Late Nighterz

Kool Kalculator

Test Case

Version 1.0

Revision History

Date	Version	Description	Author
30/11/23	1.0	Started and finished worked on the test case doc	David Donaldson, Ian Collins, Noah O'Grady, Ky Jost, Humzeh Al-Tamari

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Test Case

1. Purpose

This Test Case Specification document for the Kool Kalculator defines the various test cases used to test the final project. It contains a complete list of test cases we used to debug and troubleshoot our program.

2. Test Cases

The following table shows the test cases for the program Kool Kaclulator. It includes the test case ID, a description of what the test case tests, the data to be used as input, the expected results, and the actual results of each test case. Finally, it marks whether the test case was a pass or fail.

Test cases NPE-103, CEP-101, and CUA-101 were all initially fails. However, after executing them again, we discovered it was not a failure of the program, but a failure of the initial syntax we used. In case NPE-103, we missed an operator when we initially tested it, resulting in an error. In cases CEP-101 and CUA-101, we copied and pasted the test cases from other locations. This led to syntax errors in the input that we initially missed. When we re-typed the test cases, we fixed the syntax issues and resolved the errors.

Test Case ID	Test Case description	Test Data	Expected Results	Actual Results	Pass/Fail
ADD-101	Testing addition	1+1	2	2	Pass
ADD-102	Testing addition	1+0	1	1	Pass
ADD-103	Testing addition	0+0	0	0	Pass
SWP-101	Subtraction with Parentheses	8 - (5 - 2)	5	5	Pass
SWP-102	Subtraction with Parentheses	0-(5-2)	-3	-3	Pass
SWP-103	Subtraction with Parentheses	(5-2)-5	-2	-2	Pass
MAD-101	Multiplication and Division	10 * 2 / 5	4	4	Pass
MAD-102	Multiplication and Division	2 / 5 *10	4	4	Pass
MAD-103	Multiplication and Division	10*10*10 / 5	200	200	Pass
EXP-101	Exponentiation	2 ^ 3	8	8	Pass
EXP-102	Exponentiation	1^1	1	1	Pass
EXP-103	Exponentiation	1^0	1	1	Pass
MIX-101	Mixed Operators	4 * (3 + 2) % 7 - 1	5	5	Pass

MIX-102	Mixed Operators	10-5*8/7	-4.285	-4.285	Pass
MIX-103	Mixed Operators	5*5/7+9%5	7.57	7.57	Pass
CAE-101	Complex Addition with Extraneous Parentheses	(((2 + 3))) + (((1 + 2)))	8	8	Pass
CAE-102	Complex Addition with Extraneous Parentheses	((1+3))*(((5-1)))	16	16	Pass
CAE-103	Complex Addition with Extraneous Parentheses	((1+1))/(((1+1)))	1	1	Pass
MAE-101	Mixed Operators with Extraneous Parentheses	((5 * 2) - ((3 / 1) + ((4 % 3))))	6	6	Pass
MAE-102	Mixed Operators with Extraneous Parentheses	((5+1))/(((5*5*5/10)))	0.48	0.48	Pass
MAE-103	Mixed Operators with Extraneous Parentheses	((5+10))*(((9-1)))/(((5+18)))	5.22	5.22	Pass
NPE-101	Nested Parentheses with Exponents	(((2 ^ (1 + 1)) + ((3 - 1) ^ 2)) / ((4 / 2) % 3))	4	4	Pass
NPE-102	Nested Parentheses with Exponents	((12+4)+(8-4)^2)	32	32	Pass
NPE-103	Nested Parentheses with Exponents	(4^2*(20-4+4^2))	512	512	Pass
CEP-101	Combination of Extraneous and Necessary Parentheses	(((((5 - 3))) * (((2 + 1))) + ((2 * 3))))	12	12	Pass
CEP-102	Combination of Extraneous and Necessary Parentheses	((4+5)*(7+8))	135	135	Pass
CEP-103	Combination of Extraneous and Necessary Parentheses	(((4+5))*((7+8)))	135	135	Pass
EPD-101	Extraneous Parentheses with Division:	((9 + 6)) / ((3 * 1) / (((2 + 2))) - 1)	-60	-60	Pass
EPD-102	Extraneous Parentheses with Division:	((5-1))/((2-0))	2	2	Pass

