

DESIGN AND DEVELOPMENT OF AN ANDROID APPLICATIONS FOR LOST-FOUND

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Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled “**Lost-Found**”, submitted by Md Assaduzzaman, ID No: 143-15-4339, Abdullah Al Mamun, ID No: 143-15-4344, Md Muttakin ID No:143-15-4357 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 11th December 2018.

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We hereby declare that, this project has been done by us under the supervision of **Shah Md Tanvir Siddiquee, Senior Lecturer, Department of CSE**, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

The time of portable innovation opens the windows to the android application. The sites are vanishing and the cell phone is rising it. It has turned into a piece of our everyday life. It gives us more agreeable and a superior UI. These days, everybody loses or loses things or items all over. In any case, there are a few people who will, in general, be in a steady condition of looking for lost things. We frequently observe a few people who loses his keys, ID card, wallet, or telephone and so forth at any rate once every day. They need to get back those. Some of the time it would be exceptionally troublesome for anybody to get those items or things. That's why we have developed an Android application for finding missing products or things. This application contains functionality to add the complaint about both lost user and found a user. Users can add their product details like product name, model, IMEI number and others specific things. It will store in the database. Similarly, if any user finds that product he or she can also add product details by using this app. Then they can both check their data if someone already has found or lost. Actually, it will be matched from the system and let the user know whether it is matched or not. If matched, the user can contact through email or phone.

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CHAPTER 1

Introduction

1.1 Introduction

We're experiencing the period of cell phones. We need everything in one touch and in no time flat. The majority of the cell phones exist in our general public are controlled by android working frameworks. Lost-Found is an android application for clients who lost and found the item. It's where any lost client can discover his/her items like telephone, wallet, ID card or any others from the discovered client. It will empower lost client and discovered client to speak with security.

1.2 Motivation

Manual System for finding missing items or records have a long methodology and takes additional time. Additionally amid manual process number of labor for looking, lost an individual, is less. Now and then it is very difficult to get those items on the off chance that we don't know where we really lost items. In spite of the fact that there is some stage accessible through which individuals can discover their item or can report, yet these stages are not so much surely understood to the people groups/or not fruitful. The current framework nowadays isn't having the utilization of cutting-edge innovations. There are additionally some applications yet they have some confinement like they are physically coordinate lost and discovered client's information which is not protected. Anybody can abuse this chance. That is the reason we have built up this application which will be coordinated from the framework. It will give greater credentials and secure.

1.3 Objectives

The objectives of this application are stated below. They are:

- ❖ To reduce time and cost.
- ❖ Removing the third person between the lost and found users while products matching.
- ❖ Ensuring credential and security for both lost and found user
- ❖ To make easier to get lost product.

- ❖ Anyone can check while they want to buy a second hand product to know whether its deceiver product or not.

1.4 Expected Outcome

This application will give us the best solution to find any lost item from anywhere having detected the fixed found item by matching from the system. People just upload their all kinds of information as like as location, item type, color etcetera regarding the lost or found item to the firebase online database and the item will be redirected to the original owner by sending the notification to him. People also can check whether any product deceiver or not before buying second-hand product.

1.5 Report layout

In the 1st chapter, we described the introduction, motivation, objectives and expected outcomes. In the 2nd chapter, we mention the background of the project, related works, and comparative studies, the scope of the problem and challenges of the project. In the 3rd chapter, we viewed with a required specification which includes business process modeling, requirement collection and analysis, use case modeling and description, logical data model and design requirements. In chapter 4th we discussed the design for both front-end and back-end also implementation requirements. In chapter 5th, we expressed the implementation of a database, front-end design, testing implementation, and test results. In chapter 6th we tells and concluded our project and scope for the future developments.

CHAPTER 2

Background

2.1 Introduction

No matter how careful we are with our own effects we are will undoubtedly now and then lose or lose things whether huge or little, imperative or not. It truly can be a major migraine when something like this transpires. More often than not, we may not locate our lost things any longer, but rather Our android applications LostFound just got the most accommodating answer for everybody. With this application, we'll approach a virtual announcement board that reports lost and discovered things wherever we are on the planet. We may locate our lost assets through this application.

2.2 Related work

In recent there have some related application in google play store.

Lost or Found:

It is an Android app for reporting lost, stolen or found items. Anyone can also search for the lost or found items added by others. It serves as a worldwide online database of stolen, lost, and found items and missing people. As soon as we lose or find something, we have to do is update details about lost or found item in this app. But a user can not know intensely whether the product is matched or not. [1].

