Android Based Instant Messaging Application Using Firebase

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Abstract - *Exchange of information for our current generation is increasing day by day. Terabytes of data is generated and needs to be stored on a daily basis. Exchange of information takes place through telephones, mobiles, texting applications, via social media, etc. But online communication is an ideal way for communication in a secured and fast manner. Short messages can be sent within a very small span, saving an ample amount of valuable time for users thereby making it the most ideal way for communication. A mobile application should be able to share information like video, audio, texts with minimum delay as possible in order to provide a better user experience. Only then will the user be comfortable using the application. The information of users should also be safely stored in a secured region which will give users the confidence to upload their data freely. Firebase is therefore used for such purposes. Storage of texts, videos and files can be achieved using firebase. It is better to use android for developing mobile applications compared to other platforms as the UI is simpler as well as easy to understand, thereby helping the developers. Creating a real time android application with one-to-one communication between the users in a safe and secure way is the main objective behind making the app. This application will help users to communicate through texts with each other. Storage of files on cloud will be an added benefit for the users while using the app thereby enhancing the user's experience. The application needs an active and stable internet connection between the users for secured communication to take place.*

Key Words: Communication; Firebase; Android; Instant messaging;

1. INTRODUCTION

To overcome geological restrictions, communication plays a vital role to utilize technology and unite different people of different cultures. Over the time communication has become an important and indivisible part of our daily lives . So, from an unknown time, people have been communicating through various means throughout their lives. As in the late 2000s, smartphones began to gain popularity among youngsters and older people alike and that's the reason more messaging systems became available and began to gain popularity among the common people. Chat applications have improved social media by being the core component or characteristic of any medium. Back in older times letters were used as a medium of communication but the drawback was that for any small message or any immediate message communicating through letters was just not the ideal way , because it just sometimes took a lot of time for the letter to even get delivered.

[1]So after the recent growth in the smartphone industry and it being very popular among both the developers and the smartphone makers. [2]Therefore a text-based communication system which would allow instant communication between the users. Which led to development of several text-based messaging apps over the decade ,including WhatsApp, WeChat, hike, Snapchat just to name a few [4]This was made possible due to the Android operating system . Android is an open source operating system which is developed and managed by Google.

[5]In this paper we are developing a similar application which tries to achieve similar goals of text based communication and we will also be adding a cloud based storage solution which will help the users of this application to store any important documents or images according to their need .

2. GOALS

The basic goal is to create an application which is capable of creating a chat room according to the users, for the users and storing the related data at a single place. Implementing Google firebase, cloud to store the data. The goal of this paper is to develop a fast, smooth as well as secure application that allows users to share text, media i.e. pictures and videos, free of cost.

2.1 OBJECTIVE

The feature of authorization allows the user to sign up or login, anytime, anywhere in the country with the use of any mobile phones. The user after login can search other users in the search menu which will then be redirected to the chat room on selection of the username.

3. PROPOSED WORK

This is an internet based instant messaging android application, which provides the users to text other users in a fast, convenient and secure way.

Both users' devices must have an active internet connection for communication to take place. Numerous chat applications such as WeChat, Hike, WhatsApp, Telegram, Facebook messenger, Line etc. are used for

messaging purposes but this android application is capable of storing files, images, videos and photos. Thus, the user does not need to worry about his/her local storage. The users get their personal information stored on the cloud. Using this application, users can communicate with any user within the country who has signed-in the application successfully. The application uses Google Firebase for storage of files, images and videos and Google Firestore for the storage of texts. Users have to register or sign-in through their respective Gmail Id in order to access the application. When the user signs-in to the application, the user can search for another user for the communication to take place.

This application is designed for android mobile users. Users can respond to the messages received by just typing the reply message and press the send button. Users can also sign-out from their present device and can sign- in through another account if they feel the need to do so.

