Travelo, a social networking app

Submitted in partial fulfillment for the award of the degree of

Bachelor of Computer Applications

By

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VIT, Vellore

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March, 2019

DECLARATION

I hereby declare that the thesis entitled “Travel-O, a social networking app” submitted by me, for the award of the degree of Bachelor of Computer Applications(BCA) VIT is a record of bonafide work carried out by me under the supervision of Magesh G.

I further declare that the work reported in this thesis has not been submitted and will not be submitted, either in part or in full, for the award of any degree or diploma in this institute or any other institute or university.

Place : Vellore

Date : 05-04-2019

Signature of the Candidate

CERTIFICATE

This is to certify that the thesis entitled “Travel-O, a social networking app” submitted by Pratibha Biswas(16BCA0032), SITE VIT, of the degree of Bachelor in Computer Application is a record of bonafide work carried out by her under my supervision.

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Date : 05-04-2019

Signature of the Guide

Internal Examiner **External Examiner**

Head of the Department

BCA

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It is indeed a pleasure to thank my friends who persuaded and encouraged me to take up and complete this task. At last but not the least, I express my gratitude and appreciation to all those who have helped me directly or indirectly toward the successful completion of the project.

Pratibha Biswas

Executive Summary

Travelo is a social networking app which is aimed at creating an environment where people can interact with each other. The app is designed for Android Platform. Android Studio and Firebase has been used for the development of the app, and further, a Redmi 4 mobile has been used as a target of deployment, so as to check output from the app.

The app has many modules. Firstly, the login module enables the current user to log in to his/her account. The validation however is, that if the user has verified his/her email, then only the login would be successful. Also, if the user has verified but has not entered his information in the Setup Activity, then the user would be redirected to it, before getting into the Main Activity. If the user does not exist, then the login is unsuccessful. Second, the register module lets a user register for the app. The user can enter his/her details and then a confirmation mail is sent to them. If they verify, then only they can login, otherwise they won't. After login and register, here comes the Main Activity.

The Main Activity contains a DrawerLayout menu, a Recycler View, a toolbar with two buttons, a Toggle button and a Add Post button. Toggle button opens the drawer menu and the Add post redirects to the Post Activity where user can enter post details that they want to add. The Recycler View displays all users posts. Since this app is an open social network, it does not filter posts according to users or friends or tags or likes.

After this, we have modules like Profile Activity, Friends Activity, Find Friends Activity, Messages Activity, Settings Activity and the Logout. In Profile, the user can view their profile and there are two buttons which displays the number of posts of that particular user and the number of friends. On clicking those buttons, they can view their posts and friends. Friends activity displays list of friends and if the user clicks on any friend, a Dialog Box appears with two options: view friend's profile and messages. Find Friends is where the user can find people with their name. On clicking the person, the user is redirected to their profile, where they can send friend request them. The person, when viewing the user's profile, will have accept or decline friend request option. Messages is where the users can interact with each other. Settings allows a user to update their profile information. And logout logs the user out of that session.

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UX	User Experience
Auth	Authentication

1. INTRODUCTION

1.1. OBJECTIVE

The objective of this project is to:

a. Create a minimal social network which is present in every other Social Networking app.
b. Complete the following modules:
    i. Login
    ii. Register
    iii. Forget Password
    iv. Email verification
    v. Setup Activity(Redirected for new users)
    vi. Home(Main Activity)
    vii. Display All Users Posts(Recycler View)
    viii. Add New Post
    ix. View Profile, posts and friends
    x. View Friends and their profiles
    xi. Find Friends and send/accept/decline friend requests
    xii. Unfriend a Friend
    xiii. Messaging
    xiv. Settings where one can update his/her profile information
    xv. Logout
c. Work with Android Studio and Firebase and get more insights on both the platforms and how to connect and use them to their full potential.

1.2. MOTIVATION

Social Networking apps like Facebook, Twitter, Instagram etc have been around for quite a while now and they are all extremely popular because they provide a platform where users can interact with each other. Though they look easier in the surface, their code has various layers of complexities. In this project, my motivation was to examine and learn more those complexities and also apply them to get a minimal Social Network app that people can use.

1.3. BACKGROUND

There are social networking apps like Facebook, Twitter and Instagram that are used by a large number of users. If we look closely, all of them have similar underlying functionalities. At a minimal level, all the apps would work the same. Users can add posts which other users can like or comment, users can view their own profile with their posts and friend list, users can find friends, users can view their friend's profile, users can message among themselves, users can update their information and the most primary is the login/register/forgot password/email verification/logout and also, a setup for new users to enter essential profile information.

In my research of the existing apps, it was found that these are the essential features for any Social Networking Site to have. Rest are just added ones. And if these features could be implemented, the minimal social networking app can be made. So, this project Travelo aims to do the same and create a minimal social network app with the required features.

2. PROJECT DESCRIPTION AND GOALS

The project Travelo aims at creating the minimum Social Network app with required features. The required features have been taken into account after researching other social networking apps. A list of features was made with the list of requirements that every social networking site or app has to have. This requirements are the same in all the social apps. Users can add posts which other users can like or comment, users can view their own profile with their posts and friend list, users can find friends, users can view their friend's profile, users can message among themselves, users can update their information and the most primary is the login/register/forgot password/email verification/logout and also, a setup for new users to enter essential profile information.

Apart from working as a successful social networking app, the project also provided a layout that can be used in other projects as a base, so that other features can be added on top of them. Though the main goal was to just create a social networking app, the research provided more insight and cause to this project. Anyone who is willing to create a social networking android app can use this project as a base, and then create other features on top of it.

The main point is, the goals increased as the project proceeded. At first, it was just creating a social networking app, and now, it is also a minimum requirements social app.

