NATIONAL INSTITUTE OF TECHNOLOGY HAMIRPUR (H.P.)

उद्यमेन हि सिद्ध्यन्ति कार्याणि न मनोरथैः

Software Engineering Lab

Project : Social Network Android Application

Group members :

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Submitted to:

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Task Assigned:

We are living in the age of Social Networking like Facebook, LinkedIn, Google + etc. The objective is to develop a social networking application, which has the following basic features:

Operations:
- User can register into the application with their name, email id and password.
- Registered user may be able to login into the application.
- There should be options to get the basic information like date of birth, address, phone no, education, upload his/her picture, professional
nformation, hobby etc.
- After login, user should be able to see their profile information.
- One should be able to add new friends.
- One should be able to see the basic profile information of their friend.
- One should be able to send messages to their friends.

Note: You can add other features, as you are familiar with different social networking sites and activities. Above points are only a few basic ideas of any social networking application.

Tools And Technology Used:

- Android Studio
- Firebase
- Emulator

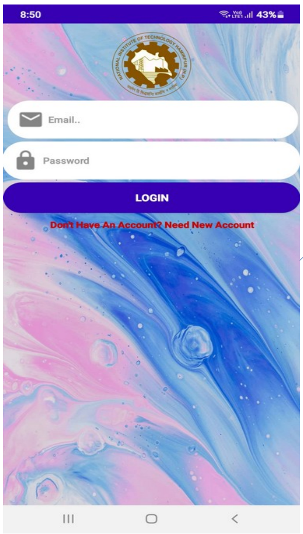
Language used:

- Java
- XML

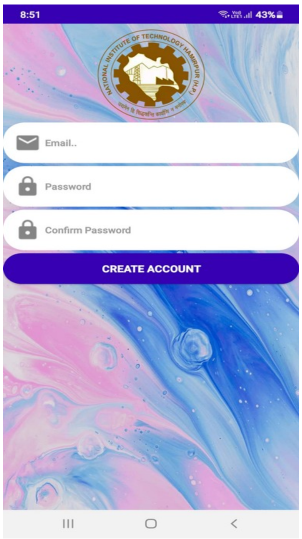
Features and Functionality of our App:

- User identification by login, then retrieving posts from server
- User Registration if not already have account
- Customize user profile
- View, comment, like and create posts
- Sending messages to friends
- Find Friends and Send Request,Decline Request
- Chatting Features

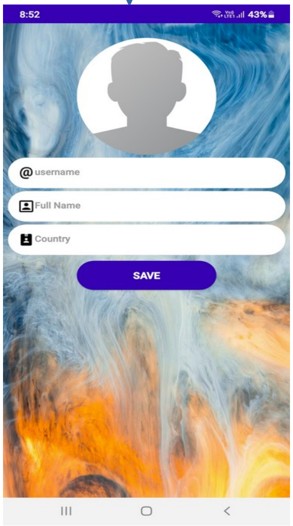
Overview of Application:



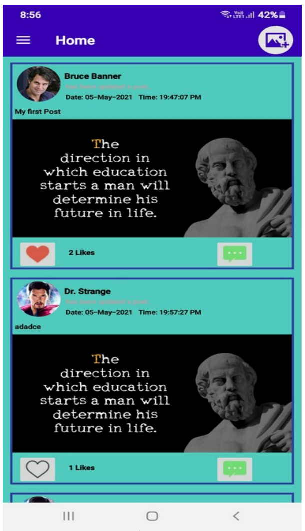
Login Activity



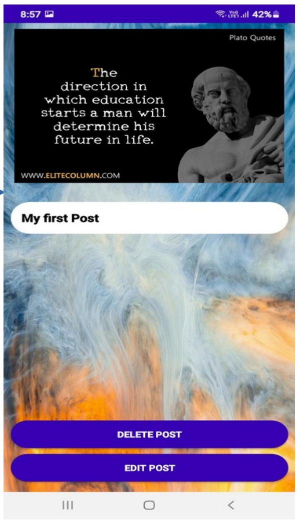
Register Activity



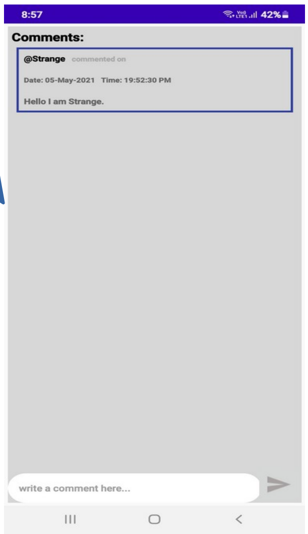
Setup Activity


8:56
Home
Bruce Banner
Date: 05-May-2021 Time: 19:47:07 PM
My first Post
The direction in which education starts a man will determine his future in life.
2 Likes
Dr. Strange
Date: 05-May-2021 Time: 19:57:27 PM
adadce
The direction in which education starts a man will determine his future in life.
1 Likes

