Internet Programming 2

Learning Mini-Project 2: Simulate the operations of a hand-held calculator (V1)
Project Specifications - February 2025

Project Title: Design and Develop a Web-Based Handheld Calculator (version 1)

Objective: Create a visually appealing and functional calculator that performs basic arithmetic operations (+, -, ×, ÷) and handles decimal numbers.

Requirements:

1. **User Interface:**
    - Design a user-friendly layout that resembles a handheld calculator.
    - Include buttons for digits (0-9), decimal point, and basic arithmetic operators.
    - Provide a display area to show user input and results.
    - Incorporate a clear (C) button to reset the display.
2. **Functionality:**
    - Implement the ability to perform addition, subtraction, multiplication, and division operations.
    - Ensure the calculator can handle decimal inputs and provide accurate results.
    - Prevent invalid operations, such as division by zero, and handle errors gracefully.
3. **Technical Specifications:**
    - Use HTML to structure the calculator's layout.
    - Apply CSS to style the calculator, aiming for a clean and realistic appearance.
    - Utilize JavaScript to manage the calculator's logic and interactivity.

Guidelines and Tips:

- **Design Considerations:**
    - Think about the user experience: How can you make the calculator intuitive and easy to use?
    - Consider the size and spacing of buttons to ensure they are easily clickable.
    - Choose a colour scheme that enhances readability and aesthetics.
- **Functionality Hints:**
    - Plan how the calculator will process multiple sequential operations (e.g., 5 + 3 - 2).
    - Decide how the calculator should behave when the user inputs multiple operators in succession.
    - Think about how to handle long numbers or results that exceed the display area.
- **Technical Tips:**
    - Break down the project into smaller tasks: start with the HTML structure, then move to CSS styling, and finally implement the JavaScript functionality.
    - Use event listeners in JavaScript to handle button clicks and perform operations.
    - Test your calculator thoroughly to ensure all buttons and operations work as intended.

Optional Enhancements:

Version 2 of this mini-project will include, among others, the following additional enhancements: [you are advised to “problem-solve” this at this stage and make an attempt to implement some of these in the current version.

- Add an "On/Off" button to simulate powering the calculator on and off.

- Implement memory functions (M+, M-, MC) to store and recall values.
- Include additional mathematical operations, such as percentage (%) or square root (√).
- Enhance the design with animations or transitions for a more dynamic user experience.

Note: This project encourages creativity and individual expression. While the core functionality is specified, feel free to explore additional features or design elements that showcase your skills and personal style.

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