3. TECHNICAL SPECIFICATION

Requirements/Modules:

A) Login Activity

The login module enables the current user to log in to his/her account. The validation however is, that if the user has verified his/her email, then only the login would be successful. Also, if the user has verified but has not entered his information in the Setup Activity, then the user would be redirected to it, before getting into the Main Activity. If the user does not exist, then the login is unsuccessful.

B) Register Activity

The register module lets a user register for the app. The user can enter his/her details and then a confirmation mail is sent to them. If they verify, then only they can login, otherwise they won't.

C) Forgot Password Activity

An additional feature available in the Login Activity. If the user clicks on Forgot Password, they will be redirected to Forgot Password activity, where they would be required to enter email and press Send email. The user would then receive a link in their email which will redirect them to a page where they can set their new passwords.

D) Setup Activity

An initial profile setup page where new users would be redirected after login, where they would be required to set a profile image, username, full name and country.

E) Main Activity

The Main Activity contains a DrawerLayout menu, a Recycler View, a toolbar with two buttons, a Toggle button and a Add Post button. Toggle button opens the drawer menu and the Add post redirects to the Post Activity where user can enter post details that they want to add. The Recycler View displays all users posts. Since this app is an open social network, it does not filter posts according to users or friends or tags or likes.

F) Display All Users Posts

All users posts would be displayed in the Recycler View of the Main Activity.

G) Profile Activity

Profile Activity allows user to view their own profile, with their posts and their friend list. It also displays the number of posts.

H) Friends Activity

Friends Activity also uses a Recycler View to display the list of friends that a user has. Also, if they click on them, a Dialog Box appears from where they can view their friend's profile and also send a message to them.

I) Find Friends Activity

Find Friends Activity is where a user can find for people by entering their names or first initials. A list of people will appear and then they can click on them to view their profile.

J) Accept/Decline/Cancel Friend Requests

A user can accept or decline a friend request. They can go to their profile, where there will be two buttons for accept and decline. Also, the user and send and cancel friend requests for specific users.

K) Unfriend Friends

A user can unfriend their friends by going to their profiles, and clicking on Unfriend.

L) Messaging

This app allows users to interact with each other via messaging. Two users can send text messages to each other.

M) Settings

Here, users can update their account information.

N) Logout

User can logout of the app and should be redirected to the Login Activity.

Software Requirements:

Android Studio, Firebase

4. DESIGN APPROACH AND DETAILS

The Materials required for this project are Firebase and Android Studio.

These three Firebase features have been implemented in this project:

a. Firebase Authentication
b. Firebase Realtime Database
c. Firebase Storage

Firebase Auth was required for user authentication, verification and unique IDs.

Firebase Realtime Database was required for dynamic realtime posts display, likes, comments, viewing friends of user and messaging. The Database works in JSON formats, creating nodes for each action which makes it easier to access data for specific events.

Firebase Storage was required to store images.

First, for the login activity, the user email and password would be taken and following verifications would work on them:

If user exists and has verified mail and is not a new user, then login to Main Activity.

If user does not exist, show error message.

If user exists but has not verified mail, show error message.

If user is a new user, then redirect to Setup Activity.

Second, the register activity takes the user email, password and confirm password and sends a verification email to their email. If the user exists, then register activity shows error.

Third, the forgot password activity takes the user email and sends a verification link to their email, where they can update their password.

The main activity shows the users posts via recycler view and has a Drawer Layout with menu.

The user posts are retrieved via FirebaseRecyclerView using the Model-View-Controller. Same goes for friends lists and messages list.

The user can view other user profiles and those profile have different buttons on the basis of their status with the user:

If user is friend with them, then Unfriend button is shown.

If user is not friend with them, then Send Friend Request button is shown.

If user is not friends with them but has send friend request to them, then Cancel Friend Request Button is shown.

If user views the profile of a user who has sent him/her friend request, then Accept/Decline buttons are shown.

The design approach was to retrieve data when certain activities are triggered, so as to work accordingly.

The nodes of the FirebaseDatabase are the key to most of the actions in this project and look like this and keep getting updated:

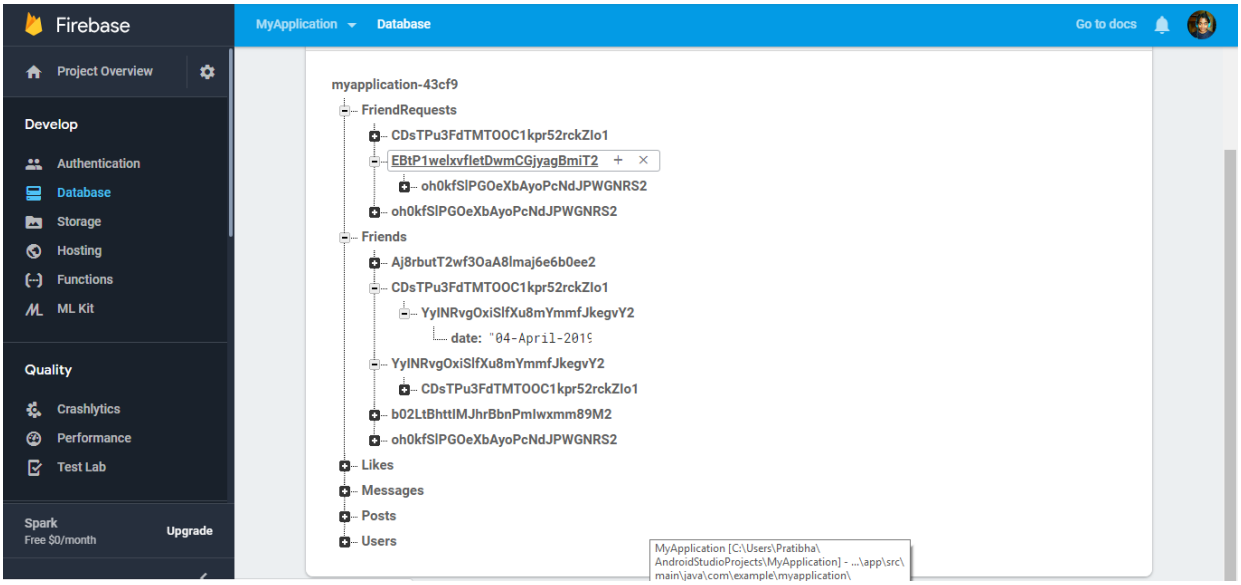


Figure 4.1 Firebase Database Nodes

5. SCHEDULE, TASKS AND MILESTONES

This project required some planning in order to finish efficiently. This was the schedule:

December	Research on the project
January	Start development
February	Finish half of the modules
March	Finish the full project
April	Give finishing touches and finish report

5.1 Schedule

The tasks were:

a. Research on the topic
b. Create activity in Android Studio
c. Connect project to Firebase
d. Create other activities
e. Connect FirebaseAuth, FirebaseDatabase, FirebaseStorage
f. Create a workflow of each activity
g. Implement the workflow of each activity.
h. Test the app

Milestones:

a. Research added value to the project
b. Activity created and project connected to Firebase Core, Firebase Auth, Fireabse Storage and Firebase Database successfully.
c. Login, Register, Setup and Main Activity successfully synced according to workflow.
d. Email verification successfully added to login, register.
e. Forgot Password feature added successfully.
f. Add new post and display all posts working in sync.
g. Profile Activity working successfully.
h. Added two buttons to profile activity to display posts and friends.
i. Friends and Find friends working successfully.
j. Accept/decline/cancel friend request feature added.
k. Unfriend feature added.
l. Messaging feature added.
m. Settings feature updated successfully.

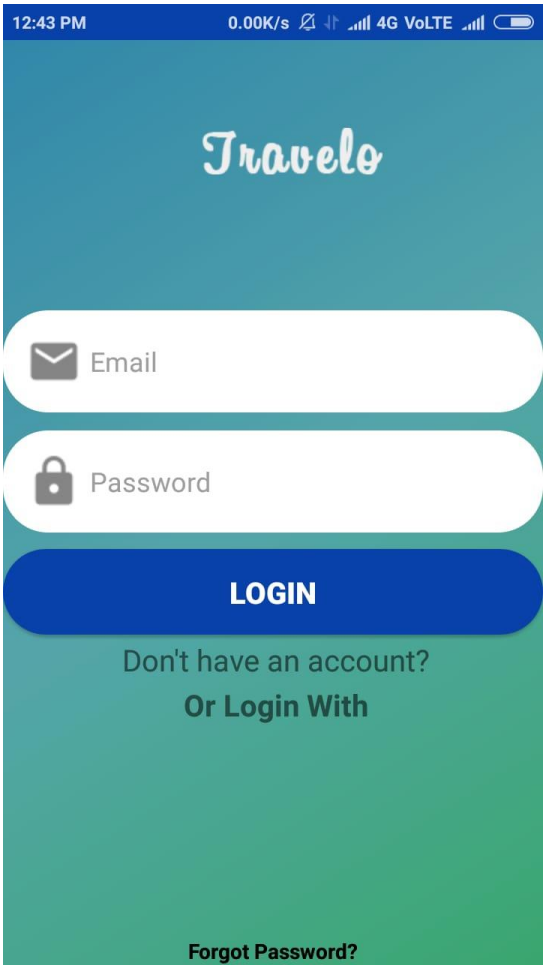
n. Logout mishaps rectified successfully.
o. Like and comment feature added to posts.

6. PROJECT DEMONSTRATION

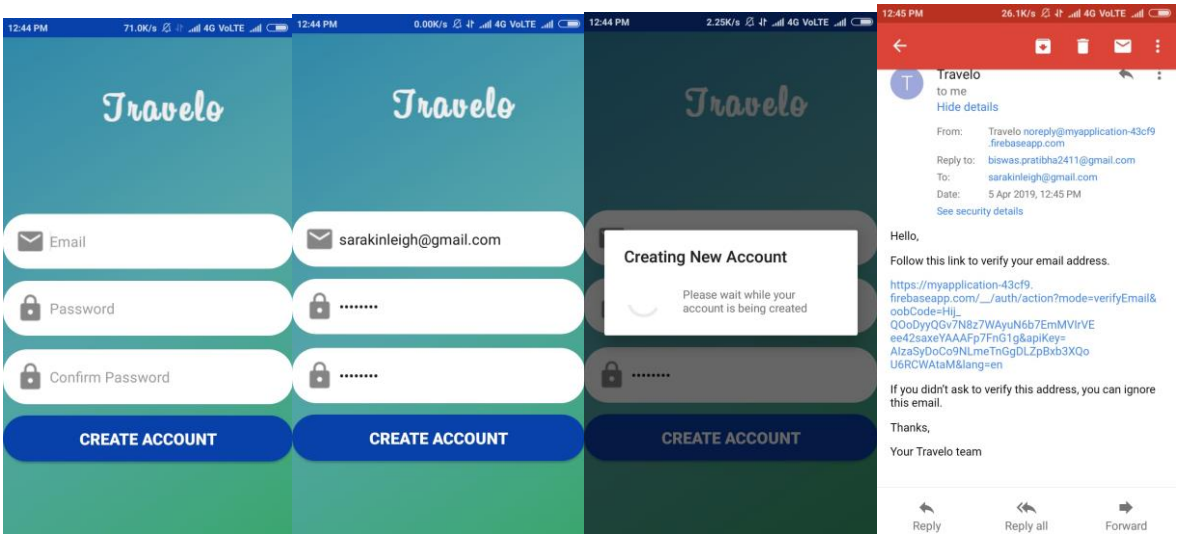
This project would be demonstrated module wise.

