CHAT ENGINE

BY GROUP - 11

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INTRODUCTION

The chat app project is a modern communication application that allows users to send and receive messages in real-time. This project utilizes various technologies such as MongoDB, Node.js, and Socket.IO to build a scalable and efficient chat application. The app supports features like user authentication, bi-directional messaging, and group messaging. It is designed to be user-friendly with a responsive and visually appealing interface.

The project involves both front-end and back-end development, with the front-end being developed using React and the back-end using Node.js and MongoDB. The chat app project requires a solid understanding of web development technologies, including JavaScript, HTML, and CSS. Additionally, expertise in database design and management, server-side scripting, and real-time communication protocols is necessary for successful implementation

WHY CHAT ENGINE ?

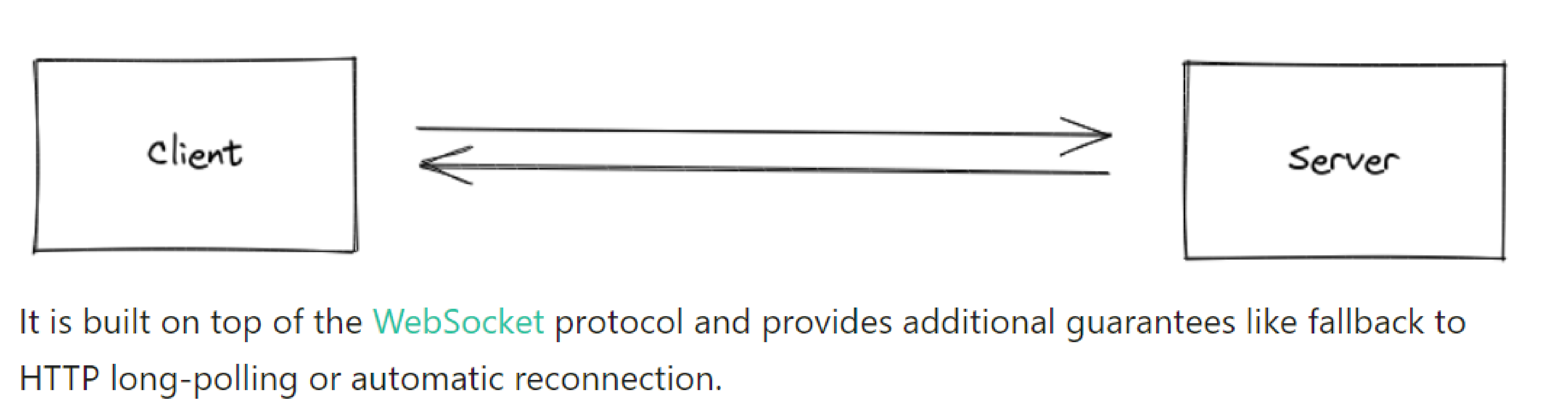
A chat app is a modern communication tool that offers several benefits over traditional communication methods. Here are some reasons why we need a chat app

- Real-time communication: Chat apps allow users to communicate in real-time, making it an effective tool for urgent and time-sensitive communication. Unlike email or other traditional communication methods, chat apps offer immediate feedback and responses.
- Cost-effective: Chat apps are cost-effective and can help businesses save money on communication costs. With chat apps, users can communicate with colleagues, clients, or partners without the need for costly phone calls or face-to-face meetings.
- Efficiency: Chat apps can help improve efficiency in communication. Users can quickly exchange messages, share files, and collaborate in real-time, eliminating the need for back-and-forth emails or time-consuming meetings.
- Accessibility: Chat apps are accessible and convenient. Users can communicate from anywhere, using their mobile devices or computers. This makes it easier to stay in touch with colleagues, friends, and family, no matter where they are.
- Group communication: Chat apps support group communication, allowing multiple users to communicate and collaborate on a shared project or task. This can help improve teamwork and productivity

1) SOCKET.IO

Socket.io is a JavaScript library that enables real-time, bidirectional and event-based communication between a client and a server. It works on the web and on mobile devices and can be used with any back-end programming language

Socket.io automatically attempts to reconnect to the server if the connection is lost, ensuring that real-time communication is maintained.