4. PROPOSED ARCHITECTURE

An online text messaging app that allows the user to communicate with other users in a fast and easy way. Both should be having an active Internet connection for communication. For any day to day activities or needs the app also features a cloud storage which helps users to store and retrieve data. The system is divided into different modules, each module has a different function and works in sync with other modules without conflicts. Major modules are as follows:
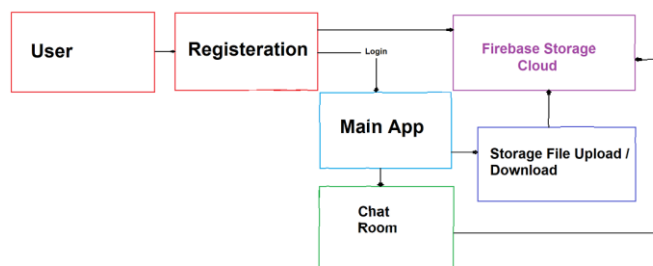

Fig.4.1 Block Diagram

4.1 REGISTER MODULE

When a new user tries to use the app for the first time he/she has to sign in using a google account or Gmail id. If Gmail is not available then the user has to create a new google account and register using Gmail id.

4.2 LOGIN MODULE

This module is introduced when a user tries to sign in to the system. The user must enter the Gmail id and password and the Firebase system will check whether the account is correct or not. The password is stored as a hash that ensures System security.
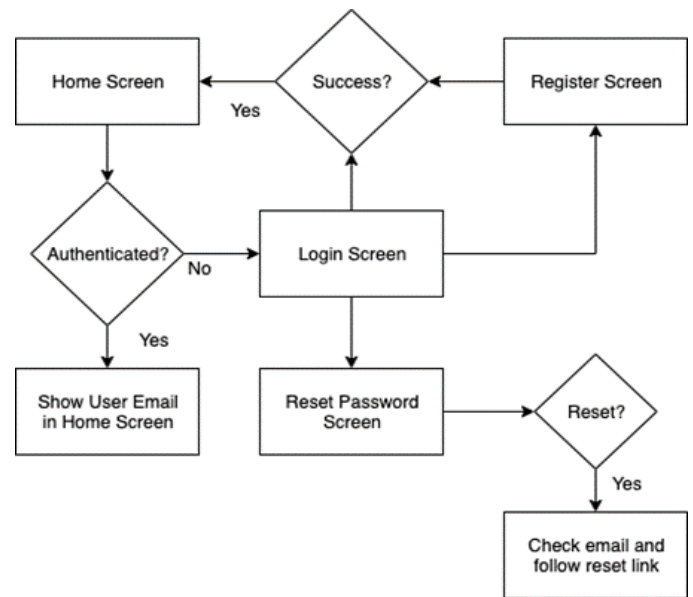

Fig.4.2 Login module

4.3 CHAT MODULE

This is the main program module that will handle the messaging function of the system. This module starts when a user chats with other users on the network. The following flow chart explains the chat room workflow.
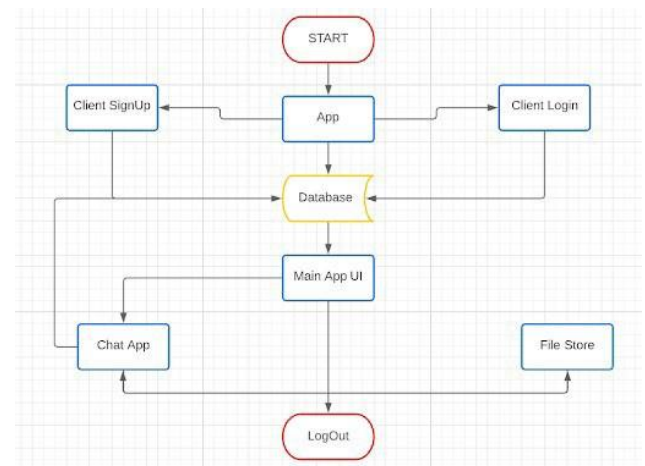

Fig.4.3 Chat Module

4.4 BACKEND MODULE

For messenger application we need to have a real time cloud database .For this purpose we have used Google Firebase .