The scenario is that we have one new user and one existing user, Sara Kinleigh and Pratibha Biswas respectively.

We will start with Sara Kinleigh. When the app opens, it opens the Login Activity:

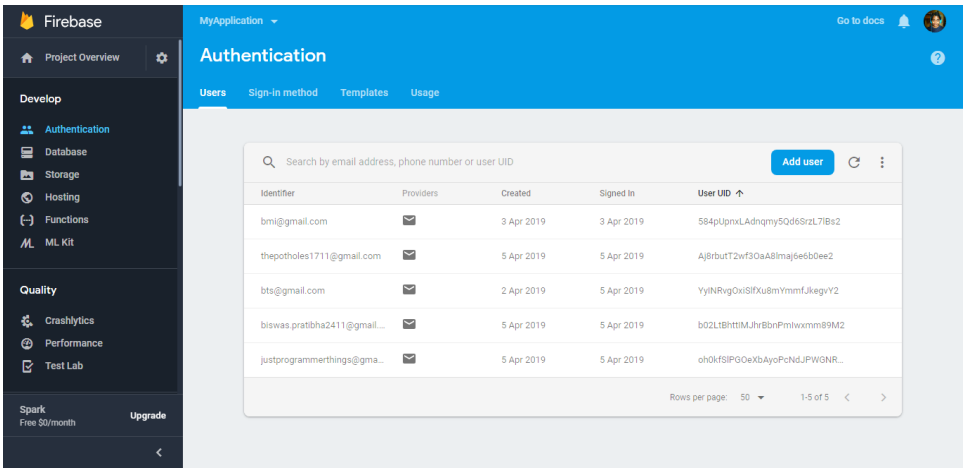


Don’t have an account? Takes the user to the Register Activity. From there, they are sent a verification email.

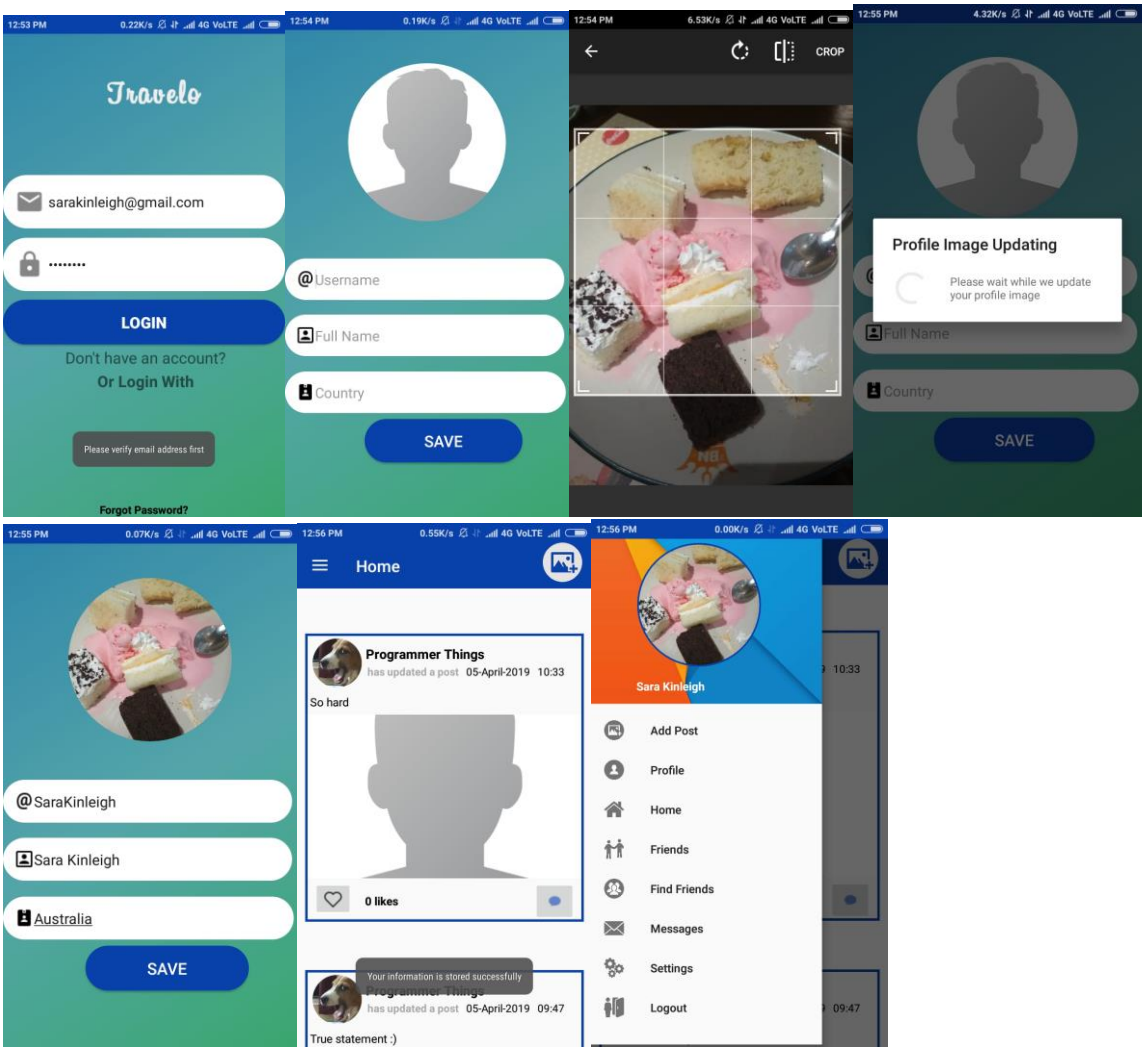


After she verifies:

Sara Kinleigh would also be added to our Firebase Auth Users List:

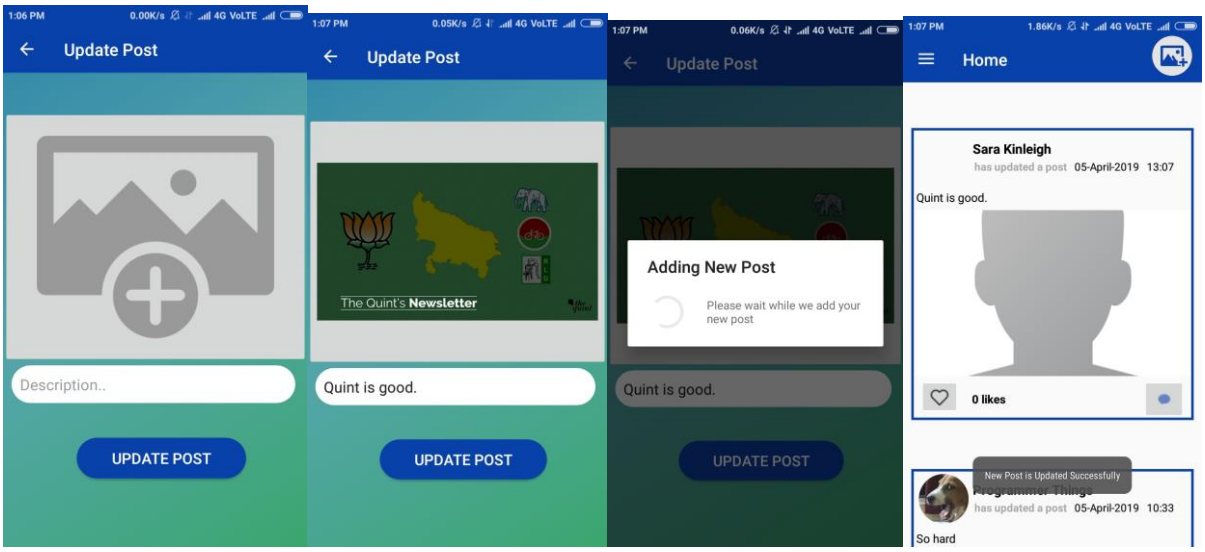


Now, it is time to login Sara Kinleigh. Since Sara is a new user, she will be redirected to the Setup Activity.



There is also an image Cropper which is implemented via an existing library. After that, her account is created with posts and her drawer layout is updated with profile pic and name.

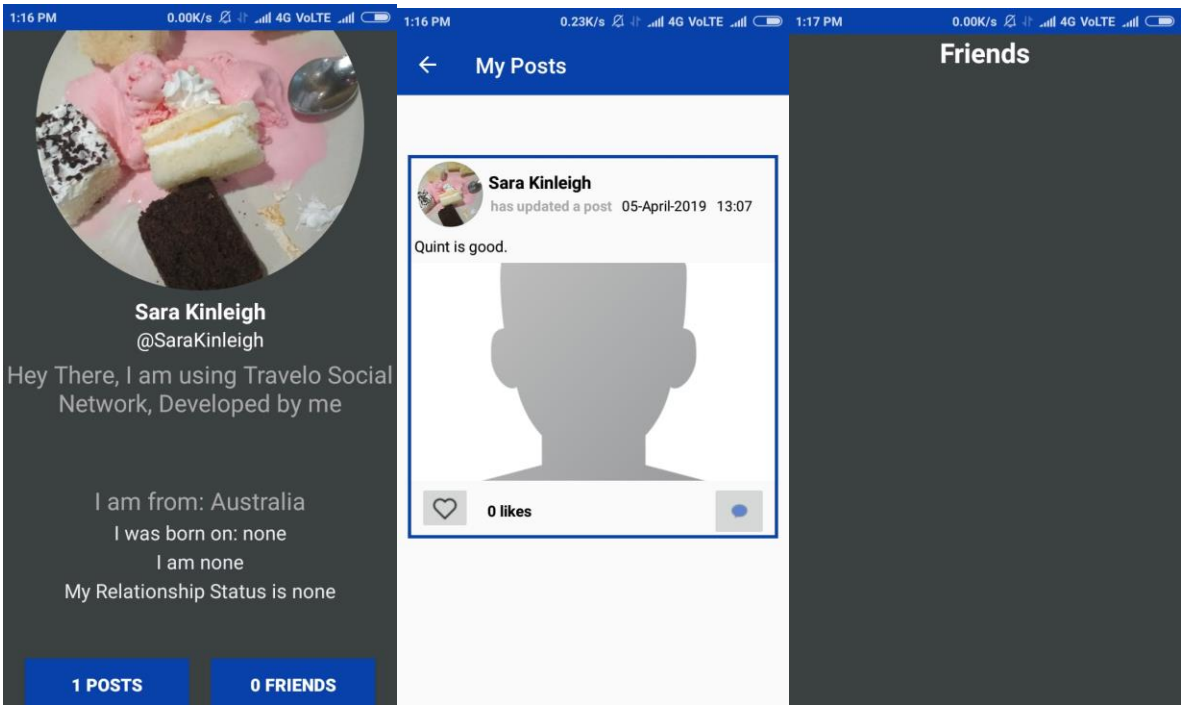
It is time to explore the features for Sara. So first, Sara adds a post. The post will be added at the top of the Recycler View of Main Activity, with parameters, profile image, her full name, description, date, time, likes button, no of likes and comment button.