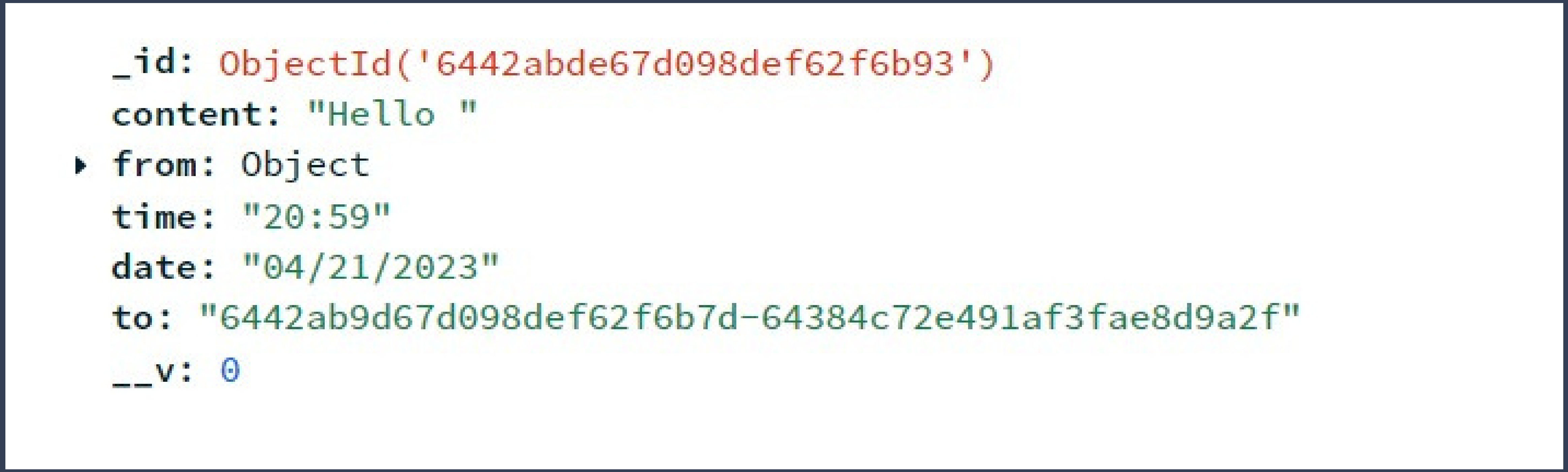


It is built on top of the WebSocket protocol and provides additional guarantees like fallback to HTTP long-polling or automatic reconnection.

2) MONGODB

MongoDB is a popular open-source NoSQL database system that is designed to store and manage large volumes of unstructured or semi-structured data.

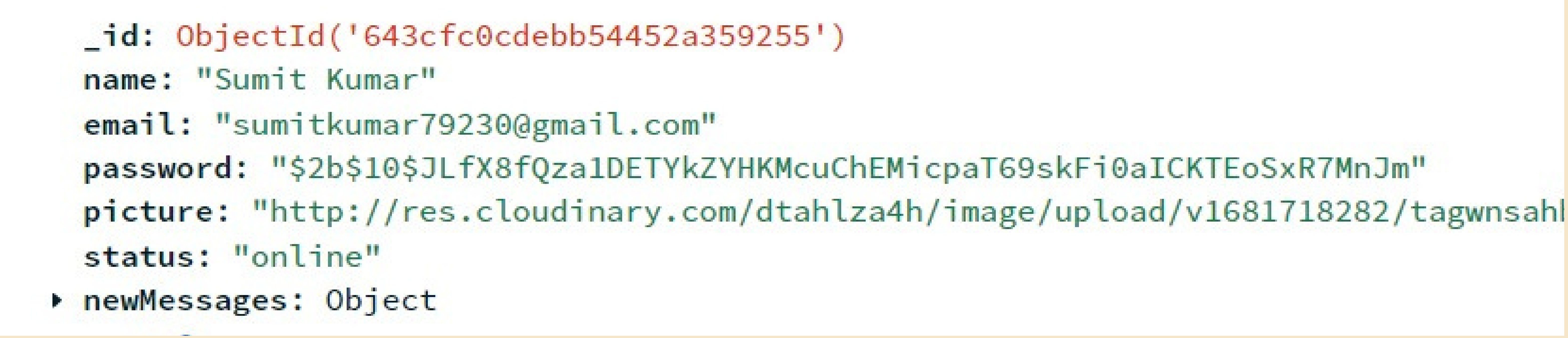
MongoDB uses a document-based data model, which means that it stores data in a JSON-like format called BSON (Binary JSON). This allows for flexible and dynamic schema design, as each document can have a different structure, unlike traditional relational databases that require a fixed schema



```
  _id: ObjectId('6442abde67d098def62f6b93')
  content: "Hello "
▸ from: Object
  time: "20:59"
  date: "04/21/2023"
  to: "6442ab9d67d098def62f6b7d-64384c72e491af3fae8d9a2f"
  __v: 0
```

