Front End Engineering-I Project

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Introduction

Title: Development of a Web-Based Calculator

Team Members:

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Overview:

In this project, we will create a simple calculator using HTML, CSS, and JavaScript. This calculator will perform basic arithmetic operations such as addition, subtraction,multiplication,division and also scientific calculations.

It aims to provide a user-friendly interface while demonstrating fundamental web development concepts.

Problem Statement

Develop a smart calculator that performs basic arithmetic operations and advanced functionalities like scientific calculations, memory storage, and a user-friendly interface.

Project Aim:

The primary aim of the Web-Based Calculator project is to develop a functional and user-friendly tool that performs basic arithmetic operations efficiently. Specifically, the project aims to:

Accessibility: Design the calculator to be accessible to all users, including those with disabilities, ensuring everyone can utilize the tool effectively.

Implement Error Handling: Ensure robustness by gracefully managing errors, such as division by zero and invalid inputs.

Technical Details

- **<u>HTML (HyperText Markup Language)</u>**:
    - Structure the layout of the calculator, including buttons and input fields.
- **<u>CSS (Cascading Style Sheets)</u>**:
    - Style the application, ensuring a visually appealing and user-friendly interface.
    - Use for responsive design to adapt to different screen sizes.
- **<u>JavaScript</u>**:
    - Implement the functionality and logic of the calculator, handling user interactions and calculations.
    - JavaScript is essential for modern web development, enabling the creation of interactive and dynamic web experiences.

