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.

MS Mthethwa, 14 February 2025.