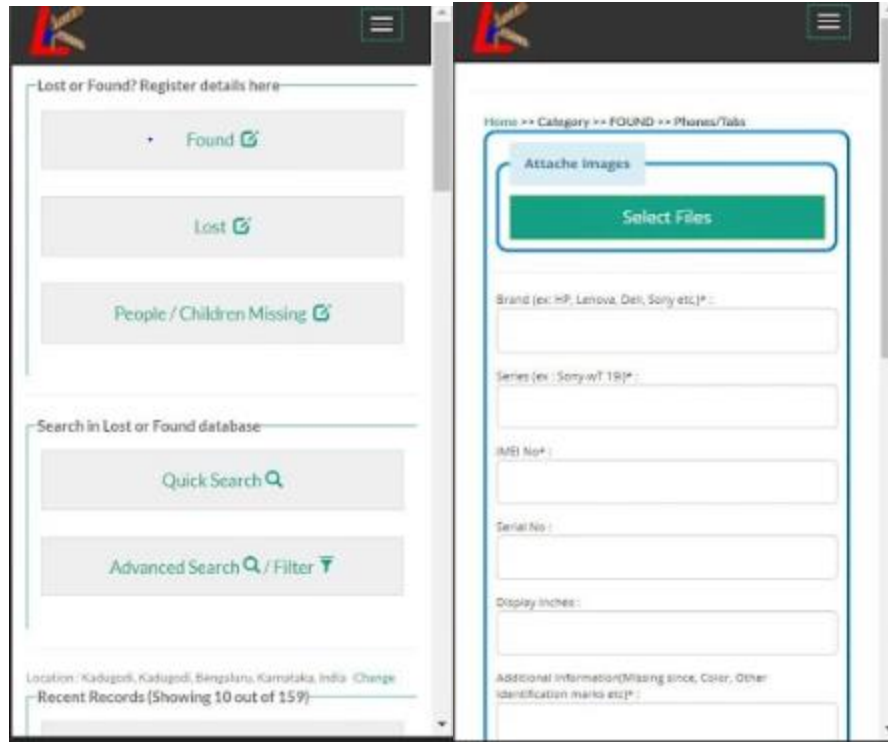


Figure 2.1 Lost Found

Find It - Lost and Found

Find It – free lost and found app helps post about lost pets, missing children, lost phone, lost car, lost wallet or any other missing item fast and easy. Any lost user can post about their product details as well as found user. But the problem is all post are public. Anyone can see anyone’s post [2].

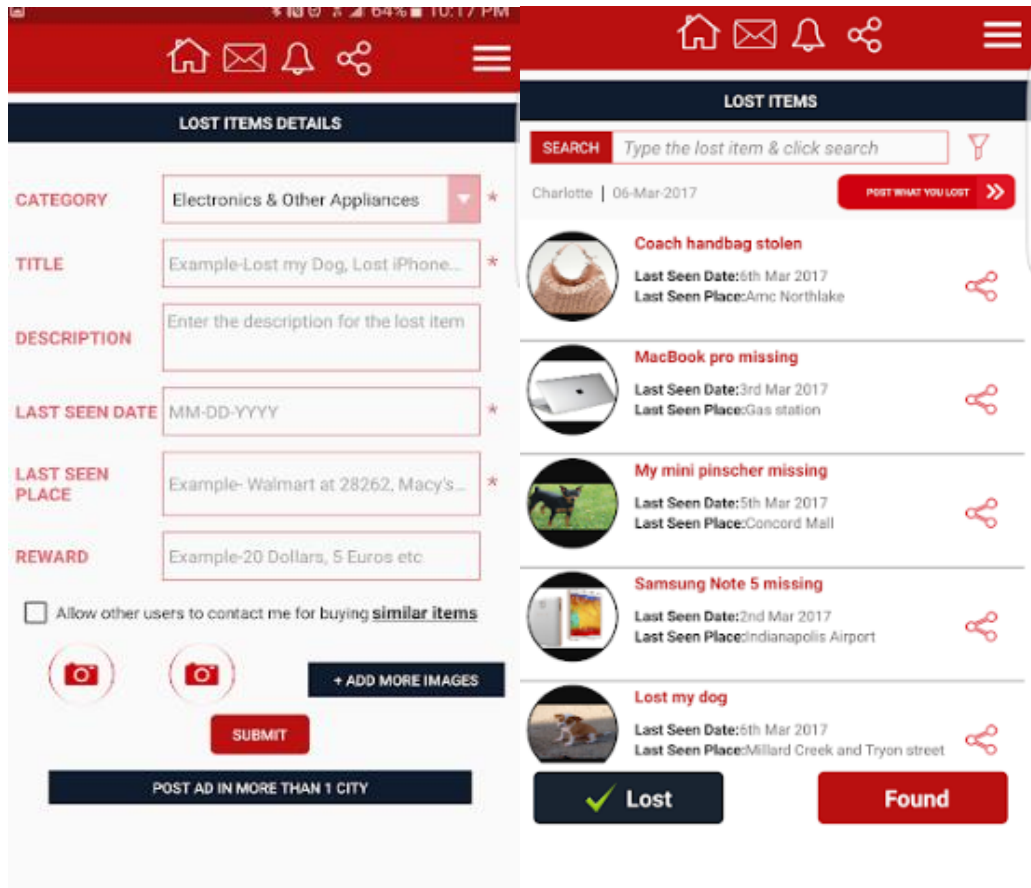


Figure 2.2 Find it-LostFound

Lost & Found

In this app, people will upload the images and description of the lost object and the persons who find that object anywhere in the world can return you on the place which is convenient to both of you. This app gives you the contact details of the person who found your object. Not this much the person who lost the object and the person who found the object both can upload the objects and then if the person who lost something can see the list of found objects by other person and if you found your object then contact that person [3].

