

Introduction

Our real-time chatting application provides users with a platform to communicate with their friends individually or in group settings. Each user has an account, allowing them to message other users, create groups, and add friends to those groups.

Stakeholders

User

Group Admin

Business Requirements

User Registration and Authentication

Provide users with the ability to create accounts and log in securely.

Messaging Features

Users should be able to initiate one-on-one conversations with their friends.

The messaging interface should support text, and images.

Messages should be delivered in real-time to ensure a seamless communication experience.

Group Creation and Management:

Users should have the capability to create new groups and add their friends to them.

Group admins should have the authority to create new groups and define group settings.

Group Admins should be able to add members to the group.

Friend Management:

Users should be able to search for other users and add them as friends.

Friend requests should be sent and received seamlessly, with options to accept or reject requests.

Responsive Design

Ensure the website is optimized for various devices (desktop, mobile, tablet) to provide a seamless user experience.

Functional Requirements

User Registration and Authentication

Users should be able to create accounts by providing necessary information such as username, email, and password.

Account creation should include validation checks to ensure data accuracy and prevent duplication.

Users should be able to login using their username and password Upon registration, users should receive a verification email or code to authenticate their account.

Messaging Features

An interface that consists of a list of all friends should allow users to select friends from their contact list and initiate one-on-one conversations.

Users should be able to send text messages and attach images to their messages.

Messages should be delivered in real-time, with notifications for new messages to ensure prompt communication.

Group Creation and Management

Users should have the option to create new groups from a specific button to create a new group and add their friends.

Group creation should include specifying a group name, description.

Admins should have the authority to add to members from the group if necessary.

Friend Management

Users should be able to search for other users using a search bar.

Adding friends should involve sending friend requests, with options for users to accept, reject.

The friend management interface should display pending friend requests.

Responsive Design

The website should be designed with responsive layouts and fluid grids to adapt to different screen sizes and resolutions.

User interface elements should rearrange and resize dynamically to ensure a consistent and user-friendly experience across devices.

Database Schema Description [MongoDB]

1. User Schema:

- **id:** Unique identifier for each user.
- **username:** Username of the user, required and unique.
- **email:** Email address of the user, required and unique.
- **password:** Hashed password of the user, required.
- **friends:** List of user ids representing the friends of the user.
- **isVerified:** Boolean flag indicating whether the user's email has been verified.

2. FriendRequest Schema:

- **id:** Unique identifier for each friend request.
- **senderEmail:** Email address of the sender of the friend request.
- **receiverEmail:** Email address of the receiver of the friend request.

3. GroupChat Schema:

- **id:** Unique identifier for each group chat.
- **chat_id:** Unique identifier for the chat.
- **group_name:** Name of the group chat, required.
- **group_description:** Description of the group chat.
- **admin_email:** Email address of the admin user who created the group chat.

4. Chat Schema:

- **id:** Unique identifier for each chat.
- **users:** Array of user IDs participating in the chat, required.
- **messages:** Array of message objects related to the chat.
- **chat_type:** Type of the chat, either "PRIVATE" or "GROUP".

5. Message Schema:

- **id:** Unique identifier for each message.
- **text:** Text content of the message, required.
- **imageUrl:** URL of any image attached to the message.
- **sender_email:** Email address of the sender of the message.
- **timestamps:** Automatic timestamps for creation and update of the message.