ANKARA ÜNİVERSİTESİ

MÜHENDİSLİK FAKÜLTESİ

BİLGİSAYAR MÜHENDİSLİĞİ BÖLÜMÜ

BLM 4538 PROJE RAPORU

Read Buddy Chatting App

Fuat FUÇUCUOĞLU

18290024

Haziran 2024

Overview

This React Native application is designed to be a comprehensive chat platform. It features user authentication, real-time messaging, and various user settings. The app leverages Firebase and Google Cloud Platform (GCP) services to handle backend functionalities such as authentication, data storage, and real-time updates.

Backend Technologies

- **Serverless Architecture**: The app uses a serverless architecture to reduce server management overhead. It relies entirely on Google Cloud Platform services, making it scalable and efficient.
- **Firestore**: Firestore is used as the primary database for storing messages and other app data. It is a flexible, scalable database for mobile, web, and server development from Firebase and Google Cloud Platform.
- **Firebase Realtime Database**: This is utilized for handling real-time data such as user online/offline status, last seen, and message read receipts. It provides low latency and real-time synchronization between connected clients.
- **Firebase Cloud Functions**: These are used for various backend operations, including handling new message notifications and processing certain events triggered within the app.
- **Firebase Storage**: This is used for storing images, such as user profile pictures and images shared in chats. It is a powerful, simple, and cost-effective object storage service.
- **Firebase Authentication**: This service is used for authenticating users. It supports email and password authentication, providing a secure and easy way to manage user accounts.
- **GCP Logging**: Logging is enabled for monitoring Cloud Functions and other backend services. This helps in tracking errors and analyzing the performance of backend processes.

Frontend Technologies and Design

- **React Native**: The app is built using React Native, a popular framework for building mobile applications using JavaScript and React. It allows for a single codebase to be used across both iOS and Android platforms.
- **React Navigation**: This library is used for handling navigation within the app. It supports stack, tab, and drawer navigations, providing a smooth and intuitive user experience.
- **Context API**: React's Context API is used to manage global state within the app, such as the authenticated user state. This allows for efficient and scalable state management.
- **Component Structure**: The app is divided into several screens/components, each handling a specific part of the user interface:
    - **Login and Signup**: These screens handle user authentication, allowing users to log in or create new accounts.
    - **Home**: The main screen where users can navigate to different sections of the app.
    - **Chatrooms**: Displays a list of chatrooms available for users to join. It includes features such as search and filtering.
    - **Chat**: The chat interface where users can send and receive messages in real-time.
    - **Explore**: A screen to discover new chatrooms or users.
    - **Settings**: Allows users to manage their account settings, notification preferences, and privacy settings.
    - **Profile**: Displays and allows editing of the user's profile information.

