Here are the functional requirements of a simple calculator:

1. Basic Arithmetic Operations

The system shall perform addition of two or more numbers.

The system shall perform subtraction of two numbers.

The system shall perform multiplication of two numbers.

The system shall perform division of two numbers (with handling of division by zero).

2. Input Handling

The system shall accept numeric inputs (integers and/or decimals).

The system shall accept operator inputs (+, −, ×, ÷).

The system shall allow correction of input (e.g., backspace or clear).

3. Display

The system shall display the entered numbers and operations.

The system shall display the result of a calculation after pressing "=".

The system shall show an error message for invalid operations (e.g., divide by zero, invalid key).

4. Chained Operations

The system shall support sequential operations without needing to press "=" every time (e.g., 2 + 3 × 4).

5. Memory Functions (optional, if included)

The system shall allow storing a number in memory.

The system shall allow recalling the stored number.

The system shall allow clearing memory.

6. Clear/Reset

The system shall provide a function to clear the current entry.

The system shall provide a function to reset the entire calculation.

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Functional Requirements

1. Basic Operations

* Perform addition, subtraction, multiplication, and division.
* Handle division by zero with an appropriate error message.

2. Input Handling

* Accept numeric inputs (integers and decimals).
* Accept operator inputs (+, −, ×, ÷).
* Allow correction of input (backspace, clear).

3. Display

* Show entered numbers and selected operations.
* Display result after pressing “=”.
* Show error messages for invalid operations (e.g., divide by zero, invalid input).

4. Chained Operations

Support sequential calculations (e.g., 5 + 3 × 2).

5. Memory Functions (optional)

* Store a value in memory.
* Recall memory value.
* Clear memory.

6. Clear/Reset

* Clear last entry.
* Reset entire calculation.

Non-Functional Requirements

1. Performance

* The calculator shall produce results within 1 second of input.
* It shall handle at least 10 sequential operations without performance degradation.

2. Usability

* The interface shall be simple and intuitive for all age groups.
* Buttons shall be clearly labeled (0–9, +, −, ×, ÷, =, C, etc.).

3. Reliability

* The calculator shall provide accurate results up to at least 8 decimal places.

* It shall not crash for invalid inputs (e.g., multiple operators in a row).

4. Portability

* The calculator shall run on multiple platforms (web, mobile, desktop) if required.

5. Security

* The calculator shall not allow execution of malicious code through inputs.

6. Maintainability

* The system shall be designed with modular code so new operations (e.g., square root, percentage) can be added easily.