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WhatsApp Clone

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Abstract

- WhatsApp Clone is a messaging application designed to replicate the functionality and user experience of WhatsApp, a popular instant messaging platform.
- The WhatsApp Clone application is developed using React.js ,Express.js ,MangoDb and more technologies.
- The application aims to provide users with a seamless communication experience while incorporating additional features to enhance usability and privacy.
- The main features of the WhatsApp Clone application are : Messaging , Multimedia Sharing etc.
- WhatsApp Clone is highly interactive and secure message experience similar to WhatsApp
- It’s main purpose is to encourage remote login feasibility along with security and ease .

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Problem Statement

- In the original WhatsApp , the functions are dependent on mobile number. The account registration and usability is only possible if the sim is in the current mobile and the number matches.
- Our version of WhatsApp clone supports the account registration through Google Login . It increases the reusability of the same account on multiple platforms . Having a mobile number is not a priority to use the app.

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Aim and Objective

- Providing account login through Google account credentials.
- Implementing required features of WhatsApp
- Enabling real -time chatting.
- Feature for sharing media files.
- Displaying the active status of logged in users.(online /offline)

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Proposed Solution

- Google OAuth services for Google Login and authentication.
- Developing the front-end application using React.js and Material UI components.
- We used Socket IO library for event-driven real-time web application.
- To send and receive the large-sized multimedia in forms efficiently , Multer library has been implemented for multipart/form data.
- Socket IO is responsible for displaying the status of the logged-in users.

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System Development Approach: MERN STACK

- MongoDB: Database to store user information, messages, and group data.
- Express.js: Backend framework to handle server-side logic and API requests.
- React.js: Frontend library for building user interfaces.
- Node.js: JavaScript runtime for server-side development.
- Socket.IO: Real-time bidirectional event-based communication library.
- JWT (JSON Web Tokens): For user authentication. (jwt= google credentials + secret key) .
- Material-UI: UI component library for React.
- Axios: Making HTTP Requests and handling Responses.

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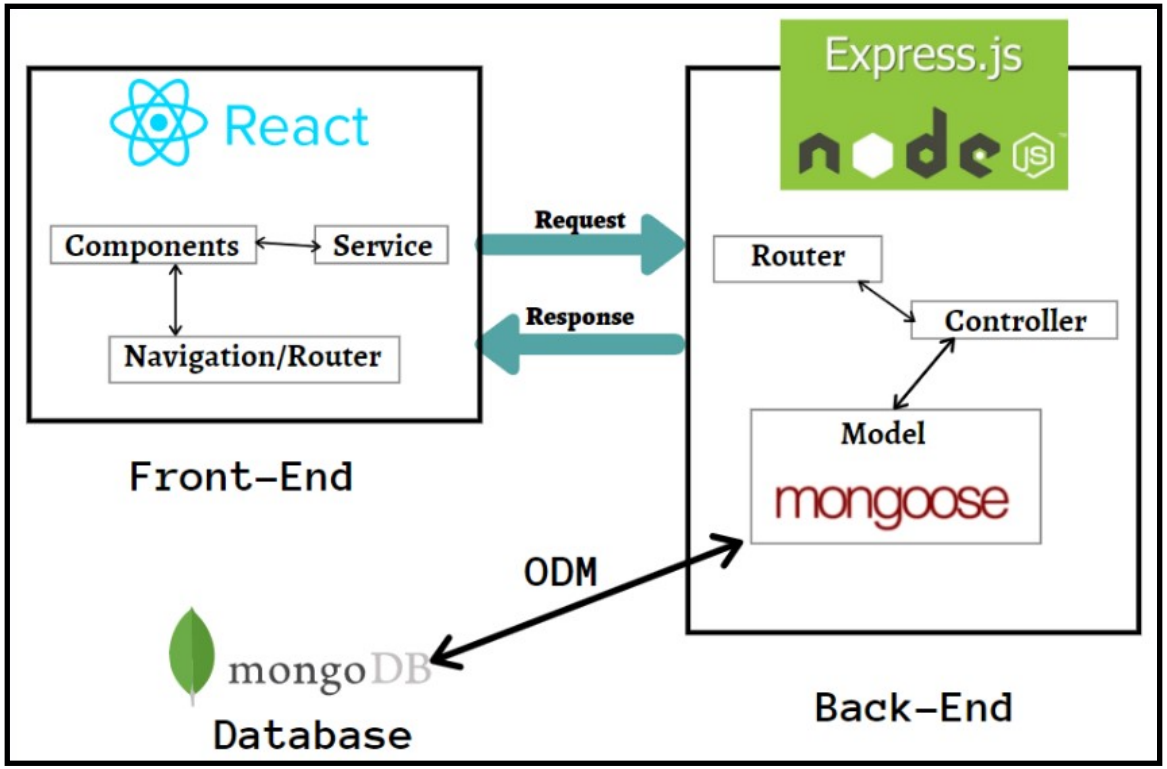
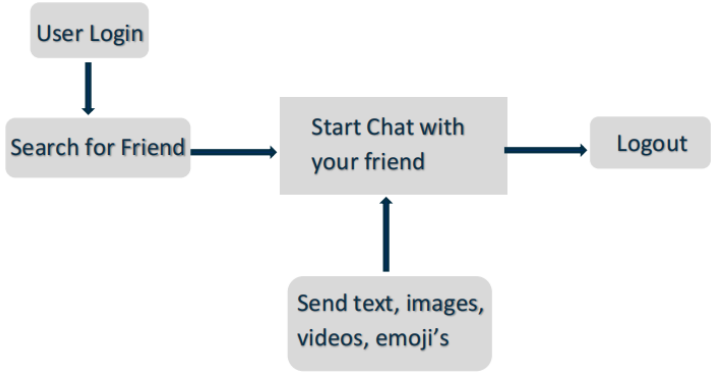
System Design / Architecture