Features and Functionality

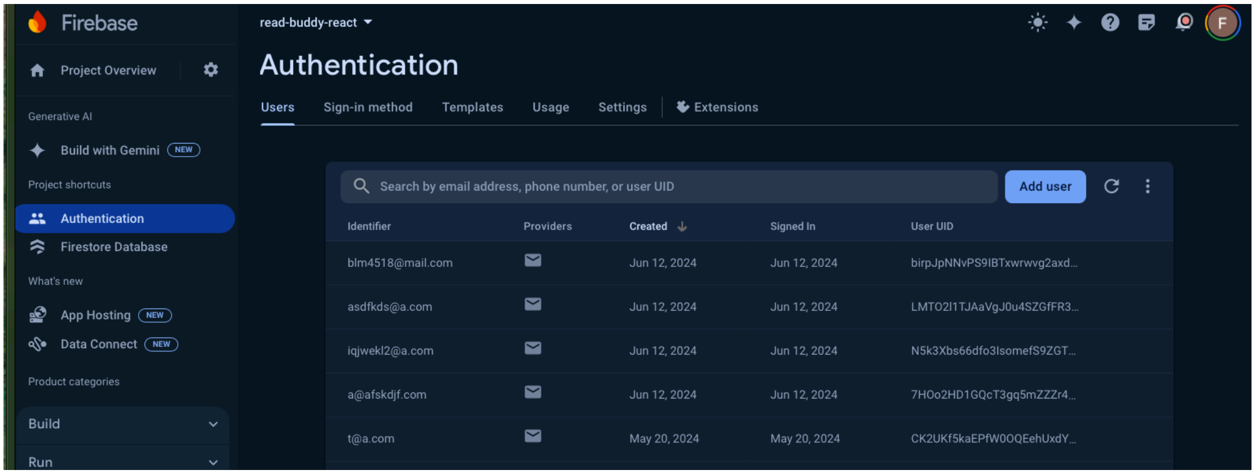
- **Real-Time Messaging**: The app supports real-time messaging, enabling users to send and receive messages instantly. This is powered by Firebase's real-time database and Firestore.
- **User Authentication**: Secure user authentication is managed by Firebase Authentication. It supports creating new accounts, logging in, and handling authentication states.
- **Profile Management**: Users can view and edit their profile information, including username, email, phone number, and bio. Profile pictures are managed using Firebase Storage.

- **Settings Management**: The settings screen provides options for managing account settings, notification preferences, privacy settings, and accessing support.
- **Search and Filtering**: Users can search for specific chatrooms or filter chatrooms by categories, enhancing the user experience and making navigation more intuitive.
- **Dark Mode**: The app includes a dark mode feature, allowing users to switch to a dark theme for better readability in low-light conditions.

Scalability and Performance

- **Scalable Backend**: By using a serverless architecture with GCP services, the app is designed to handle a growing number of users and increasing data without significant changes to the backend infrastructure.
- **Efficient Data Handling**: Firestore and Firebase Realtime Database are optimized for handling large volumes of data efficiently, ensuring quick data retrieval and updates.
- **Real-Time Synchronization**: Firebase Realtime Database ensures that all connected clients receive updates in real-time, providing a seamless and responsive user experience.

This comprehensive chat application demonstrates the integration of various modern technologies to create a feature-rich and scalable solution. By leveraging Firebase and GCP, the app ensures efficient data management, real-time updates, and secure authentication, making it a robust platform for real-time communication.



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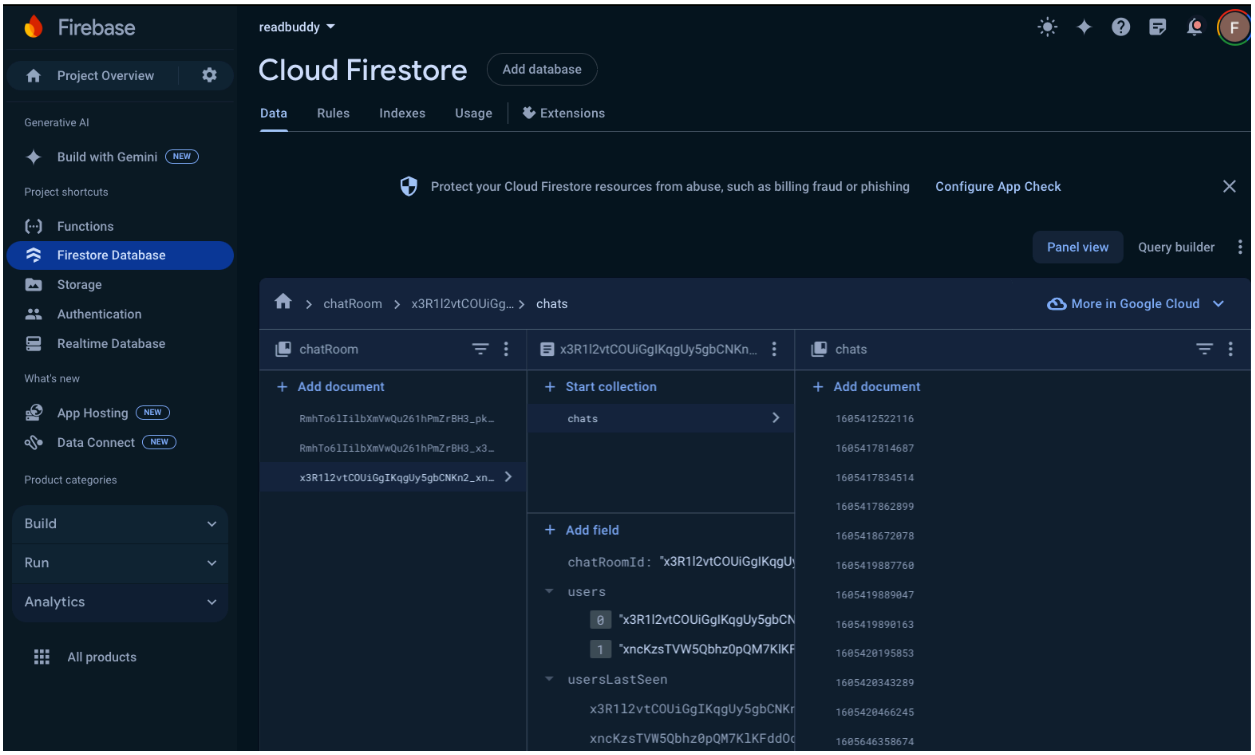

