Scientific Calculator Documentation

Introduction

The Scientific Calculator is a fully functional, dynamic, and responsive web application built using HTML, CSS, and JavaScript. It provides a user-friendly interface for performing a wide range of mathematical calculations, including basic arithmetic, trigonometry, logarithms, and more.

Features

1. **Basic Arithmetic Operations:** The calculator supports addition, subtraction, multiplication, and division of numbers. The user can perform these operations using the on-screen buttons or their keyboard.

2. **Trigonometric Functions:** Users can calculate trigonometric functions such as sine, cosine, and tangent. The calculator operates in both degrees and radians, with an option to switch between them.

3. **Logarithmic Functions:** The calculator allows users to compute logarithms and exponentials of numbers, facilitating complex calculations.

4. **Parentheses Support:** Users can use parentheses to group and control the order of operations, enabling them to perform complex calculations accurately.

5. **Responsive Design:** The calculator interface is designed to adapt seamlessly to various screen sizes, making it accessible and user-friendly on both desktop and mobile devices.

6. **Keyboard Support:** In addition to using the on-screen buttons, users can perform calculations using their keyboard. This feature enhances user convenience and efficiency.

Usage

1. **Basic Arithmetic:** To perform basic arithmetic operations, click the respective buttons on the calculator interface. For example, to calculate 5 + 3, click the "5" button, followed by the "+" button, and then the "3" button. Finally, click the "=" button to see the result.

2. **Trigonometric Functions:** Click the appropriate trigonometric function button (e.g., "sin", "cos", "tan"), enter the angle value, and press the "=" button to compute the result. Toggle the "Degrees" or "Radians" button to switch between angle measurement modes.

3. **Logarithmic Functions:** For logarithmic calculations, select the logarithm base, input the number, and click the "=" button to get the result.

4. **Parentheses Usage:** To perform calculations with parentheses, click the "(" button to start a group, enter the numbers and operators within the parentheses, and then click the ")" button to close the group. Press "=" to compute the result.

5. **Keyboard Shortcuts:** Use keyboard shortcuts for quick calculations. For instance, press the "1" key, followed by the "+" key, then the "2" key, and finally the "=" key to calculate 1 + 2.

Implementation

Technologies Used

- **HTML:** Used to structure the calculator's layout and interface.
- **CSS:** Styled the calculator interface to ensure a visually appealing design and responsive layout.
- **JavaScript:** Implemented the calculator's functionality, including calculations, button interactions, and dynamic updates.

Code Structure

1. **HTML:** The HTML structure defines the calculator's layout, including buttons and display screen.

2. **CSS:** Cascading stylesheets are used to style the calculator's appearance, ensuring a user-friendly design.

3. **JavaScript:** The JavaScript code handles user interactions and mathematical calculations. Event listeners are used to capture button clicks and perform appropriate actions.

Conclusion

The Scientific Calculator is a versatile web application that provides users with a robust tool for performing a wide range of mathematical calculations. Its user-friendly interface, responsive design, and support for various mathematical functions make it an essential tool for students, professionals, and anyone in need of quick and accurate calculations. The combination of HTML, CSS, and JavaScript ensures a seamless user experience, making the calculator accessible across different devices and screen sizes.