Indian Institute of Information Technology Kalyani

Project Report on Real-Time Collaborative Text Editor

Submitted by

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📌 **Project Title:** Real-Time Collaborative Text Editor

Project GitHub Repository:

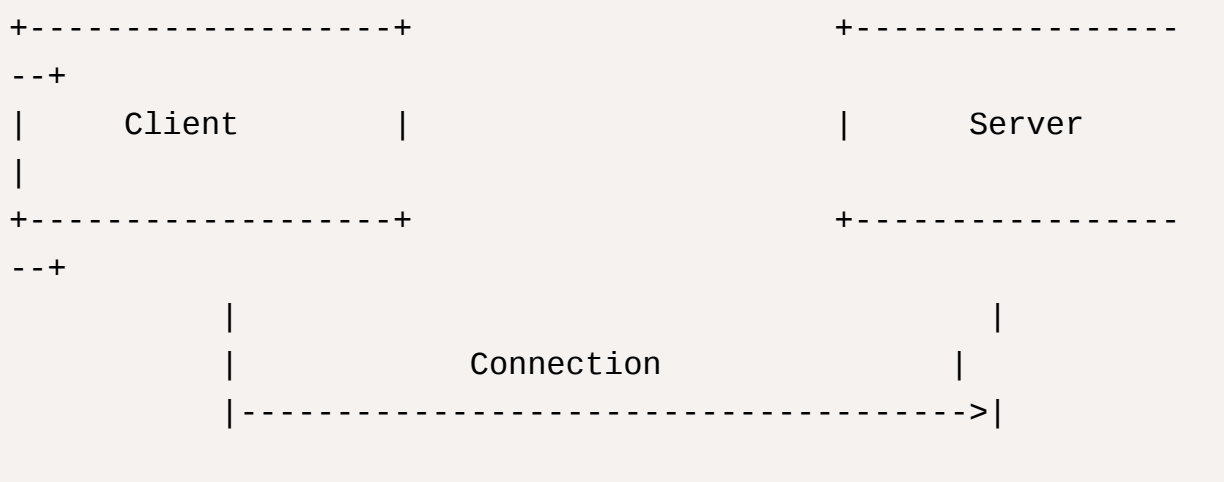
https://github.com/shibv/TextEditor

Introduction:-

The project aims to develop a real-time collaborative text editor where multiple users can join a particular room using a unique socket key and collaborate on text editing tasks in real-time. The application utilizes modern web technologies such as **ReactJS, Node.js, Socket.IO, CSS, and integrates MongoDB** for persistent data storage.

Features:-

- **Real-Time Collaboration:** Users can join a specific room using a unique socket key and collaborate in real-time on text editing tasks. Changes made by one user are immediately reflected for all participants in the same room.
- **Rich Text Editing:** The application employs the Quill editor to provide a rich text editing experience for users, allowing them to format text, add images, and more.
- **Persistent Data Storage:** All text editing sessions and changes made by users are stored in MongoDB, ensuring that the data persists even after users leave the session or refresh the page.




Establish Socket
Listening for JOIN Events
JOIN Event Handler
JOIN Acknowledgment
Listening for DISCONNECT
DISCONNECT Event Handler
Listening for Text Changes
Text Change Handler
Send Text Changes
Save Document Event
Save Document Handler

```
            |          Disconnection               |
            |<-------------------------------------|
```

Project Workflow:

- **Backend Development:** Backend services were implemented using Node.js, which manages socket connections, room creation, and data communication between clients.
- **Integration:** Socket.IO was integrated into the project to enable real-time communication between the server and clients.
- **Database Integration:** MongoDB was integrated into the backend to store text editing sessions and user changes, ensuring persistence of data.
- **Frontend Development:** The team worked on developing the user interface using ReactJS and integrating the Quill editor for rich text editing functionalities.
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Technical Stack:-

- **Frontend:** ReactJS for building the user interface and integrating the Quill editor for rich text editing capabilities.
- **Backend:** Node.js is used for the server-side implementation, handling socket connections, room management, and communication between clients.
- **Websocket :** Socket.IO library is utilized for enabling real-time bidirectional communication between clients and the server.
- **Database:** MongoDB is used to store text editing sessions and user changes, ensuring persistence of data.
- **CSS:** Cascading Style Sheets (CSS) are used for styling the user interface and enhancing the visual appeal of the application.

Future Enhancements:

- Implement user authentication and authorization features.

- Add support for additional text editing functionalities.
- Enhance the user interface and user experience.
- Improve scalability and performance for handling a larger number of concurrent users.

Conclusion:-

The development of the real-time collaborative text editor was successfully completed by the team. The application offers a seamless collaborative editing experience, allowing users to work together on text editing tasks in real-time. By utilizing modern web technologies and integrating MongoDB for data persistence, the application provides a robust solution for collaborative text editing requirements.