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Algorithm & Deployment

1.Clone the repository: `git clone < https://github.com/rohitgarwad/CAPSTONE_PROJECT-GROUP-2-WhatsApp_Clone >`
2. Navigate to the project directory: `cd CAPSTONE_PROJECT-GROUP-2-WhatsApp_Clone `
3. Install dependencies:
   - For the client: `cd client && npm install`
   - For the server: `cd server && npm install`
   - For the socket: `cd socket && npm install`
4. Setup MongoDB database and obtain connection URI.
5. Configure environment variables:
   - Create a `.env` file in the server directory.
   - Define variables:
   - `MONGODB_URI=<mongodb+srv://<username>:<password>@clone-whatsapp.ukgm3b2.mongodb.net/>`
   - `JWT_SECRET=<your-jwt-secret>`
6. Start the server: `cd server && npm start`
7. Start the client: `cd client && npm start`
8. Start the socket: `cd socket && npm start`
9. Access the application at `http://localhost:3000`.

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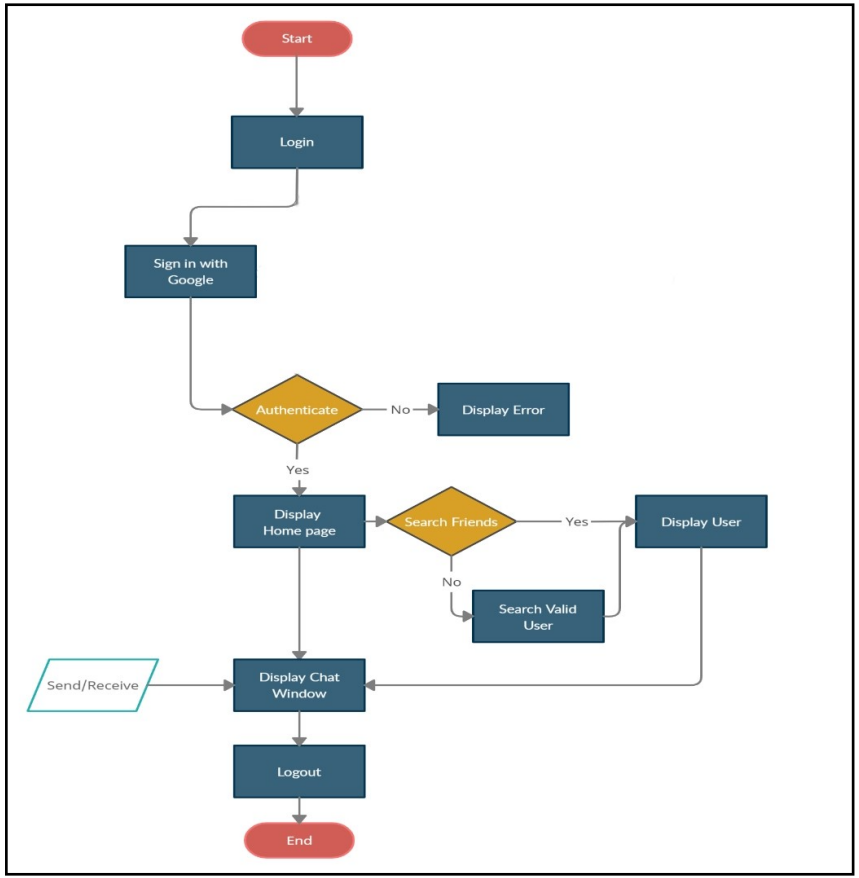
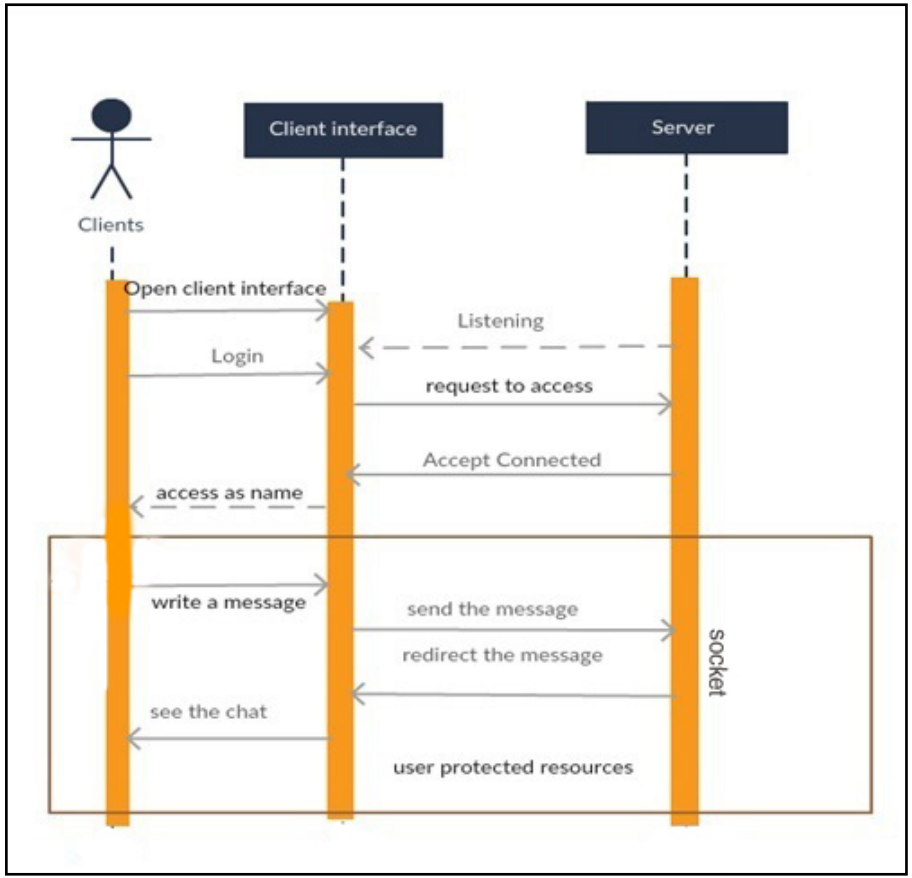
Flow chart



