Functional Requirements

1. Input Constraints

1.1. Accepts only valid hexadecimal numbers (0-9, A-F).
1.2. Input length is restricted to a maximum of 2 digits (00 to FF).
1.3. Detects and prevents empty inputs or non-hexadecimal characters.
1.4. Allows users to input numbers via keyboard or on-screen buttons.

2. Supported Operations

2.1. Performs addition, subtraction, multiplication, and division.
2.2. Prevents division by zero and provides a clear error message.
2.3. Supports calculations that stay within hexadecimal limits.
2.4. Ensures correct order of operations when handling multiple calculations.

3. Output Constraints

3.1. Results are displayed as valid hexadecimal numbers.
3.2. Maximum output length is four hexadecimal digits (0000 to FFFF).
3.3. Provides an error message if the result exceeds FFFF (overflow condition).
3.4. Displays negative results as an error

4. User Interface & Interaction

4.1. Includes a clear display screen for user inputs and results.
4.2. Provides buttons for hexadecimal digits (0-9, A-F) and operations (+, -, ×, ÷).
4.3. Includes a clear/reset button to erase inputs and results.
4.4. Ensures real-time feedback on invalid inputs or errors.

5. Error Handling & Validation

5.1. Displays a clear error message when an invalid input is detected.
5.2. Prevents overflow conditions by stopping calculations beyond FFFF.

5.3. Ensures division by zero is handled properly with a warning.
5.4. Detects and ignores accidental multiple operation inputs