

Chat Messenger using Flutter

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ABSTRACT

Chat application is an easy platform to connect people by enabling them to stay linked to each other. In today's time messaging apps have more worldwide users than conventional social networks—which mean they will play a progressively more significant role in the distribution of digital information. Flutter – a high performance framework is based on Dart language is used for this purpose. It provides high UI directly in the operating system's workspace rather than through native framework. Firebase, a next-generation app-development platform on Google Cloud, provides Backend-as-Service. It is a real-time database that permits storing a list of objects in the form of a tree form data structure. This research paper discusses about the implementation of a Chat Room for android mobile phone using flutter framework. To provide security to the client the database is created using Google.

Keywords

Messenger, Chat, Firebase, Flutter, Cloud

1. INTRODUCTION

Flutter^[8] is an open source UI software development kit. It gives lots of UI options to show creativity. Flutter by default uses dart as a language for interaction. Though number of platforms for app development is available but the main reason for selecting Flutter is, the pre-created libraries which can be used by simply importing them. Further, it gives an option of hot reload for which it only compiles that part of code which is being worked upon so it saves lots of time and CPU utilization and sometimes developer may get stuck while using other platforms for example just for changing color, it had to run the entire code again some times bigger in size. So with flutter even new users can have a flow of work and be very much enjoyable for them. As database Google is used since it is one of the securest among the world. The chats of users in documents form, is stored as individual document. And the login info is saved in authentication services of Firebase^[9]. The architecture of the Chat app is simple as it has a wall chat like structure it can be given the use of app by following example, as now we are hearing of privacy leaks even in WhatsApp and many bigger apps, so for example there is a team in a company of let's say 50 people, so if boss wants to convey message to rest of his team so what they all can do is simply create accounts, one account per user and then the boss will post the message on wall of the App, and thus other members of team can see it and reply accordingly. The purpose of the App is to aim at small companies or a classroom to make their work easy in different domains by giving them a much simpler UI and a handy app for management.

2. LITERATURE SURVEY

Chat Service have a long history with lot of research been done in late nineties. In 1996 at North Carolina State University, Zanin-Yost cited an exploratory service using synchronous video chat through CU-SeeMe software^[2]. On the other side, the University of Michigan Shapiro Undergraduate Library conducted similar experiment with CUSeeMe^[3]. Many other renowned researchers in several Universities have worked on the Library system & services related to Chat software^{[1][4]}. Libraries exploring more scaled down software options for real time chat through instant messaging (IM) software such as America Online's AIM, Microsoft's MSN Messenger, and Yahoo Chat^[5]. This technology was less expensive, easy to use and many people in the target audience were using it.

Flutter framework introduced by Google, an open source UI software development kit is an easy to use and also provide more security to the user. Number of issues can be of concerned for preparing the chat app, like what if the documents/stuff could be hacked or leaked by hackers to the competitors or it becomes difficult to provide enough space to the users for saving their data. Google Cloud^[10] service called Firebase provides database and authentications services to all, it is considered as one of the most trustable company in terms of security. For IDE, there is visual studio code and android studio for android SDK and emulator for testing code and deploying it. App will consist of 4 screens, 1st screen is home page, 2nd is registration page, the 3rd is the login page and lastly the final 4th one is chat room page. And finally all the pages are combined to main page where it is needed to import all the pages and create routes there (order of pages to appear).

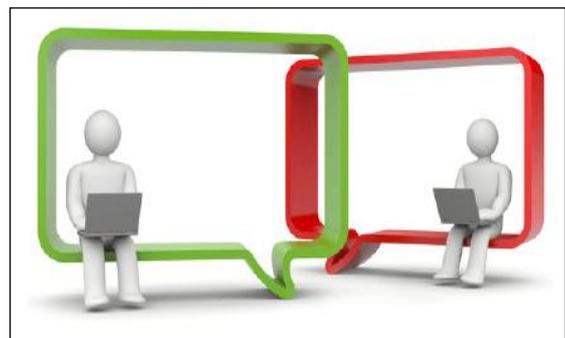


Figure1: Chatting

3. PROPOSED SYSTEM

Chat rooms permit number of users to connect from any location, which provides a perfect solution for conducting conferences between multiple people. The real-time interaction does not require users to sit close to a conference system speaker, which makes user feel more comfortable. In

addition, text-based chat can be easily downloaded and saved for future use. The proposed work of is an Android app which is basically a chat room, with a database built on Google cloud platform, since Google is known for highest security and speed, and also has best engineers among the world which will take care of the database. So the app is created on the top of flutter framework. As the application is more like a chat room, you can do live chatting or post your stuff on wall. It uses android studio for getting Android SDK further it also uses visual studio code as IDE for writing code and dart as a language.

