**A SIMPLE GROUP CHAT APPLICATION USING MERN-STACK WITH SOCKET.IO**

**PROJECT OVERVIEW**

The Simple Chat Application project endeavors to create a user-friendly two-way communication platform facilitating message exchange between users and an administrative backend. Leveraging the MERN-Stack and enhanced with Tailwind CSS for styling, this application offers a seamless chatting experience within a group chat room setting. Users can access the chat room via a common ID and engage in real-time conversations with multiple participants. The interface also displays active members within the group chat, allowing users to seamlessly navigate their interactions. Additionally, users have the flexibility to exit the chat room when desired.

**KEY FEATURES**

* Utilizes MERN-Stack and Tailwind CSS for development and styling.
* Supports real-time communication between users and an administrative backend.
* Allows multiple users to participate in group chats using a common chat room ID.
* Provides visibility of active members within the group chat.
* Facilitates smooth user interaction with intuitive features.

**TECHNOLOGIES USED**

* **Express JS** : Powers the backend with its robust web application framework.
* **Node JS** : Provides the runtime environment for executing JavaScript code.
* **HTML** : Serves as the mark-up language for constructing web pages.
* **Tailwind-CSS** : Elevates the styling with its utility-first CSS framework.
* **JavaScript** : Acts as the primary programming language for web development.
* **Socket.io** : Enables real-time communication within the application.
* **React JS** : Drives the frontend with its efficient library for building user interfaces.

**USAGE**

1. **HOME PAGE**

* Access the group chat by providing a unique name and chat ID
* **Provide a Unique Name** : Your unique name should consist of at least 3 characters. This name will be used to identify you within the chat room.
* **Enter a Valid Chat ID** : Your chat ID must meet the following criteria:

- It should not contain any spaces.

- It should not exceed 12 characters in length.

- It should consist of at least 3 characters.

1. **CHAT PAGE**

* Engage in real-time messaging with the administrator upon joining the chat room.

**SECURITY**

1. **AUTHENTICATION AND AUTHORIZATION**

* Implement user authentication mechanisms such as username/chat Id, to verify the identity of users.
* Ensure that only authenticated users can access sensitive operations like sending messages or accessing certain chat rooms.
* Use authorization to control access to different features and functionalities.

1. **SECURE COMMUNICATION**

* Use HTTPS (HTTP Secure) to encrypt communication between the client and server, protecting against eavesdropping and data tampering.
* Implement secure Socket connections for real-time communication, ensuring that messages are transmitted over a secure channel.

1. **INPUT VALIDATION AND SANITIZATION**

* Validateand sanitize user input to prevent injection attacks such as XSS (Cross-Site Scripting), and CORS (Cross-Origin Resource Sharing) configuration to secure communication of socket.io server
* Validate user input types, length, and format to prevent malicious input from compromising the system.

1. **SESSION MANAGEMENT**

* Implement secure session management techniques to prevent session hijacking and fixation.
* Implement session expiration and idle timeout mechanisms to invalidate sessions after a period of inactivity.

**GitHub Repository URL :** <https://github.com/yogapriya-star/Group-Chat-App>

**Hosted App URL :** <https://group-chat-application-slxw.onrender.com>

**CONCLUSION**

The Simple Chat Application project presents a robust solution for streamlined communication, offering users a seamless platform to engage in real-time conversations. By leveraging the power of the MERN-Stack and Tailwind CSS, we have created an application that not only fulfills its primary function but also prioritizes user experience and accessibility across different devices. We aim to evolve the Simple Chat Application into a comprehensive communication platform that meets the evolving needs of our user community.