

# PING: Connecting People

## System Design Document

PING is a chat web app that facilitates users to communicate with each other. The key functionalities that have been incorporated into this messaging service prototype encompass:

1. User registration and authentication.
2. Transmitting and receiving text messages among users.
3. Group chat capabilities.
4. Immediate message updates in real-time.

PING is built using the MERN tech stack. Here's a simplified step-by-step guide on how the prototype for PING is designed:

### **1. Set Up the Development Environment:**

- Install Node.js, React.js, and MongoDB.
- Create a new React.js project for the frontend.
- Set up a Node.js server for the backend.

### **2. Frontend Development (React.js):**

- Create components for user registration and authentication.
- Implement a user interface for sending and receiving text messages.
- Add group chat functionality.
- Use Chakra UI, a popular open-source library for building user interfaces (UI) in web applications using the React JavaScript library.
- Integrate real-time updates using WebSocket (e.g., Socket.io).

### **3. Backend Development (Node.js):**

- Create API routes for user registration and authentication.
- Implement APIs for sending and receiving text messages.
- Add endpoints for creating and managing group chats.
- Implement real-time updates using WebSocket (e.g., Socket.io).

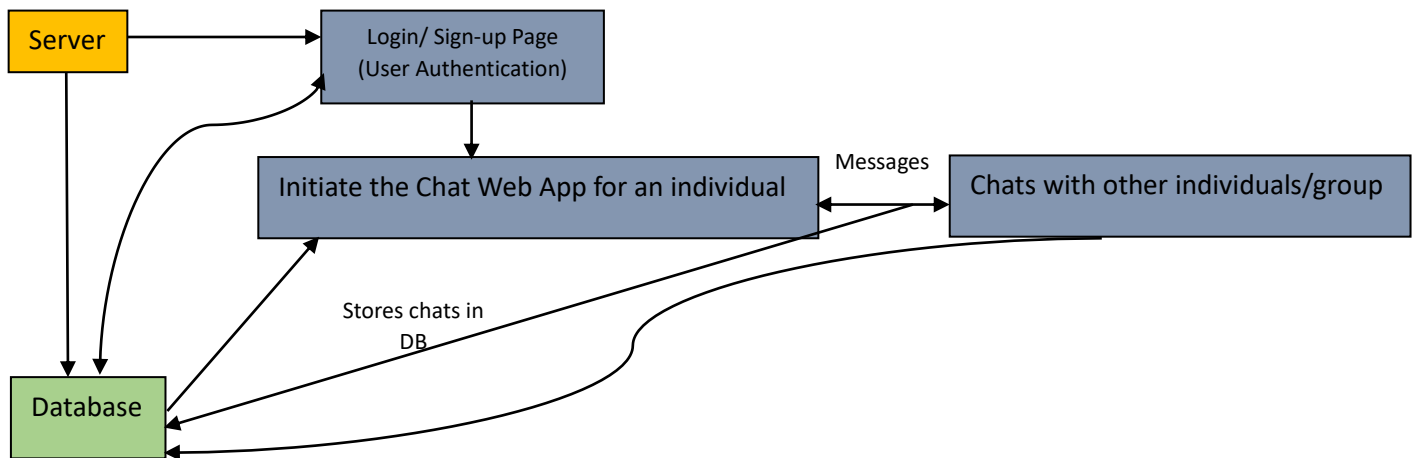
### **4. Database (MongoDB - NoSQL):**

- Design the database schema for users, messages, and group chats.
- Implement database CRUD (Create, Read, Update, and Delete) operations for user data, messages, and group chats.
- Connect the database to the server using Mongoose.

### **5. User Authentication:**

- Use JWT (JSON Web Token) for user authentication.
- Store user passwords securely by hashing using BCrypt.