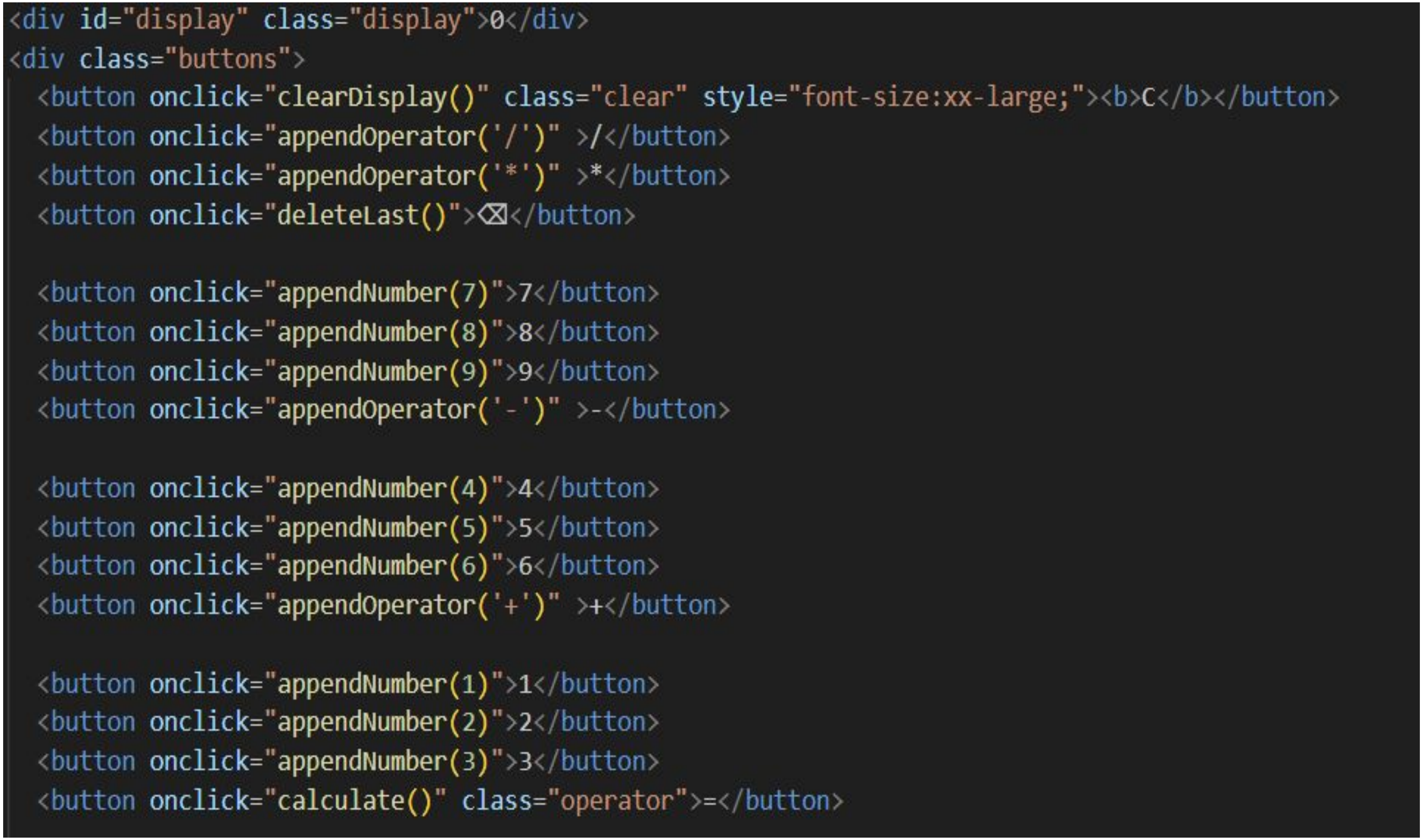
Key Features

The calculator will have a user-friendly interface designed for ease of use, featuring:

- **Clear Layout**: A well-organized keypad with large buttons for numbers and functions, making it easy to read and press.
- **Responsive Design**: Adaptable to different screen sizes, ensuring a seamless experience on both mobile devices and desktops.
- **Visual Feedback**: Immediate visual feedback (like button highlights) when a button is pressed, enhancing user interaction.

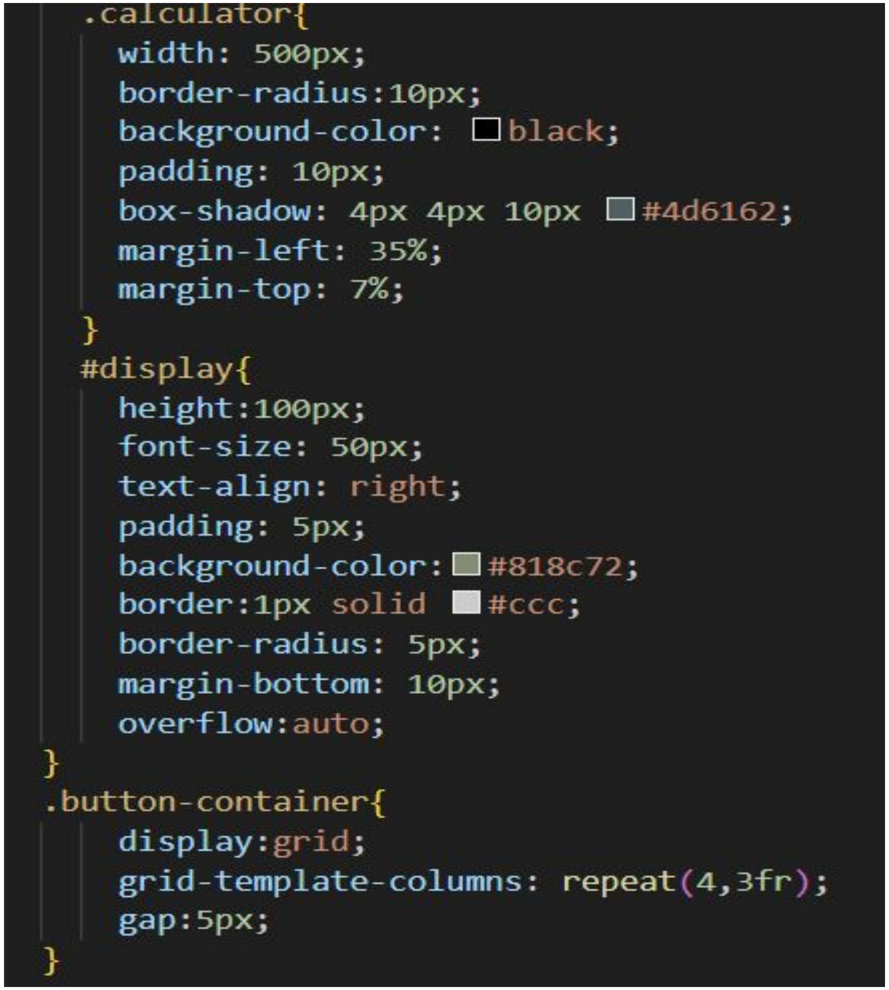
Project Highlights

Code snippets (HTML):

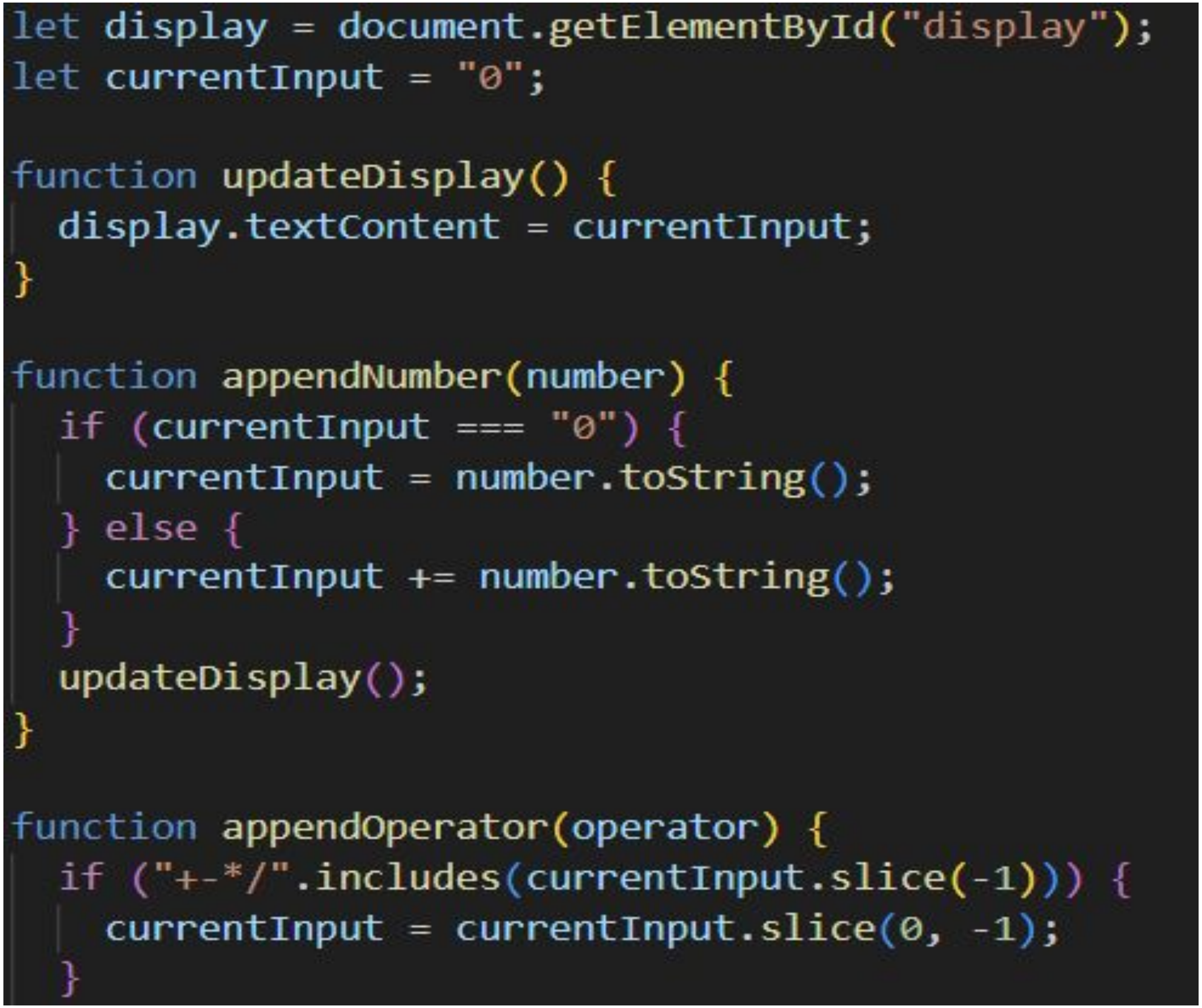


```html
<div id="display" class="display">0</div>
<div class="buttons">
  <button onclick="clearDisplay()" class="clear" style="font-size:xx-large;"><b>C</b></button>
  <button onclick="appendOperator('/')" >/</button>
  <button onclick="appendOperator('*')" >*</button>
  <button onclick="deleteLast()">⌫</button>

  <button onclick="appendNumber(7)">7</button>
  <button onclick="appendNumber(8)">8</button>
  <button onclick="appendNumber(9)">9</button>
  <button onclick="appendOperator('-')" >-</button>

  <button onclick="appendNumber(4)">4</button>
  <button onclick="appendNumber(5)">5</button>
  <button onclick="appendNumber(6)">6</button>
  <button onclick="appendOperator('+')" >+</button>

  <button onclick="appendNumber(1)">1</button>
  <button onclick="appendNumber(2)">2</button>
  <button onclick="appendNumber(3)">3</button>
  <button onclick="calculate()" class="operator">=</button>
```