4. REQUIREMENTS SPECIFICATION

Functional Requirements: The key requirement of an application is to provide a system for Online Chatting at a small scale.

Non-Functional Requirements:

- Ease of operation: The User Interface must be user friendly.

- Accessibility: The application must be available for use as and when required.

Hardware Specifications (minimum):

- **Operating System:** Windows, Mac
- **Processor :** Intel Core 2 Duo 3.0 GHz
- **RAM:** 4 GB

Software Specifications:

- **Language:** Dart
- **Tools:** Flutter , Android Studio
- **Database:** Firestore (GCP)
- **IDE :** Visual Studio Code

5.2 BACK-END DESIGN

The figure 2 below represents the layout of the backend work of the screens. Consisting of the Login details and the Register details & the Database.

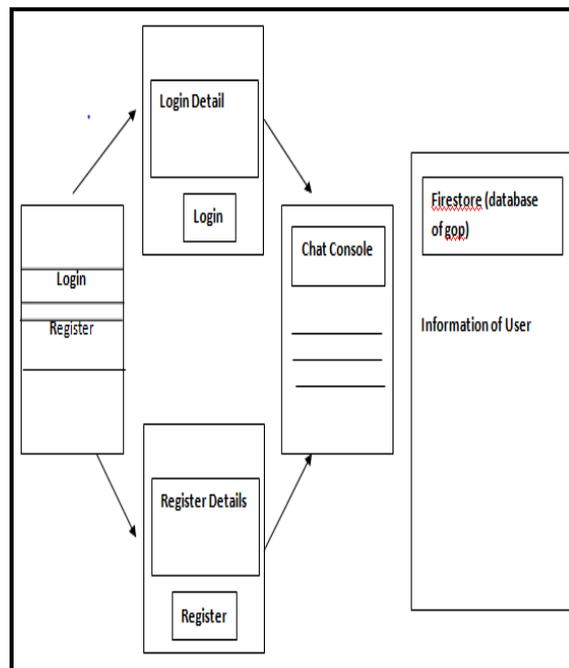


Figure2: Backend work of screens

The chat room is simple as it has a wall chat like structure. The first page is basically home page which will ask the user either to register or to login. The second page is for new users that is registration and after filling details on it, new account of user will be created and after that the login page where the details of pre-registered users will be matched from database and if the details are right the user will be landed to chat-room or page where user can chat plus it also has a logout button at the top corner of app bar by pressing it user will get the login page.

5. IMPLEMENTATION

5.1. LIVE CHATTING:

With Chat room, the users can do live chatting with each other without any hassles. The messages that are sent and received are highly secured.

Starting the Chat Session:

- Both the users should be present online simultaneously.
- Type the message in the message box.
- Click on the “Send” button or press Enter.

Storage:

- The messages are stored securely on the Fire store Database which is the most secure database of GCP.

6. RESULTS

A user acquires the access to messages by logging into the application by providing email address and password which was given while registering to the application. This information is stored inside the Database. Each time user login, the information is crossed checked with the database. Once the users has logged in successfully, messages can be sent to each other.

- The situation is: the first user sees the second user online, the first user sends a message to the second