EPD-103	Extraneous Parentheses with Division:	((10+10))/(2-0)/(5-0)	2	2	Pass
CUA-101	Combining Unary Operators with Arithmetic Operations	+(-2) * (-3) – ((-4) / (+5))	6.8	6.8	Pass
CUA-102	Combining Unary Operators with Arithmetic Operations	-(2)*(+5)	-10	-10	Pass
CUA-103	Combining Unary Operators with Arithmetic Operations	+(-2)*10	-20	-20	Pass
UNA-101	Unary Negation and Addition in Parentheses	-(+1) + (+2)	1	1	Pass
UNA-102	Unary Negation and Addition in Parentheses	-(-2)	2	2	Pass
UNA-103	Unary Negation and Addition in Parentheses	-2(2)+(-10)	-6	-6	Pass
NAN-101	Negation and Addition with Negated Parentheses	-(-(-3)) + (-4) + (+5)	-2	-2	Pass
NAN-102	Negation and Addition with Negated Parentheses	-(+(-3))+(-4)+(+5)	4	4	Pass
NAN-103	Negation and Addition with Negated Parentheses	-(-1)-(-5)	6	6	Pass
UNE-101	Unary Negation and Exponentiation	+2 ^ (-3)	0.125	0.125	Pass
UNE-102	Unary Negation and Exponentiation	-2^(-2)	-0.25	-0.25	Pass
UNE-103	Unary Negation and Exponentiation	+5^(-2)	0.04	0.04	Pass
CUO-101	Combining Unary Operators with Parentheses	-(+2) * (+3) - (-4) / (-5)	-6.8	-6.8	Pass
CUO-102	Combining Unary Operators with Parentheses	-(-2)*(5)-(+7)	3	3	Pass
CUO-103	Combining Unary Operators with Parentheses	+6(+6)*(-3)%(-1)	0	0	Pass

UNP-101	Unmatched Parentheses	2 * (4 + 3 - 1	Invalid operator character error	Invalid operator character error	Pass
UNP-102	Unmatched Parentheses	3+5*8)	Invalid operator character error	Invalid operator character error	
UNP-103	Unmatched parantheses	((4-5)+8*(-9)	Invalid operator character error	Invalid operator character error	
APE-101	All Possible Errors	2+2(5/0))+)~++	Invalid Operator Character, Repeated Operator, Invalid Operator Sequence,Hanging Operator, Missing Operator, Mismatch Parenthesis, Cannot Divide by 0	Invalid Operator Character, Repeated Operator, Invalid Operator Sequence,Hanging Operator, Missing Operator, Mismatch Parenthesis, Cannot Divide by 0	Pass
ICE-101	Invalid Character Error	2~0	Invalid Operator Character Error	Invalid Operator Character Error	Pass
ICE-102	Invalid Character Error	~2+5	Invalid Operator Character Error	Invalid Operator Character Error	Pass
ICE-103	Invalid Character Error	2a5	Invalid Operator Character Error	Invalid Operator Character Error	Pass
ROE-101	Repeated Operator Error	2++5	Repeated Operator Error	Repeated Operator Error	Pass
ROE-102	Repeated Operator Error	2///5	Repeated Operator Error	Repeated Operator Error	Pass
IOS-101	Invalid Operator Sequence	5+(4+)	Invalid Operator Sequence Error	Invalid Operator Sequence Error	Pass
IOS-102	Invalid Operator Sequence	9+5*(4/)	Invalid Operator Sequence Error	Invalid Operator Sequence Error	Pass

HOP-101	Hanging Operator	5+4+	Hanging Operator Error	Hanging Operator Error	Pass
HRO-101	Hanging and Repeating Operator	5+4++	Repeated Operator Error, Hanging Operator Error	Repeated Operator Error, Hanging Operator Error	Pass
PRZ-101	Mismatch Parenthesis and Repeating Operator and Divide by Zero	(((4++4)/0	Repeated Operator Error, Mismatched Parenthesis Error, Divide by Zero Error	Repeated Operator Error, Mismatched Parenthesis Error, Divide by Zero Error	Pass
MPR-101	Mismatch Parenthesis and Repeating Operator Error	(((5++4)	Repeated Operator Error, Mismatched Parenthesis	Repeated Operator Error, Mismatched Parenthesis	Pass
MPR-102	Mismatch Parenthesis and Repeating Operator Error	(5*/7))	Repeated Operator Error, Mismatched Parenthesis	Repeated Operator Error, Mismatched Parenthesis	Pass

3. Environmental needs

3.1.1   Software

Our calculator is compatible with both Linux and Windows machines.

Required Software:

- Node.js

3.1.2   *Other*

Computer must have power, a CPU, RAM, and a keyboard.

4. Special procedural requirements

Node.js is required to use this program. The user must first run the JavaScript server for the HTML webpage to solve the expression. Only once the server is running will the program work.