There are various methods available but the firebase is the easiest and developer-friendly environment to create a database. To create firebase database and link it with the application

We need to create the project on the firebase. Following are the steps to create and link the dataset to the android studio ide: to the android studio ide:

1) Create Firebase project

2) Login with your same email id in the Android studio as the one which you used to create firebase project.

3) Authenticate your login credentials.

4) Make sure the package name of the firebase project and the android applications are the same.

5) Make sure the name of firebase package is correct in the gradle.build file

6) Now configure database authentication and storage settings.

7) Enable the google sign in method in the sign in method tab.

8) For the database, create the database in test mode. When done, we can make more rules for the database in future as per requirement.

4.5 STORAGE MODULE

This module in the program is used for uploading and downloading files from the firebase database. The messenger app has this cloud storage feature which helps users to store and retrieve data from firebase cloud storage. So users can store images, documents, videos on the cloud and download them anytime, saving disk space on local devices.

5. RESULTS

Following images show different pages and parts of implemented application . The messenger application has all the implemented parts including sign in , registration , user search page , chat room and file upload and download pages which helps user to store and retrieve files from firebase cloud .
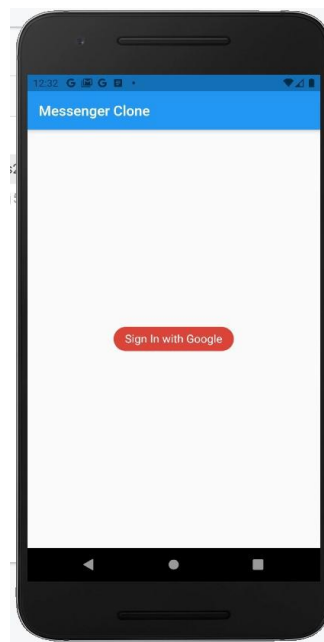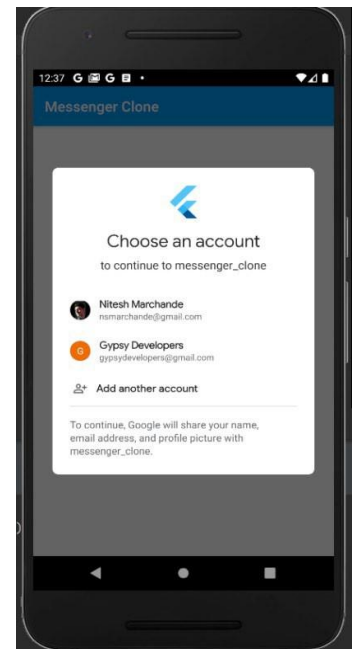
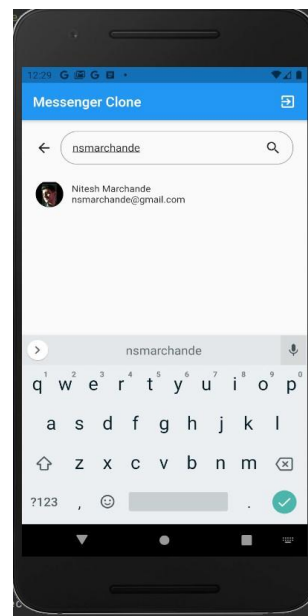**Fig.5.1 Sign In Screen**   **Fig.5.2 Registration**
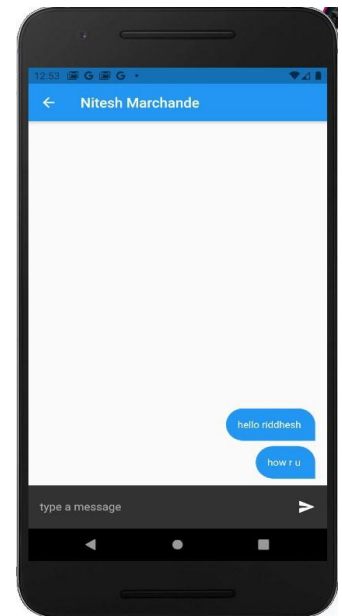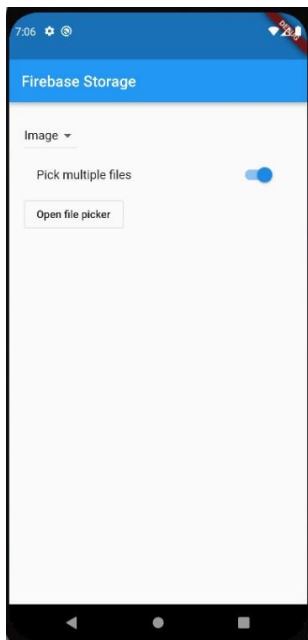
Fig.5.3 User search screen   **Fig.5.4 Chat Screen**

