Project Report

Project Title: Calculator

Developed By: Saurabh Kumar Kashinwar

Project Description:

This project is a simple, user-friendly calculator built using HTML, CSS, and JavaScript. It replicates basic calculator functionalities found in typical devices, including operations like addition, subtraction, multiplication, and division. This calculator provides a smooth user experience with an intuitive layout and responsive design, suitable for users of all levels.

Objectives:

- Functionality: Implement a functional calculator with basic arithmetic operations.
- Responsive Design: Ensure compatibility across various devices with a responsive interface.
- Usability: Create a user-friendly, accessible design that is easy to interact with and understand.

Project Components:

- HTML: Structuring the layout and elements of the calculator.
- CSS: Styling the calculator for an appealing and responsive design.
- JavaScript: Implementing the calculator's functionality, including basic operations and event handling.

Tools & Technologies:

- HTML5: Used to structure the calculator layout, including buttons, display screen, and container.
- CSS3: Used to style the calculator, providing visual elements, colors, and layout adjustments for responsiveness.
- JavaScript (ES6): Used to handle the logic of operations, manage user input, and update the display.

Features Implemented:

- Arithmetic Operations: Supports addition, subtraction, multiplication, and division.
- Clear Functionality: Allows users to reset the display or clear individual entries.
- Responsive Design: Adjusts layout for compatibility with both desktop and mobile devices.

- Error Handling: Displays error messages for invalid operations, such as division by zero.

Project Structure:

- index.html: Contains the HTML code, including the structure and elements of the calculator.
- style.css: Contains CSS code for styling and layout adjustments.
- script.js: Contains JavaScript code for handling operations and user interactions.

Code Explanation:

1. HTML:

Created a container with a display section and buttons for digits (0–9), operators (+, -, *, /), and functionalities (clear, equals).
Organized buttons into a grid format for easy access.

2. CSS:

Styled the calculator with a clean, modern look. Used CSS Flexbox to create a responsive grid layout.
Styled individual buttons and the display for optimal visibility.

3. JavaScript:

Added functions to handle each arithmetic operation. Implemented event listeners on buttons to capture user input and display results.
Handled error messages, such as division by zero, to improve user experience.

Challenges and Solutions:

- Challenge: Implementing continuous calculations without resetting the input.
    - Solution: Stored the ongoing calculation state and updated the display after each operation.
- Challenge: Ensuring mobile compatibility.
    - Solution: Used media queries in CSS to make the layout adapt to different screen sizes.

Results:

The calculator performs all the essential functions as expected. It’s responsive and

accessible across different devices,
offering users a reliable, basic tool for everyday calculations.

Future Enhancements:

- Scientific Calculator Features: Add functionalities like square root, exponential, and trigonometric functions.
- Keyboard Support: Implement keyboard input for faster access to functions.
- History Tracking: Allow users to view their calculation history.

Conclusion:

This calculator project is a functional, visually appealing, and accessible tool built using fundamental web technologies.
It demonstrates a good understanding of HTML, CSS, and JavaScript while reinforcing concepts in responsive design and event handling.