



## INSTANT MESSAGING APPLICATION

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**Abstract:** *Without communication, we cannot imagine this world. As technology has been growing with a good pace, a lot of devices and mechanism has been developed for better ease to initiate conversation. What a user want from a conversation application is that he or she can easily grasp the meaning of another user what he or she want to say. Stepping ahead in this era, an application we going to create with the help of Java and Firebase. Java is an object-oriented, class-based programming language. To reduce the dependencies, it is designed. The main feature about this language is that it has to be write one time and the same can be run anywhere anytime. [1]. What a developer wants in his/her application, it should be easily developable, and its database should be easily available. Firebase do that job by providing real time database[2]. If we talk about who provide better platform, Android stood up at first place amongst other platforms . How we can reduce the gap between users in form of communication is the major aim of this paper. Main idea about this is that the user should be able to communicate with another user by the help of text messages however the same will be working through internet. This application demands allow us to work on Java and Firebase and will solely base on Android.*

**Keywords:** *communication; Java; android; Instant messaging; real-time databases; Firebase.*

### I. INTRODUCTION

Without communication, no deal is possible. If you have to express something to another person you have to talk to them. If the person is at some distance, then people use many applications and medium. If we talk about, in previous era, how we used to communicate with one another, then we use letters, however this form of communication takes so much of time. As the time passed, phones come into role. But, for sending a small message its not worthy to use phone at that time. Thus, developer comes with an idea of SMS(Short messages services), which was solely a instant communication which is based on text only. The credit of SMS concept goes to Friedhelm Hillebrand and Bernard Ghillebaert. They welcomed the idea of SMS in 1984[3]. But, as we know, that

was the initial of our communication era, after that everything has changed. SMS comes up with certain limitations which was its 128byte limited size. After that, era of smartphones came into limelight, thus many messaging apps have developed in that phase some were of Bluetooth based and some were of internet, like telegram, Hike WeChat.

[4]Here is some glimpse of Android, an operating system (OS) for mobiles which was built by google and now it has a great number of users word wide . With the help of this operating system many apps are working efficiently. In our application, we have used Java, the major advantage of using java is that It is Object oriented language such that everything belongs to java is an object[5][6]. Apart from this we do not need a certain platform to run it such that it is platform independent because of its platform independent byte code, which can be interpreted by the JVM.[7] Java Compiler generates a architecture neutral object file format by the help of which code can be run on many processors. Java is a highly portable language[8][9]. Due to strong memory management of Java, it is considered as a secure and robust. Various authentication techniques in java are based on public key encryption which also made it a secure language[10].

[11]Now question is that how to store the data so there is answer **Firestore**, Firestore is a database with the help of sockets which can allow developer to retrieve or store the data.

The requirement of this app is an android studio >=1.5 Android version >=2.3, and android studio projects needed to connect the firebase to an application which is of android in our case. Firebase provides various kinds of services such as:

**Real time database used :** It is a NoSQL database hosted on cloud. It helps the client to connect to each other as data is stored as JSON.

**Firestore Authentication[12]:** It is useful for both the developers and the users. Maintaining and developing sign in setup may be bit difficult and time taking. Firestore provides an API for sign in. By using real time database, it can also provide data backup.

**Firestore cloud[13]:** While dealing with a new application main problem arise where to store all type of data, thus firestore provides the opportunity of cloud storage.

*Crash Reporting[17]:* When a whole running application stuck somewhere, it will be difficult for developer to find out where the crash has occurred. Thus, this problem sometimes leads to consumption of more time and resources. For dealing with the crashes, firebase also provides the reporting service.

1.1 Related Work

As we know the authenticity algorithm in which the phone number used by the user has to be submitted and thus OTP needs to be verified in given span of time, the same algorithm has been used here.

After that It will prompt you to enter the name which can not be empty. For proceeding further, one has to enter a name in it.

II. GOALS

The main goal is to build an application which can be used to build a connection between two users so that they can communicate with ease with no delay or very short interval of delay.

To make the same, we choose to work on java and for storing the data google firebase has used in building the same

III. PROPOSED WORK

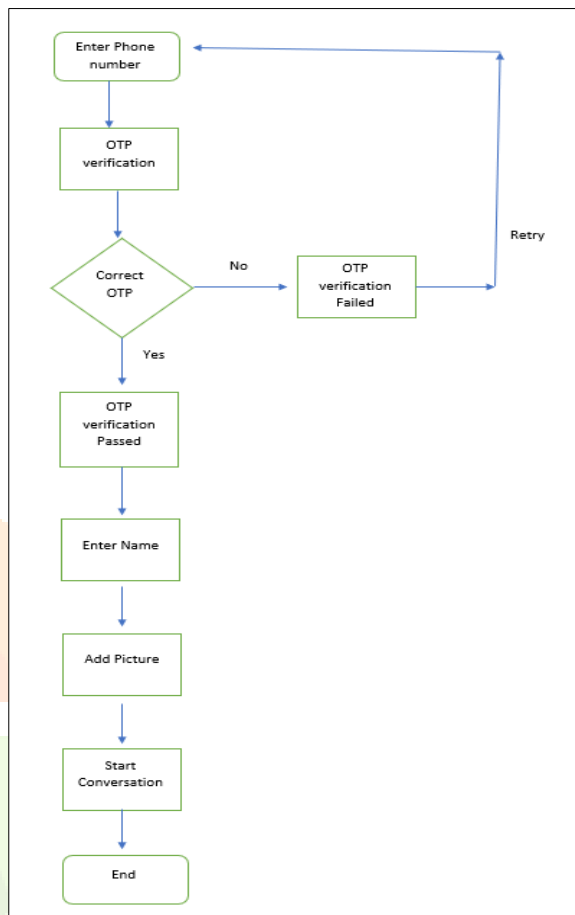
The proposed app will be a instant messaging app which will help the user to communicate easily[14]. It requires both the devices to be connected to the internet for the communication. There are many chatting applications like WhatsApp, telegram etc. There is no restriction of this application that it can used in specific region. It can be used anywhere around the world and can be accessed easily. In this application we are using java and android studio for developing the frontend of the software. For storing the data of the application google firebase is used[15]. The application is designed for android mobile phone users only. User can see another person profile picture. User can also see the recent conversation he/she has done with another person. User will also be able to delete the chat. User have also the access to logout from the application.