2) MONGODB

Another key feature of MongoDB is its rich query language, which supports a variety of queries, including text search, geospatial queries, and aggregation. MongoDB also supports indexing, which helps to optimize query performance and speed up data retrieval.



```
  _id: ObjectId('643cfc0cdebb54452a359255')
  name: "Sumit Kumar"
  email: "sumitkumar79230@gmail.com"
  password: "$2b$10$JLfX8fQza1DETYkZYHKMcuChEMicpaT69skFi0aICKTEoSxR7MnJm"
  picture: "http://res.cloudinary.com/dtahlza4h/image/upload/v1681718282/tagwnsah
  status: "online"
▸ newMessages: Object
```

3) EXPRESS

Express.js, or simply Express, is a web application framework for Node.js. Express provides a robust set of features for web and mobile applications. Express provides a thin layer of fundamental web application features, without obscuring Node.js features.

4) NODEJS

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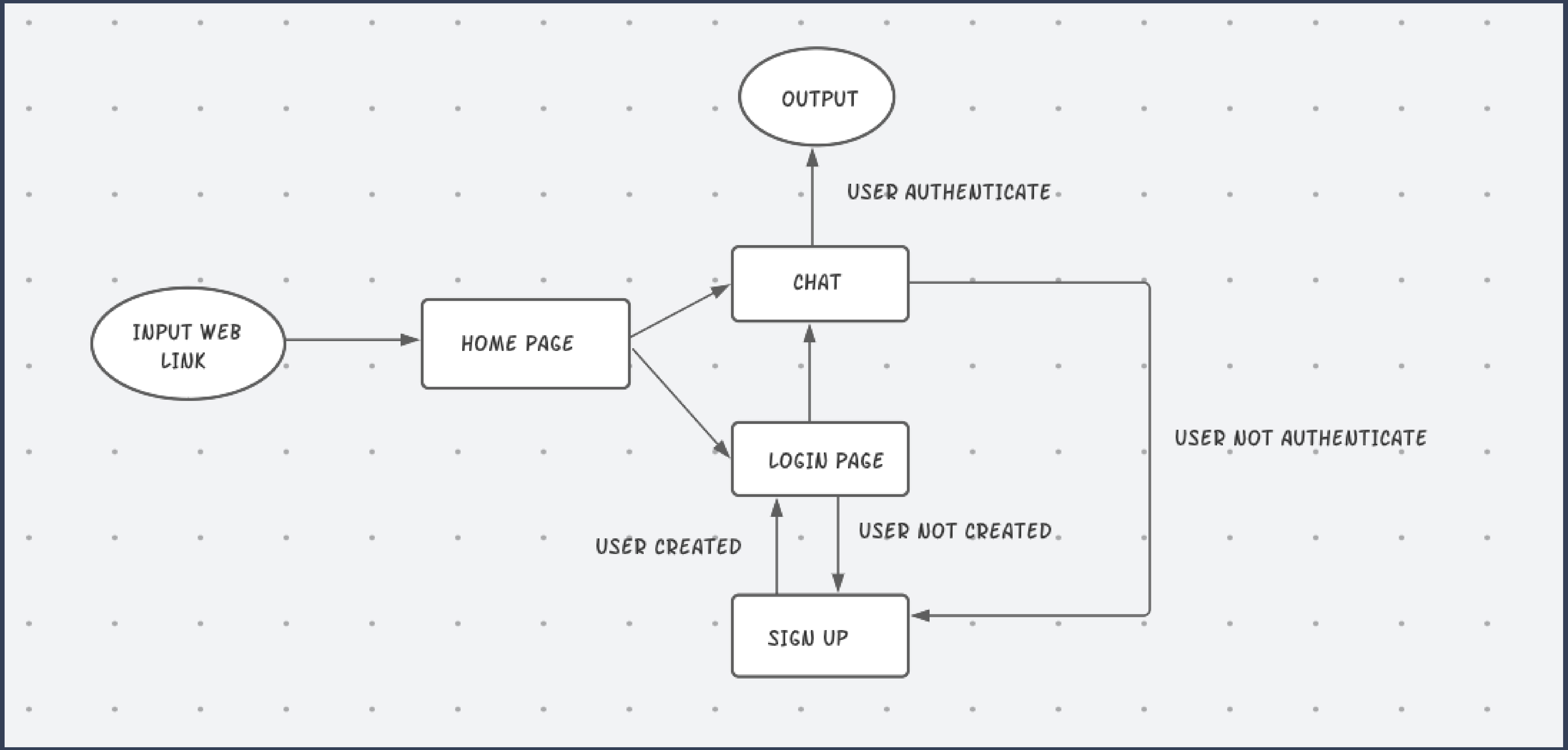
5) REACTJS