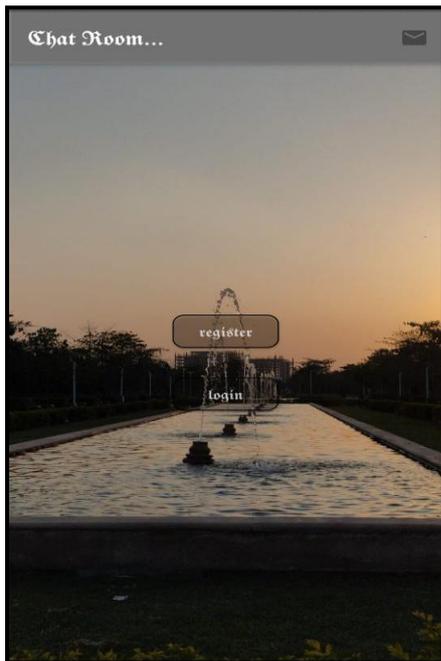


Figure 3(a): Home Page

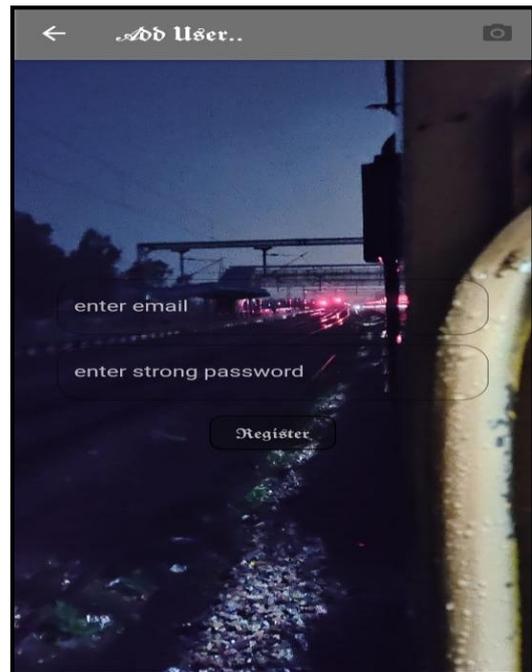


Figure 3(b): Registration Page

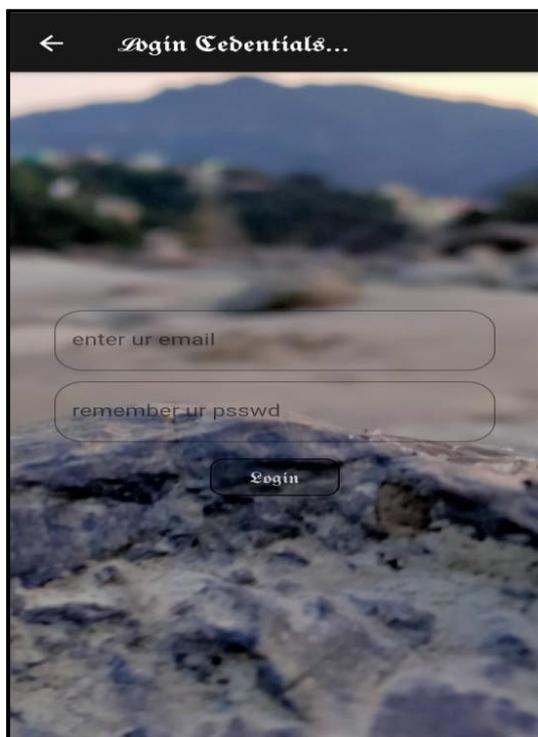


Figure 3(c): Login Page

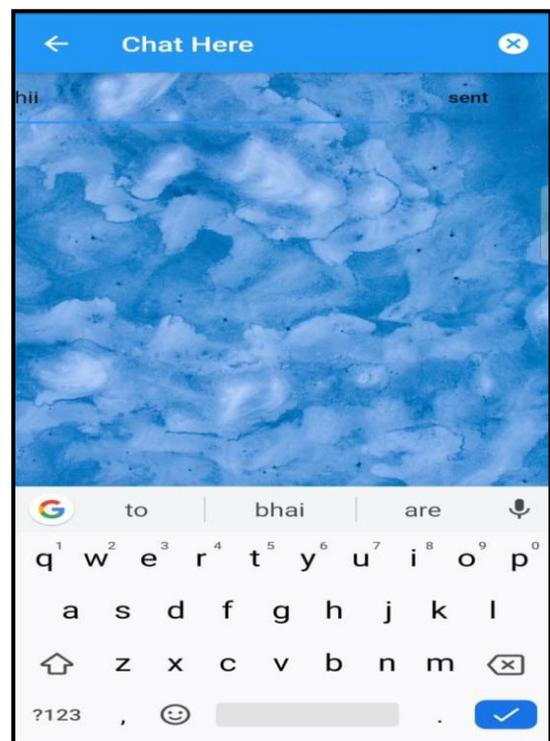


Figure 3(d): Chat Console

- Just text data, no binary data.

The above implementation part shows how the app works in the front-end; the following section shows the working on the server side or back-end. Figure 4(a) & (b) below can be seen that the users are created and the chats are being saved as documents.