Sequence Diagram



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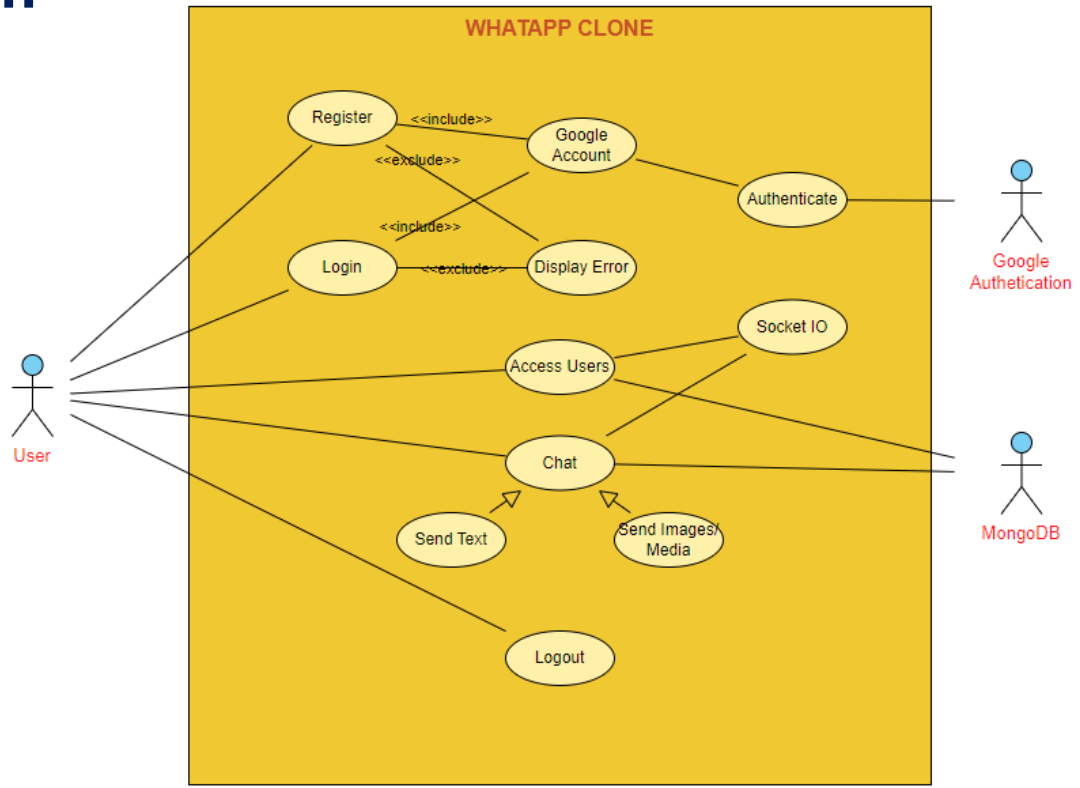
Use-Case Diagram



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Features

- User registration and authentication using Google OAuth service.
- Real-time messaging using Socket.IO.
- Sending and receiving messages in chat.
- Attachments support (images, documents).
- View online/offline status of users.
- View message timestamps.
- Responsive design for various screen sizes.

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Future Enhancements

- End-to-end encryption for messages.
- Message deletion and editing.
- Attaching emojis in chat.
- User profile customization.
- Notification system.

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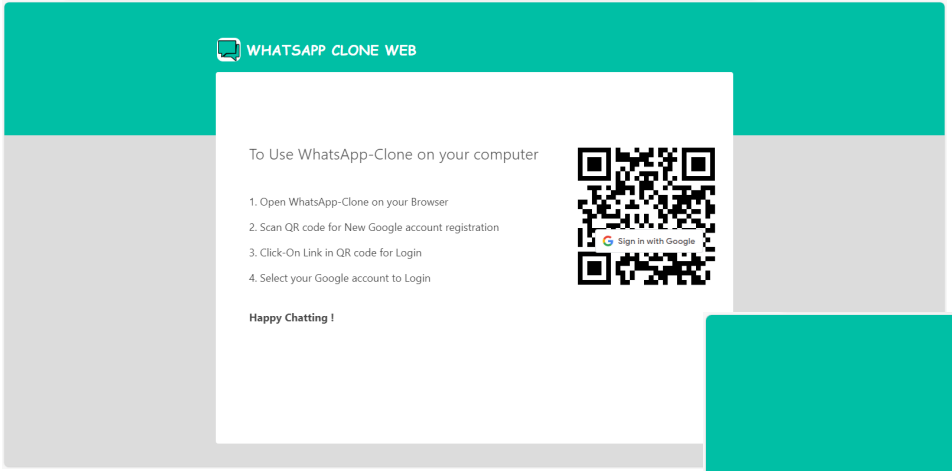