Fig.5.5 Upload Files   **Fig.5.6 Select Files**

6. CONCLUSIONS AND FUTURE SCOPE

The application will be used for users to connect and communicate with each other . The application has sign up option by which users can register them using a google account .Users can search other users by their emails also and send them requests and communicate with them. The feature of authorization allows the user to use their account anywhere anytime with the use of any mobiles phone.

Users have to login to their application with their email id and password as there is no need for an OTP. There is in every case some spot for improvements in any product application, how great and proficient that application might be. At this moment, we are managing just the texting between the friends.

In future the application may add more features to incorporate a few highlights, for example,

1. Voice calling.
2. Video calling
3. Messages auto delete after a certain time.

7. REFERENCES

[1] Sabah, N., Kadhim, J.M. and Dhannoon, B.N., 2017. Developing an End-to-End Secure Chat Application. *IJCSNS*, *17*(11), p.108.(2017)
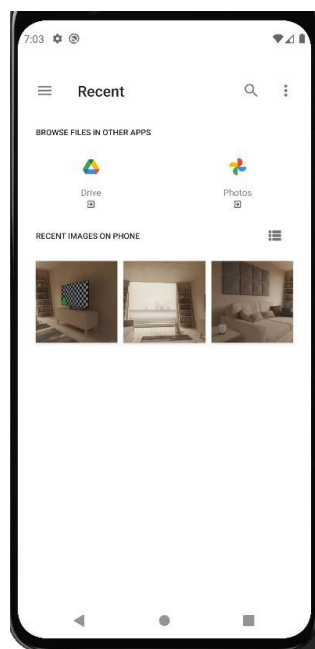
[2] M. Bahrami, "Cloud Computing for Emerging Mobile Cloud Apps," 2015 3rd IEEE International Conference on Mobile Cloud Computing, Services, and Engineering, 2015, pp. 4-5, doi: 10.1109/MobileCloud.2015.40.(2015)

[3] Emmadi, S.S.R. and Potluri, S., 2019. Android based instant messaging application using firebase. International Journal Recent Technology and Engneering, *7*(5), pp.352-355.(2019)

[4] R. Sanjaya and A. S. Girsang, "Implementation application internal chat messenger using android system," 2017 International Conference on Applied Computer and Communication Technologies (ComCom), 2017, pp. 1-4, doi:10.1109/COMCOM.2017.8167092.(2017)

[5] M. A. Shahid, N. Islam, M. M. Alam, M. M. Su'ud and S. Musa, "A Comprehensive Study of Load Balancing Approaches in the Cloud Computing Environment and a Novel Fault Tolerance Approach," in IEEE Access, vol. 8, pp. 130500-130526, 2020, doi: 10.1109/ ACCESS.2020.3009184.(2020)