COMP 4220

Aaron Collins

110011732

User Stories and Test Design

1. 10 User Stories
    a. As a user, I want to be able to enter some numbers to perform a calculation
    b. As a user, I want to be able to add two numbers to find out the answer
    c. As a user, I want to be able to multiply two numbers to find out the answer
    d. As a user, I want to be able to subtract two numbers to find out the answer
    e. As a user, I want to be able to divide two numbers to find out the answer
    f. As a user, I want to be able to undo an input to correct my mistakes
    g. As a user, I want to be able to use floating point numbers to have precise calculations
    h. As a user, I want to be able to square a number to find out the answer
    i. As a user, I want to be able to square root a number to find out the answer
    j. As a user, I want to be able to cube a number to find out the answer
2. Specify test cases for multiplication of numbers (test case c)
    a. (In)Valid I/O
        i. Valid input: (4, 8.2), (50, 100), (-25, -25), (8, 0), (1, 3.4028235E38), (1.844674352395373E19, 1.844674352395373E19)
        ii. Invalid input: (a, 1), (a, a), (a, #), (3.4028235E38, 3.4028235E38)
        iii. Valid output: 10, 2500, 0, 3.4028235E38, 1.844674352395373E19
        iv. Invalid output: Error, Infinity, -Infinity
    b. Equivalence classes:
        i. Preconditions: Inputs must be a float, or converted to a float
        ii. Valid equivalence classes:
            1. [-3.4028235E38, $-1.844674352395373e^{19}$, 0, $1.844674352395373e^{19}$ (square root of the max float value), 3.4028235E38]
        iii. Invalid equivalence classes: String values [a-zA-Z@_./#&$)]
    c. Testing in/out using boundary value analysis
        i. Valid input boundaries: [-3.4028235E38, $-1.844674352395373e^{19}$, -1, 0, 1, $1.844674352395373e^{19}$, 3.4028235E38]
    d. Test Cases Steps
        i. TC1
            1. Run the calculator
            2. Enter 0 for the first input
            3. Enter 0 for the second input
            4. Press on the multiplication button
            5. Check if the result is 0
        ii. TC2
            1. Run the calculator
            2. Enter 0 for the first input

3. Enter 1 for the second input
4. Press on the multiplication button
5. Check if the result is 0

iii. TC3
1. Run the calculator
2. Enter 1 for the first input
3. Enter 1 for the second input
4. Press on the multiplication button
5. Check if the result is 1

iv. TC4
1. Run the calculator
2. Enter 1 for the first input
3. Enter $-1.844674352395373e^{19}$ for the second input
4. Press on the multiplication button
5. Check if the result is $-1.844674352395373e^{19}$

v. TC5
1. Run the calculator
2. Enter $-1.844674352395373e^{19}$ for the first input
3. Enter $-1.844674352395373e^{19}$ for the second input
4. Press on the multiplication button
5. Check if the result is 3.4028235E38

vi. TC6
1. Run the calculator
2. Enter $1.844674352395373e^{19}$ for the first input
3. Enter $1.844674352395373e^{19}$ for the second input
4. Press on the multiplication button
5. Check if the result is 3.4028235E38

vii. TC7
1. Run the calculator
2. Enter 1 for the first input
3. Enter 3.4028235E38 for the second input
4. Press on the multiplication button
5. Check if the result is 3.4028235E38

viii. TC8
1. Run the calculator
2. Enter 3.4028235E38 for the first input
3. Enter 3.4028235E38 for the second input
4. Press on the multiplication button
5. Check if the result is Infinity

ix. TC9
1. Run the calculator
2. Enter 3.4028235E38 for the first input
3. Enter -3.4028235E38 for the second input
4. Press on the multiplication button

5. Check if the result is -Infinity

x. TC10
    1. Run the calculator
    2. Enter 1 for the first input
    3. Enter a for the second input
    4. Press on the multiplication button
    5. Check if the output is “Error”

xi. TC11
    1. Run the calculator
    2. Enter a for the first input
    3. Enter 1 for the second input
    4. Press on the multiplication button
    5. Check if the output is “Error”

xii. TC12
    1. Run the calculator
    2. Enter a for the first input
    3. Enter a for the second input
    4. Press on the multiplication button
    5. Check if the output is “Error”