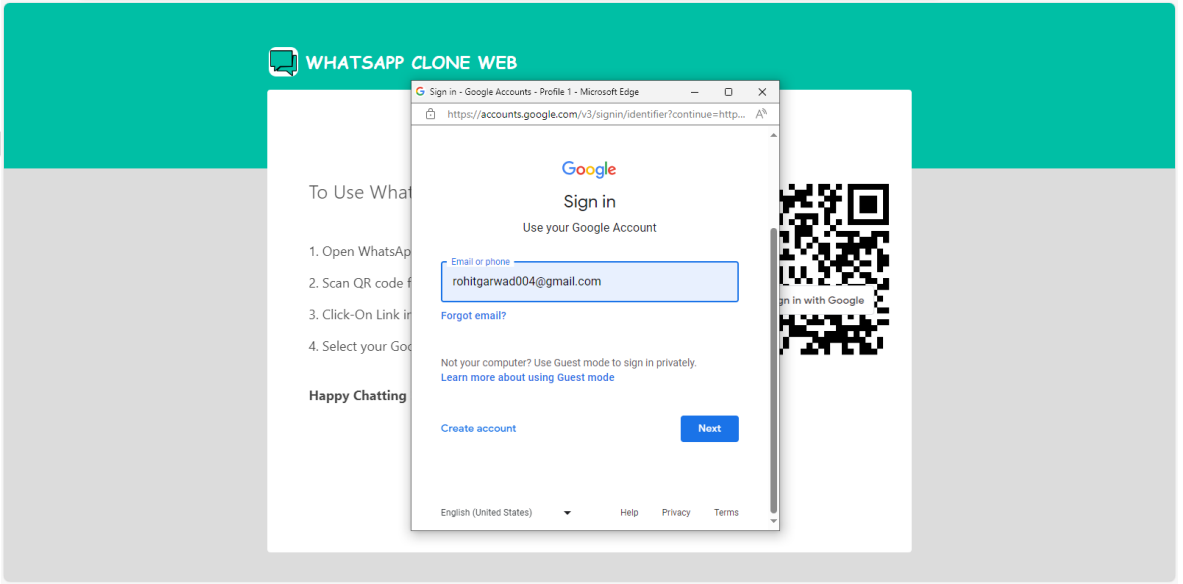

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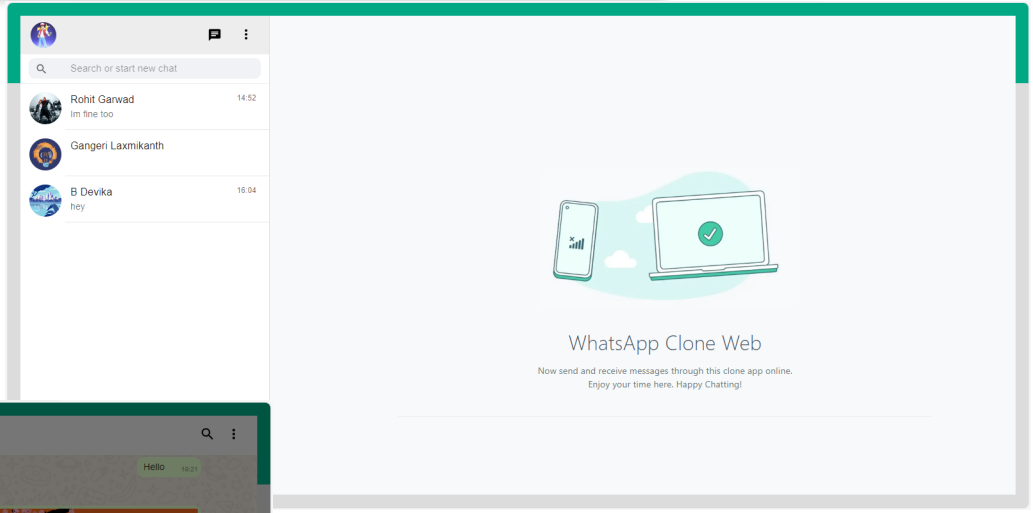

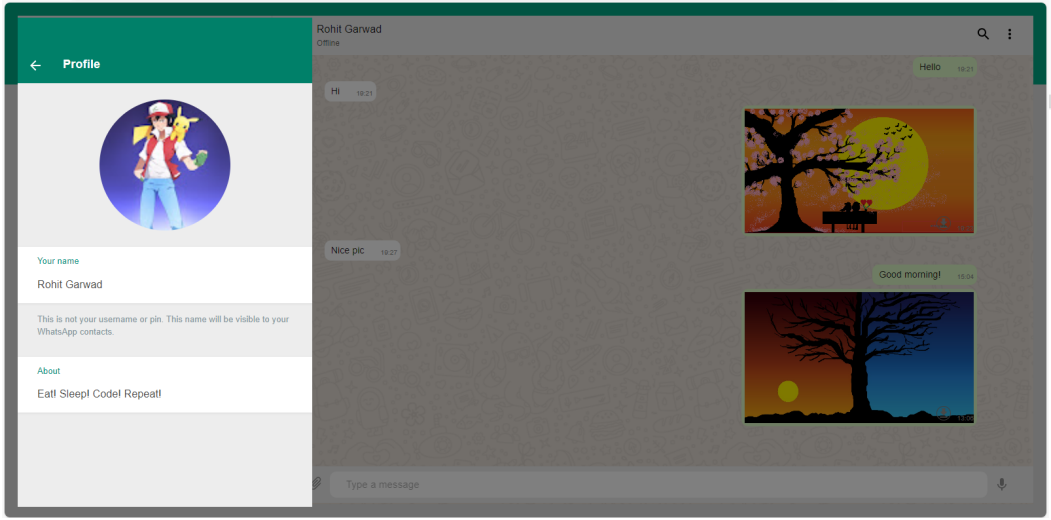

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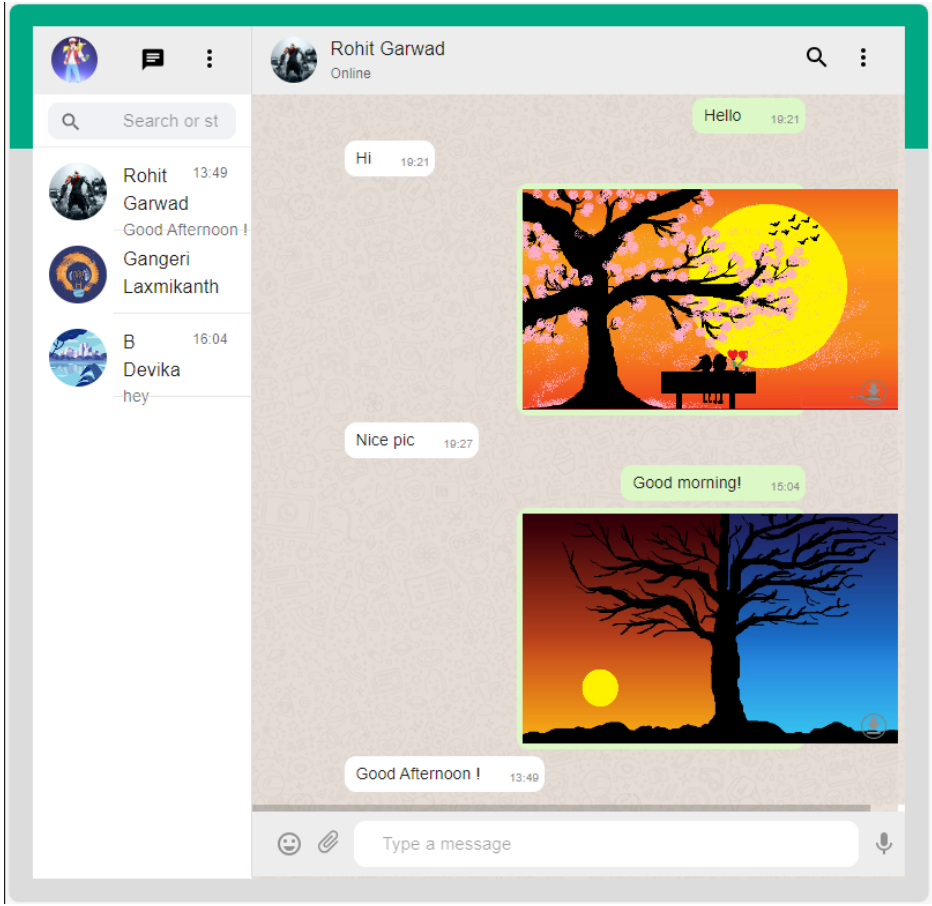