Protect your Cloud Firestore resources from abuse, such as billing fraud or phishing

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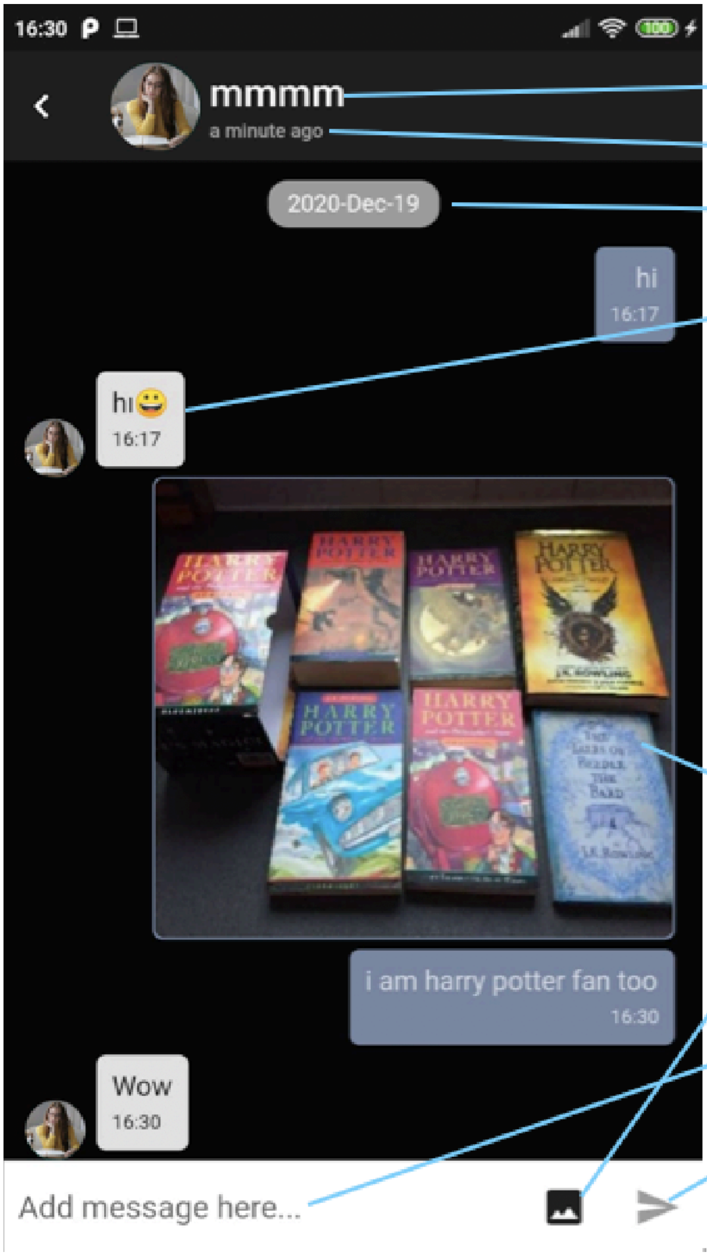
Initial fronted design