- A rough Flow-Chart to show the functionality of the prototype:



- Features:

1. Authentication:

Ping

Login Sign Up

Email Address \*

Enter Your Email Address

Password \*

Enter password Show

Login

Get Guest User Credentials

Ping

Login Sign Up

Name \*

Enter Your Name

Email Address \*

Enter Your Email Address

Password \*

Enter Password Show

Confirm Password \*

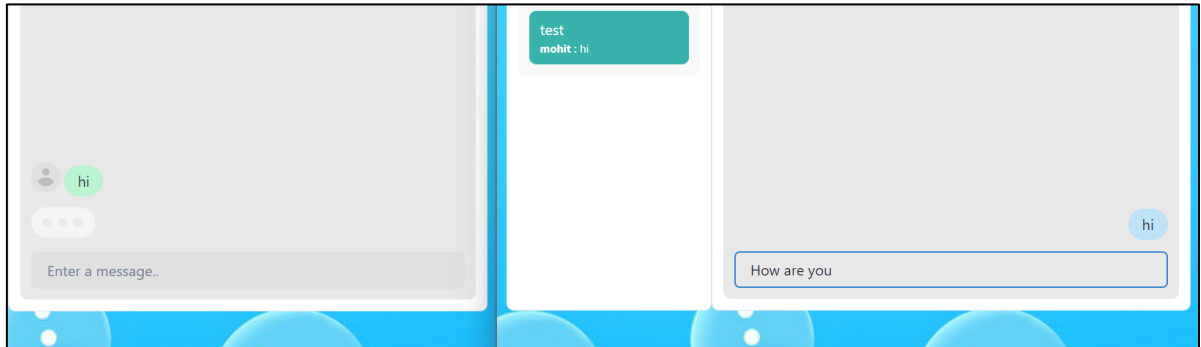
Confirm password Show

Upload your Picture

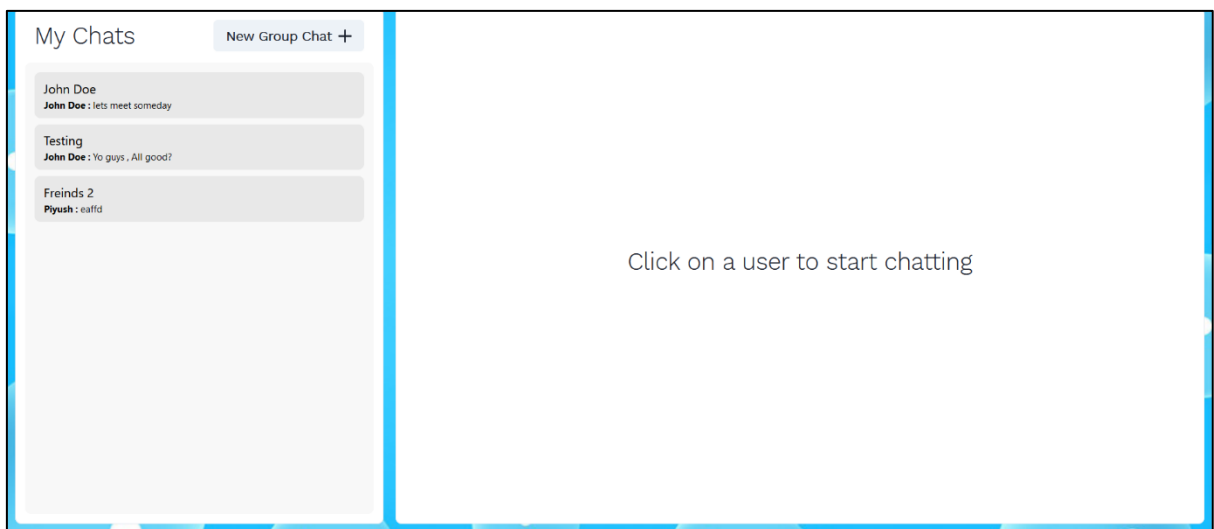
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Sign Up