Code snippet (CSS)

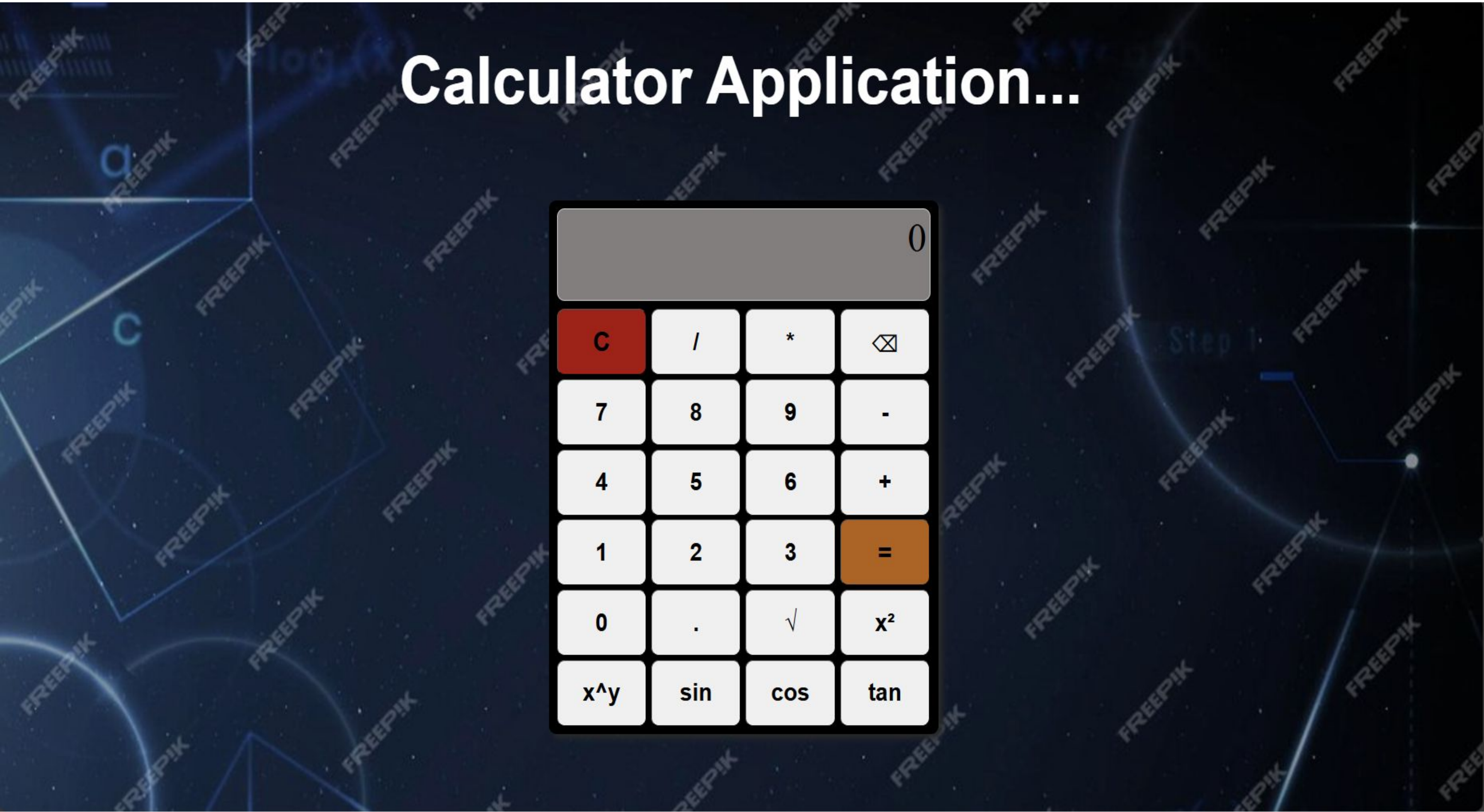


```
  .calculator{
    width: 500px;
    border-radius:10px;
    background-color: black;
    padding: 10px;
    box-shadow: 4px 4px 10px #4d6162;
    margin-left: 35%;
    margin-top: 7%;
  }
  #display{
    height:100px;
    font-size: 50px;
    text-align: right;
    padding: 5px;
    background-color: #818c72;
    border:1px solid #ccc;
    border-radius: 5px;
    margin-bottom: 10px;
    overflow:auto;
}
.button-container{
    display:grid;
    grid-template-columns: repeat(4,3fr);
    gap:5px;
}
```



```
let display = document.getElementById("display");
let currentInput = "0";

function updateDisplay() {
  display.textContent = currentInput;
}

function appendNumber(number) {
  if (currentInput === "0") {
    currentInput = number.toString();
  } else {
    currentInput += number.toString();
  }
  updateDisplay();
}

function appendOperator(operator) {
  if ("+-*/".includes(currentInput.slice(-1))) {
    currentInput = currentInput.slice(0, -1);
  }
```

OUTPUT:



Additional Features

- **Square and fraction Mode:** It also calculate the squares or fractions of the input.
- **Scientific Mode**: An option to switch to scientific calculations, providing additional functions like logarithms, factorials, and combinations for more advanced users.
- **Responsive Mode**: Adaptable to different screen sizes, ensuring a seamless experience on both mobile devices and desktops.

Conclusion

Functionality: The web calculator offers a user-friendly interface for performing basic arithmetic operations, enhancing user experience through intuitive design.

Technologies Used: Built with HTML, CSS, and JavaScript, ensuring cross-browser compatibility and responsiveness across devices.

Key Features:

- Real-time calculations
- Clear and reset functions
- Responsive design for mobile and desktop

Future Enhancements:

- Add advanced mathematical functions (e.g., trigonometry, logarithms)

References/Links used

https://www.w3schools.com

https://developer.mozilla.org

https://javascript.info

https://getbootstrap.com

https://docs.github.com

Thank you!