The post adds successfully.

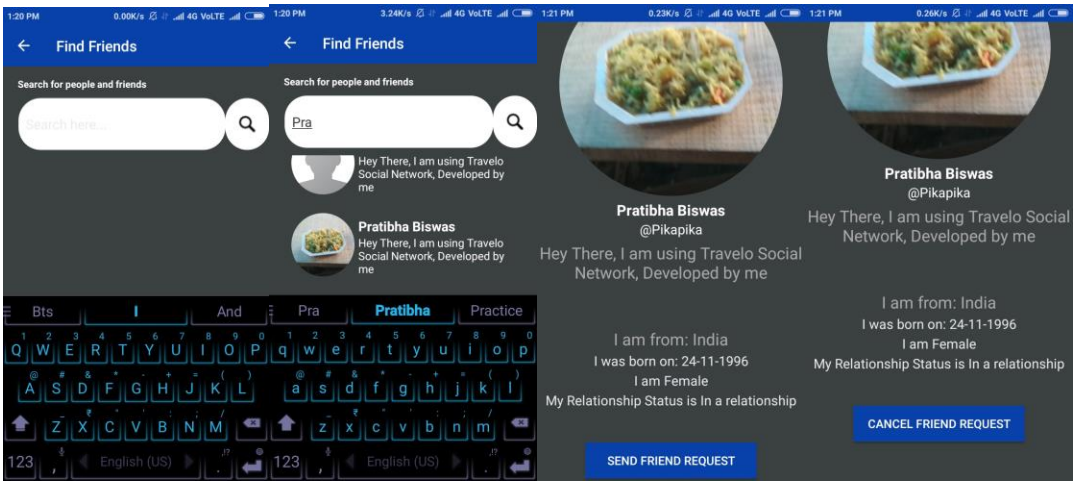
Please Note: The only error that this project is finding difficult to rectify is that the post image is not showing. Maybe it is because of the size or some fault. Multiple steps have been taken to rectify this, but in vain. But the rest of the project is working properly.

After this, the Profile Activity. The Profile Activity shows Sara's information and number of posts and friends. If she clicks on Posts, she will see her posts and if she clicks on Friends, she will see list of her friends.

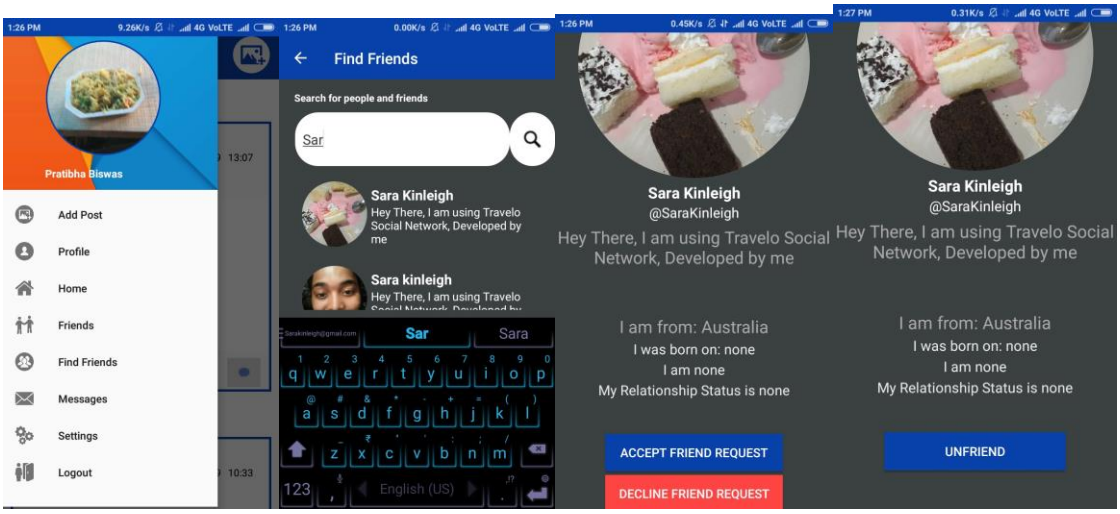


Since she has no friends, her Friends activity is empty. So now, Sara will send friend request to Pratibha and Pratibha will accept her friend request and then these activities would change.

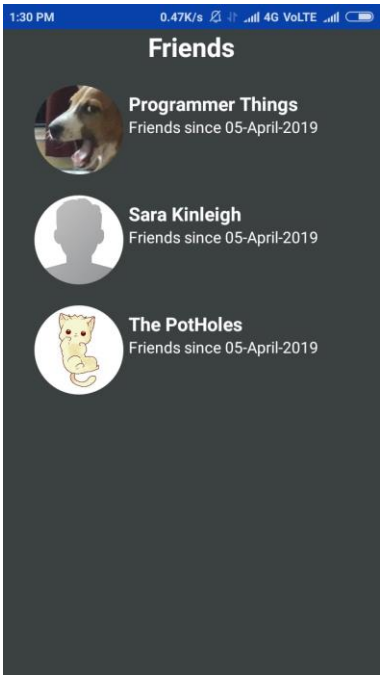
So now, Sara explores the Find Friends Activity:



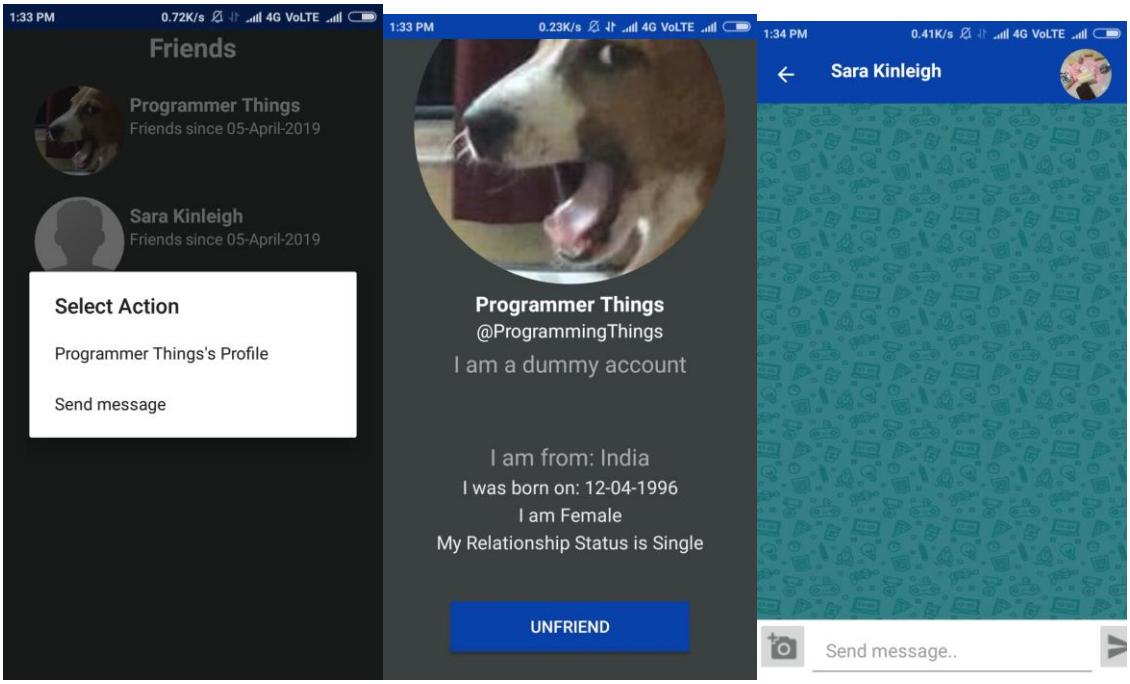
Now, we log in Pratibha. Pratibha goes to Sara's profile in the same way:



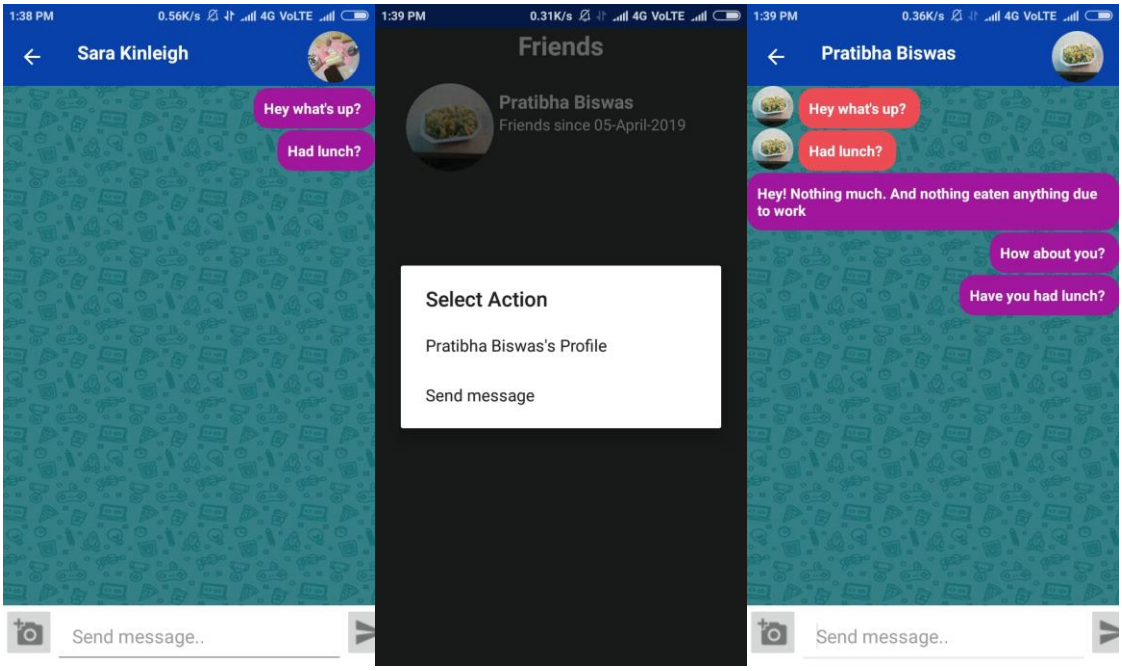
Now, let’s review the Friends Activity of Pratibha:



On clicking one of the friends, we will get a Dialog Box with two options, one to view the friend’s profile and one to view messages Activity with that friend.