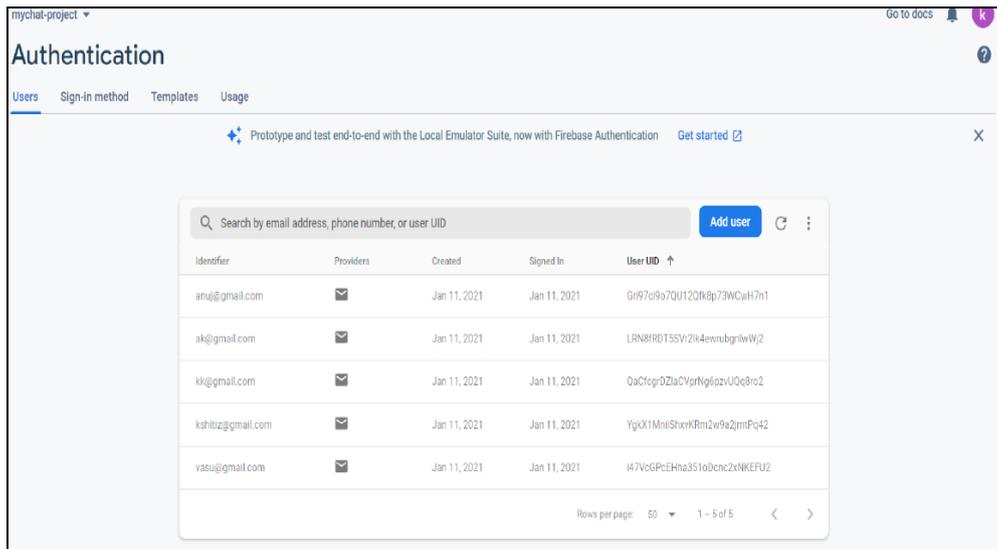


Figure4(a):Authentication of Service of Firebase

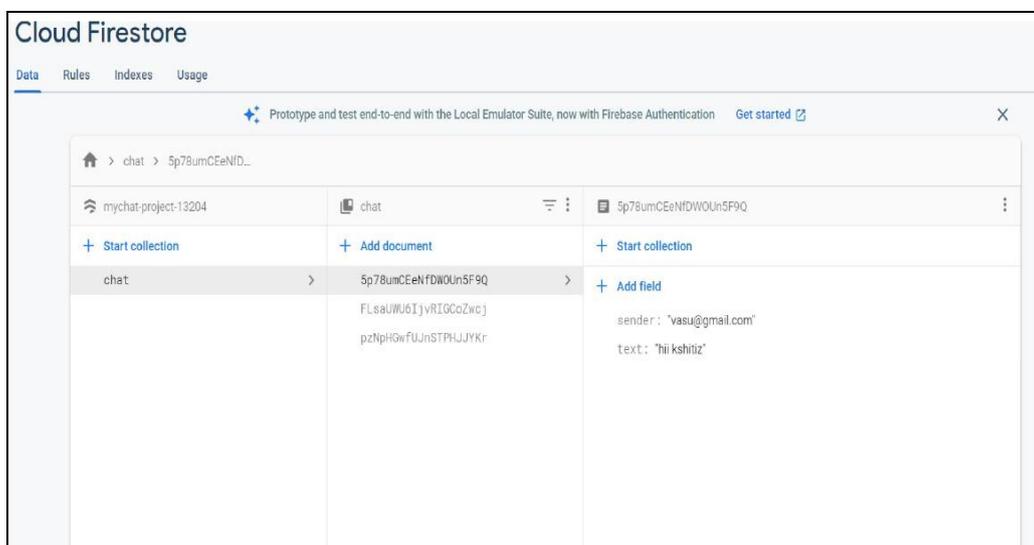


Figure 4(b): Database of Firebase (Fire-store)

Firebase authentication services in the accounts are created as users register with their emails. The chats are saved in forms of documents, individual document contains individual chat. Users can use the app without the fear of data breaching or other security problems.

7. CONCLUSION & FUTURE SCOPE

Chat Room for android mobile phone using flutter framework has been discussed in this paper. So as seen in above sections the app is working good and fine the user being created, database is working fine UI was good enough front-end was working fine so as the back-end. The target users for the designed app are a team in a company of up to 100 people and a class in a school and others like these in group. There is always a room for improvement in any software, how good and efficient it maybe. But most important thing is that, it should be flexible, password recovery to accept further modifications. The framework assists in developing an android application with comparatively low-end machinery in comparison to other technologies.

Secondly, the framework automatically updates the contents of the interface when required .Also, it constitutes the Hot

Reload feature that brings an instant result on the changing of code. It helps in defining the look and feel of the mobile app. The open-source technology framework has the capability to deliver smooth and responsive animations to the user interface elements. There are endless opportunities available when it comes to backend development and there is no exception to this. Flutter renders every pixel of the screen. This means all the widgets will look alike on the mobile device .Coming to the development process , it assists in saving a lot of time along with money. Testing can be done with Flutter SDK and can get the feedback accordingly.

8. REFERENCES

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