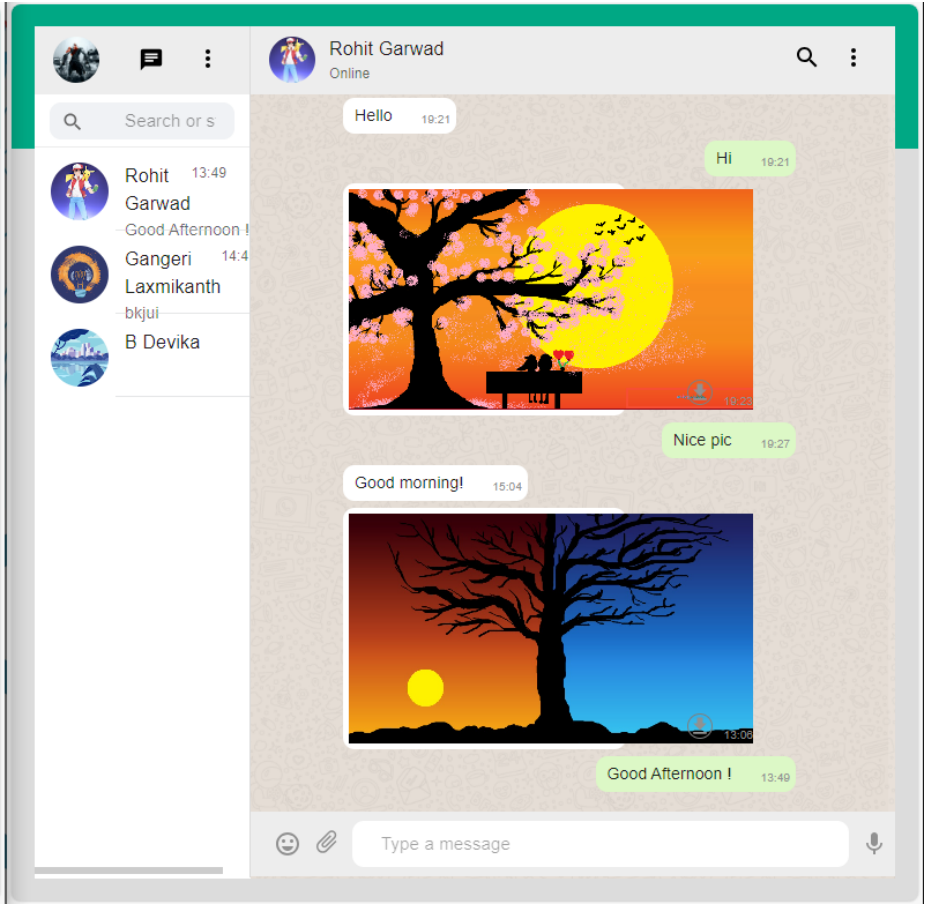

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Conclusion

- The WhatsApp clone project is a web-based application that mimics the features and functionality of the popular messaging app WhatsApp.
- The project uses HTML, CSS(Material UI), JavaScript (React js, Express js, Node js) , Socket IO and MongoDB as the main technologies to create a responsive and real-time chat interface.
- The project demonstrates the use of various web development concepts, such as HTML(MUI) elements, CSS styling, JavaScript events, React Hooks , Google authentication, and MongoDB database.
- The project also showcases the design and layout of the WhatsApp web UI, including the chat window, message input box, and conversations .
- The project aims to provide a learning experience for web developers who want to create their own chat applications using modern web technologies.

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Reference

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- https://github.com/ajay4ugit

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Thank you!