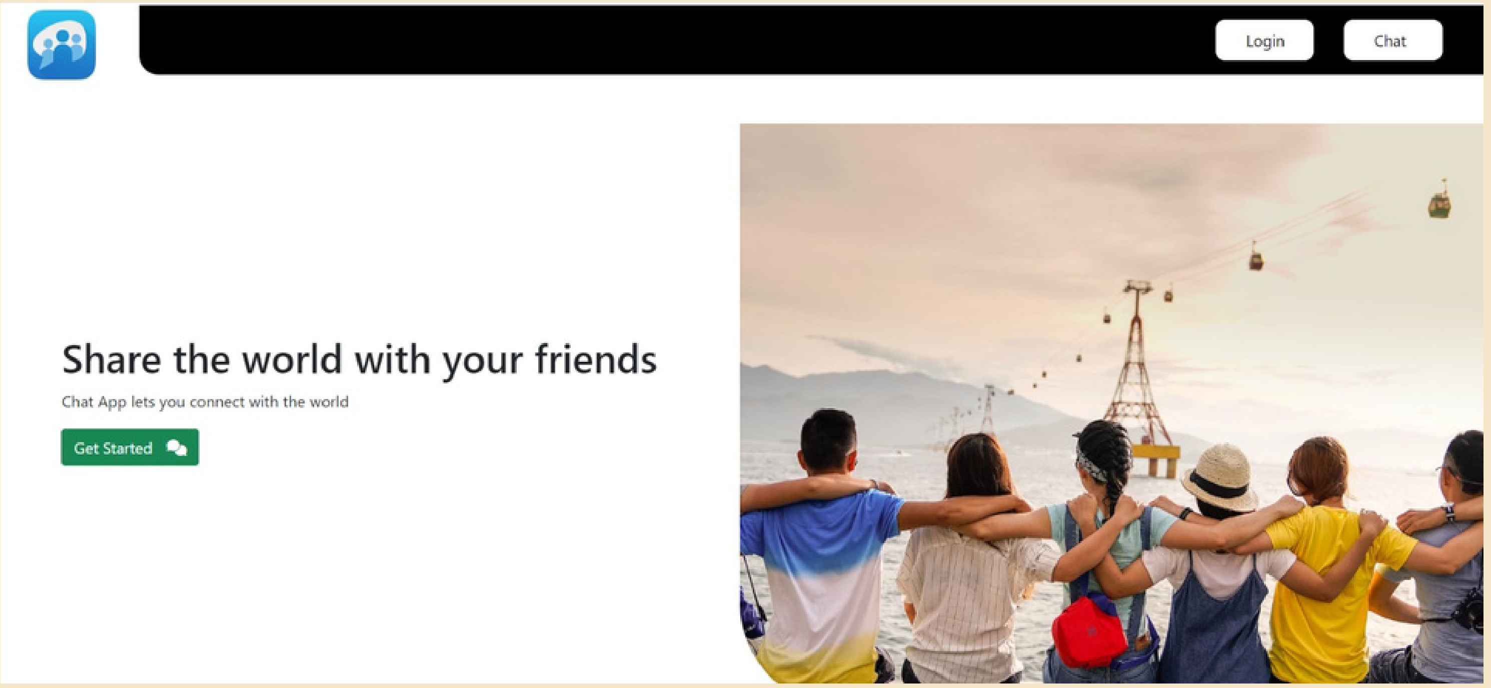
React is a library for building composable user interfaces. It encourages the creation of reusable UI components, which present data that changes over time. Lots of people use React as the V in MVC. React abstracts away the DOM from you, offering a simpler programming model and better performance. React can also render on the server using Node, and it can power native apps using React Native. React implements one-way reactive data flow, which reduces the boilerplate and is easier to reason about than traditional data binding