hi
16:17

hi😀
16:17

i am harry potter fan too
16:30

Wow
16:30

Username

Last seen/online status

Date labels

Text messages with emojis

Chatting page:
It's a messaging screen with text and photo sharing capabilities.

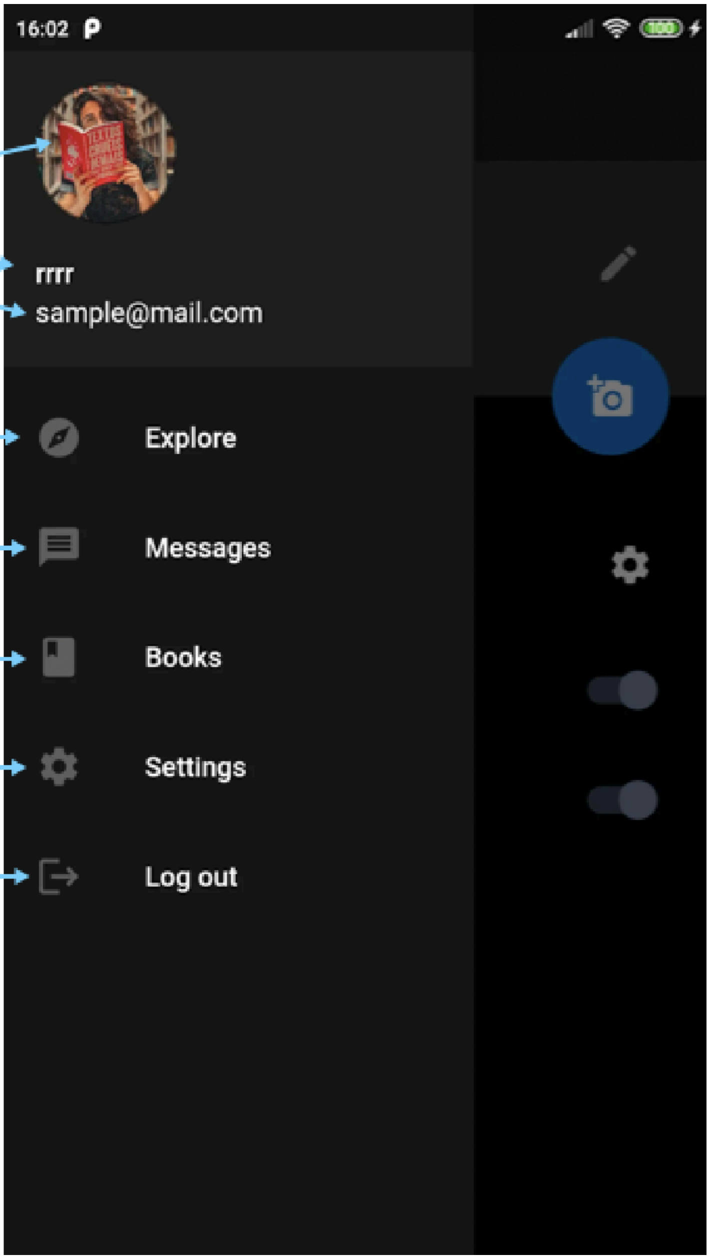
Image message

Send image button

Message box

Send message button

Navigation drawer:



User's profile picture, username and email

Explore page to find new users to chat

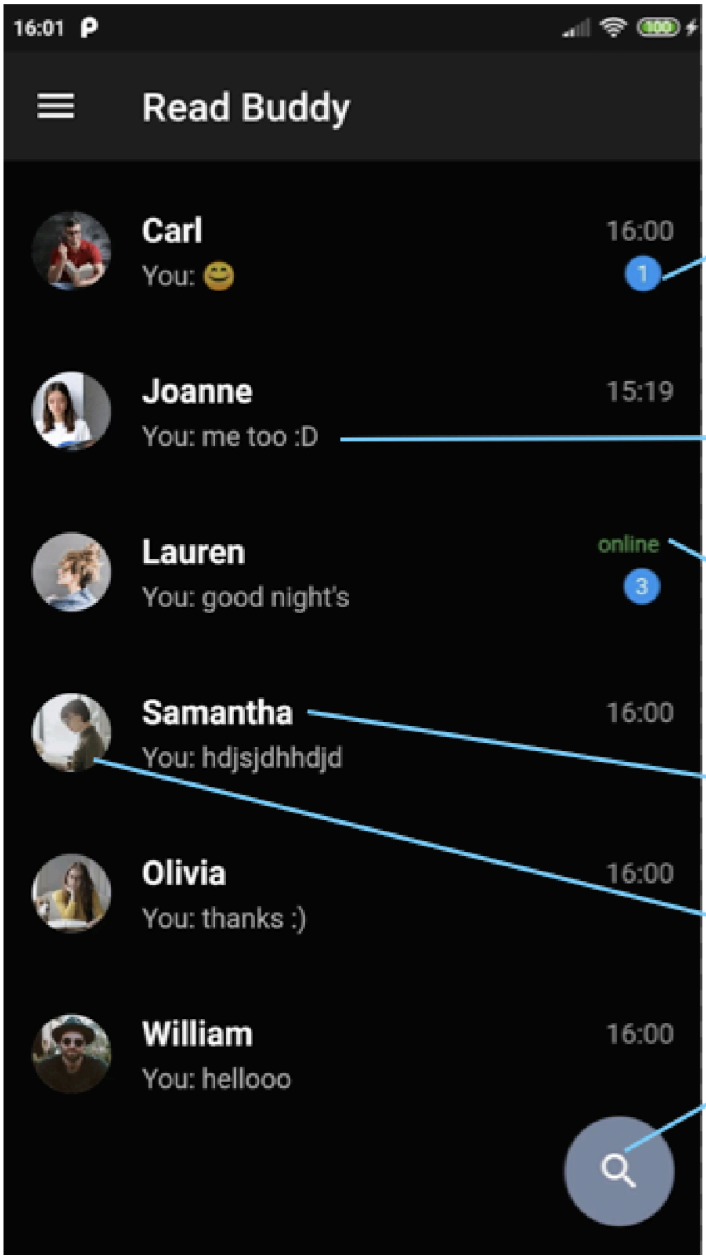
Chatrooms page

You can add your books on this page

Settings page

Logout button

Chatrooms page:



16:01

Read Buddy

Carl 16:00
You: 😊 1

Joanne 15:19
You: me too :D

Lauren online
You: good night's 3

Samantha 16:00
You: hdjsjdhhdjd

Olivia 16:00
You: thanks :)