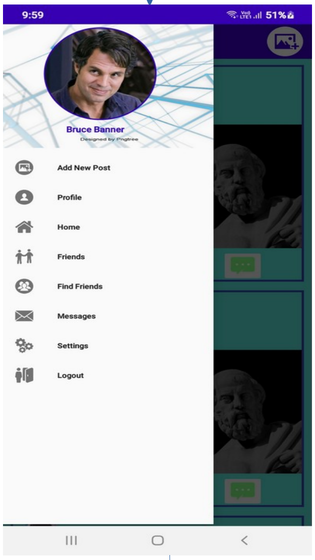
Main Activity


8:57
Plato Quotes
The direction in which education starts a man will determine his future in life.
WWW.ELITECOLUMN.COM
My first Post
DELETE POST
EDIT POST

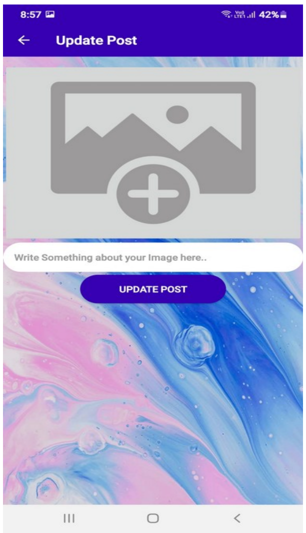
ClickPostActivity



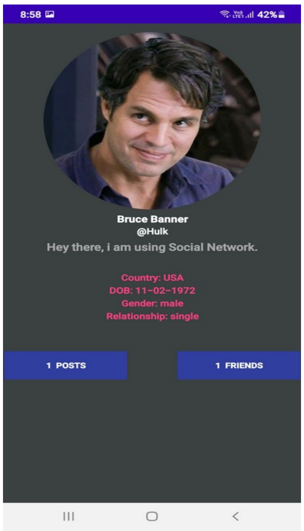
CommentsActivity



Main Activity menu



PostActivity



8:58 42%

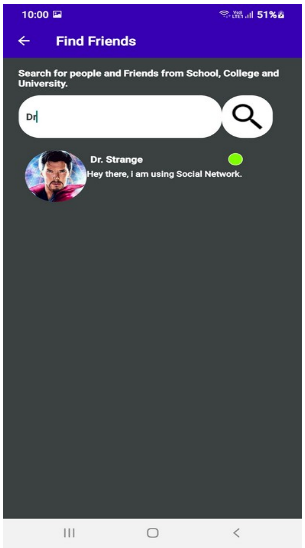
Bruce Banner
@Hulk
Hey there, i am using Social Network.

Country: USA
DOB: 11-02-1972
Gender: male
Relationship: single

1 POSTS

1 FRIENDS

ProfileActivity



10:00 51%

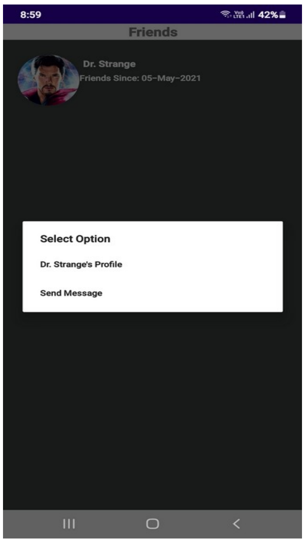
Find Friends

Search for people and Friends from School, College and University.

Dr

Dr. Strange
Hey there, i am using Social Network.

FindFriendsActivity



8:59 42%

Friends

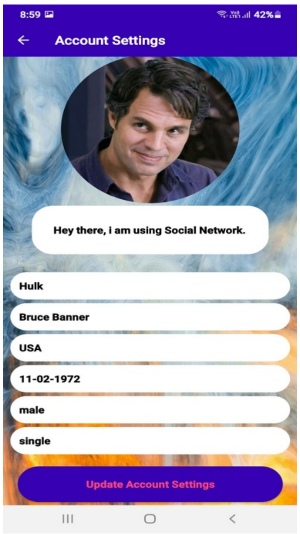
Dr. Strange
Friends Since: 05-May-2021

Select Option

Dr. Strange's Profile

Send Message

FriendsActivity2



8:59 42%

Account Settings

Hey there, i am using Social Network.