BLOCK DIAGRAM



IMPLEMENTATION

STEP - 1



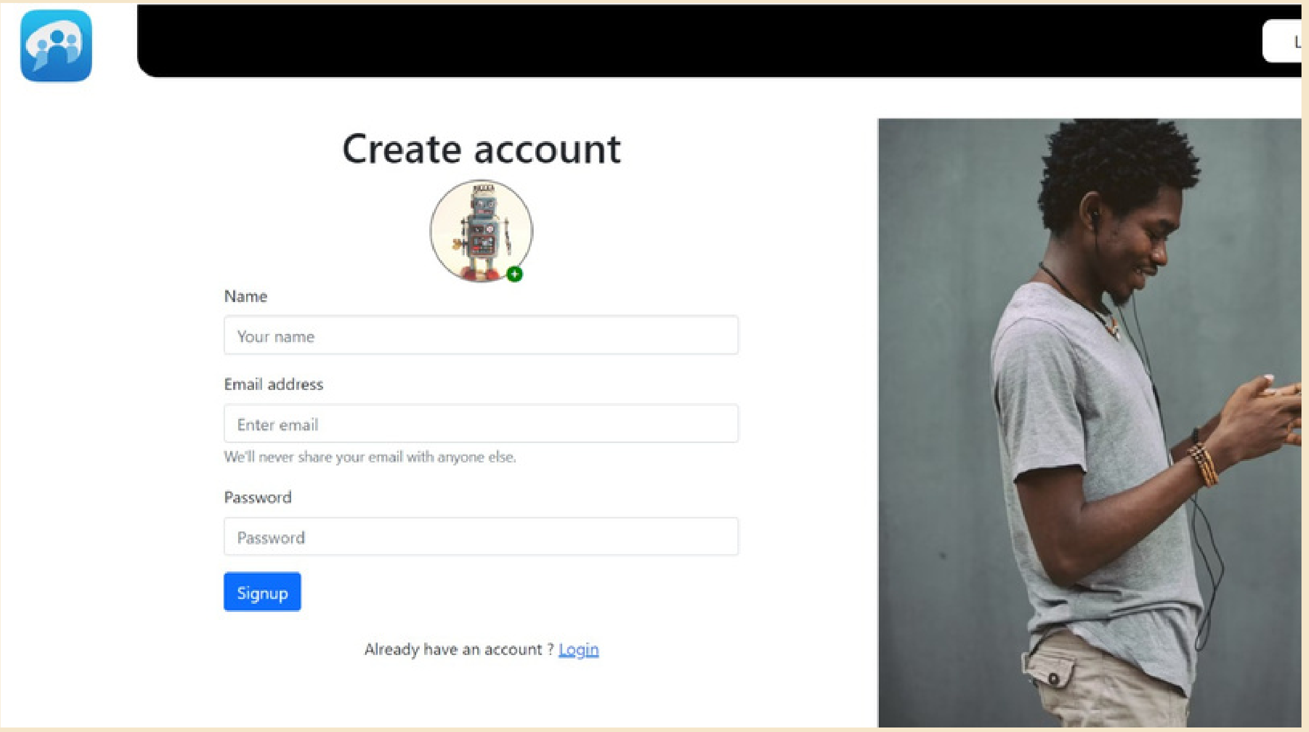
Share the world with your friends

Chat App lets you connect with the world

This is our homepage where you can see two options in the top right corner. The first option is "Login" and the second option is "Chat". If you click on the "Chat" option without creating an account on the app it will redirect you to the Sign-up page