William 16:00
You: hellooo

Unread message count

Last message on chat that room

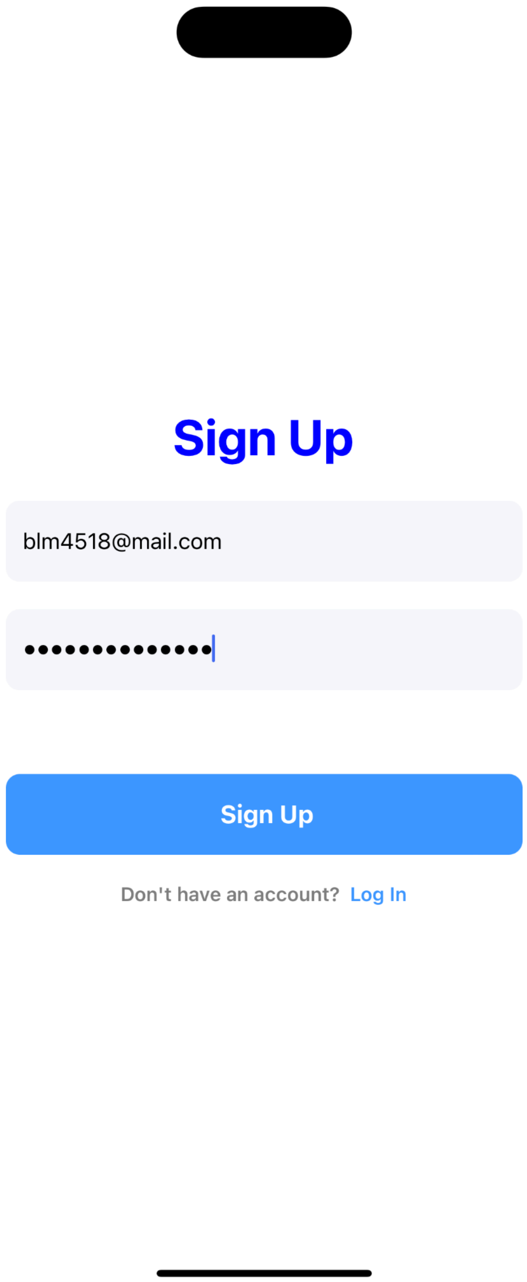
Last seen/online status

Username

User profile picture

Chatroom search functionality

Final fronted design

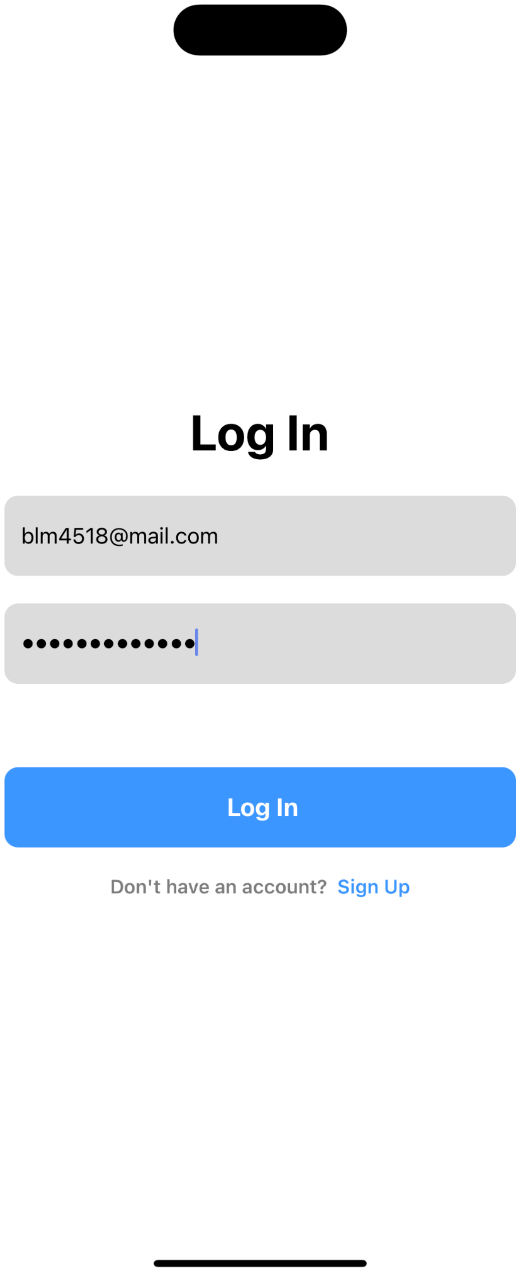


Sign Up