3.1 Algorithms used

For developing the application following algorithm is used: - [16]

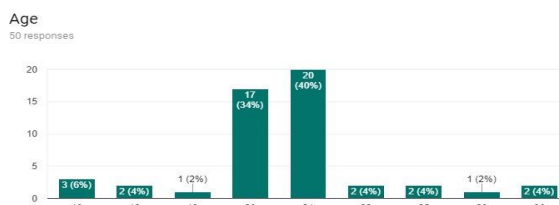
- *Authentication algorithm:* Application requires the identity of the user that helps user to secure their data in cloud. Google firebase provides SDK's that helps developers to authenticate their account more securely. This algorithm lets user to login to their application with their mobile number if the mobile number matches with the present records, it will display a message Successfully login and if not present then tell the user to create a new account and login again or to check the values entered correctly. If you are a new user to the application, you have to select the new user login option. The user has to enter their phone number and click on the button present for One time password (OTP) identification. Within few seconds the user will receive an SMS on their

registered mobile number with the OTP, then the user has to enter the OTP and if the OTP is not correct the user will have to again follow the same steps again and if it is correct the user will be navigated to profile page, in that page the user has to enter their name, add profile picture if they want and then click on OK. And then they will be able to start communicating with the other users.



VI. FEEDBACK SURVEY

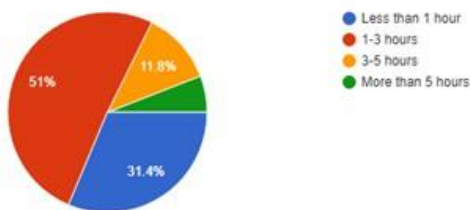
For adding some freshness to the application, firstly one has to understand what is in the user mind. Based on that, some question has been framed for the user so that we can see in which flow we have to work in order to get the different outcomes from previous made apps. The following questions are asked to 50 peoples of different age groups.



From this graph it can be concluded that young generation aged 20-21 are participated on high scale as craze among youngster is high for a messaging app.

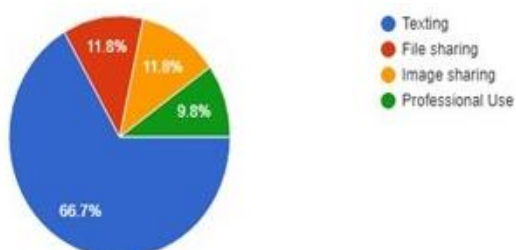
1. How much time people use to spend on these applications?
  - < 1 hour

- 1 to 3 hours
- 3 to 5 hours
- >5 hours



**Conclusion:** - Majority of the people uses their 1-3 hours on this type of applications.

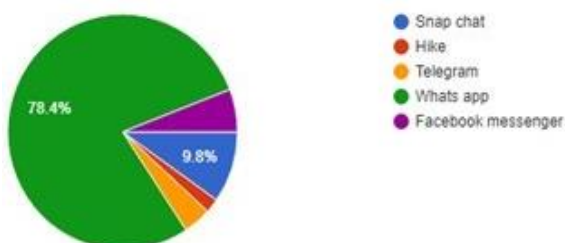
2. Why you use this app?
- For Only Texting Purpose
  - For sharing Files
  - For Image sharing Only
  - Other Professional Use



**Conclusion:** -Texting is the main purpose for user as 67% of people voted texting.

9.8% people chooses professional use which set it as lowest amongst all.

3. Which app you preferred to work on among the followings?
- Snapchat
  - WhatsApp
  - Hike
  - Facebook
  - Telegram



**Conclusion:** - 78% of users said that they prefer WhatsApp over others whereas least one goes to Hike platform.

## V. RESULT

Based on surveys questions we have developed an app which will be used for real time communication. Firstly, user has to go through the one-time password authentication mechanism so that his or her number verified properly. After that user can set his name and profile picture and can start chatting with other users.

## VI. CONCLUSION AND FUTURE SCOPE

We have made a basic version of instant messaging app which in future will require some updates and side by side we are going to work on them. Up to how much extent application is efficient, there is always some room of improvement.

AS the basic idea behind our app is instant messaging which in future can be updated to more features such as: -

1. Groups
2. Group calls
3. Video calls
4. Live streaming
5. Auto delete messages
6. Delete unwanted messages for both users.
7. Voice Call
8. Voice messages

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