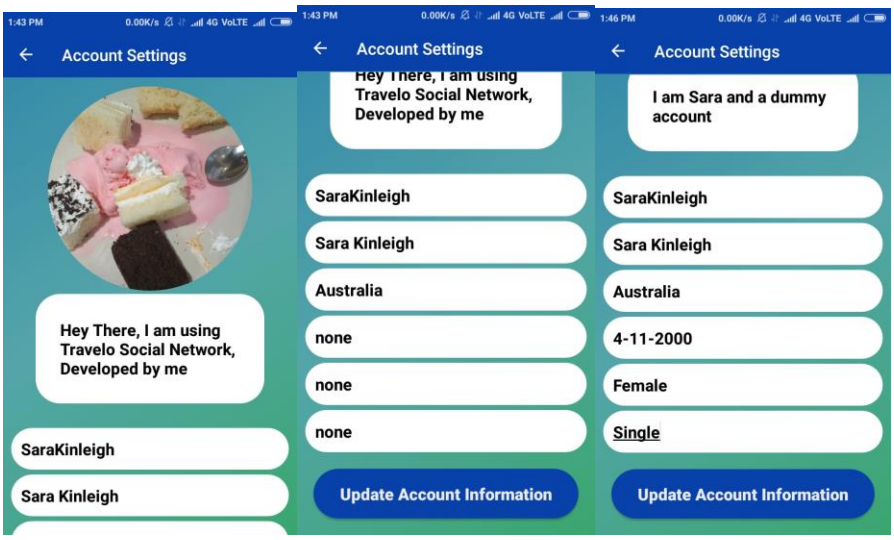


Let’s see how Messaging works as well. Pratibha sends a message to Sara. Sara will send a message to Pratibha as well:

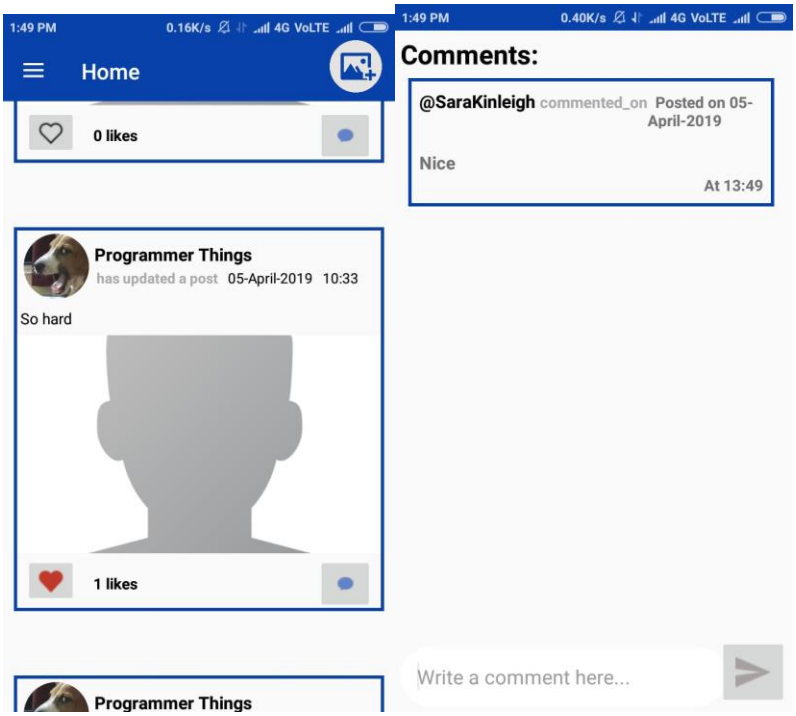


As can be seen, the messaging works perfectly. The sender’s message is in purple and the receiver’s message is in holo red.

There is also our Settings activity where the user can update their account info. Sara wants to update her account info.



We will discover likes/comments of posts. Sara will like a post and comment on it:



7. RESULT AND DISCUSSION

This project has been full of bumps yet successful. The layout and coding was done in Android Studio. Firebase Authentication, Realtime Database and Storage has been used. Realtime Database made it easier to display posts list, friend list and messages. Storage helped in storing images. But some errors were encountered in the way. First, the feed images are not loading. The problem has still not been rectified and I think that it is because of image sizes and how much Firebase allows.

The main approach was to code the app in Android Studio, connect it with Firebase, make necessary changes/additions to the code. This is the basic approach and since the work was detailed, the learning process was rewarding and certain academic goals were fulfilled. Working on a project often opens up one's horizon to learn bit by bit. My academic goal was to learn basic android app development and this project helped me in my pursuit.

The project was successful in fulfilling almost the requirements and works beautifully as an app. What has really intrigued me is the fact that this app can be further extended in two paths : one is to create a social networking app with it with more features and better functionality and the second is to make this as some base layout library that will make it easier for developers to implement a social networking android app.

One thing to note is that this app does not cause any money in development. It is free to create using Android Studio and Firebase. But the costs will come our way on deployment and if the storage and database limit of Firebase exceeds.

8. SUMMARY

Travelo is a social networking app which is aimed at creating an environment where people can interact with each other. The app is designed for Android Platform. Android Studio and Firebase has been used for the development of the app, and further, a Redmi 4 mobile has been used as a target of deployment, so as to check output from the app.

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After this, we have modules like Profile Activity, Friends Activity, Find Friends Activity, Messages Activity, Settings Activity and the Logout. In Profile, the user can view their profile and there are two buttons which displays the number of posts of that particular user and the number of friends. On clicking those buttons, they can view their posts and friends. Friends activity displays list of friends and if the user clicks on any friend, a Dialog Box appears with two options: view friend's profile and messages. Find Friends is where the user can find people with their name. On clicking the person, the user is redirected to their profile, where they can send friend request them. The person, when viewing the user's profile, will have accept or decline friend request option. Messages is where the users can interact with each other. Settings allows a user to update their profile information. And logout logs the user out of that session.

9. REFERENCES

1. Firebase, Google(2019, February 23). *Firebase documentation*. Retrieved from firebase.google.com.
2. Stadd, Alison(2015, May 29). *How to become an android developer*. Retrieved from blog.udacity.com.

APPENDIX A

An image loading library named Picasso has been used for retrieving and setting images into respective views. https://github.com/square/picasso

APPENDIX B

Image Cropper by Arthur Hub lets you crop images. https://github.com/ArthurHub/Android-Image-Cropper

APPENDIX C

A circle image view library has been used. https://github.com/hdodenhof/CircleImageView