blm4518@mail.com

••••••••••••••

Don't have an account? Log In



Log In

blm4518@mail.com

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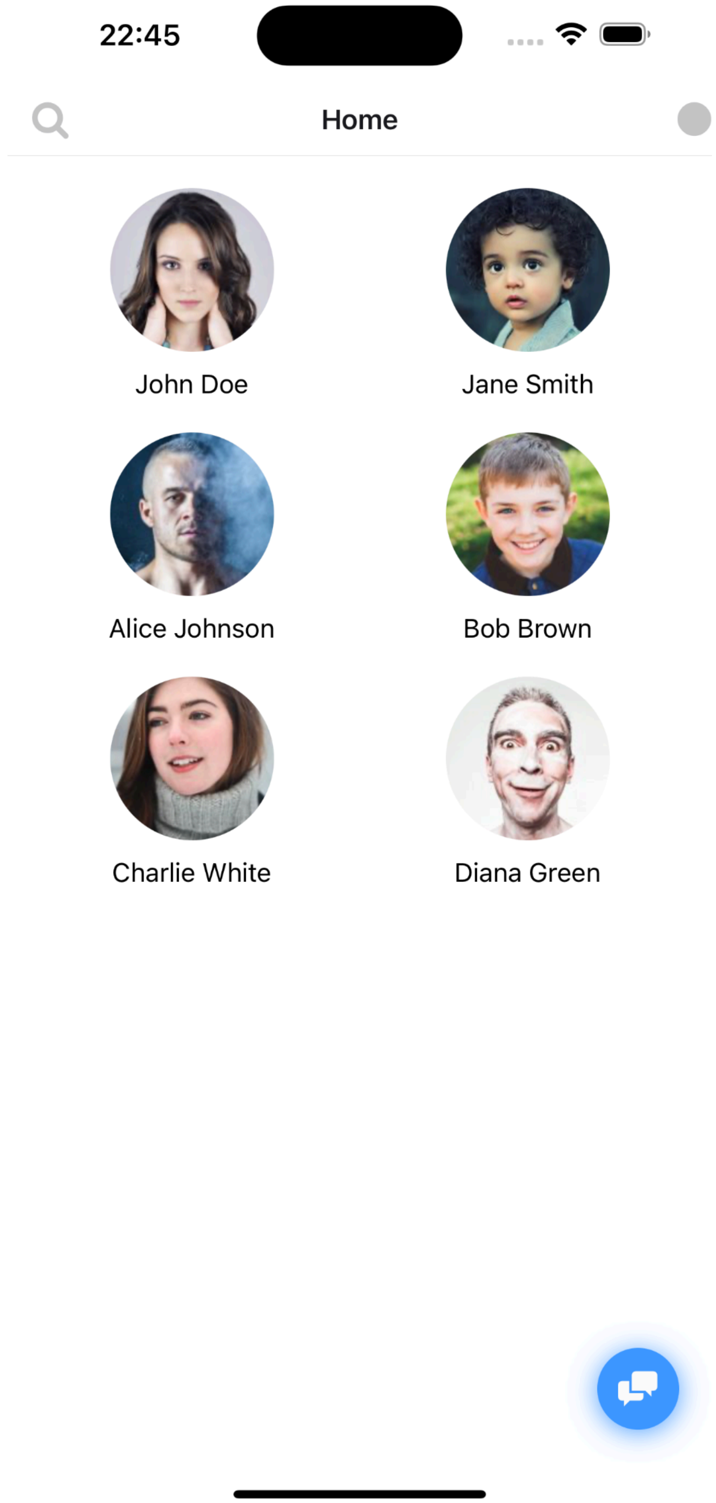
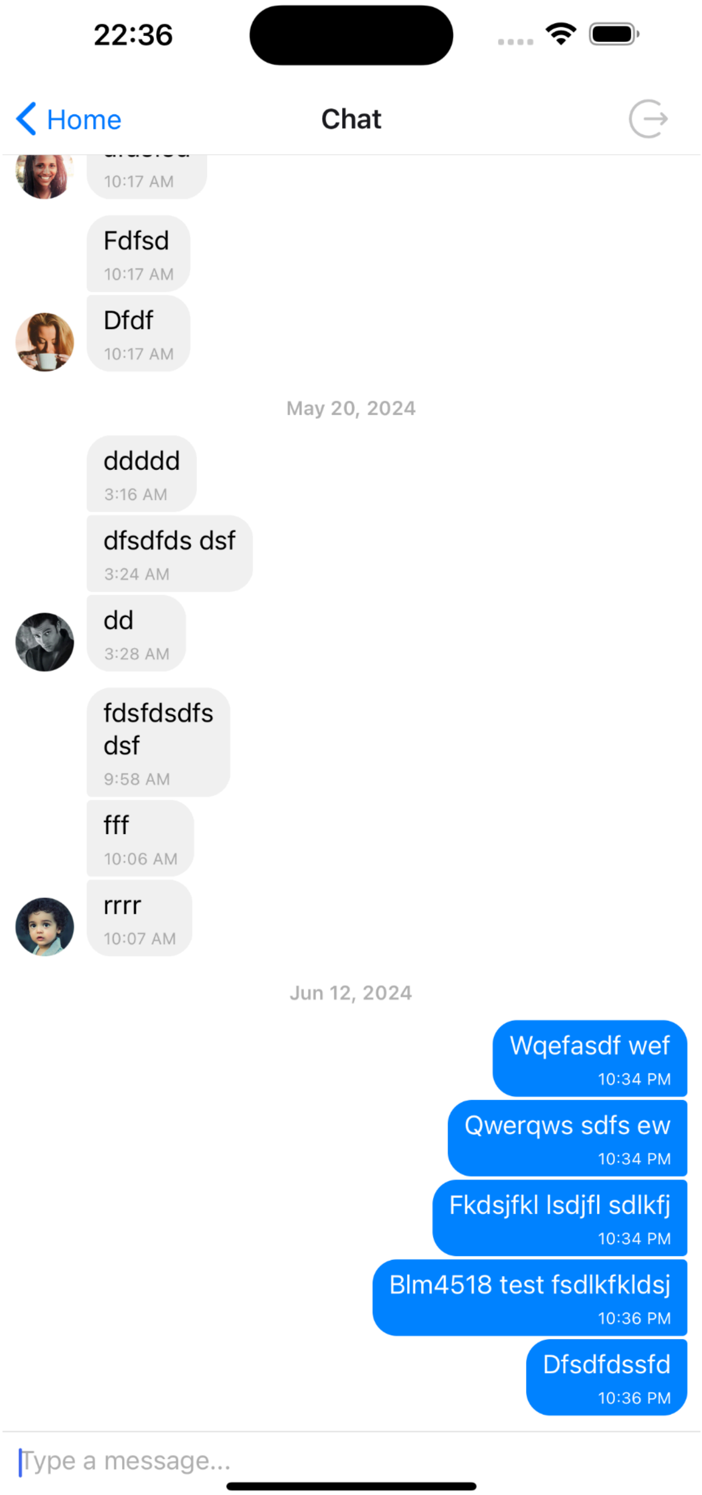
Don't have an account? Sign Up

Matchmaking page



Chatting page



10:17 AM

Fdfsd
10:17 AM

Dfdf
10:17 AM

May 20, 2024

ddddd
3:16 AM

dfsdfds dsf
3:24 AM

dd
3:28 AM

fdsfdsdfs dsf
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fff
10:06 AM

rrrr
10:07 AM

Jun 12, 2024

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