Hulk

Bruce Banner

USA

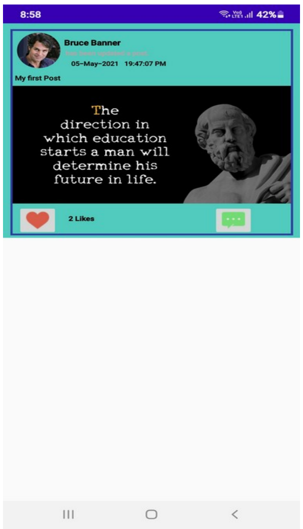
11-02-1972

male

single

Update Account Settings

SettingActivity



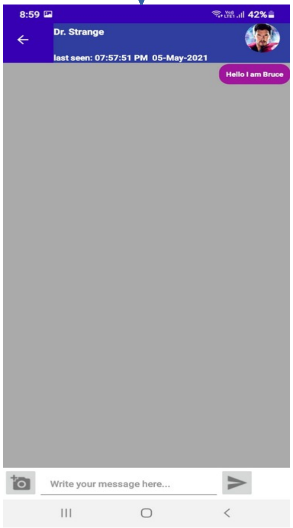
8:58 42%

Bruce Banner
has been updated a post.
05-May-2021 19:47:07 PM
My first Post

The direction in which education starts a man will determine his future in life.

2 Likes

MyPostActivity



8:59 42%

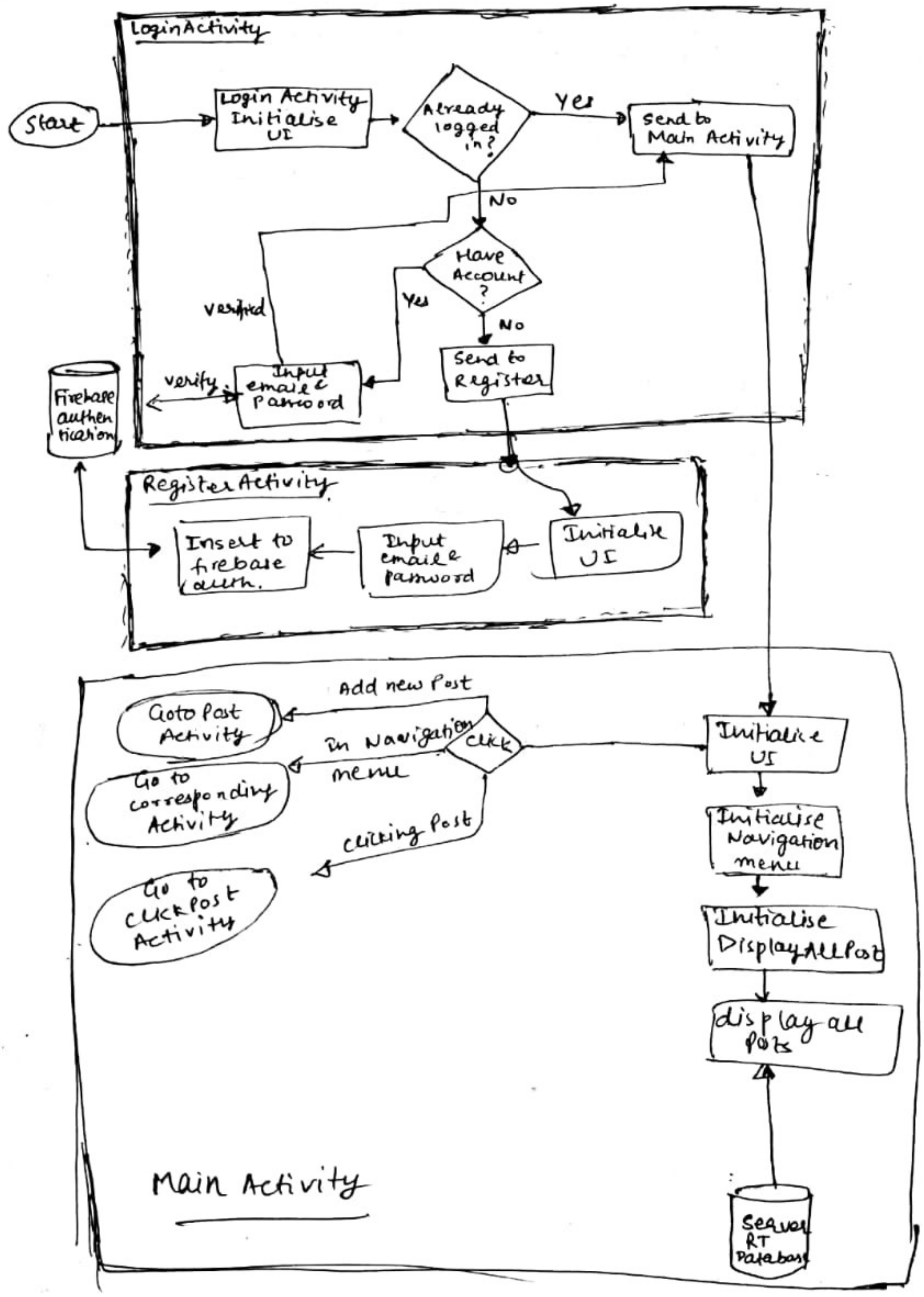
Dr. Strange
last seen: 07:57:51 PM 05-May-2021

