**Project Report: To-Do List Application**

**Introduction**

* **Project Name**: To-Do List Application (Beginner Level)
* **Developed By**: Lakshay Jain
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* **Branch**: Computer Science (CS)
* **Technology Stack**: HTML, CSS, JavaScript
* **Purpose**: This project aims to create a streamlined, interactive to-do list application that allows users to organize tasks efficiently. Designed with a user-friendly interface and a responsive layout, the application helps users keep track of tasks and improve productivity.

**Project Objectives**

* **Core Functionalities:**
  + **Add New Tasks**: Users can input and add new tasks to the list.
  + **Edit and Delete Tasks**: Tasks can be modified or removed as needed.
  + **Mark as Complete**: Enables users to mark tasks as completed, helping prioritize active tasks.
* **Extended Functionalities:**
  + **Clear Completed Tasks**: A feature that removes all completed tasks with a single click, keeping the task list organized.
  + **Filter Options**: Provides filtering capabilities to display all tasks, only active tasks, or completed tasks.

**Project Requirements**

* **Frontend:**
  + **HTML**: Structures the main layout of the to-do list, organizing sections for task input, task display, and action buttons.
  + **CSS**: Ensures an appealing and responsive design, with styles that enhance user experience on multiple devices.
* **JavaScript:**
  + **Functionality**: Manages task creation, deletion, and marking as complete, along with dynamic updates to the task list.
  + **Event Handling**: Uses event listeners to handle actions like adding, editing, deleting, and filtering tasks seamlessly.

**System Design**

* **User Interface**: A minimalist and clean design featuring an input field for new tasks, a list display for tasks, and control buttons to edit, delete, or mark tasks as complete.
* **Event Handling**: JavaScript event listeners capture user actions, process task data, and provide real-time feedback on the interface.

**Implementation**

* **JavaScript Logic**: Functions handle task addition, deletion, and updates, while also managing task states (active vs. completed).
* **User Interaction**: Captures user input through the task input field and buttons, dynamically updating the to-do list in real time.
* **Testing**: The application undergoes extensive testing to ensure that tasks are accurately updated, and that the UI remains responsive and intuitive.

**Features**

* **Task Management**: Allows users to add, edit, delete, and complete tasks efficiently.
* **Filter Options**: Displays all tasks, active tasks, or completed tasks, giving users more control over their task list.
* **Clear Completed Tasks**: Provides a quick way to remove completed tasks and maintain a clean to-do list.
* **Responsive Design**: Ensures optimal performance and usability on both desktop and mobile devices.

**Challenges Addressed**

* **Task State Management**: Managed task states effectively to prevent duplication or unintended deletion.
* **Responsive Layout**: Ensured that the interface is user-friendly and accessible across various devices and screen sizes.

**Future Enhancements**

* **Task Prioritization**: Add options for setting task priorities (e.g., high, medium, low).
* **Due Dates and Reminders**: Enable users to set deadlines and receive notifications for upcoming tasks.
* **Customizable Themes**: Allow users to switch themes, enhancing the application’s aesthetic appeal and personalization.
* **Data Persistence**: Implement local storage or server-based storage to save tasks across sessions.

**Conclusion**

This To-Do List Application provides an efficient and interactive tool for task management, offering a clean interface and responsive design that cater to everyday organizational needs. With additional scope for features like prioritization, reminders, and data persistence, it has a strong foundation for further enhancement.

**Thank you!**