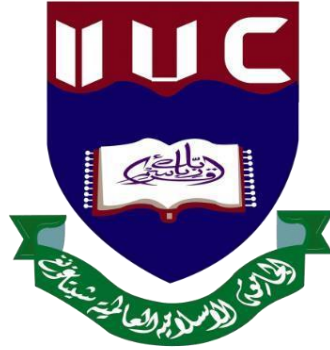


International Islamic University Chittagong



Course Code: CSE-3640.

Course Title: Software Development 2 Lab.

Software Requirements Specification Report

Submitted by-

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Submitted to-

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Software Requirements Speciation Report for project “Nikhoj”

A software requirements specification is a description of a software system to be developed. It is modeled after business requirements specification, also known as a stakeholder requirements specification.

A Software requirements specification (SRS) document describes the intended purpose, requirements, and nature of software/application/project to be developed.

To prepare an SRS document, you would need to have a functional knowledge of your project or application, knowledge of software/hardware/technology to be used.

Generally, the report is prepared with the following format.

Index:

1. Introduction.

- 1.1. Purpose.
- 1.2. Need/Motivation.

2. Literature Survey.

3. Requirements.

- 3.1. Functional Requirements.
- 3.2. Non-functional Requirements.
 - 3.2.1. Safety Requirements.
 - 3.2.2. Security Requirements.
 - 3.2.3. Software Quality Attributes.
- 3.3. Hardware Requirements.
- 3.4. Software Requirements.
- 3.5. Prototype Model.
- 3.6. Feasibility Study.
 - 3.6.1. Economic Feasibility.
 - 3.6.2. Technical Feasibility.
 - 3.6.3. Operational Feasibility.

4. System Architecture.

- 4.1. Client-Server Architecture.

5. Design and Implementation.

- 5.1. Product Features.
- 5.2. E-R Diagram.
- 5.3. Data Flow Diagram.

6. Snapshots.

7. Testing and Results.

7.1. Unit Testing.

7.2. Black Box Testing.

7.3. White Box Testing.

7.4. Integration Testing.

7.5. Validation Testing.

7.6. Acceptance Testing.

8. Conclusion.

9. Bibliography.

The following software requirements specification report has been prepared for a project named “Nikhoj”.

Chapter 1: Introduction

“Nikhoj” is an android based software. The main goal of this project is to find out missing person through app. We all know that, Digital Bangladesh is one of the nation’s dreams, and so special emphasis is given on the application of digital technologies to realize Vision 2021, which we commonly call Digital Bangladesh. When a person is missing what one’s parent do? First thing they do is making an announcement in their area, giving ad on newspapers, Facebook, Social Medias, give leaflets to people and so on. So it’s kind of long procedure and costly. Sometimes they can’t find out.

In “Nikhoj”, there will be 2 sections. One is for posting the details about the missing person and the 2nd one will be option for searching the missing person. Suppose, John is 6 years old. He and his family went on a vacation. Suddenly, he lost his parents. He doesn’t know his parents contact no or anything. So, he went to Mr. Smith and told him that he kind of lost. Mr. Smith knows about “Nikhoj”. He collects the information and details from John and posts it in Nikhoj by giving his name, age hometown etc. If his parent has knowledge about Nikhoj, they can find his son through search box in Nikhoj. It’s kind of easily made and easy to understand.

1.1. Purpose:

There are 75% people who can afford to make the activities to find their missing person. However, 25% people can't afford to do so. Our main concern is to help this 25% people as we say "needy poor people", because there is a lot of money needed to distribute leaflets, miking procedure, door to door finding etc.

1.2. Need/Motivation:

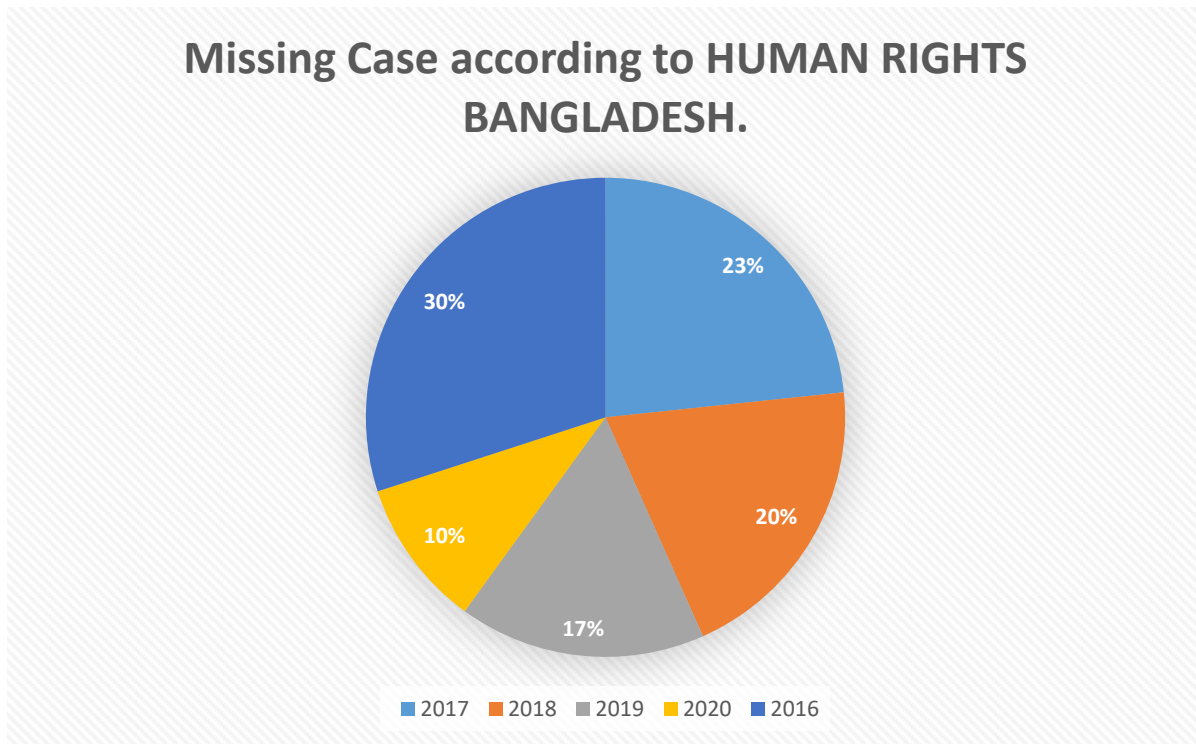
Bangladesh is a digital country with digital innovations. Smartphone is a common thing now-a-days. "Missing" is now a global common problem in our country now a days. Whenever a person is missing, most of the people post it in Facebook. But as we all know Facebook is a multi-users platform and it is a matter of regret that majority people does not share the contents or help to boost the post. So, in this case we thing, we should make a platform where only missing things can be post/find out so that anyone can know this place and give their feedback.

Chapter 2: Literature Survey

The "Nikhoj" is a new attempt of finding missing person. In general, if a person is missing there are some activities may happen. Such as:

- Leaflets Distribution.
- Newspaper advertising.
- Miking in area etc.

In our survey, we find out there are no app or any digital innovation where anyone can post or search their person. But this is a country problem and about 25% people can't afford it.



The pie chart shows that, day to day missing case is a common problem now-a-days but there are exact no best solution to find the person. The main goal of this project is to help those people who can't manage to find their person. And there is **no base app** to find any person who is missing so this is new attempt to maximize the needs of poor needy people.

Objectives:

- Helps the poor people to find their missing person.
- Decrease complexity of finding the person.
- Proper maintenance of available Resources.
- Speed up the Activities to overcome the problem.

Chapter 3: Requirements

3.1. Functional Requirements:

Requirements: These are the requirements that the end user specifically demands as basic facilities that the system should offer. All these functionalities need to be necessarily incorporated into the system as a part of the contract.

In our app “Nikhoj”, the functional requirements are:

1. A user can **register** by using his email or use Google authentication.
2. A user can **post** information such as: photo, name, age, contact number, location.
3. A user can **edit** the information after posting it.
4. A user can **search** by name, age, contact number, and location.
5. A user can **comment** on any post.
6. Easy to access in both android and IOS.
7. User friendly and easy to understand.

3.2. Non-functional requirements:

These are basically the quality constraints that the system must satisfy according to the project contract. The priority or extent to which these factors are implemented varies from one project to other. They are also called non-behavioral requirements.

3.2.1. Safety Requirements:

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage (typically tape) and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed up log, up to the time of failure.

3.2.2 Security Requirements

Security systems need database storage just like many other applications. However, the special requirements of the security market mean that vendors must choose their database partner carefully.

3.2.3 Software Quality Attributes:

In our app “Nikhoj”, it gives us:

- 1. Portability:** This app can be transfer from one device to another so can anyone can use it the apk without downloading it.
- 2. Security:** The data can be secured by SSL (Secured socket layer).
- 3. Maintainability:** We intend to provide the beta version to Market to see the users response and find the bugs if presents. Then we fix the bugs according to their solutions.
- 4. Reusability:** We upload the source code to GitHub. If we shut down or operation we can download the source code and then use it, also we can reuse any component of it.
- 5. Flexibility:** We can change necessary items in anytime because it is free platform and the resources are available.
- 6. Performance:** We used flutter and Firebase to develop the app. We have coded in an efficient manner and time to fetch information from

Firebase is also quick. So, the app opening time and performance will be faster than any platform.

3.3 Hardware Requirements:

- Core-i5/ryzen 5 or above.
- 8 gb ram or above.
- 6 gb storage minimum.

3.4 Software Requirements:

- Front End: Flutter sdk (Google UI Kit).
- Back End: Dart & Firebase

3.5 Prototype Model:

In our app, we use prototype model as there are iterative, trial and error method approach are presence. **Prototype Model** is a software development model in which prototype is built, tested, and reworked until an acceptable prototype is achieved. It also creates base to produce the final system or software. It works best in scenarios where the project's requirements are not known in detail.

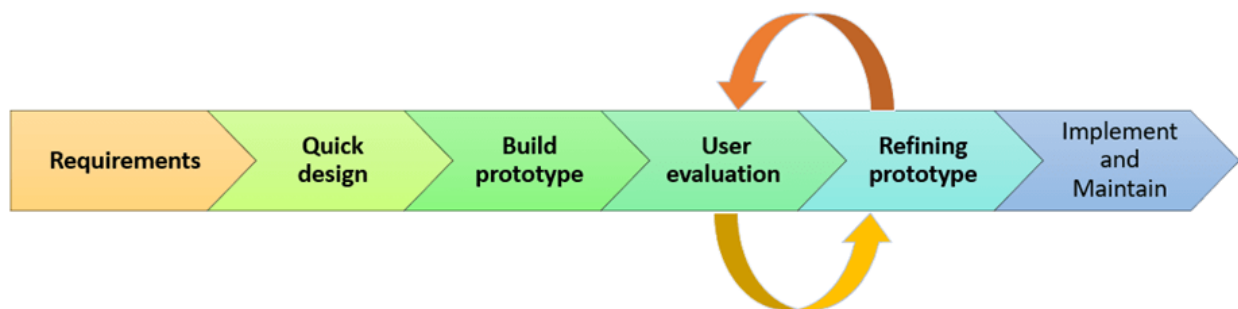


Fig: Prototype Model

Here we initially came up with some features and made a prototype of it then we added more feature to it and It is done till an appropriate paradigm is achieved to help develop the entire system or product.

3.6 Feasibility Study

Feasibility Study in Software Engineering is a study to evaluate feasibility of proposed project or system. As name suggests, feasibility study is the feasibility analysis or it is a measure of the software product in terms of how much beneficial product development will be for the organization in a practical point of view.

In our system “Nikhoj”, we analyze people’s needs, objectives and current processes to provide with a feasibility study report. Our report contains:

Technical Feasibility:

In Technical Feasibility, current resources such as hardware and software along with required technology are analyzed/assessed to develop project.

Our project is technically feasible because:

1. It is possible to develop our project with current resources which are available on internet.
 - Flutter.
 - Firebase.

Each of the technologies is freely available and the technical skills required are manageable.

2. It is possible to use it in different technologies like android, iOS.
3. Time limitations of the project development and the ease of implementation using these technologies are synchronized.

Operational Feasibility:

Operational feasibility is the measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.

In our project:

1. When the end-users find out their missing persons they get benefited and encourage others to use it thus we get more users.
2. The proposed system really benefit the organization because when a person is missing there will be a long procedure to find out like making an announcement, giving ad to newspapers etc. But when you use the app, you can easily give an Ad of the missing person by providing the information.

Economic Feasibility:

Economic feasibility is a kind of cost-benefit analysis of the examined project, which assesses whether it is possible to implement it. In Economic Feasibility study cost and benefit of the project is analyzed.

Our app is economical feasible because:

1. It is under budget, because we do not need any financial transaction like (bKash, Rocket or any ePayment). Only one time payment is required which is 25\$ for signing developer account in play store.
2. We can earn money through
 - Google AdSense/ Ad mob.
 - In-app purchase.

Legal Feasibility:

Legal Feasibility study project is analyzed in legality point of view. This includes analyzing barriers of legal implementation of project, data protection acts or social media laws, project certificate, license, copyright etc.

In our app there are nothing illegal activities such as breaking the law and data protection security. The main theme of this project is to ensure social services by helping people to find out their missing persons without any charge.

Schedule feasibility:

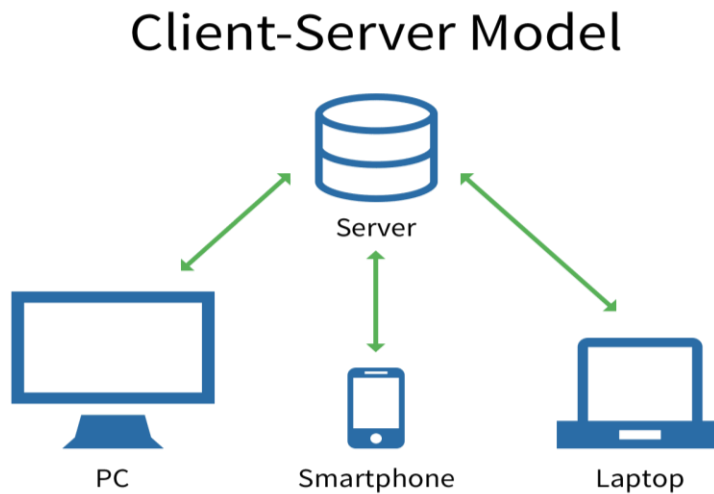
The process of assessing the degree to which the potential time frame and completion dates for all major activities within a project meet organizational deadlines and constraints for affecting change.

A feasibility study not only collects the entire requirement and estimates the cost, but also calculate the total time for the completion of any project.

We assume that we need approximately 4 months to develop the project.

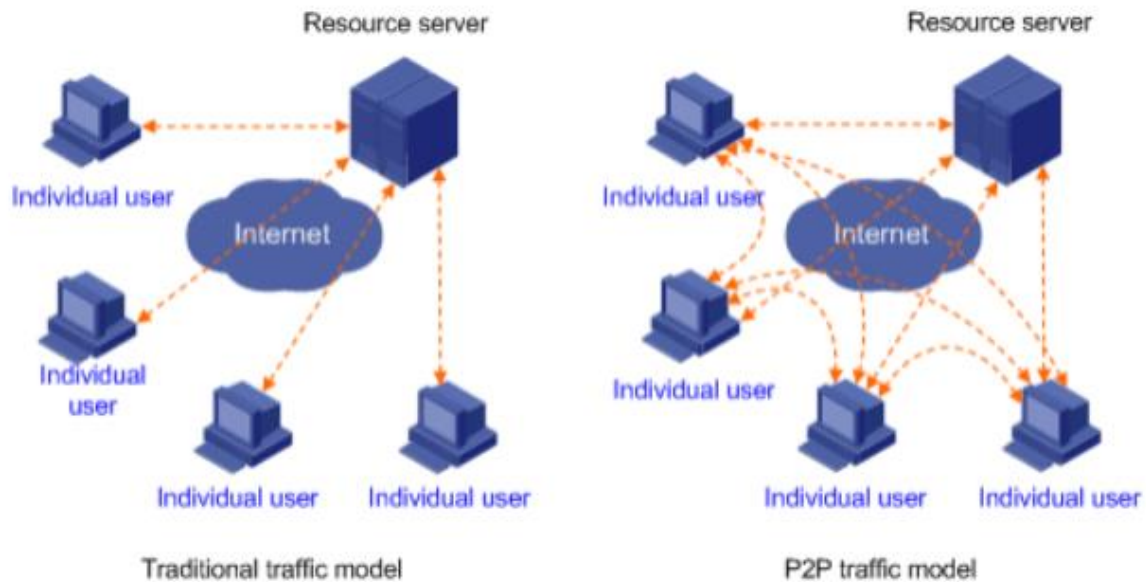
Chapter 4: System Architecture

4.1 Client-Server Architecture:



The client-server model is a distributed application structure that partitions tasks between the servers, and the clients. Often clients and servers communicate over a network on separate hardware, but both client and server may reside in the same system. A server machine is a host that is running one or more server programs which share their resources with clients.

Client-Server software architecture is versatile and flexible. It is modular in structure and relies on messaging services for communication between components. They were designed to improve flexibility, usability, scalability, and interoperability. Software flexibility implies the ability for a program to change easily according to different users and different system requirements.



For “Nikhoj” app the client-server architecture will work this way:
A single server hosting all the required data in a single place facilitates easy protection of data and management of user authorization and authentication.

- Resources such as network segments, servers, and computers can be added to a client-server network without any significant interruptions.
- Data can be accessed efficiently without requiring clients and the server to be in close proximity.
- All nodes in the client-server system are independent, requesting data only from the server, which facilitates easy upgrades, replacements, and relocation of the nodes.
- Data that is transferred through client-server protocols are platform-agnostic.

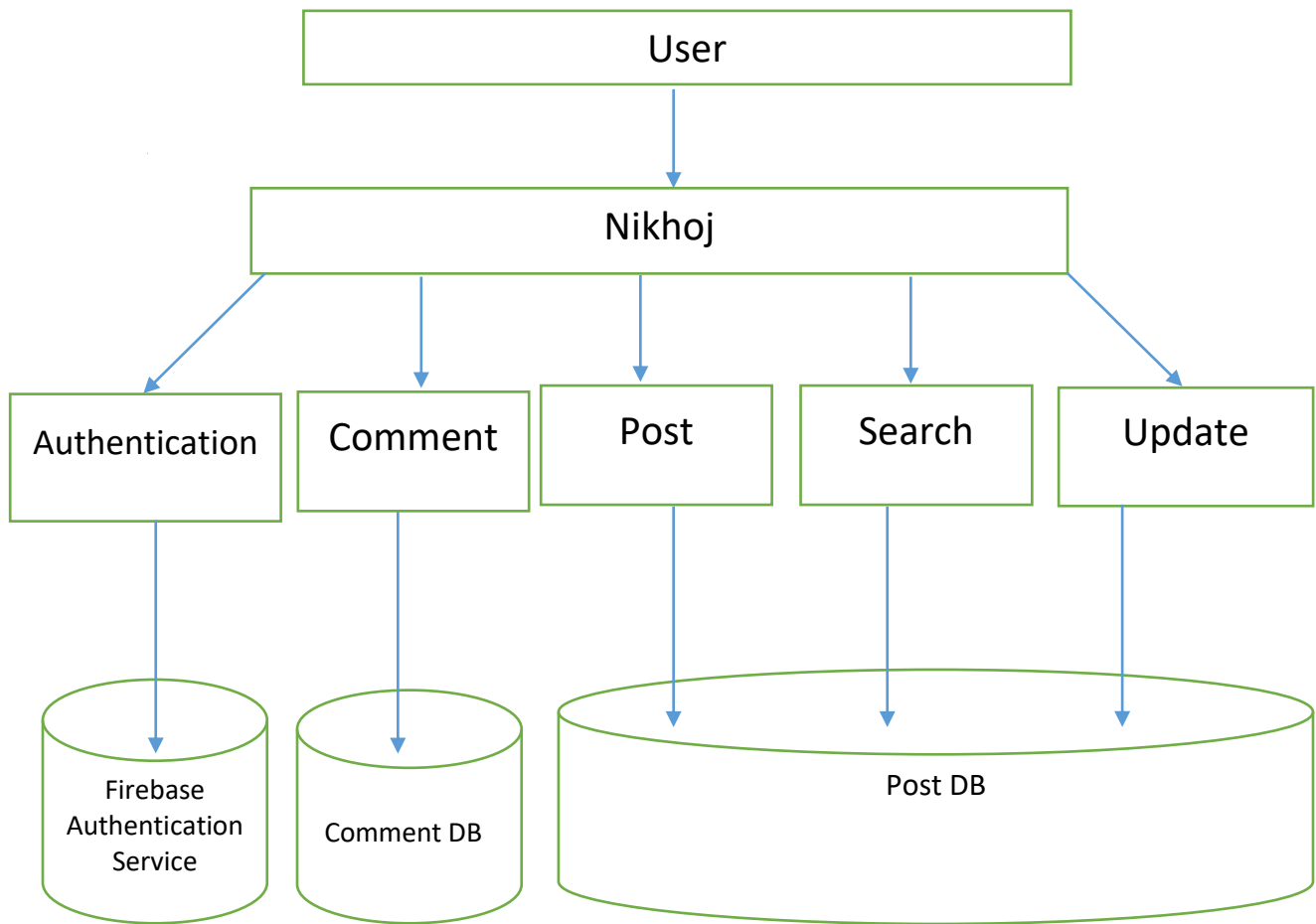


Fig. 4.2: System Architecture of Nikhoj App

System Architecture of Nikhoj app:

“Nikhoj” app is a dynamic, multi layered, user friendly information system. In this system the user can register/signup using firebase authentication system and post, search, update data using Post Database.

Chapter 5: Design and Implementation

5.1 Product Features:

The major features of “Nikhoj” system are as listed below:

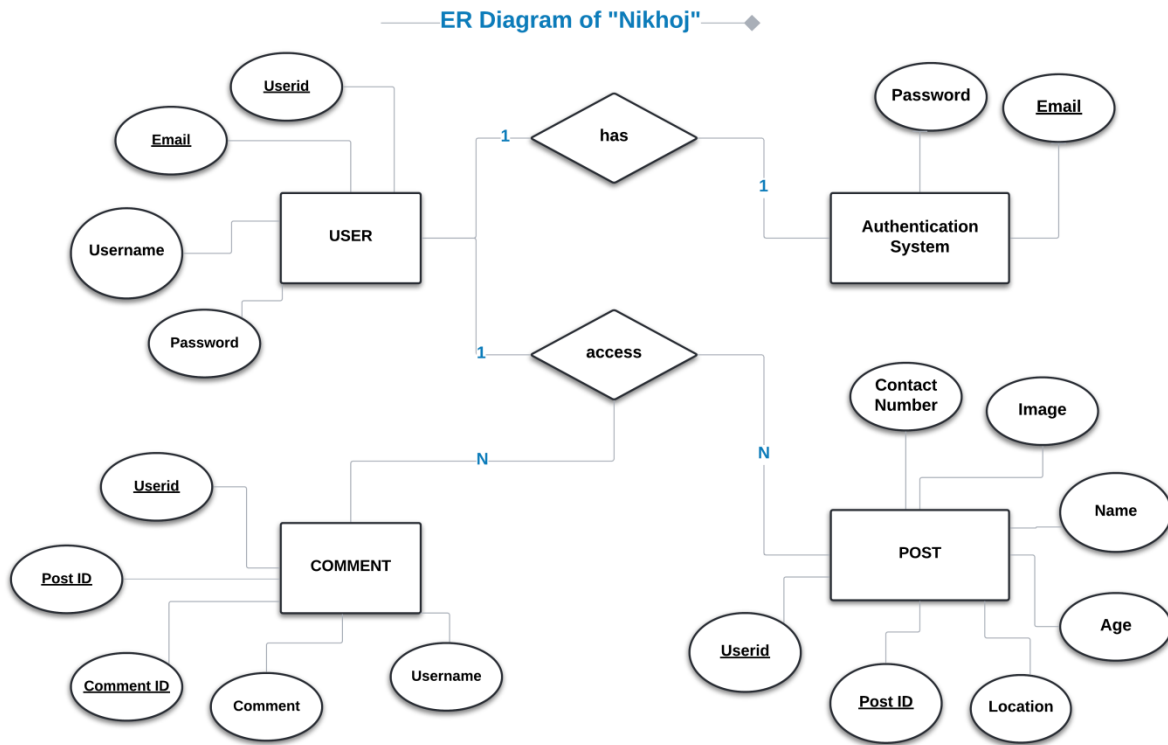
- It helps the user to find the missing person’s information and helps them to keep track of their loved ones.
- Unauthorized access is prevented. Because only authorized users can Post and Search information.
- It helps the users to find the necessary information quickly
- A smooth communication link establishes between different users.

In short “Nikhoj” App has these features:

- Authentication(via email or Gmail)
- Post
- Update
- Search(by name, age, contact number, location)
- Comment

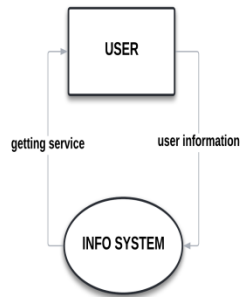
5.2 Entity Relationship Diagram:

Although we have implemented this app on **NoSQL**, But if this app is implemented on Relational Database, The ER-Diagram is as follows:



5.3 Data Flow Diagram:

DFD(Data flow diagram) of the system "Nikhoj"



Context Diagram

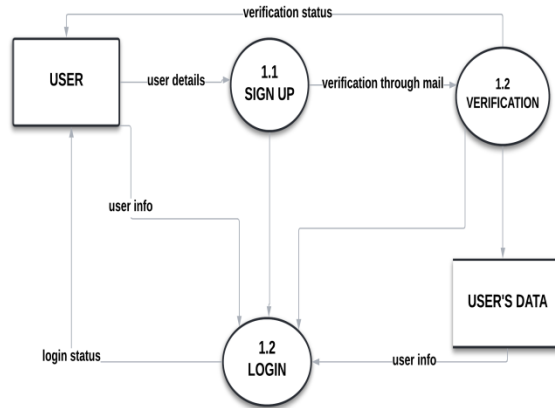


Diagram 1

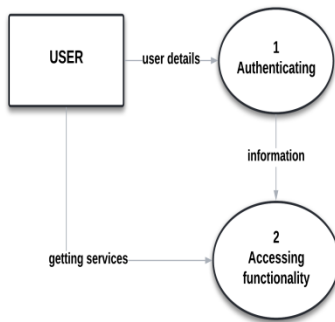


Diagram 0

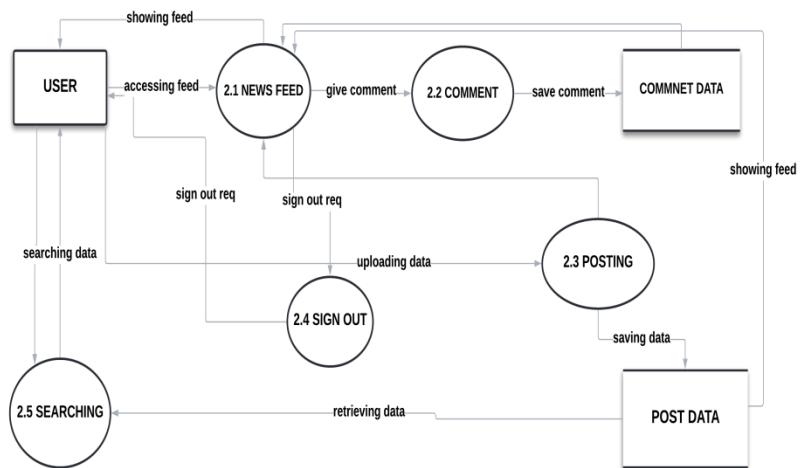


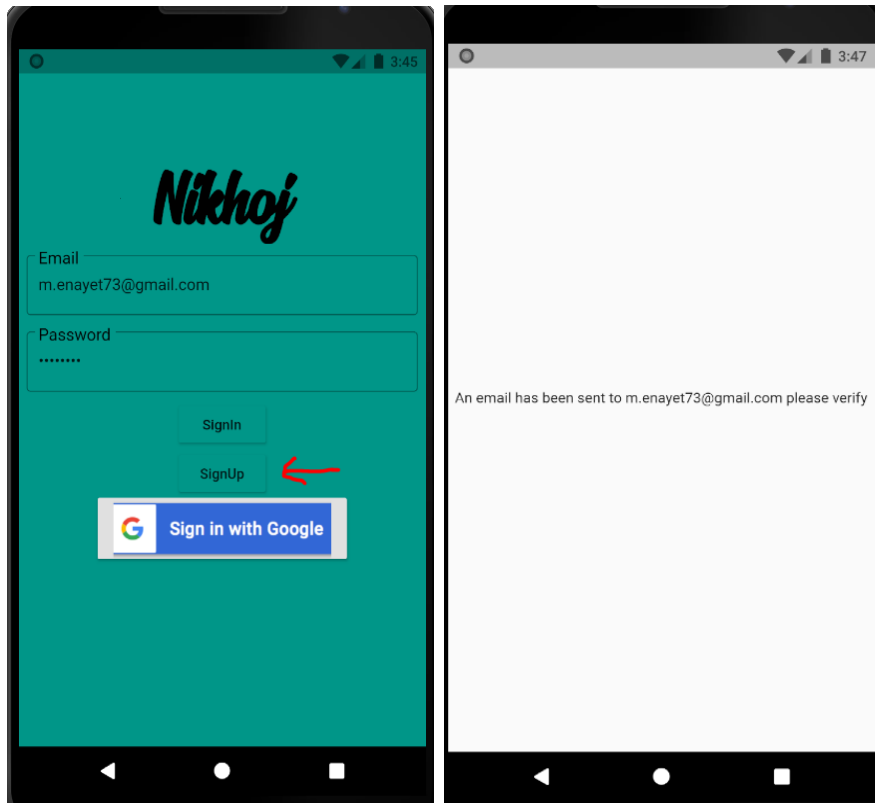
Diagram 2

Chapter 6: Snapshot

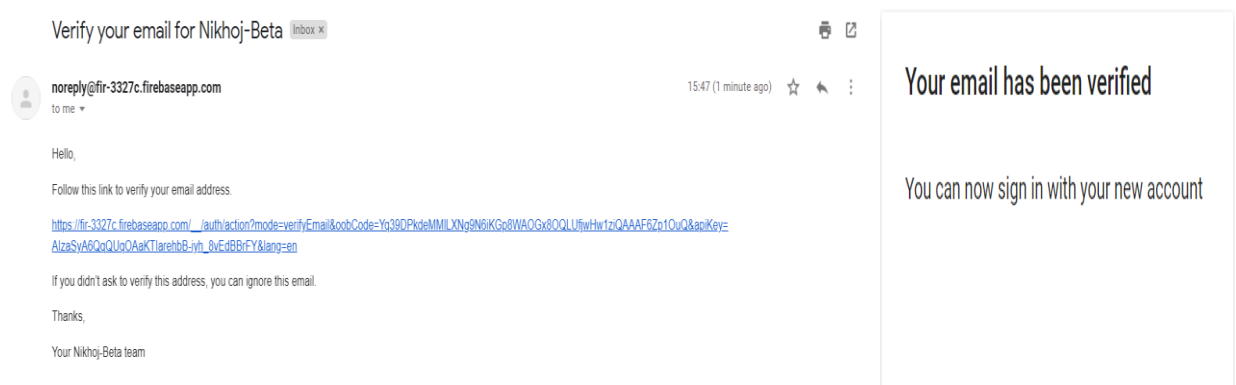
Landing Page:



Initially user can sign up via email or authenticate via Gmail.



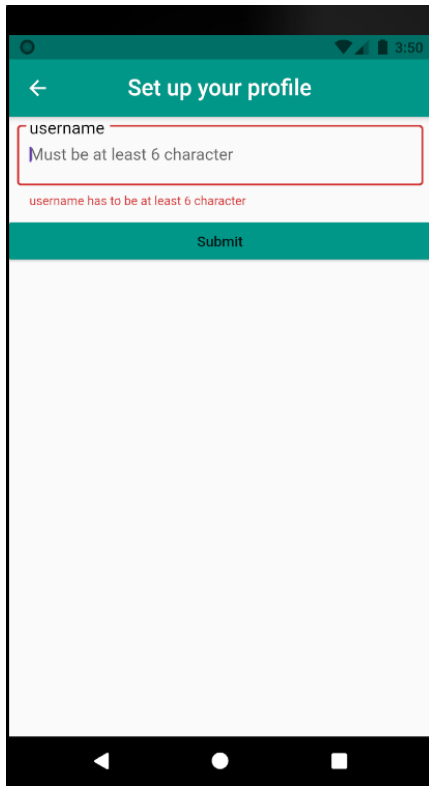
Clicking the signup button one can sign up. Then an OTP will be sent to user on his email to verify.



An email has been sent to user. Click on the link, and user will be verified.

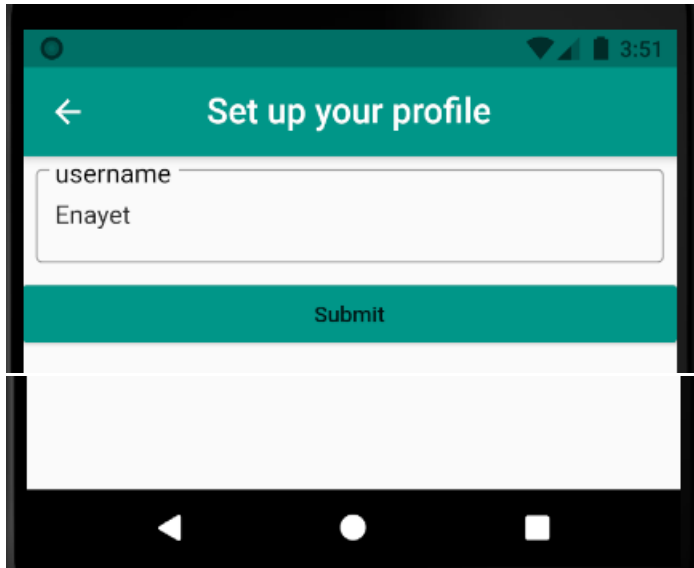
By clicking on the link this dialog box will be shown on the screen and user will be forwarded to create username page.

[23]



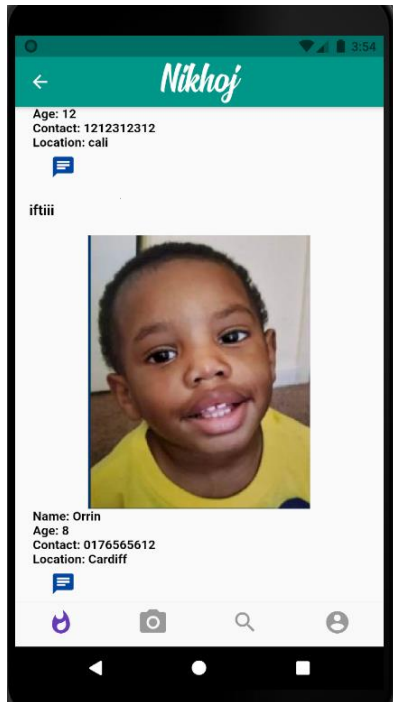
A screenshot of a mobile application screen titled "Set up your profile". At the top, there is a teal header bar with a back arrow on the left and the title "Set up your profile" in the center. Below the header, there is a white input field labeled "username". Inside the field, the text "Must be at least 6 character" is displayed. Below the input field, a red error message "username has to be at least 6 character" is shown. Below the error message is a teal button labeled "Submit". The bottom of the screen shows the Android navigation bar with back, home, and recent apps icons.

Once the user verifies, he/she need to pick a username.

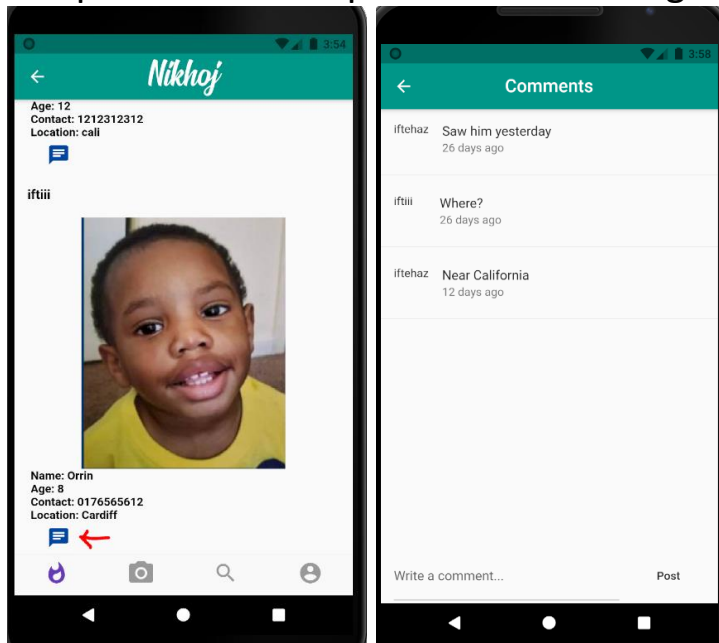


A screenshot of the same mobile application screen titled "Set up your profile". The teal header bar is at the top. Below it, the "username" input field now contains the text "Enayet". The "Submit" button remains below the input field. The bottom of the screen shows the Android navigation bar.

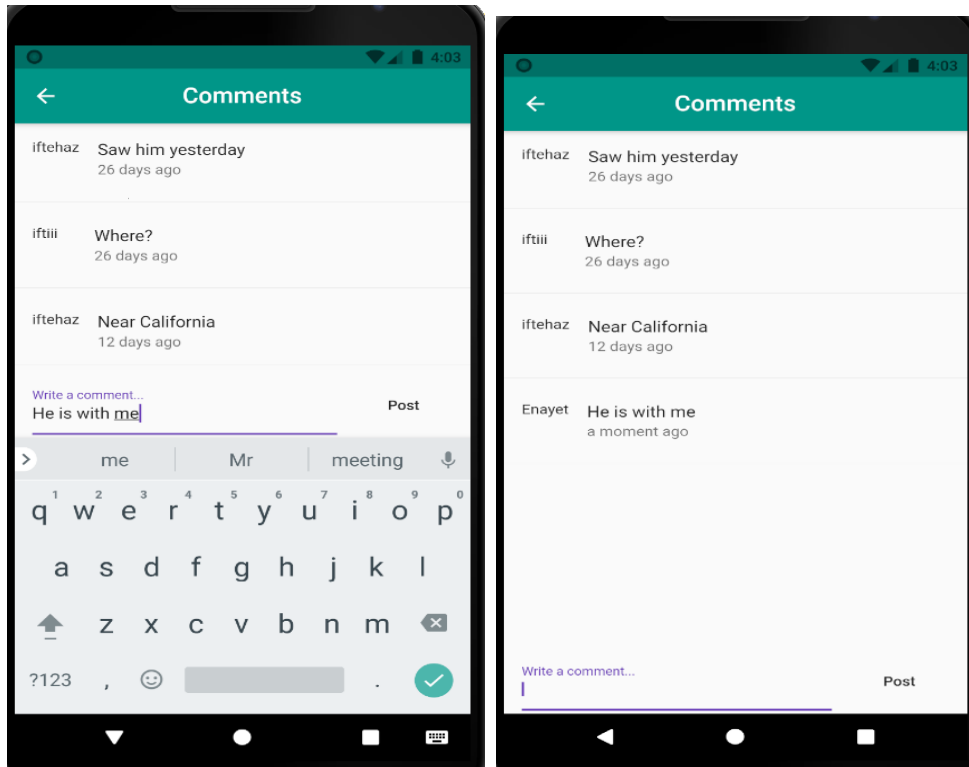
After clicking on the submit button registration is done and one will be forwarded to Newsfeed page.



A user is then on Newsfeed page. Once the user is on newsfeed page he/she may comment on any post, or go to search tab and search or go to upload tab and upload. Here clicking on the comment section,

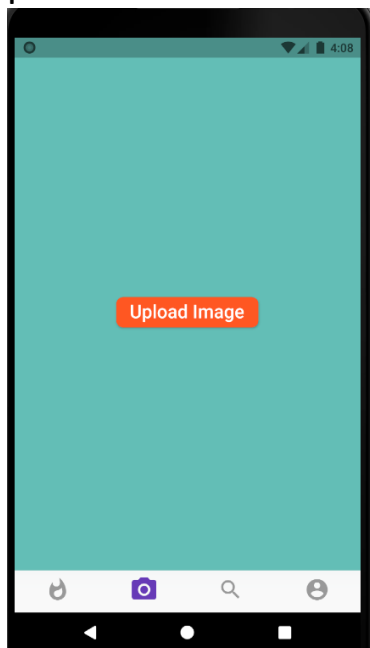


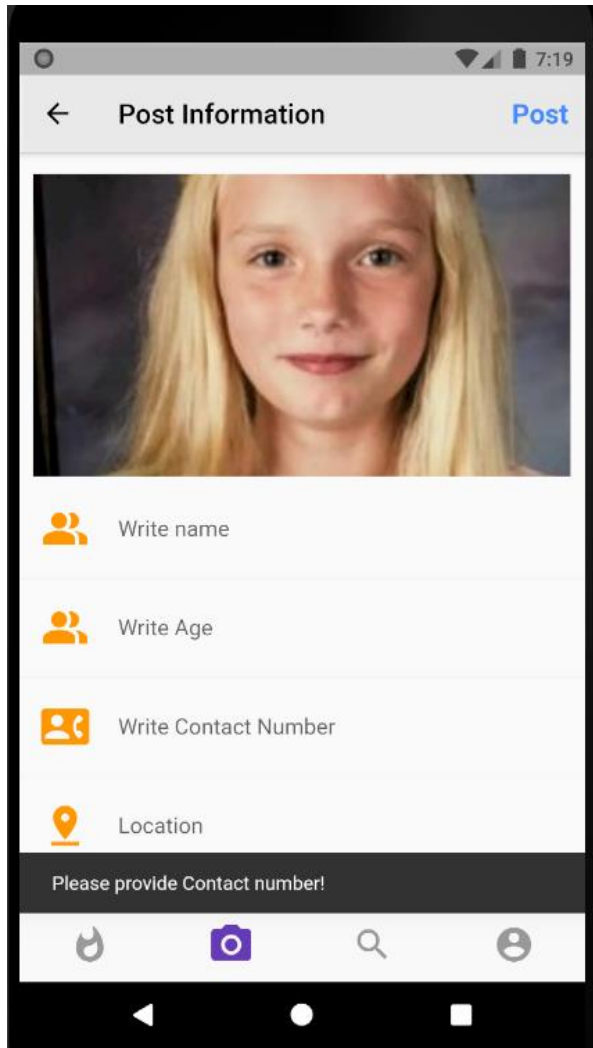
comment feed will be opened.



Once he enter the post button, user comment is displayed along with the time.

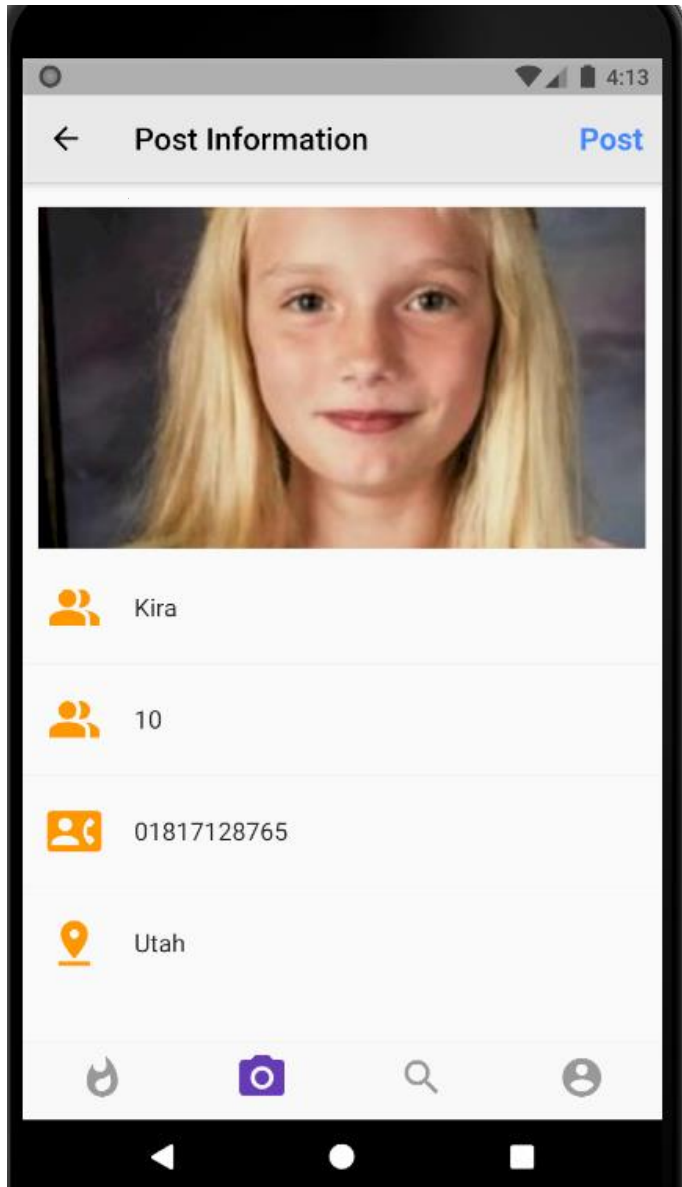
Then a user can also upload information once he finds a missing person.



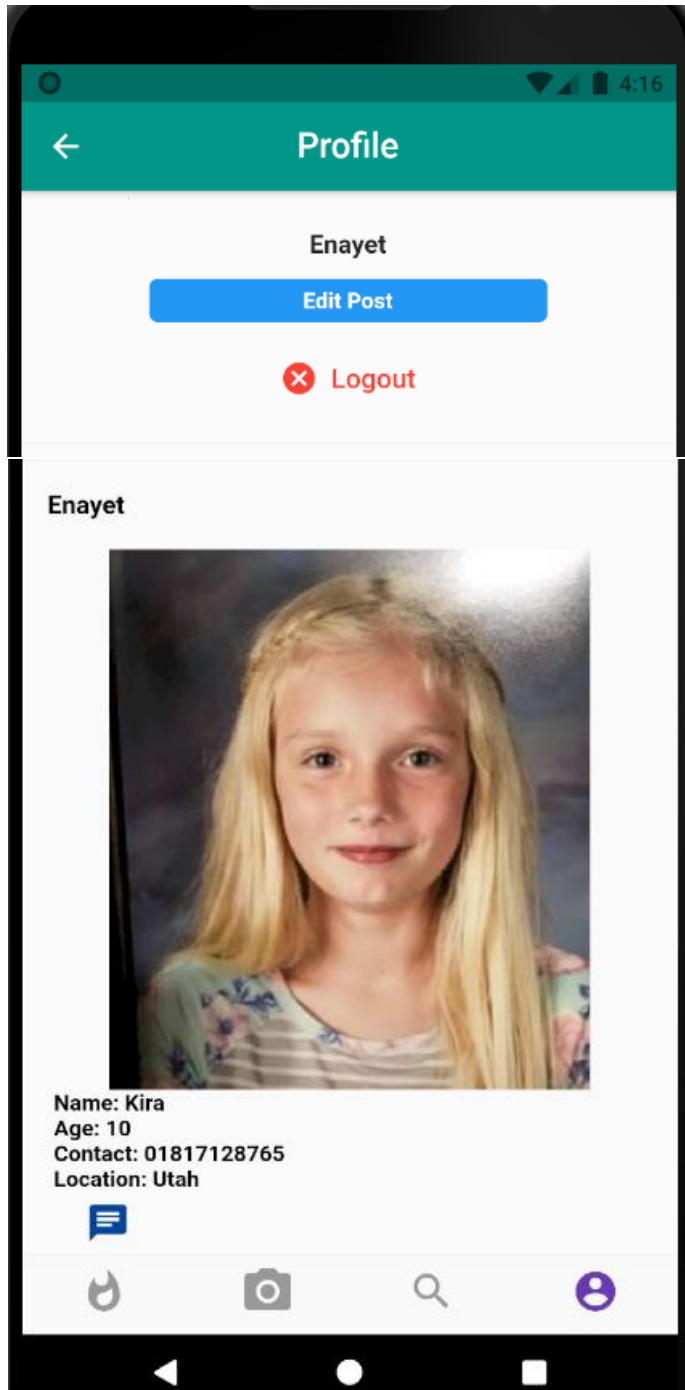


User can pick an image from gallery or with camera and with information, post it on Nikhoj.

Let's Assume, missing child can't say his name or age then the person who found it can post only containing his contact number and picture of the missing child. Contact Number is required field. Therefore if any person recognizes the child can call on that contact number and get to know whereabouts of that missing child.



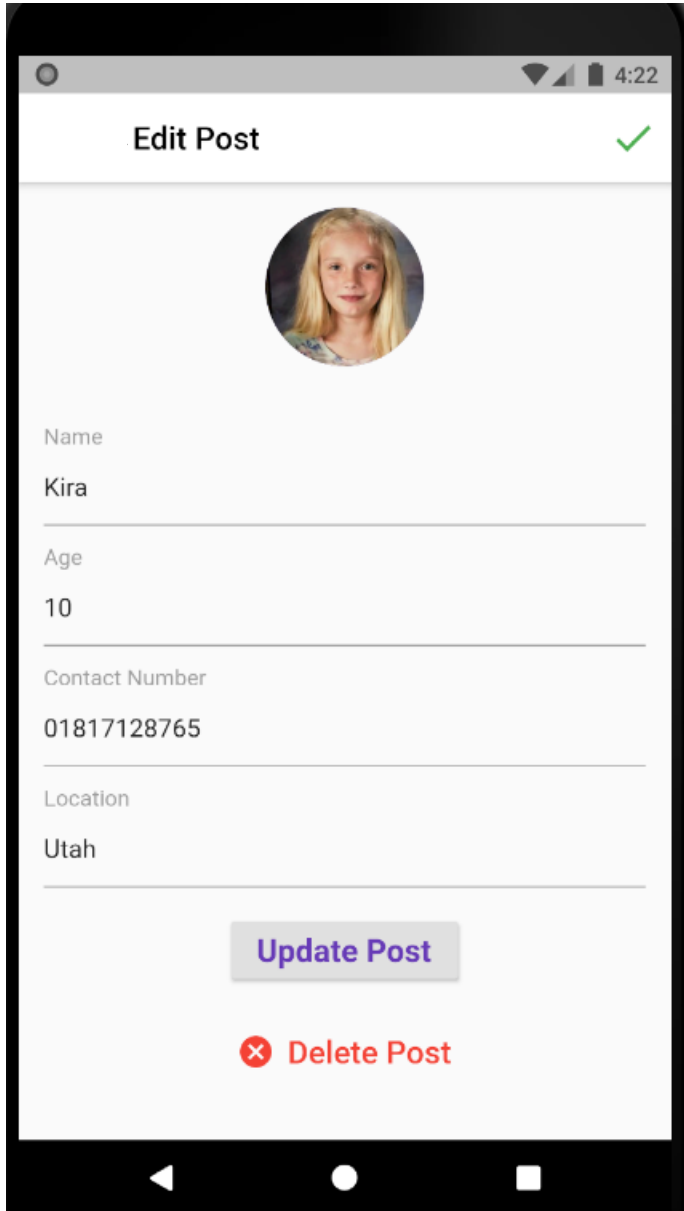
Once the post is done he will be popped back to the previous page. From there he can come to his profile and see the post.



This is the Profile page along with his post.

Here if he go to the comment section he can find the comment feed, also he can edit his post if he misspelled something, if he wants to log out he can do that as well.

If we go to the Edit post.

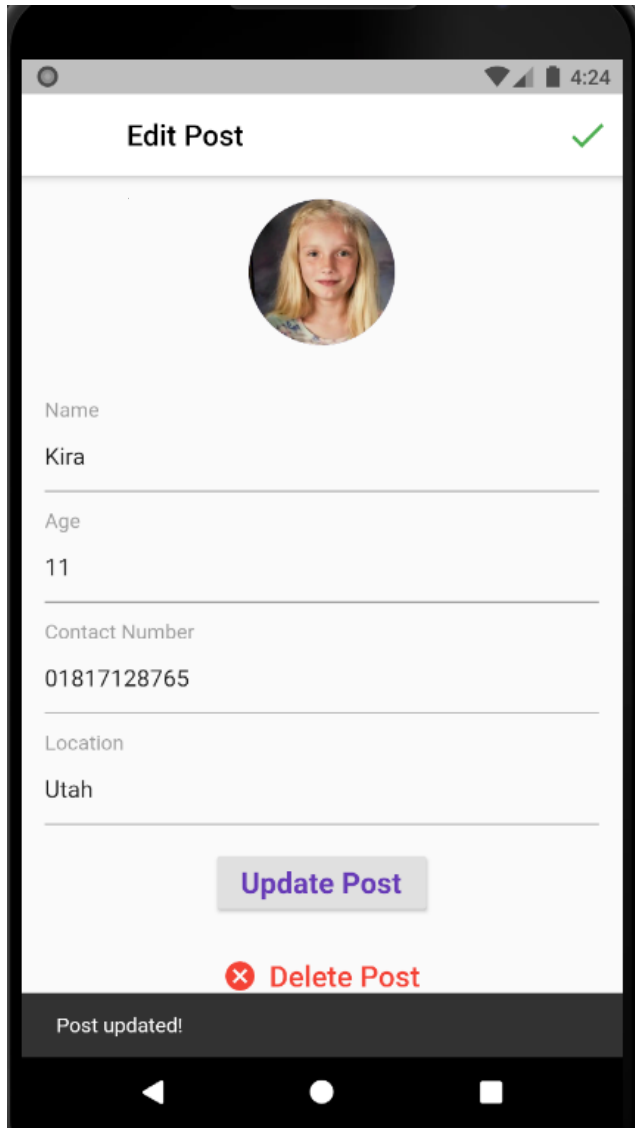


The screenshot displays a mobile application interface for editing a post. At the top, the status bar shows the time as 4:22. The app's header is titled "Edit Post" with a green checkmark icon on the right. Below the header is a circular profile picture of a young girl with blonde hair. Underneath the picture are four input fields: "Name" with the text "Kira", "Age" with the text "10", "Contact Number" with the text "01817128765", and "Location" with the text "Utah". At the bottom of the form are two buttons: a purple "Update Post" button and a red "Delete Post" button with a red "x" icon. The bottom of the screen shows the standard Android navigation bar with back, home, and recent apps icons.

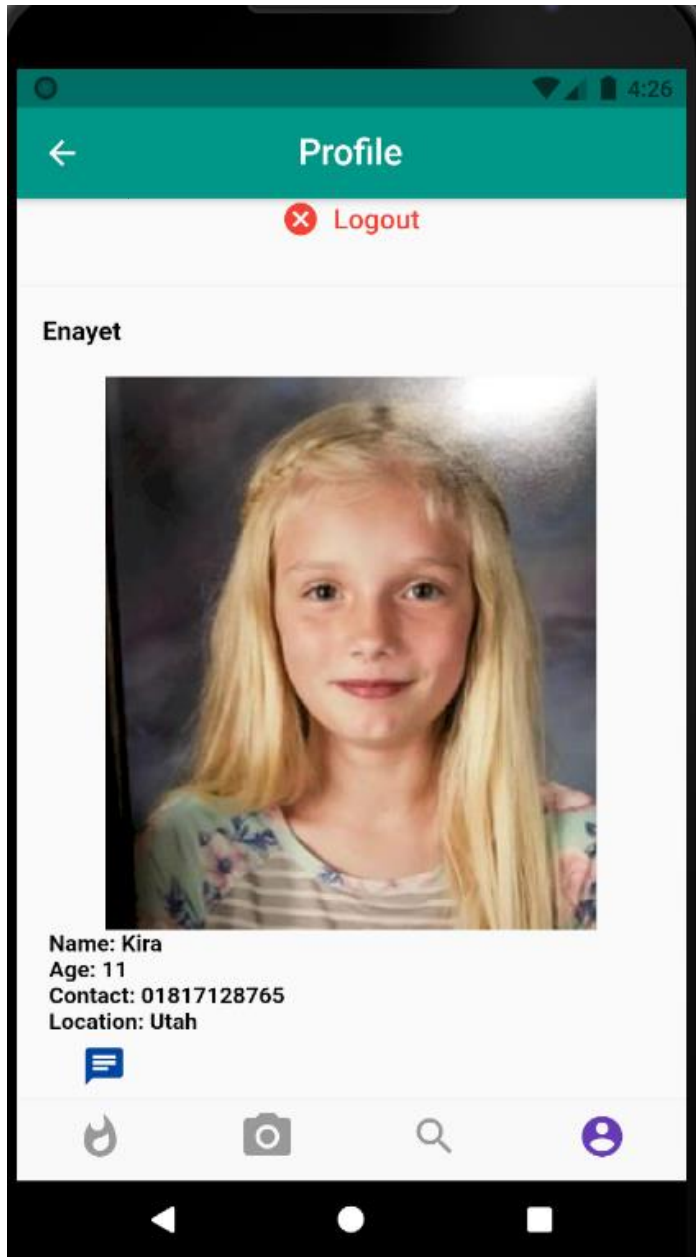
We will see this.

Here we can edit and update post, also delete this if one may like to do it.

Let's say here the age will be 11 years old instead of 10, then let's edit it and update.

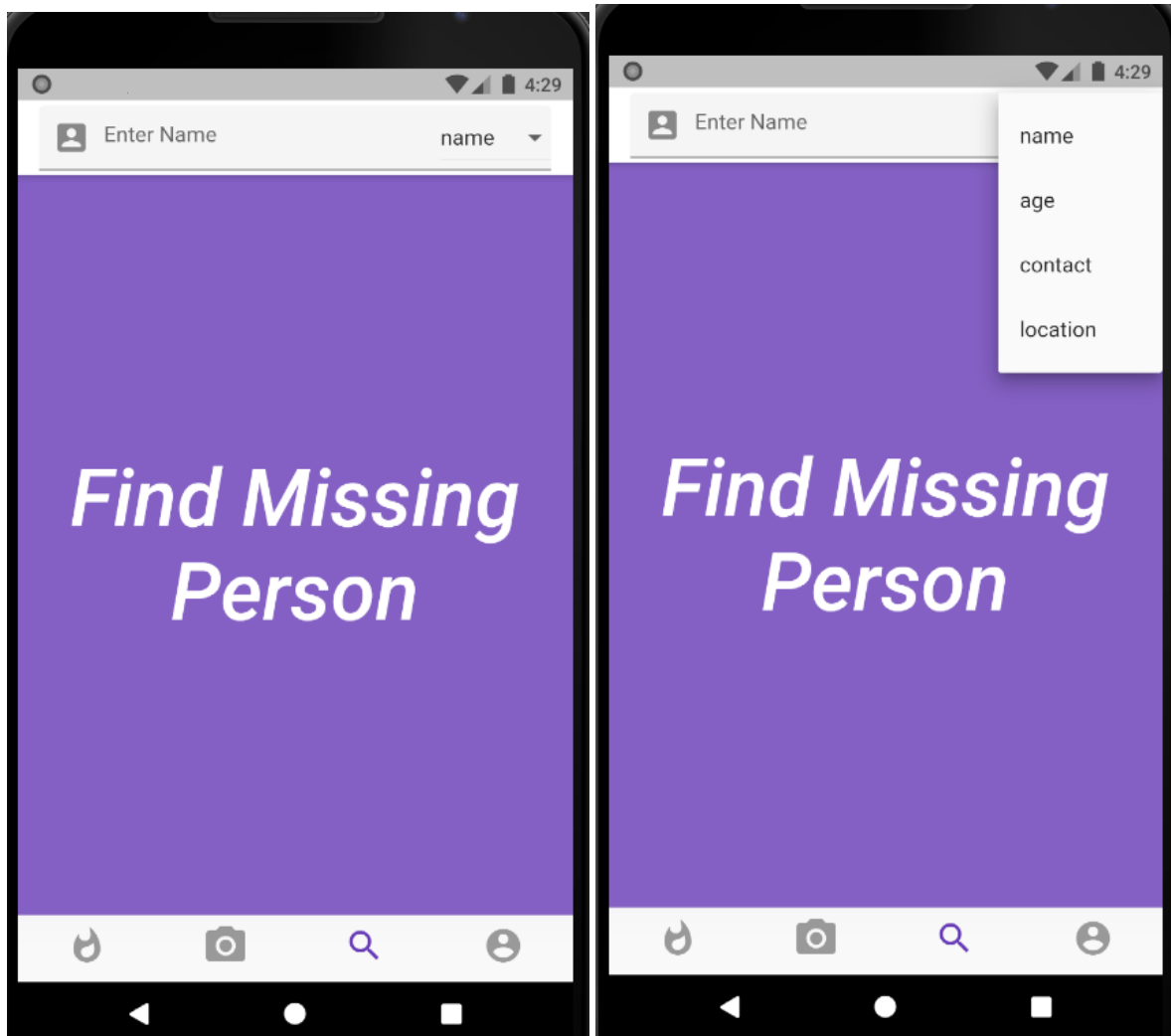


At bottom we can see post updated notification is popped up. If we click on the green tick button on top right corner, we will be brought back to Profile page.

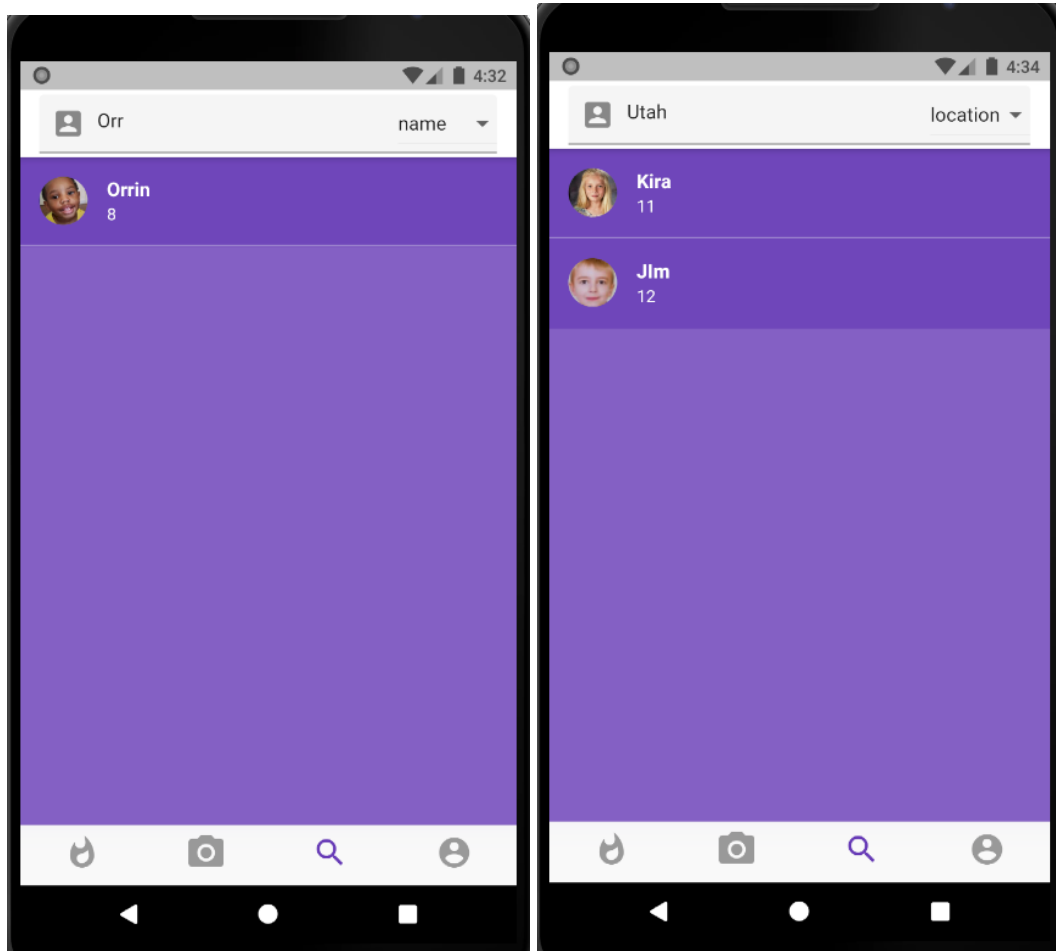


Here we see age is updated to 11. Like age we can also update other information as well.

Now if we go to Search field, here it is by default set to name.



we can also pick any of the attribute from the dropdown option. One can pick name, age, contact number, location to find the missing person's finder or guardian. This feature is one of the key feature of this project.

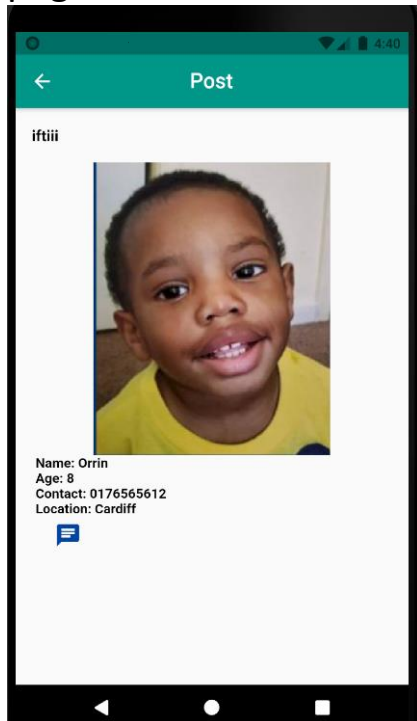


Let's assume user found a missing child who hardly can pronounce his name Orrin and saying just Orr. At first we searched by name Orr to find if there's anyone name Orrin, here we found it.

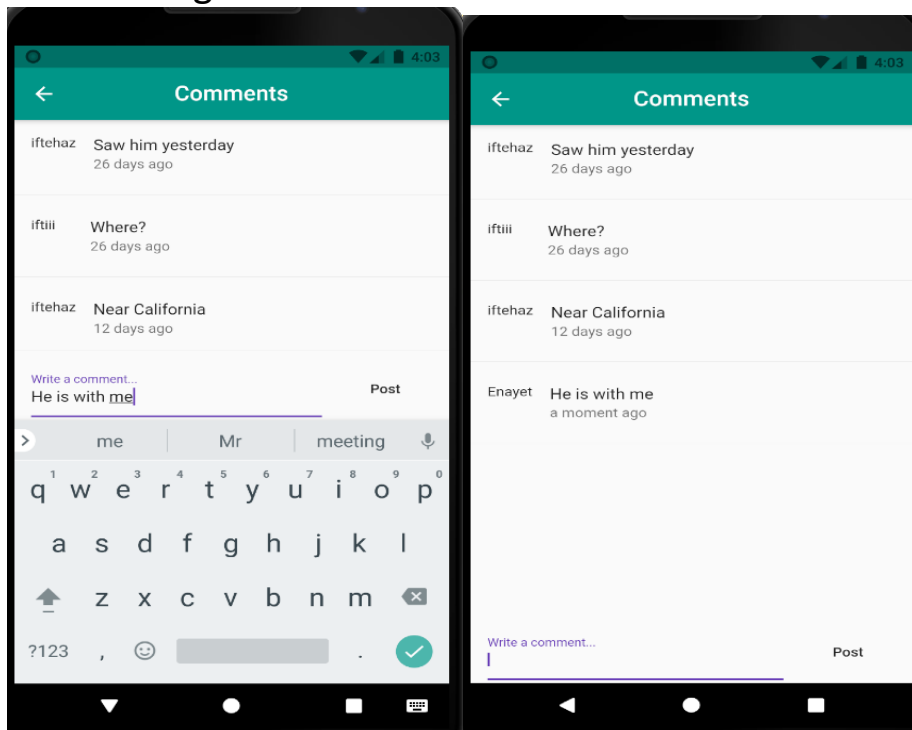
Another case we tried to find via location Utah as the user posted it, he can also find Kira's post just by providing location information and he found it. Here we can also find missing person's information by providing contact number and age or if in future we add more attribute in upload field.

Thus this helps the user to get the best possible result to find any user.

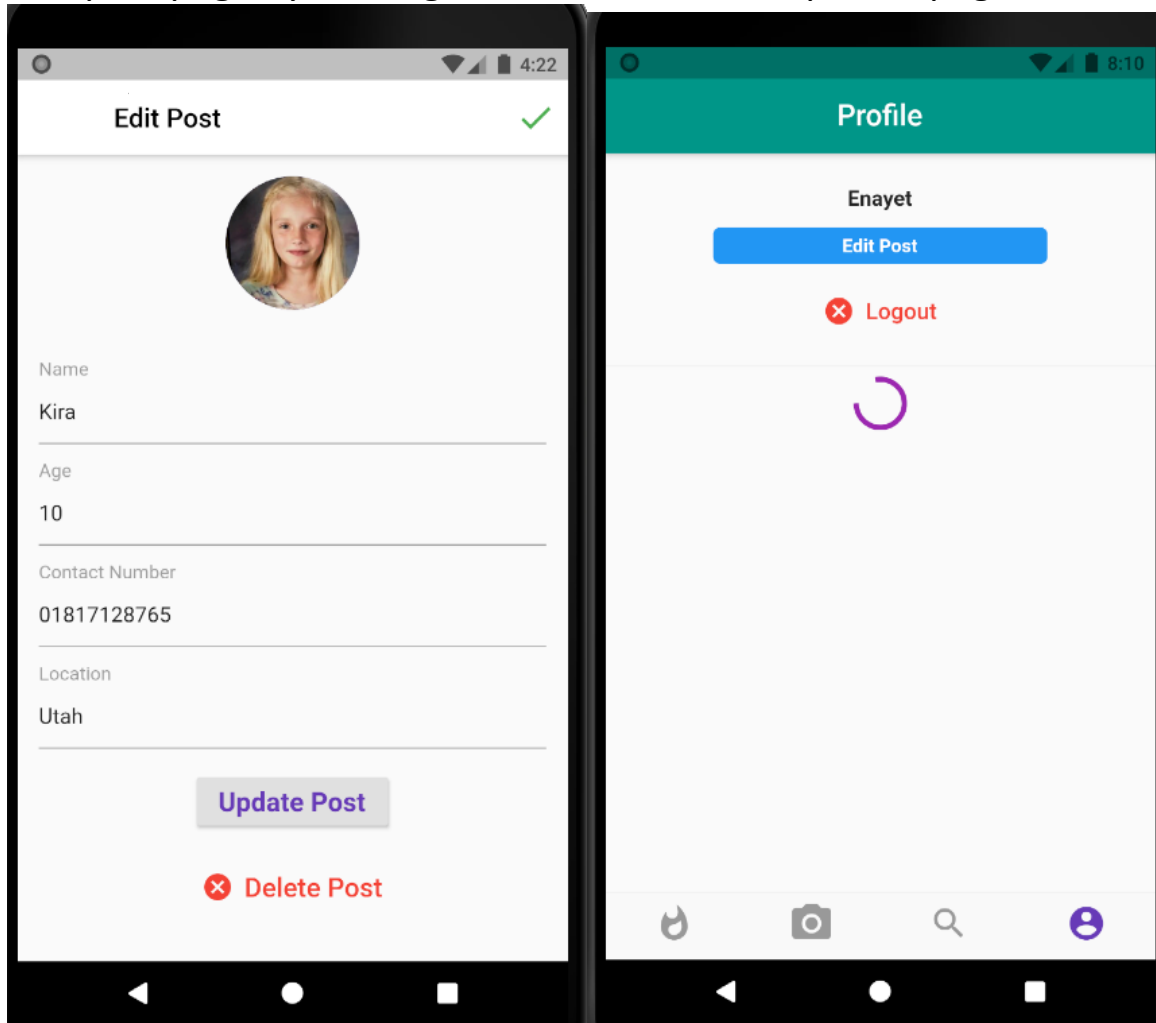
Above mention first case about Orrin, once he searched by Orr he found Orrin's missing post. By clicking on it, he will be shown following page:



And clicking on the comment section he can comment on the post.

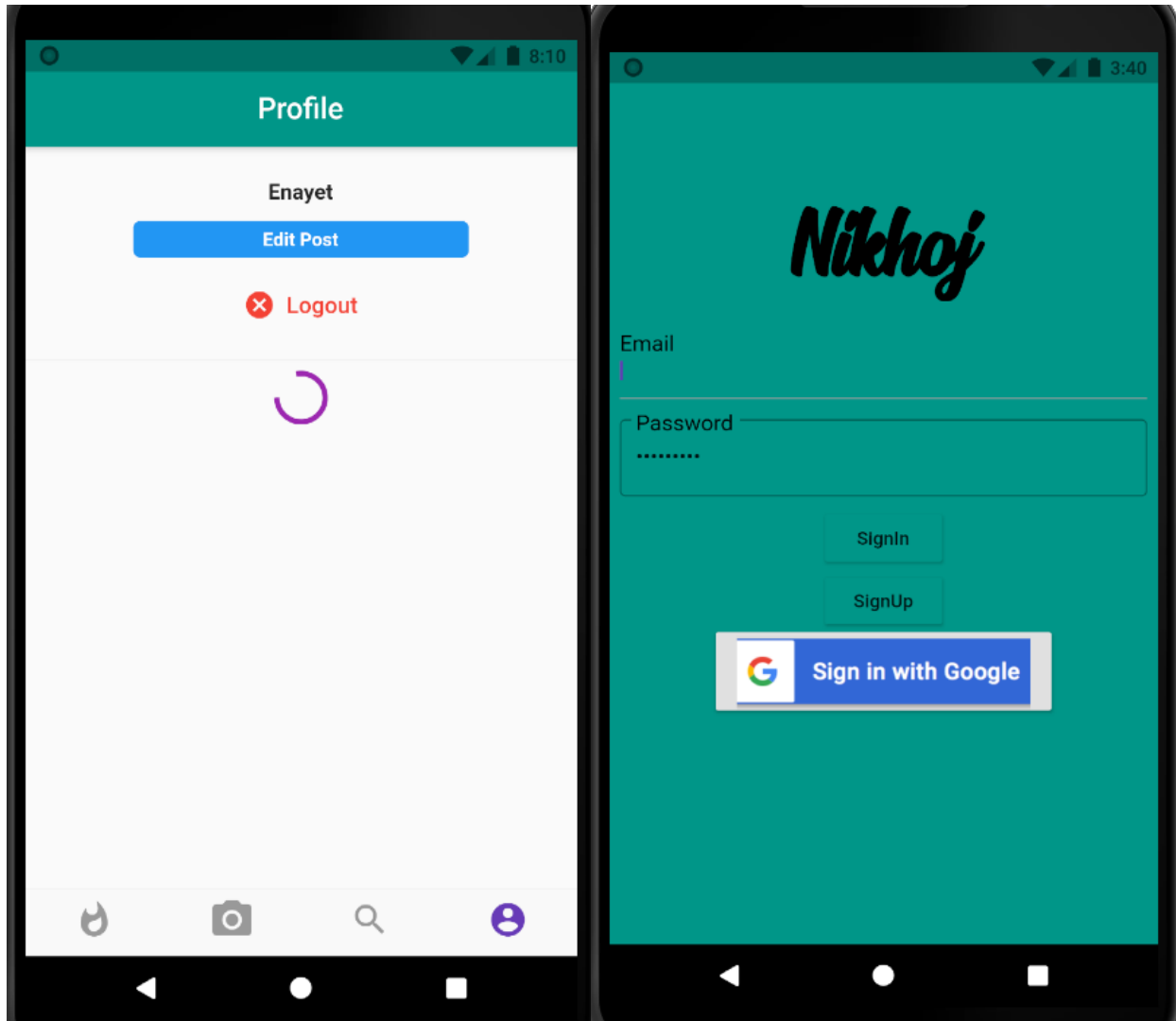


If he wants to delete his Post he can simply click on delete button from edit post page by clicking on edit button from profile page



And the post will be deleted and a circular progress will be shown because no data to be fetched from Database.

Once he is done he can log out simply by clicking on the log out button from profile page.



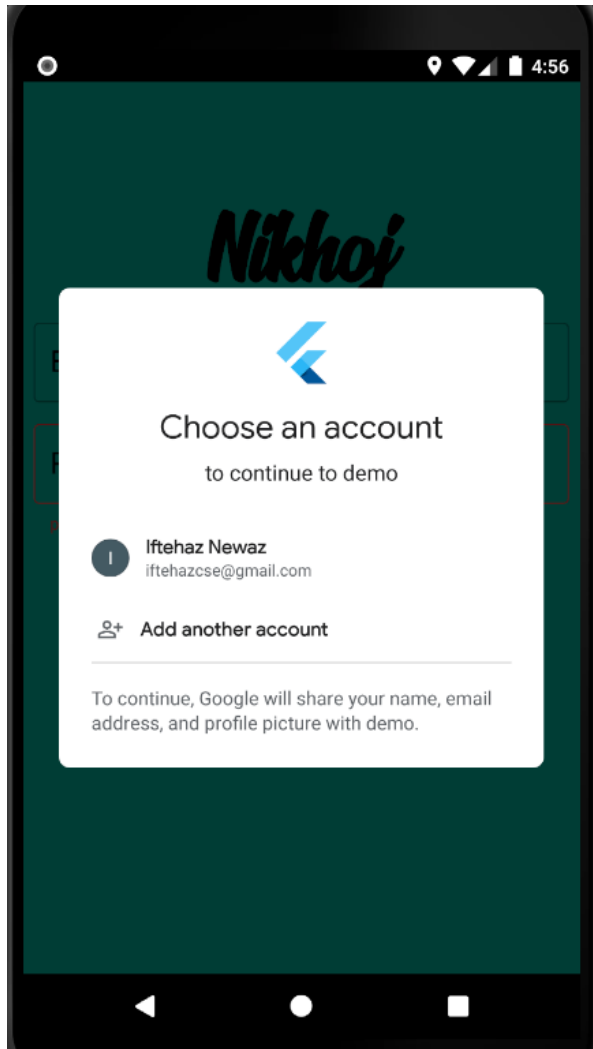
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If a user try to log in by providing wrong information,

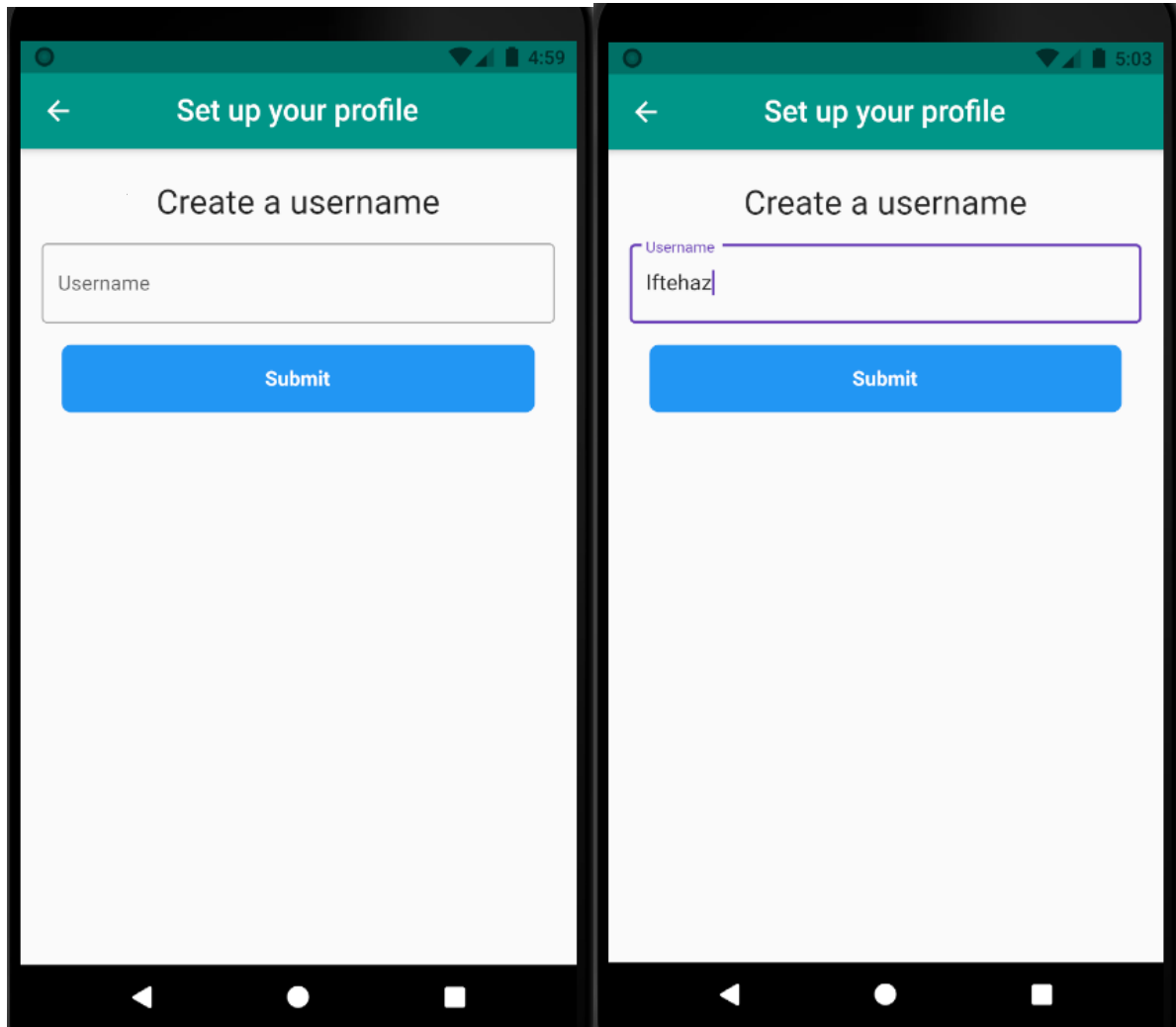


At bottom following notification will pop up.

A user can avoid signing up/in and use the Google Authentication feature.



Once we click on the account. If user has not used this app before he/she will need to create username.



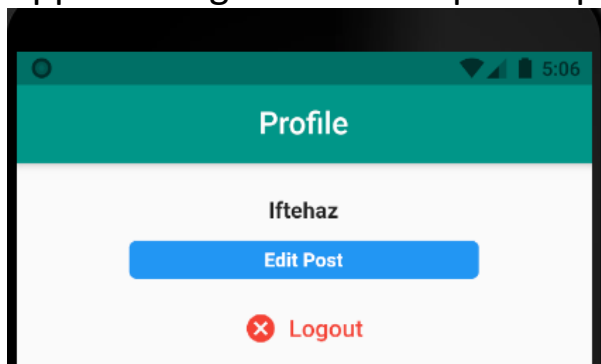
Once we click on the submit button we will be headed to Newsfeed page.

[40]

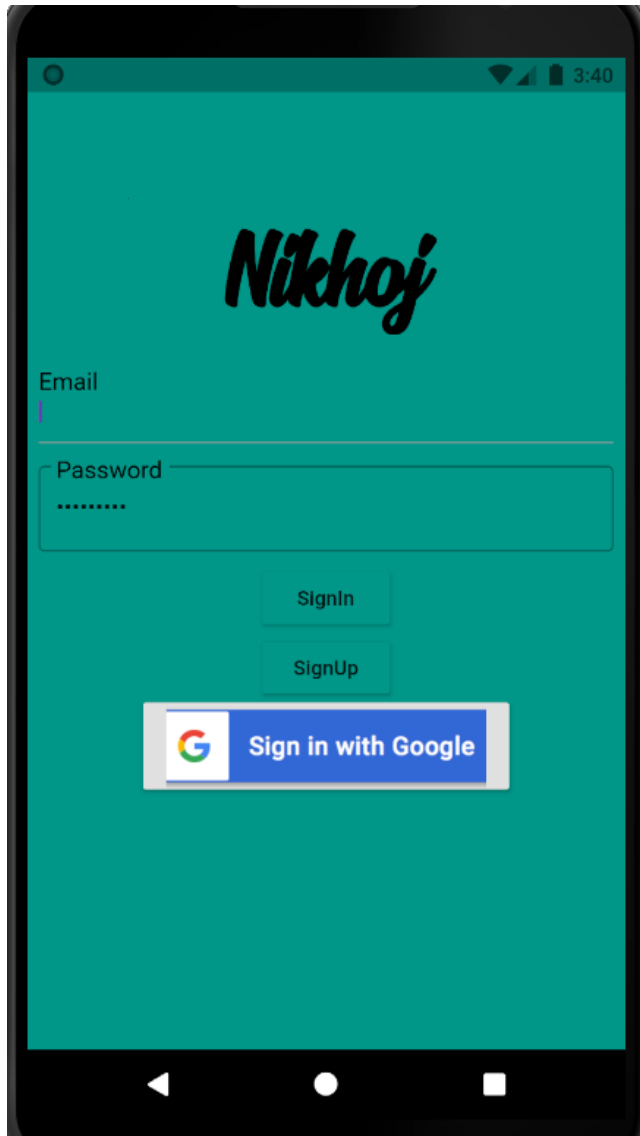


This is the Newsfeed page; here we see the latest post on top.

The features are same as the login by email. Once he is done using the App he can go to his own profile page and press the logout button.



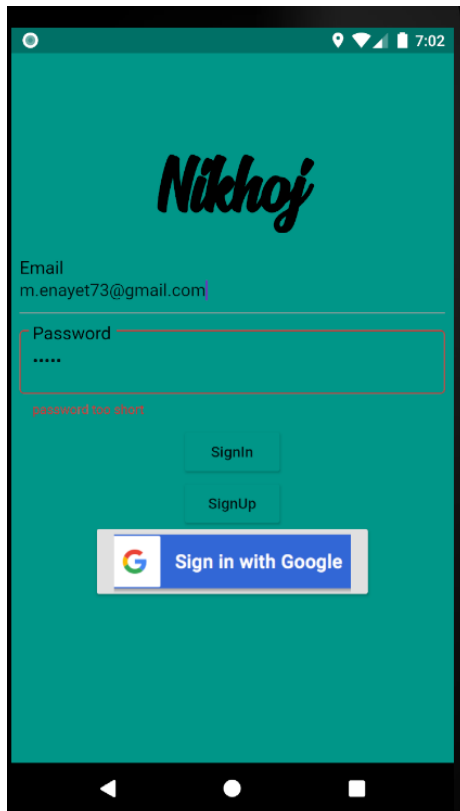
[41]



At last he will be brought back to the landing page.

Chapter 6: Testing

When user types email and password for signup, if password is below 6 characters the console log shows the result.



```
I/flutter (10671): email is being typed
```

```
I/flutter (10671): password is too short, at least 6 character
```

When the password is 6 characters long then

```
I/flutter (10671): password is being typed
```

```
I/flutter (10671): password is okay
```

If any user without signing up tries to log in following result shows

```
I/flutter (10671): snackbar is being used to show email or password is wrong
```

When information is correct and clicked on Sign in, following result shows

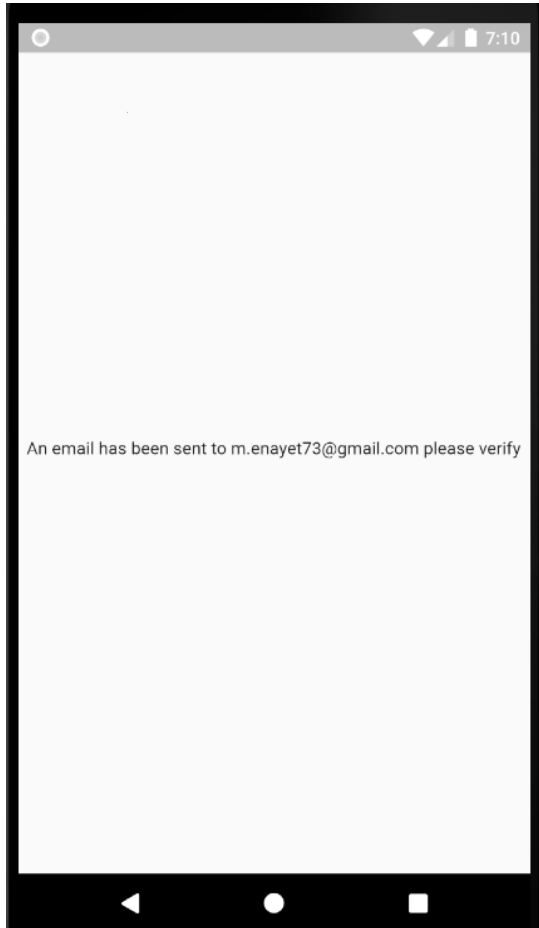
```
I/flutter (10671): Sign in done
```

When information is inputted correctly for signing up following result shows

```
I/flutter (10671): Sign up form is done heading to email verification
```

[43]

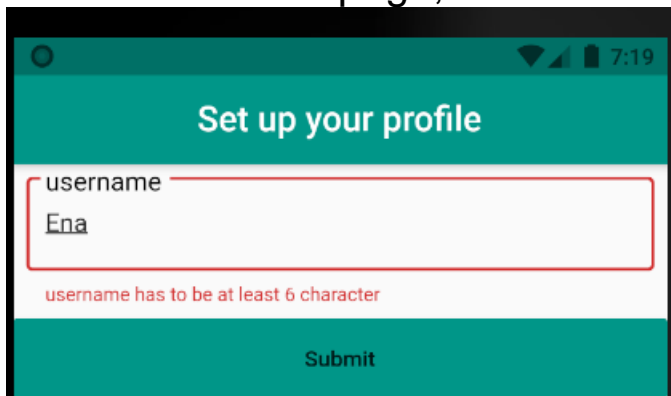
And headed to this page:



After verifying:

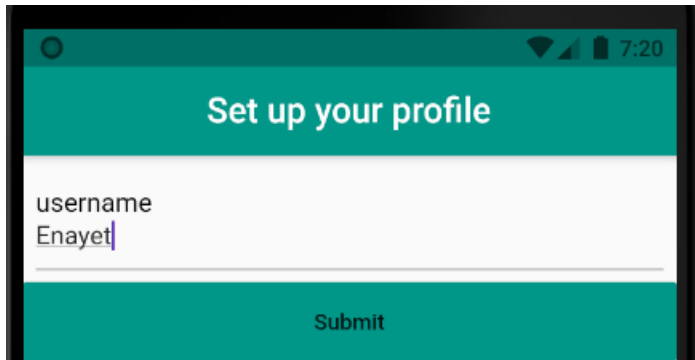
```
I/flutter (10671): User is verified
```

