
Bonsai Tree

**M.A.R.C.O.
Test Case**

Version 1.0

M.A.R.C.O	Version: 1.0
Test Cases	Date: 03/12/2023
PROJ2023-TC-001	

Revision History

Date	Version	Description	Author
28/11/2023	1.0	Creation of Test Case document.	Marco Martinez
03/12/2023	1.2	Completed requirement 6.	Mikey Cauthon

M.A.R.C.O	Version: 1.0
Test Cases	Date: 03/12/2023
PROJ2023-TC-001	

Table of Contents

1. Purpose	4
2. Test case identifier	4
3. Test Item:	4
4. Input specifications	4
5. Output specifications	4
6. Environmental needs:	4
6.1.1. Other needs	4
Complier:	4
7. Test case table:	4
7.1. Description:	4
7.2. Legend:	4
7.3. Table:	4

M.A.R.C.O	Version: 1.0
Test Cases	Date: 03/12/2023
PROJ2023-TC-001	

Test Case

1. Purpose

This Test Case Specification document for the M.A.R.C.O defines a Table of Black Box test cases Aimed to Rigorously test Valid input handling and Invalid input handling from User input.

2. Test case identifier

Please refer to column 1 in the table found in 7.3

3. Test Item:

Please refer to column 2 in the table found in 7.3

4. Input specifications

Please refer to column 3 in the table found in 7.3

5. Output specifications

Please refer to column 4 in the table found in 7.3

6. Environmental needs:

6.1.1. Other needs

Complier:

The system running the program needs to have a C++ compiler installed and functioning.

7. Test case table:

7.1. Description:

This section contains all Blackbox test cases for both valid and invalid input

7.2. Legend:

VTC: valid input Test Case

ITC: invalid input test Case

TBDBT: to be determined during testing

7.3. Table:

Test Case ID	Test case description	Test Data	Expected Result	Actual Result	Pass/Fail
VTC_00	Test Addition	2+2	4	TBDDT	TBDDT
VTC_01	Test Subtraction	2-2	0	TBDDT	TBDDT
VTC_02	Test Multiplication	2*3	6	TBDDT	TBDDT
VTC_03	Test Division	1/4	0.25	TBDDT	TBDDT
VTC_04	Test Exponentiation	2^3	8	TBDDT	TBDDT
VTC_05	Test Modulo	7%4	3	TBDDT	TBDDT

M.A.R.C.O	Version: 1.0
Test Cases	Date: 03/12/2023
PROJ2023-TC-001	

VTC_06	Test Premdas Order of operations	$2/2+2*3$	7	TBDDT	TBDDT
VTC_07	Test parenthesis functionality	$2*(2+4)$	12	TBDDT	TBDDT
VTC_08	Test Unary addition	+1	1	TBDDT	TBDDT
VTC_09	Test Unary subtraction	-1	-1	TBDDT	TBDDT
VTC_10	Test unary operator inside parenthesis	$(-1 *3) +1$	-2	TBDDT	TBDDT
VTC_11	Test unary operator outside parenthesis	$-(1+2)$	-3	TBDDT	TBDDT
VTC_12	Test unary operator inside and outside of parenthesis	$-(2+(-3))$	1	TBDDT	TBDDT
VTC_13	Test Extraneous parenthesis	$((((-1+2))))$	1	TBDDT	TBDDT
VTC_14	Test complex Expression	$(-4(3+3)/2^2)\%3$	-3	TBDDT	TBDDT
VTC_15	Test nested Complex Expression	$(2^(2+1))+(3+1)^2+(12\%5)$	26	TBDDT	TBDDT
VTC_16	Test Complex expression with extraneous parenthesis	$((5*2)-((3/1)+((4\%3))))$	6	TBDDT	TBDDT
VTC_17	Test Unary operators within complex operations	$(-3)*(2+1)^3+(-4)/(+2)$	-83	TBDDT	TBDDT
VTC_18	Test Unary operations in exponentiation	$2^(-1)$	0.5	TBDDT	TBDDT
VTC_19	Test Complex operations within exponents	$2^((25/5)+4\%2)$	32	TBDDT	TBDDT
VTC_20	Test Complex Division	$(1/2)/(1/4)$	2	TBDDT	TBDDT
VTC_21	Testing spaces in Arithmetic Expressions	$(1/ 2)+ 3*(3/2)$	6	TBDDT	TBDDT
VTC_22	Testing Basic decimal operations	$1.2+2.4/1.1$	3.381	TBDDT	TBDDT
VTC_23	Testing unary operations with decimals	$(1.1+(-3.2))$	-2.1	TBDDT	TBDDT
VTC_24	Testing Decimal operations with extraneous parenthesis	$((((1.2-1.3))+0.5))$	0.4	TBDDT	TBDDT
VTC_25	Testing Complex Decimal operations	$((4^1.5)/(2.25\%0.5))+(-1.1)-0.9)$	30	TBDDT	TBDDT
ITC_00	Testing missing parenthesis	$(1+2 *3$	Error	TBDDT	TBDDT

M.A.R.C.O	Version: 1.0
Test Cases	Date: 03/12/2023
PROJ2023-TC-001	

ITC_01	Testing * Operator without operands (excluding – and +)	*2	Handled Error	TBDDT	TBDDT
ITC_02	Testing / Operator without operands (excluding – and +)	/2	Handled Error	TBDDT	TBDDT
ITC_03	Testing % Operator without operands (excluding – and +)	%2	Handled Error	TBDDT	TBDDT
ITC_04	Testing Division by 0	1/0	Handled Error	TBDDT	TBDDT
ITC_05	Testing Missing operator	2(1+3)	Handled Error	TBDDT	TBDDT
ITC_06	Testing Invalid characters	ABC&@	Handled Error	TBDDT	TBDDT
ITC_07	Testing Mismatched extraneous parenthesis	((((1+2)+3)+4	Handled Error	TBDDT	TBDDT
ITC_08	Testing Division by 0 within complex equations	(1/3)+(2.3*(1.4/0))	Handled Error	TBDDT	TBDDT
ITC_09	Testing Missing operands within complex equations	(1/3+(**))	Handled Error	TBDDT	TBDDT
ITC_10	Testing Invalid Characters within complex equations	((((a+1)-2)/@))	Handled Error	TBDDT	TBDDT
ITC_11	Testing Regex injection into input	\b 1+2 \$2+3\b	Handled Error	TBDDT	TBDDT