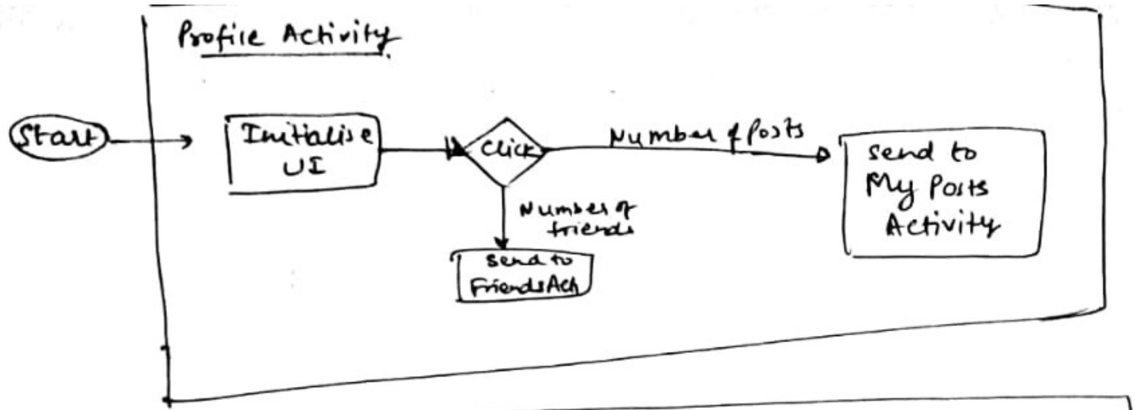
Hello I am Bruce

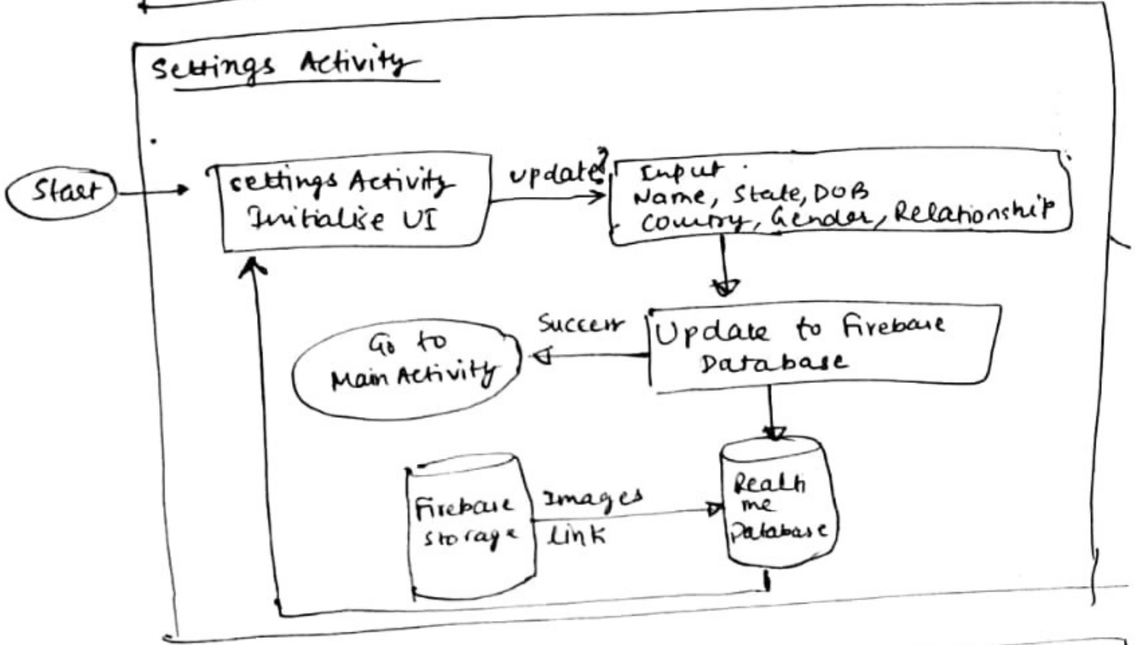
Write your message here...

