
Test case description	Operators without Operands
Test case data	*5+2

Expected Result	Operand Error
Actual Result	Error: Missing Operand
Pass/Fail	Pass

Test case ID	TC03-A
Test case description	Divide by Zero
Test case data	4/0
Expected Result	Division by Zero
Actual Result	Error: Division by Zero
Pass/Fail	Pass

Test case ID	TC04-A
Test case description	Missing Operator
Test case data	5(2+3)
Expected Result	Missing Operator
Actual Result	Error: Missing Operator
Pass/Fail	Pass

Test case ID	TC05-A
Test case description	Invalid Characters
Test case data	7&3

Test case ID	TC06-A
Test case description	Mismatched Parentheses
Test case data	(((3+4)-2)+(1)
Expected Result	Parentheses Error
Actual Result	Error: The parentheses are not properly matched
Pass/Fail	Pass

Test case ID	TC07-A
Test case description	Invalid Operator Usage/Divide By zero
Test case data	((5+2)/(3*0))
Expected Result	Divide by Zero Error
Actual Result	Error: Division by Zero
Pass/Fail	Pass

Test case ID	TC08-A
Test case description	Invalid Operator Sequence
Test case data	((2-)1+3)
Expected Result	Operand Error
Actual Result	Error: Invalid Operator Sequence
Pass/Fail	Pass

Test case ID	TC09-A
Test case description	Missing Operand
Test case data	((4*2)+(-))
Expected Result	Operand Error
Actual Result	Error: Missing Operand
Pass/Fail	Pass

Test case ID	TC10-A
Test case description	Invalid Characters
Test case data	((7 * 3) ^ 2)
Expected Result	Character Error
Actual Result	Unrecognized character in Equation '^'
Pass/Fail	Pass

Test case ID	TC01-S
Test case description	Division with Decimals
Test case data	10.5 / 2
Expected Result	5.250
Actual Result	5.250
Pass/Fail	Pass

Test case ID	TC02-S
Test case description	Mixed Operators with Decimals
Test case data	4.5 * 2 - 3.2

Expected Result	5.800
Actual Result	5.800
Pass/Fail	Pass

Test case ID	TC03-S
Test case description	Modulo Operation with Negative Numbers
Test case data	-7 % 4
Expected Result	-3
Actual Result	-3
Pass/Fail	Pass

Test case ID	TC04-S
Test case description	Division by Negative Numbers
Test case data	9 / -3
Expected Result	-3
Actual Result	-3
Pass/Fail	Pass

Test case ID	TC05-S
Test case description	Multiplication with Large Numbers
Test case data	100000 * 100000
Expected Result	10000000000
Actual Result	
Pass/Fail	

Test case ID	TC06-S

Test case description	Mixed Operators with Division by Decimal
Test case data	(10 + 5) / 1.5
Expected Result	10
Actual Result	10
Pass/Fail	Pass

Test case ID	TC07-S
Test case description	Chained Exponentiation
Test case data	2**10
Expected Result	1024
Actual Result	1024
Pass/Fail	Pass

Test case ID	TC08-S
Test case description	Double Parentheses Multiplication
Test case data	((2 + 3)) * ((4 - 1))
Expected Result	15
Actual Result	15
Pass/Fail	Pass

Test case ID	TC09-S
Test case description	Modulo with Decimals
Test case data	7.5 % 3

Expected Result	1.500
Actual Result	1.500
Pass/Fail	Pass

Test case ID	TC10-S
Test case description	Negative Base Exponentiation
Test case data	-(2 ** 4)
Expected Result	-16
Actual Result	-16
Pass/Fail	Pass

Test case ID	TC11-S
Test case description	Complex Multiplication and Subtraction
Test case data	10 * (5 - 2) - 20
Expected Result	10
Actual Result	10
Pass/Fail	Pass

Test case ID	TC12-S
Test case description	Mixed Operators with Nested Parentheses
Test case data	((4 + 2) * (5 - 3)) / (2 ** 1)
Expected Result	6
Actual Result	6
Pass/Fail	Pass

Test case ID	TC13-S

Test case description	Exponentiation to Zero Power
Test case data	10**0
Expected Result	1
Actual Result	1
Pass/Fail	Pass

Test case ID	TC14-S
Test case description	Multiplication with Zero
Test case data	0*5
Expected Result	0
Actual Result	0
Pass/Fail	Pass

Test case ID	TC15-S
Test case description	Negative Exponent with Decimal Base
Test case data	0.5 ** -2
Expected Result	4
Actual Result	4
Pass/Fail	Pass

Test case ID	TC16-S
Test case description	Combination of Multiplication and Modulo
Test case data	7 * (10 % 3)

Expected Result	7
Actual Result	7
Pass/Fail	Pass

Test case ID	TC17-S
Test case description	Negative Numbers in Mixed Operations
Test case data	-10 + 5 * -2
Expected Result	-20
Actual Result	-20
Pass/Fail	Pass

Test case ID	TC18-S
Test case description	Complex Exponentiation with Parentheses
Test case data	(2 + 3) ** 2
Expected Result	25
Actual Result	25
Pass/Fail	Pass

Test case ID	TC19-S
Test case description	Mixed Operators Without Parentheses
Test case data	10-2*3
Expected Result	4
Actual Result	
Pass/Fail	

Test case ID	TC20-S

Test case description	Nested Parentheses with Mixed Operators and Exponentiation
Test case data	((3 + 2) * (4 - 1)) ** 2 / ((6 / 2) + (8 - 5))
Expected Result	37.5
Actual Result	
Pass/Fail	

2. Environmental needs

2.1.1 *Hardware (nothing particular for the arithmetic expression project)*

Specify the characteristics and configurations of the hardware required to execute this test

2.1.2 *Software (nothing particular for the arithmetic expression project)*

Specify the system and application software required to execute this test case. This may include system software such as operating systems, compilers, simulators, and test tools. In addition, the test item may interact with application software.

2.1.3 *Other*

Specify any other requirement.

3. Special procedural requirements

Describe any special constraints on the test procedures that execute this test case. These constraints may involve special set up, operator intervention, output determination procedures, and special wrap up.

4. Intercase dependencies

List the identifiers of test cases that must be executed prior to this test case. Summarize the nature of the dependencies.