IMPLEMENTATION

STEP - 2



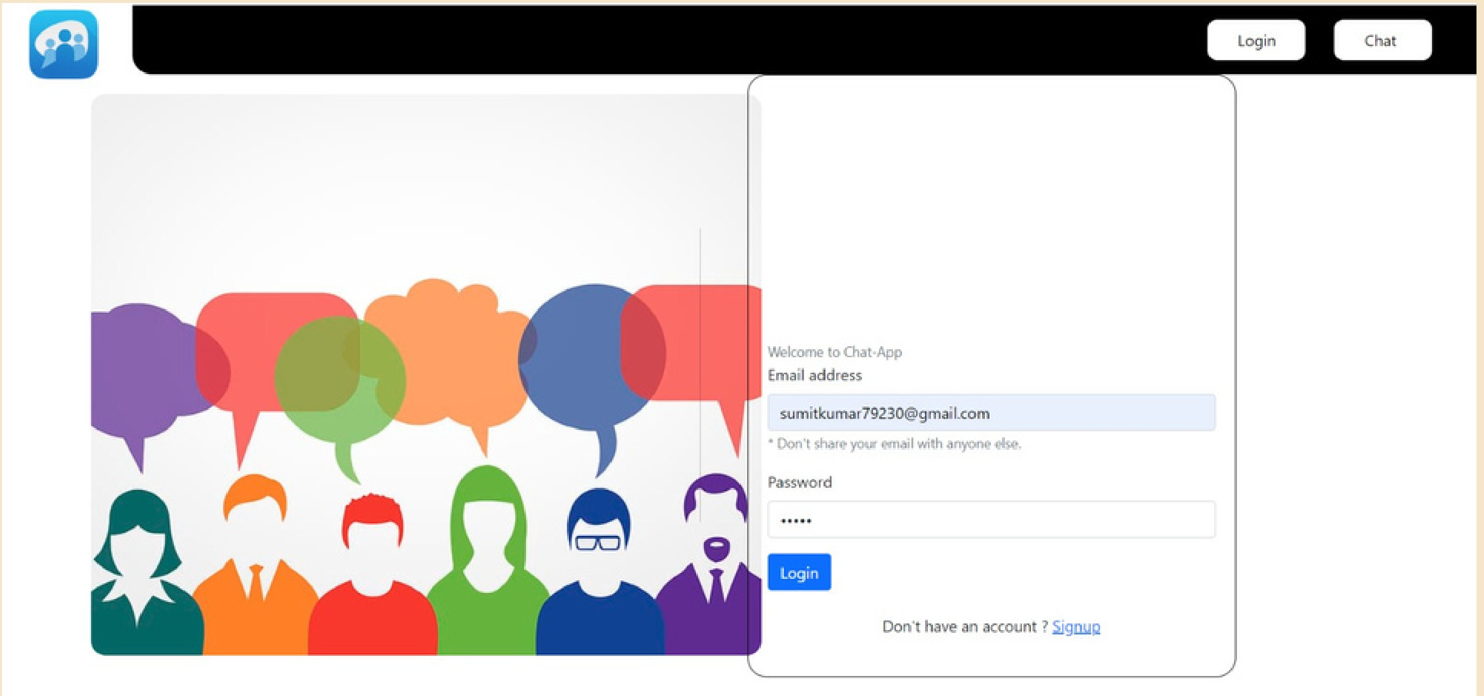
We'll never share your email with anyone else.

Already have an account ? Login

Now, you are on the create account page where you have to provide us with your basic information like name, email, and password. This information will eventually be saved in our database. We also require you to upload a profile picture.

IMPLEMENTATION

STEP - 3



Welcome to Chat-App

Email address

sumitkumar79230@gmail.com

* Don't share your email with anyone else.