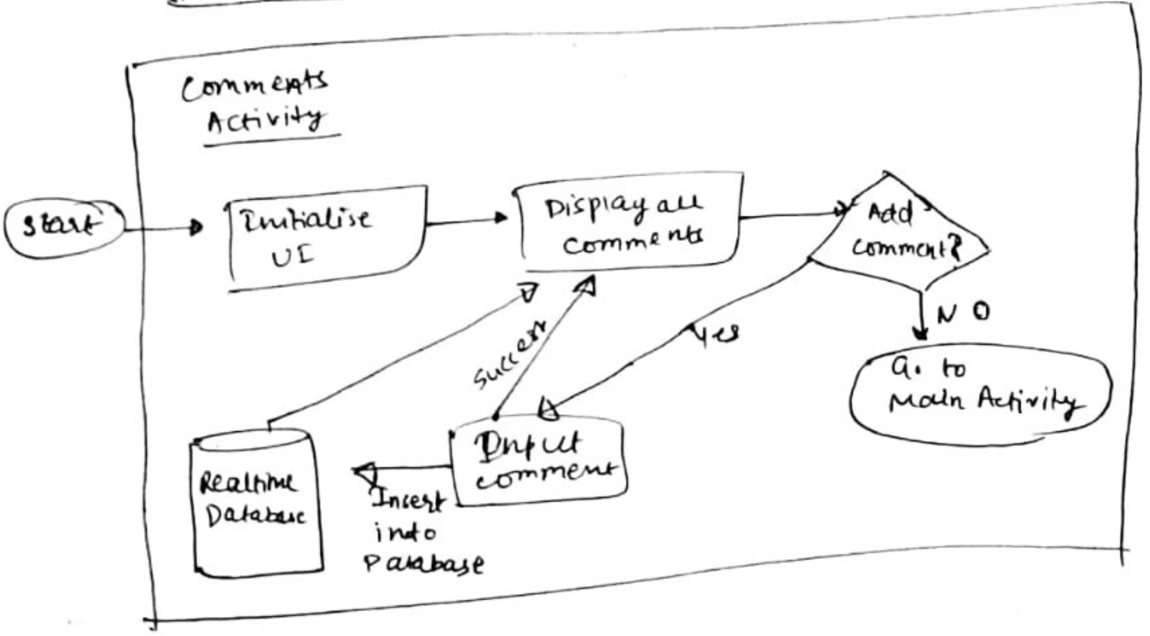
ChatActivity

User Authentication and Posts Retrieval

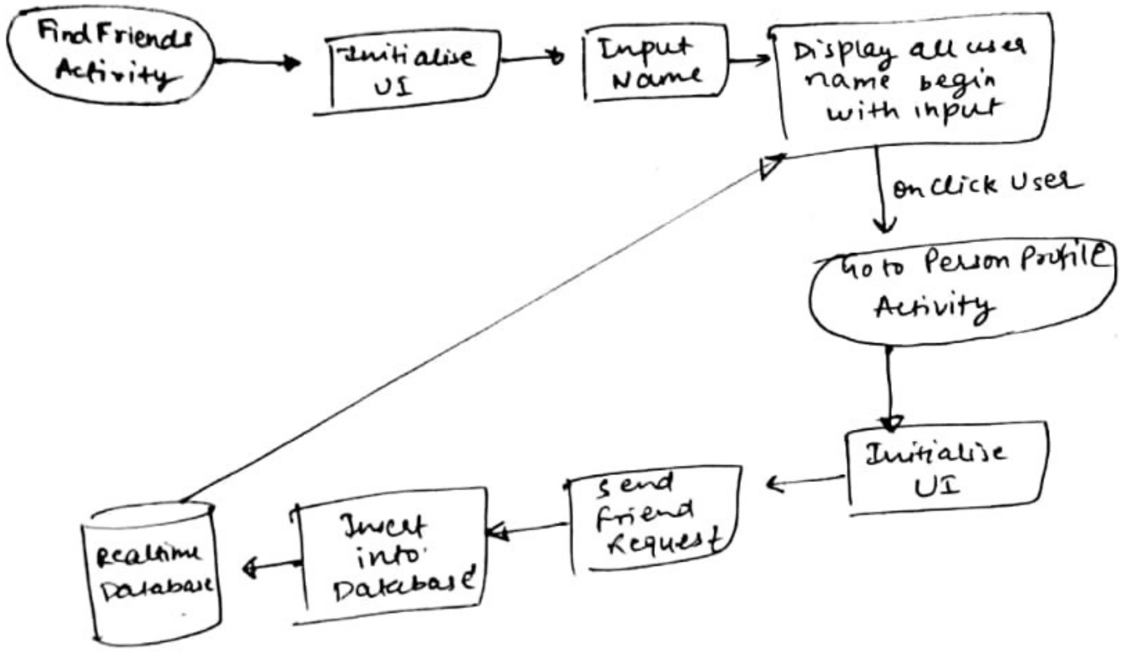



Profile Activity
Start
Initialise UI
Click
Number of Posts
Send to My Posts Activity
Number of friends
Send to FriendsAct

