Test Case 1: Large Multiplication

- **Test Case ID:** TC001
- **Test Description:** Verify multiplication of two large positive numbers.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `12345`.
  2. Press `×`.
  3. Input `6789`.
  4. Press `=`.
- **Expected Result:** The result displayed is `83810205`.

Test Case 2: Subtraction with Negative Result

- **Test Case ID:** TC002
- **Test Description:** Verify subtraction resulting in a negative number.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `5`.
  2. Press `-`.
  3. Input `8`.
  4. Press `=`.
- **Expected Result:** The result displayed is `-3`.

Test Case 3: Multiplication with Negative Second Operand

- **Test Case ID:** TC003
- **Test Description:** Verify behavior when the second operand in multiplication is negative.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `6`.
  2. Press `×`.
  3. Input `-3`.
  4. Press `=`.
- **Expected Result:** Usually, `6 × -3` would give `-18`. However, here the operator automatically switches to subtraction, and the result incorrectly displays `3` (since `6 - 3 = 3`).

Test Case 4: Division by Zero

- **Test Case ID:** TC004
- **Test Description:** Verify behavior when dividing a number by zero.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `9`.
  2. Press `÷`.
  3. Input `0`.
  4. Press `=`.
- **Expected Result:** The result displayed is `Infinity`.

Test Case 5: Modulo with Large Positive Operands

- **Test Case ID:** TC005
- **Test Description:** Verify modulo operation with larger positive integers.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
    1. Input `123`.
    2. Press `%`.
    3. Input `45`.
    4. Press `=`.
- **Expected Result:** The result displayed is `33`.

Test Case 6: Consecutive Operators

- **Test Case ID:** TC006
- **Test Description:** Verify behavior when two operators are pressed consecutively.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
    1. Input `8`.
    2. Press `+`.
    3. Press `×`.
    4. Input `3`.
    5. Press `=`.
- **Expected Result:** The second operator (`×`) overrides the first (`+`), and the result displayed is `24` (`8 × 3`).

Test Case 7: Operator Shortcut for Repeated Equals

- **Test Case ID:** TC007
- **Test Description:** Verify behavior when an operator is followed directly by `=` without providing a second operand.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
    1. Input `7`.
    2. Press `+`.
    3. Press `=`.
- **Expected Result:** The calculator performs `7 + 7` and displays `14`. This behavior applies similarly for other operators like `×`, `÷`, `%`, etc.

Test Case 8: Decimal Multiplication with Negative First Operand

- **Test Case ID:** TC008
- **Test Description:** Verify multiplication involving a negative decimal number as the first operand.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
    1. Input `-5.5`.
    2. Press `×`.

3. Input `2.2`.
4. Press `=`.

- **Expected Result:** The result displayed is `-12.1`.

Test Case 9: Negative First Operand with Division

- **Test Case ID:** TC009
- **Test Description:** Verify behavior when the first operand is negative and operation is division.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `-10`.
  2. Press `÷`.
  3. Input `2`.
  4. Press `=`.
- **Expected Result:** The result displayed is `-5`.

Test Case 10: Left to Right Execution with 2 Operators

- **Test Case ID:** TC010
- **Test Description:** Verify left-to-right execution when there are 2 or fewer arithmetic operators.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `10`.
  2. Press `+`.
  3. Input `5`.
  4. Press `×`.
  5. Input `2`.
  6. Press `=`.
- **Expected Result:** The result displayed is `30`. The calculator evaluates from left to right:
  - First, `10 + 5 = 15`, then
  - `15 × 2 = 30`.

Test Case 11: BODMAS with 3 Operators

- **Test Case ID:** TC011
- **Test Description:** Verify BODMAS is applied correctly when there are more than 2 arithmetic operators.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `2`.
  2. Press `+`.
  3. Input `6`.
  4. Press `×`.
  5. Input `5`.
  6. Press `/`.
  7. Input `5`.
  8. Press `=`.

- **Expected Result:** The result displayed is `8`. The calculator follows BODMAS:
  - First, `6 × 5 = 30`,
  - Then, `30 / 5 = 6`,
  - Finally, `2 + 6 = 8`.

Test Case 12: Invalid Modulo Operation Resulting in NaN

- **Test Case ID:** TC012
- **Test Description:** Verify behavior when performing invalid modulo operations like `0 % 0 =` or `5 % 5 % =`, resulting in `NaN`.
- **Preconditions:** Calculator is reset.
- **Test Steps:**
  1. Input `5`.
  2. Press `%`.
  3. Input `5`.
  4. Press `%`.
  5. Press `=`.
- **Expected Result:** The result displayed is `NaN` (Not a Number).