Password

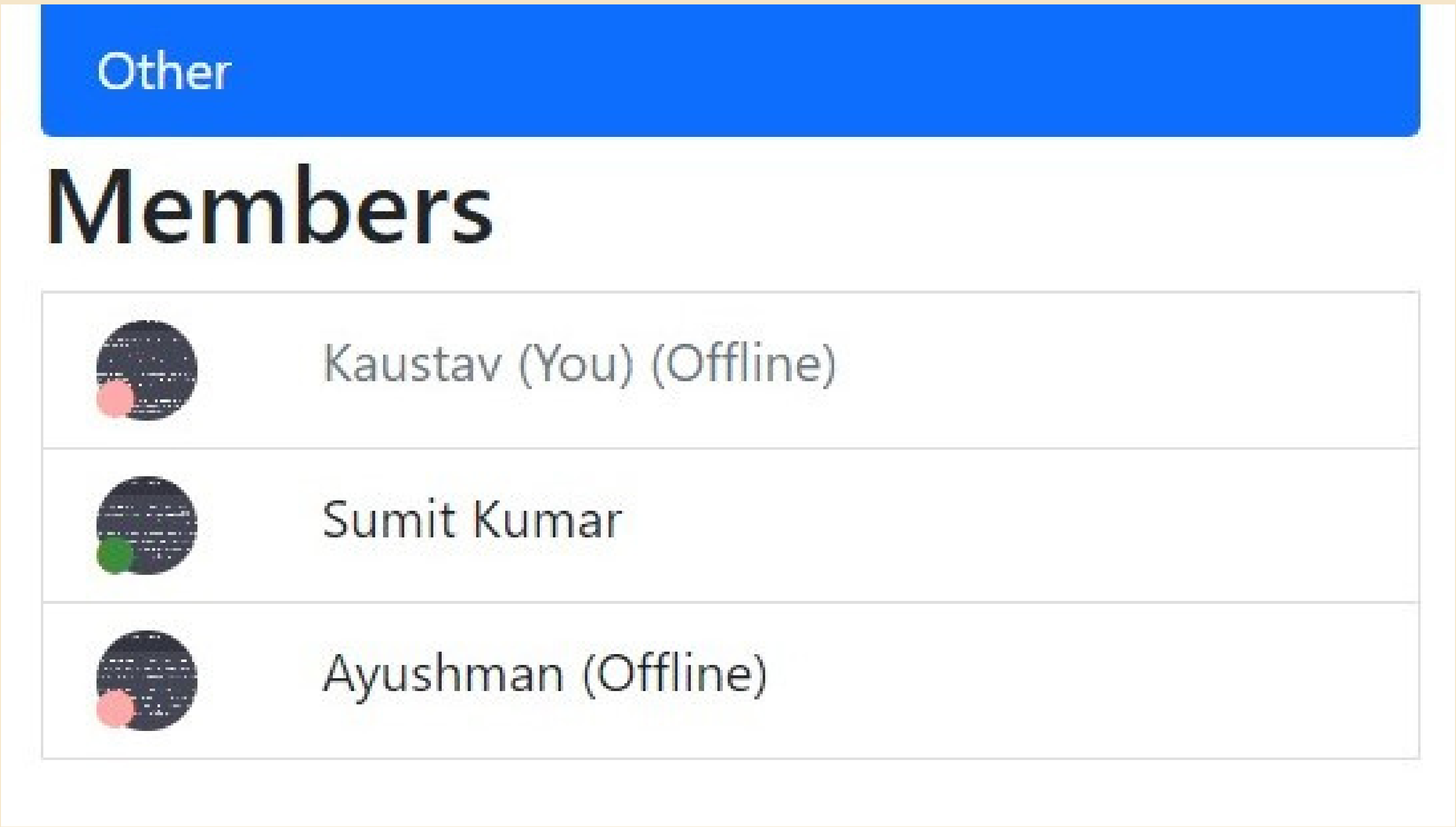
•••••

Don't have an account ? Signup

Once you have created your account, you can now login to our website using your email address and password.

IMPLEMENTATION

STEP - 4



Members

Kaustav (You) (Offline)