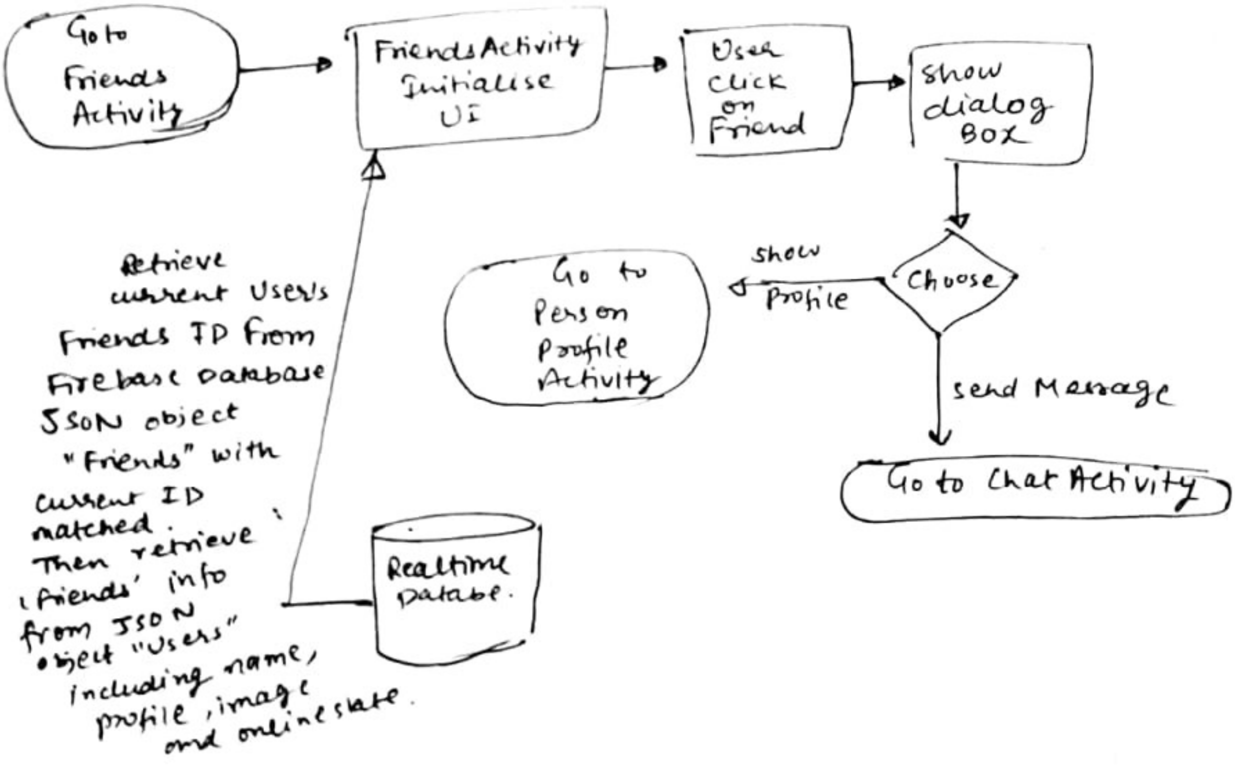

Settings Activity
Start
settings Activity Initialise UI
update?
Input :
Name, State, DOB
country, Gender, Relationship
Update to Firebase Database
Success
Go to Main Activity
Firebase storage
Images link
Realti me Database


Comments Activity
Start
Initialise UI
Display all comments
Add comment?
NO
Go to Main Activity
Yes
Success
Input comment
Insert into Database
Realtime Database

Friends and Messages



Friends Activity



Retrieve current User's Friends ID from Firebase Database JSON object "Friends" with current ID matched. Then retrieve friends' info from JSON object "Users" including name, profile, image and onlinestate.

LoginActivity, RegisterActivity and SetupActivity

User should provide his/ her identification information to application. The application will submit the information to server for login verification/ creating account. Once user is login, and unique userID would be downloaded and cached in the mobile device. No login is required next time.

MainActivity

Application would download all posts if users submit a valid userID to server, i.e. user successfully login. The posts are fetched and showed using RecyclerView, which allows user to view posts even if the connection with server is lost.

MainActivity – Navigation Menu

User could access other functions by clicking the menu.

ProfileActivity

Application retrieves current user information and statistics from server and displays on screen.

MyPostsActivity

Application requests information of post created by current user by query (supported by Firebase Server) and displays on screen.

SettingsActivity

Application displays current user information on screen. It allows user to enter new information and replace the existing one in server.

ClickPostsActivity
All posts are show in MainActivity. By clicking a post, creator of the post could send request to server for edit or delete the it. If other users click a post, they could see the post in full screen. Edit and deleted functions are invisible for them.

CommentsActivity

User could leave comments in a post. Comments are child of posts, which are in text format. Comments are showed only if user clicks the comment button.

