Calculator Test Plan

SE 317 – Lab 8

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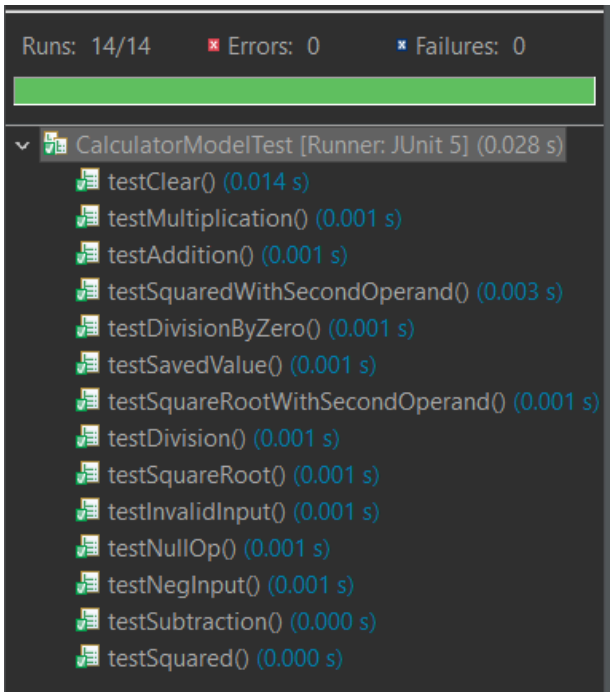
Calculator Model Tests



The CalculatorModelTest class contains JUnit tests for the CalculatorModel class.

The testAddition(), testSubstraction(), testMultiplication(), testDivision() methods test the basic arithmetic operations with simple operands. The testDivisionByZero() method test the case when division by zero occurs, which should throw an ArithmeticException.

The testSquared() and testSquareRoot() methods test the more advanced operations of squaring and taking square root, respectively. The testSquaredWithSecondOperand() and testSquareRootWithSecondOperand() methods test the case when there is a second operand, which should throw an ArithmeticException.

The testInvalidValue() method tests the case when an invalid input iss given, which should throw an ArithmeticException. The testClear() method tests the case when the calculator is cleared, which should reset the result to 0. The testNullOp() method tests the case when no operation is given, which should throw an ArithmeticException.

The testSavedValue() method tests the case when a value is saved and added to the current value, which should give the correct result. The testNegInput() method tests the case when negative input is given, which should give the correct result.

Calculator GUI Tests

Basic Addition Test case:

Input sequence:

1. “5” button
2. “+” button
3. “7” button
4. “=” button

Expected result: “12” (output field / saved value field)

Actual result: “12” (output field / saved value field)

Basic Subtraction Test case:

Input sequence:

1. “5” button
2. “-” button
3. “7” button
4. “=” button

Expected result: “-2” (output field / saved value field)

Actual result: “-2” (output field / saved value field)

Basic Division Test case:

Input sequence:

1. “9” button
2. “/” button
3. “3” button
4. “=” button

Expected result: “3” (output field / saved value field)

Actual result: “3” (output field / saved value field)

Basic Multiplication Test case:

Input sequence:

1. “4” button
2. “*” button
3. “6” button
4. “=” button

Expected result: “24” (output field / saved value field)

Actual result: “24” (output field / saved value field)

Basic Invalid Equation Test case:

Input sequence:

1. “+” button
2. “7” button
3. “=” button

Expected result: “Error” (equation field)

Actual result: “Error” (equation field)

Basic Squaring Test case:

Input sequence:

1. “5” button
2. “(Squared)” button
3. “=” button

Expected result: “25” (output field / saved value field)

Actual result: “25” (output field / saved value field)

Basic Invalid Squaring Test with Two Operands case:

Input sequence:

1. “5” button

2. “(Squared)” button

3. “4” button

3. “=” button

Expected result: “Error” (equation field)

Actual result: “Error” (equation field)

Basic Square Root Test case:

Input sequence:

1. “25” button

2. “(Square-Root)” button

3. “=” button

Expected result: “5” (output field / saved value field)

Actual result: “5” (output field / saved value field)

Basic Invalid Square Root Test with Two Operands case:

Input sequence:

1. “25” button

2. “(Square-Root)” button

3. “5” button

3. “=” button

Expected result: “Error” (equation field)

Actual result: “Error” (equation field)

Basic Equation with Decimal Values Test case:

Input sequence:

1. “5” button

2. “.” button

3. “5” button

4. “*” button

5. “7” button

6. “.” button

7. “5” button

8. “=” button

Expected result: “41.25” (output field / saved value field)

Actual result: “41.25” (output field / saved value field)

Basic M+ Test case:

Input sequence:

1. “2” button

2. “+” button

3. “8” button

4. “=” button

5. “M+” button

6. “9” button

7. “=” button

Expected result: “19” (output field / saved value field)

Actual result: “19” (output field / saved value field)

Basic M- Test case:

Input sequence:

1. “7” button

2. “-” button

3. “9” button

4. “=” button

5. “M-” button

6. “2” button

7. “=” button

Expected result: “-4” (output field / saved value field)

Actual result: “-4” (output field / saved value field)

Basic Swap Operator Test case:

Input sequence:

1. “6” button
2. “(Squared)” button
3. “6” button
4. “+” button

Expected change: “equation field: “6+6”

Actual change: “equation field: “6+6”

5. “=” button

Expected result: “12” (output field / saved value field)

Actual result: “12” (output field / saved value field)

M-Recall Test case:

Input sequence:

1. “7” button
2. “-” button
3. “9” button
4. “=” button
5. “M-Recall” button
6. “-” button
7. “8” button
8. “=” button

Expected result: “-10” (output field / saved value field)

Actual result: “-10” (output field / saved value field)

M-Clear Test case:

Input sequence:

1. “7” button
2. “-” button
3. “9” button
4. “=” button
5. “M-Clear” button

Expected result: “0” (output field / saved value field)

Actual result: “0” (output field / saved value field)

Negative Input Test case:

1. “neg_” button
2. “7” button
3. “3” button
4. “-” button
5. “neg_” button
6. “9” button
7. “=” button

Expected result: “-64” (output field / saved value field)

Actual result: “-64” (output field / saved value field)

Clear Test case:

1. “7” button
2. “*” button
3. “6” button
4. “C” button

Expected result: “” (equation field)

Actual result: “” (equation field)

Delete Operand Digit Test:

1. “9” button
2. “7” button
3. “D” button
4. “/” button
5. “2” button
6. “D” button
7. “3” button
8. “=” button

Expected result: “3” (output field / saved value field)

Actual result: “3” (output field / saved value field)

Delete Operator Test:

1. “6” button
2. “(Square-Root)” button
3. “D” button
4. “(M+)” button
5. “D” button
6. “+” button
7. “8” button
8. “=” button

Expected result: “14” (output field / saved value field)

Actual result: “14” (output field / saved value field)