**Project Report: Simple Calculator**

**Introduction**

* **Project Name**: Simple Calculator (Medium Level)
* **Developed By**: Lakshay Jain
* **Roll No.**: 2200290120095
* **Branch**: Computer Science (CS)
* **Technology Stack**: HTML, CSS, JavaScript
* **Purpose**: The goal of this project is to develop a simple, responsive calculator that efficiently performs basic arithmetic operations—addition, subtraction, multiplication, and division. The design emphasizes a clean and intuitive user interface, ensuring smooth user interaction.

**Project Objectives**

* **Basic Features**:
  + Perform core arithmetic operations: addition, subtraction, multiplication, and division.
* **Advanced Features**:
  + **Percentage Calculation**: Enables percentage calculations (e.g., calculating "20% of 200" returns 40).
  + **Square Root Calculation**: Includes a square root function for quick access to square root values.

**Project Requirements**

* **Frontend**:
  + **HTML**: Structures the calculator layout, providing a well-organized interface.
  + **CSS**: Styles the calculator for aesthetic appeal and ensures a responsive design for various screen sizes.
* **JavaScript**:
  + **Functionality**: Handles inputs, performs real-time calculations, and dynamically updates the display.
  + **Event Handling**: Utilizes event listeners to capture button clicks and trigger the corresponding operations.

**System Design**

* **User Interface**: A simple, clear layout featuring buttons for numbers (0-9), core arithmetic operations (+, -, \*, /), and an interactive display screen.
* **Event Handling**: JavaScript event listeners respond to button clicks, process the user input, and update the display in real time.

**Implementation**

* **JavaScript Logic**: JavaScript functions perform essential arithmetic operations such as addition, subtraction, multiplication, and division.
* **User Interaction**: User inputs are captured through button clicks, and the results display dynamically, enabling real-time feedback.
* **Testing**: The calculator undergoes thorough testing to verify calculation accuracy and ensure smooth UI interactions.

**Features**

* **Basic Arithmetic Operations**: Performs addition, subtraction, multiplication, and division.
* **Clear Button**: Resets the calculator display for new calculations.
* **Real-Time Dynamic Display**: Updates the display as the user inputs numbers and selects operations.

**Challenges Addressed**

* **Input Management**: Prevented errors from chaining operations (e.g., avoiding consecutive operations like "++" or "--").
* **Responsive Design**: Ensured UI consistency and usability across multiple screen sizes and devices.

**Future Enhancements**

* **Advanced Functionalities**: Add features like square root, percentage, and memory functions to expand calculator capabilities.
* **UI Customization**: Introduce customizable themes and display options to enhance user experience.

**Conclusion**

This project successfully implements a functional and user-friendly calculator with the foundation for additional features. Its clean design and responsive interface make it a practical tool for basic and advanced calculations, providing an excellent platform for future development.

**Thanks !**