Like Post
Like post is a function in MainActivity. If user click like button, a record in inserted in the “Likes” table of database. Application counts the number of records and shows the number of Like for a post. Different from comments, “Likes” is not child of post. It is accessed more frequently because number of Like is counted when MainActivity is loaded.

PostActivity
User could create a post by selecting image, entering description and inserting the post into server. If it is success, the post could be retrieved in MainActivity, edited in ClickPostActivity, commented in CommentsActivity and liked by Like Post Function in MainActivity.

FindFriendActivity
Sender have to be a friend of receiver for sending a message, which is done in FindFriendActivity. Application sends query to server to request the ID of intended receiver. Then application insert a record in “FriendRequests” table in PersonProfileActivity.

PersonProfileActivity
Friend requests are processed here. Buttons are clicked to switch between states: not friend, friend, to process friend request (sender or receiver).

FriendActivity
Application retrieves basic profile information of a friend. User could click buttons to send message or view full profile information.

ChatActivity
Application create a RecyclerView to show all messages. User could enter message and insert it in database. Application will download the message from database in simultaneously.

Fetching in RecyclerView

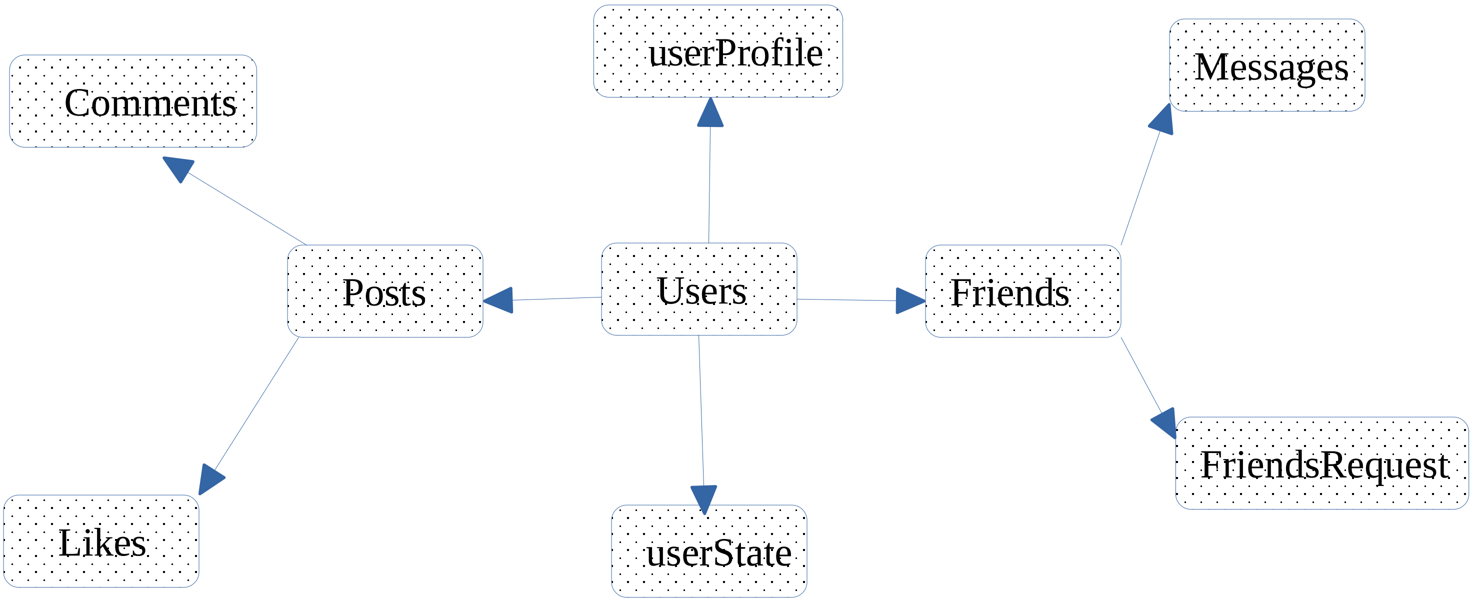
The application is an Instagram-like application, which require users to have continuous connection with server to access all function. Powerful local data storage is unnecessary for this application. Hence, no local database is built for copying information from server. Instead some fetching techniques are used, which allows users to view the content even there is a short connection loss with the server.
RecyclerView is a build-in library in android for display a scrolling list of elements based on large data sets (or data that frequently changes). It automatically cached data from server. To read the data, a RecyclerView.Adapter should be built. All data are temporary cached, and user could continuous browsing even connection is lost. However, creating new posts or changing profile information is not allowed in this offline mode.

Application Logic – Server Side

Our application server is supported by Firebase. Most of the logic are done by Firebase, including

- User registration and Login
- Inserting records in database (JSON) and random key generation
- Monitoring connection with clients

For server side, our focus in on creating suitable database structure and accessing the functions supported by Firebase.



Tables in Database

Users

+userID	String
fullName	String
profileImageID	String
status	String
gender	String
dob	String
country	String
relationship	String
userStateDate	DateTime
userStateTime	DateTime
UserStateType	String

Friends

+ userID	String
friendUserID	String
date	DateTime

Messages

+userID	String
friendUserID	String
messageID	String
date	DateTime
time	DateTime
messageType	String
messageContent	Object

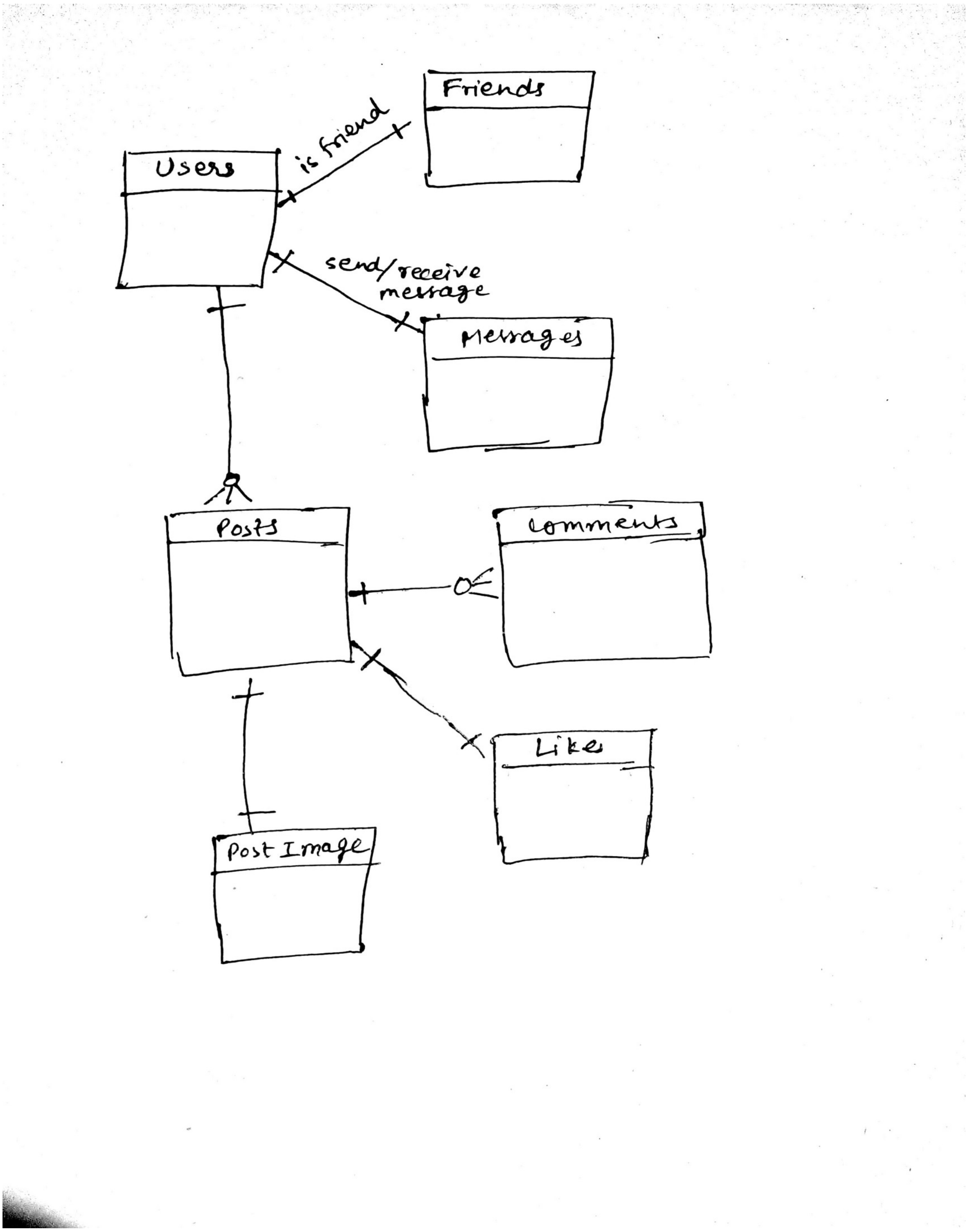
Posts

+postID	String
userID	String
date	DateTime
time	DateTime
fullName	String
profileImageID	String
description	String
postImageID	String

Likes

+postID	String
userID	String

ER Diagram



Friends
is friend
Users
send/receive message
Messages
Posts
Comments
Like
Post Image

Data are stored in the noSQL database in Firebase using JSON in tree-structure. However, for easier application development, the client-side application will access database by assuming that it no differences with relational database. Firebase supports query processing which is similar to SQL.