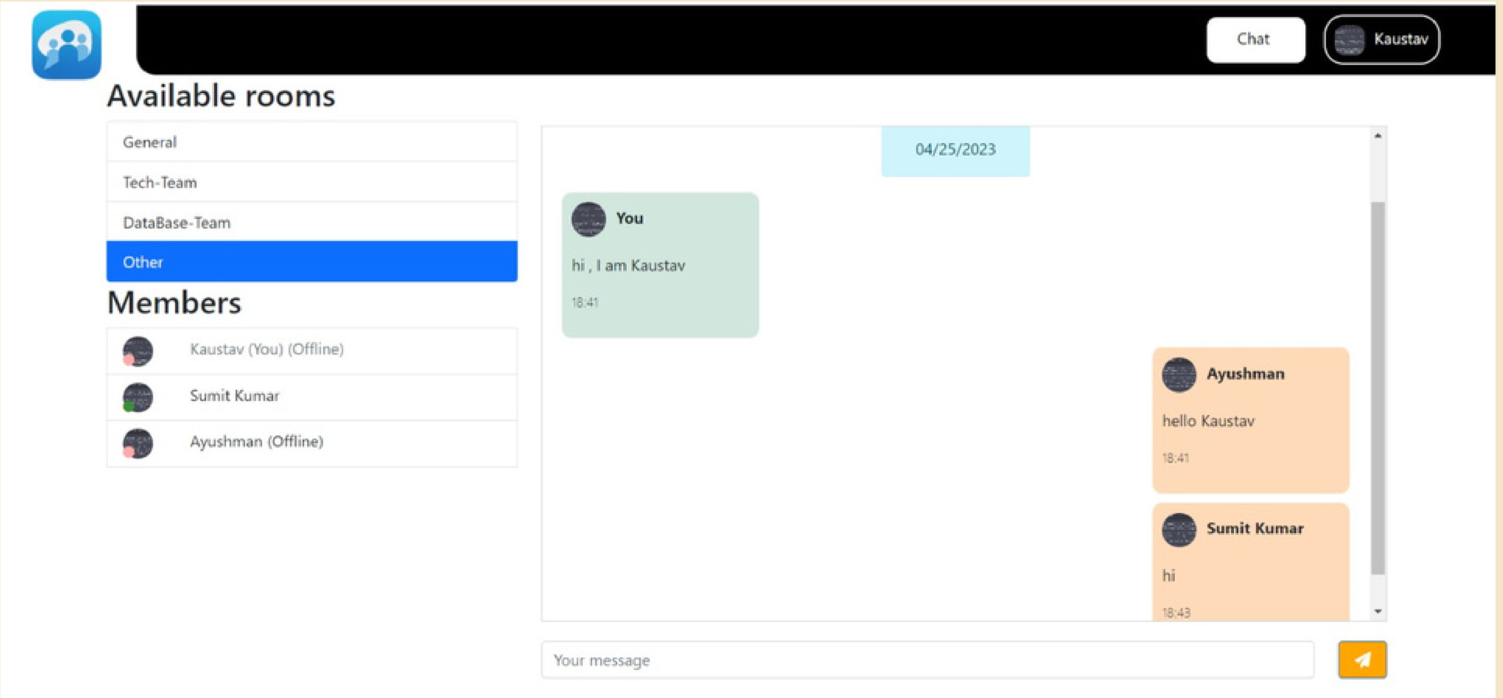
Sumit Kumar

Ayushman (Offline)

On the left side, you can see the available chat rooms where you can join and start talking to other users. You can also see who is currently online by looking at the list of members at the bottom of the page. If you want to have a private conversation, you can click on the person's name and start chatting with them personally.

IMPLEMENTATION

STEP - 5



Available rooms

- General
- Tech-Team
- DataBase-Team
- Other

Members

- Kaustav (You) (Offline)
- Sumit Kumar
- Ayushman (Offline)

04/25/2023

You
hi , I am Kaustav
18:41

Ayushman
hello Kaustav
18:41

Sumit Kumar
hi
18:43

Your message

This is the main chat page where all public conversations take place. You can see that I sent the message "hi" at 18:41 and ayushmaan and Sumit replied back. One of the features we have added is similar to Telegram's chat feature where new users can see previous messages even if they join the chat late. We think this is a great idea because new users can catch up on important messages they may have missed when they were not present in the group chat

CONCLUSION

In conclusion, this chat engine project has successfully developed a real-time chat application that allows users to communicate with each other in real-time using text messages. The project has implemented various features such as user authentication, online status, notifications, and user profile management.

During the project, we faced several challenges such as scalability, user experience, and security, but we managed to overcome them by adopting appropriate technologies and design patterns.

The project has some limitations such as limited support for video and audio calls, lack of end-to-end encryption, and limited accessibility features for users with disabilities. These limitations can be addressed in future work by adopting appropriate technologies and design patterns.

Overall, this chat engine project has successfully achieved its goals and objectives by providing an efficient and user-friendly chat application. The project can be further improved by incorporating additional features and enhancements to meet the evolving needs of users.

THANK YOU