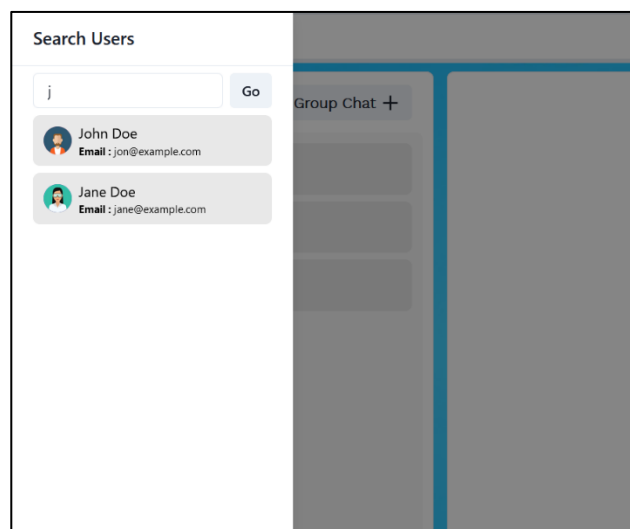
## 2. Real-Time Chatting with Indicators:



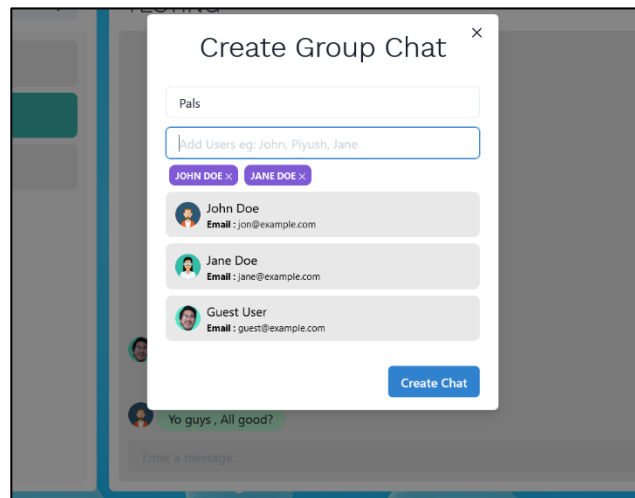
## 3. One-to-one chat:



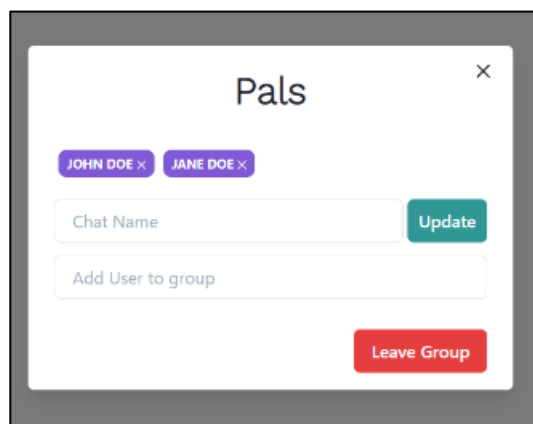
## 4. Search Users:



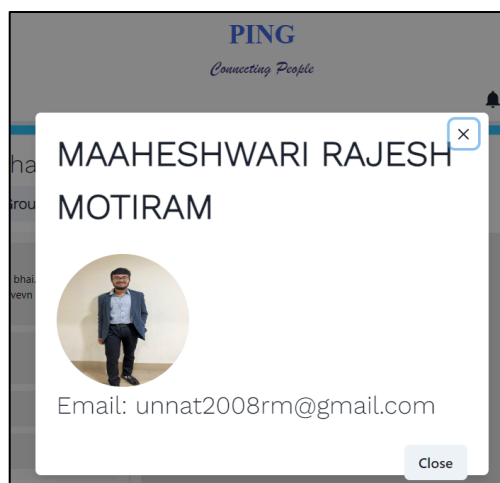
## 5. Create Group Chats:



## 6. Add/Remove People:



## 7. View User Profile:



## 8. Real-Time Notifications:

