ByteMath

Arithmetic Expression Evaluator

Test Case

Version 1.0

Revision History

Date	Version	Description	Author
10/12/24	1.0	Worked on section 1.	Ellie Thach
11/12/24	1.0	Worked on section 2 and 3.	Ellie Thach

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Test Case

1. Purpose

The Test Case Specification document for the Arithmetic Expression Evaluator defines test cases for items that should be tested. The document outlines specific items and features that need to be tested, including the test data, expected result, and the actual result.

2. Test case table

Test Case ID	Description	Test Data	Expected Result	Actual Result	Pass/Fail
TC-001	Addition	3+4	7	7	Pass
TC-002	Subtraction with Parentheses	8 - (5-2)	5	5	Pass
TC-003	Multiplication and Division	10 * 2/5	4	4	Pass
TC-004	Exponentiation	2 ** 3	8	8	Pass
TC-005	Mixed Operators	4 * (3+2) % 7 – 1	5	5	Pass
TC-006	Complex Addition with Extraneous Parentheses	(((2 + 3))) + (((1 + 2)))	8	8	Pass
TC-007	Mixed Operators with Extraneous Parentheses	((5 * 2) - ((3 / 1) + ((4 % 3))))	6	6	Pass
TC-008	Nested Parentheses with Exponents	(((2 ** (1 + 1)) + ((3 - 1) ** 2)) / ((4 / 2) % 3))	4	4	Pass
TC-009	Combination of Extraneous and Necessary Parentheses	(((((5 - 3))) * (((2 + 1))) + ((2 * 3))))	12	12	Pass
TC-010	Extraneous Parentheses with Division	((9 + 6)) / ((3 * 1) / (((2 + 2))) - 1)	-60	-60	Pass
TC-011	Combining Unary Operators with Arithmetic Operations	+(-2) * (-3) – ((-4) / (+5))	6.8	6.8	Pass
TC-012	Unary Negation and Addition in Parentheses	-(+1) + (+2)	1	1	Pass
TC-013	Negation and Addition with Negated Parentheses	-(-(-3)) + (-4) + (+5)	-2	-2	Pass
TC-014	Unary Negation and Exponentiation	+2 ** (-3)	0.125	0.125	Pass
TC-015	Combining Unary Operators with Parentheses	-(+2) * (+3) - (-4) / (-5)	-6.8	-6.8	Pass

TC-016	Unmatched Parentheses	2 * (4 + 3 - 1	Error: Unmatched opening parentheses.	Error: Unmatched opening parentheses.	Pass
TC-017	Operators Without Operands	* 5 + 2	Error: Missing operand in the expression.	Error: Missing operand in the expression.	Pass
TC-018	Incorrect Operator Usage	4 / 0	Error: Division by 0 in the expression.	Error: Division by 0 in the expression.	Pass
TC-019	Missing Operator	5 (2 + 3)	Error: Missing operand in the expression.	Error: Missing operand in the expression.	Pass
TC-020	Invalid Characters	7 & 3	Error: Non-numeric character in expression.	Error: Non-numeric character in expression.	Pass
TC-021	Mismatched Parentheses	(((3 + 4) - 2) + (1)	Error: Unmatched opening parentheses.	Error: Unmatched opening parentheses.	Pass
TC-022	Invalid Operator Usage	((5 + 2) / (3 * 0))	Error: Division by 0 in the expression.	Error: Division by 0 in the expression.	Pass

TC-023	Invalid Operator Sequence	((2 -) 1 + 3)	Error: Consecutive / non-paired operators.	Error: Consecutive / non-paired operators.	Pass
TC-024	Missing Operand	((4 * 2) + (-)	Error: Unmatched opening parentheses.	Error: Unmatched opening parentheses.	Pass
TC-025	Invalid Characters	((7 * 3) ^ 2)	Error: Non-numeric character in expression.	Error: Non-numeric character in expression.	Pass
TC-026	Empty Input		It will ask the user to enter in the input again.	It will ask the user to enter in the input again.	Pass

3. Environmental needs

3.1.1 Other

No environmental needs are required.