Shows and headed to create username page, if username is below 6 characters:



```
I/flutter (10671): Error: Username length is below 6 character or empty
```

[44]



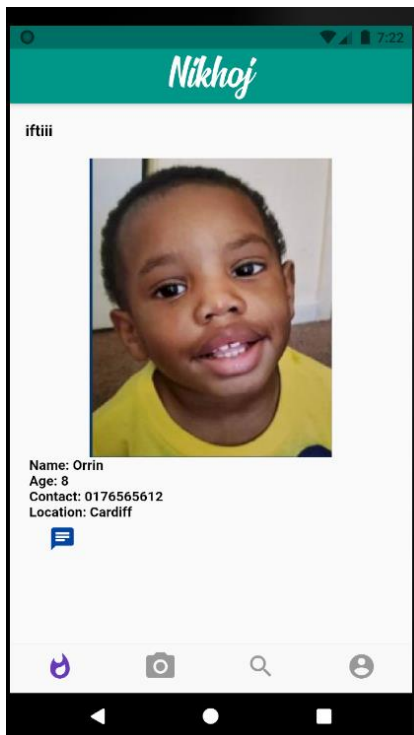
When typed at least 6 characters:

```
I/flutter (10671): Username is good to go
```

When submit button is clicked:

```
I/flutter (10671): Submit is done
```

Authentication is done and headed to Feed:



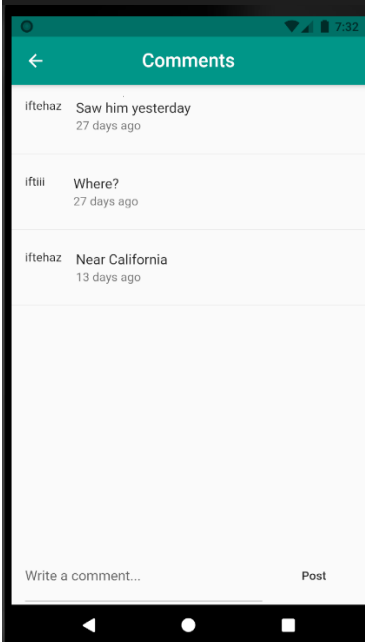
While accessing Feed Page, following result shows:

```
2 I/flutter (10671): Post is being fetched in Timeline
```

[45]

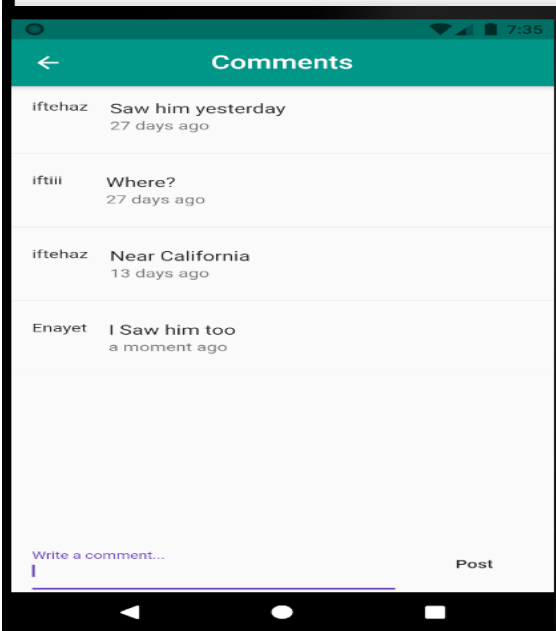
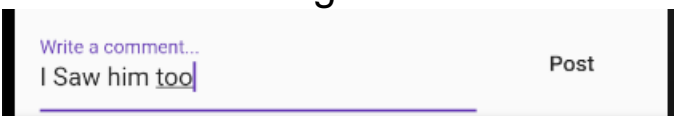
After clicking on the comment section:

```
I/flutter (10671): Comments are being fetched from Firebase
```



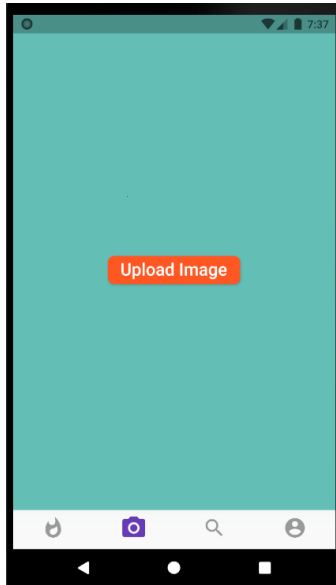
```
I/flutter (10671): Comments are fetched from Firebase
```

After commenting:



```
I/flutter (10671): Comment is posted
```

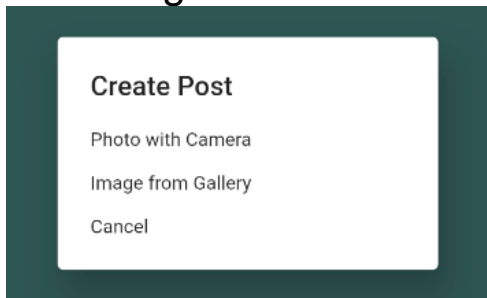
[46]



When upload button is pressed.

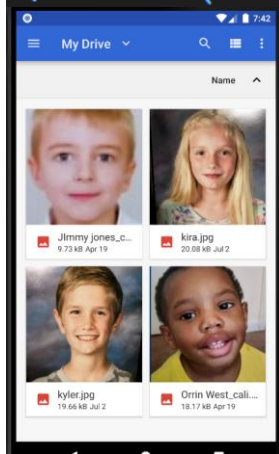
```
I/flutter (10671): Upload Button is pressed
```

Following result shows:



On upload page clicking on Upload image button Create post is showed. If we pick Image from Gallery following result is showed:

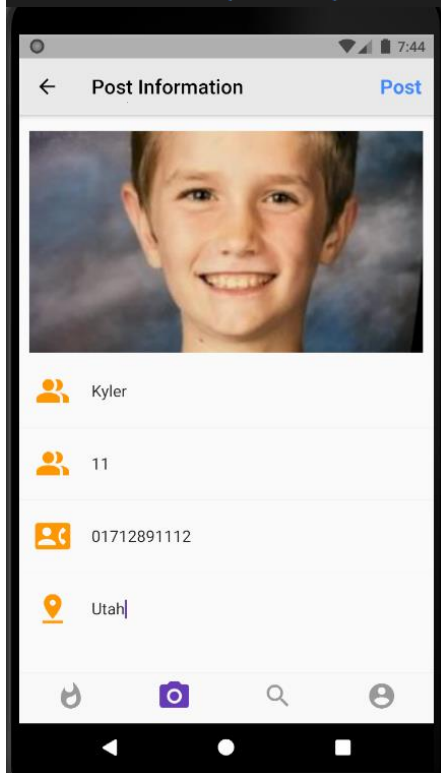
```
I/flutter (10671): Handle Choose Image from gallery is picked
```



[47]

Picked an image and following result is showed:

```
I/flutter (10671): Image is picked to Post
```



After providing all the information we can click on Post Button.

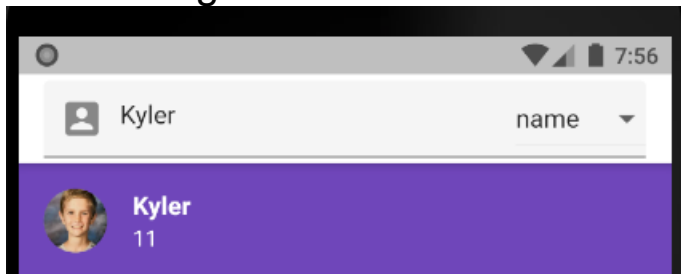
```
I/flutter (10671): Image is Compressed to upload
```

```
I/flutter (10671): Image is uploaded to Firebase Storage
```

```
I/flutter (10671): Information along with picture is uploaded to Firebase
```

Above result is showed.

When we go to search tab and search for kyler.



Above result is showed.

```
2 I/flutter (10671): Search result is fetched from Firebase
```

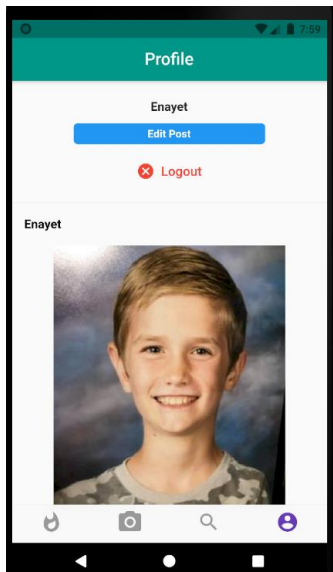
[48]

If we click on the result then we are headed to following page



```
I/flutter (10671): Post fetched from database
```

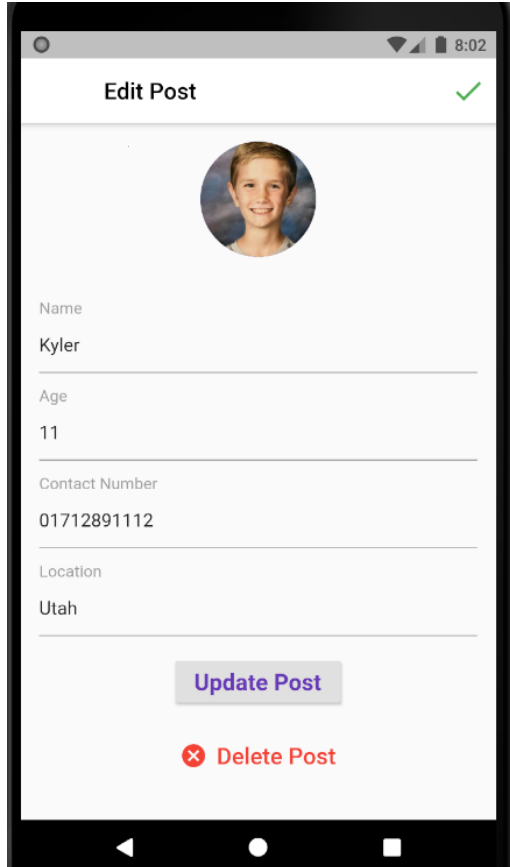
Now if we come to our profile page following result is showed:



```
I/flutter (10671): Post is fetched from Firebase  
I/flutter (10671): Post is fetched
```


[49]

Now if we click on Edit Post



And update the age to 10 and click on update post

```
I/flutter (10671): Post is Updated to Firebase
```

This shows

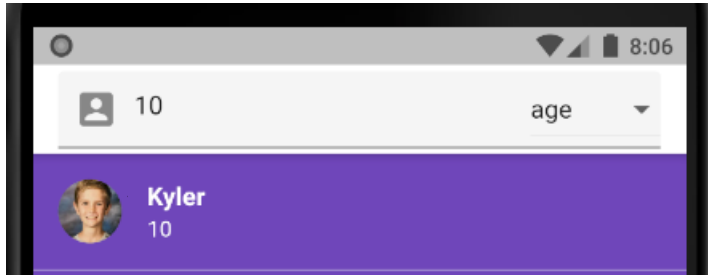
Now if we go to search tab and pick the Age from dropdown button.



```
I/flutter (10671): age is selected from DropDown menu
```

Above result is showed.

[50]



If we type 10 we get Kyler on top and on console we get:

```
2 I/flutter (10671): Search result is fetched from Firebase
```

Now if we delete the post from edit post page on profile tab, Following result is showed on console.

```
I/flutter (10671): Post is deleted from Firebase
```

If we tap on logout button:

```
I/flutter (10671): Logout button is clicked
```

And after successfully logging out, following result is showed:

```
I/flutter (10671): logout completed
```

Here Unit Testing, Integration Testing, System Testing, White box Testing, Black box Testing is done.

System meets the features that were mention in JAD session (e.g. User requirements), Therefore Acceptance Testing is also done and passed.

Chapter 8: Conclusion

Digital Bangladesh is one of the nation's dreams, and so special emphasis is given on the application of digital technologies to realise Vision 2021, which we commonly call Digital Bangladesh. Bangladesh is currently working most of the procedures in a digital way and the common problems can be solved digitally at present.

“Nikhoj” is an application where a lost person can be found without any hassle. It eases the tasks which generally handled by the police, guardians, local people etc. But it is a matter of regret that, since 67% people are poor; they can't afford money to find their missing person. “Nikhoj” can fulfil all of these problems in a single way. The instructions of this software are mainly design for the simple use where anyone who has not use a smartphone can understand the usability easily. A registration which simply takes you to the place home where you can post an ad or search an ad freely. Whereas the ad mainly contains the information's of the person who is missing. The design, procedure and the UI of this app is friendly so that anyone can recognize the functionality.

In light of this information, to summarize “Nikhoj” app can perform a great deal to our country. The ultimate goal of this app is to reduce the percentage of finds out problems and the main concern of this app for the poor so that they can get help through our app.

Chapter 9: Bibliography

Online Resources:

1. [YouTube](#)
2. [Flutter Documentation](#)
3. [Flutter Packages](#)
4. [Torrent Tutorial](#)
5. [Firebase Documentation](#)