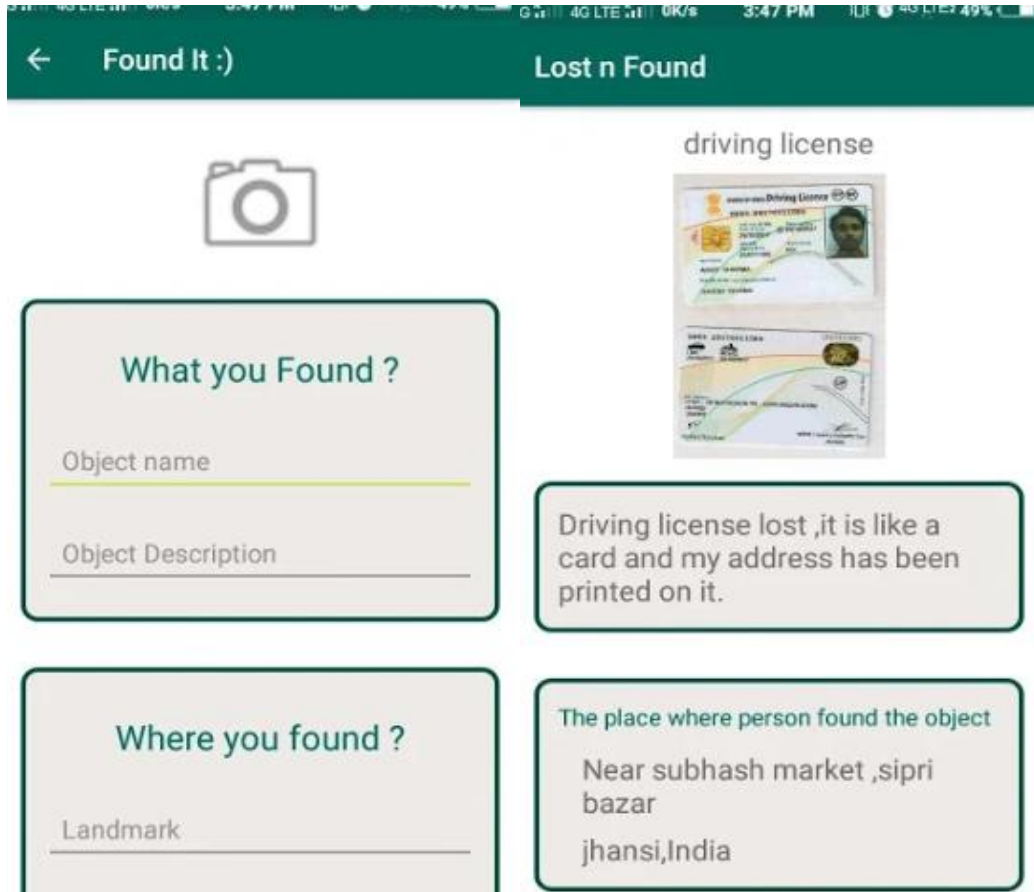


Figure 2.3 Lost n Found

2.3 Comparative studies

Our actualized application is very not quite the same as the existing applications. Some of the utilizations are accessible in Google play store yet we haven't got any application where the coordinating philosophy has been produced legitimately from the framework. Every one of those application has built up the coordinating framework physically. In any case, the extent that we know just in our application we have grown such an incredible calculation which has been utilized to analyze the coordinating exactness in the middle of the lost and discovered question from the framework consequently. So in our application, we have included some new highlights and our application is more easy to use than different applications. We have endeavored to make this application more creative and

our application is more dynamic additionally which will be useful for the general population.

2.4 Scope of the problem

- It is an open platform where all user can access easily.
- Friendly user interface and Updated information.
- User interface is too simple to understand by the all kinds of users.
- We try to fulfill some common problems in this application.
- We have provided the guideline activity for the users for their welfare.

2.5 Challenges

In our life every time we face many challenges and obstacles. Thus for our project we also face challenges. We face some challenges to make this application user-friendly. We haven't got any valid resources throughout Google for this project in most of the cases. We fell in a great problem during retrieving the data from the firebase database and to restore into an array and during comparing the found data with all of its lost data. So, finally, we have made a new algorithm to restore the firebase data into the array after retrieving them. And then we have solved the second obstacles that were to create a comparison in between the found and lost data.

CHAPTER 3

Requirement Specification

3.1 Requirement analysis and collection

Prerequisite examination and gathering is a fundamental part of any item application. For this technique we require two sorts of need, the initial one is utilitarian and second is nonfunctional. How an application can perform better it depends upon helpful essential, and nonfunctional tells the suitability of the application. Our application has various sorts of helpful need. For instance, the sign to some degree, set up a profile, portion, territory look for. We fuse diverse features that person's prerequisite for standard life.

3.2 Use case modeling and design

Use case use to known the relation between actor and action and learn details about the system. The use case has 2 actors:

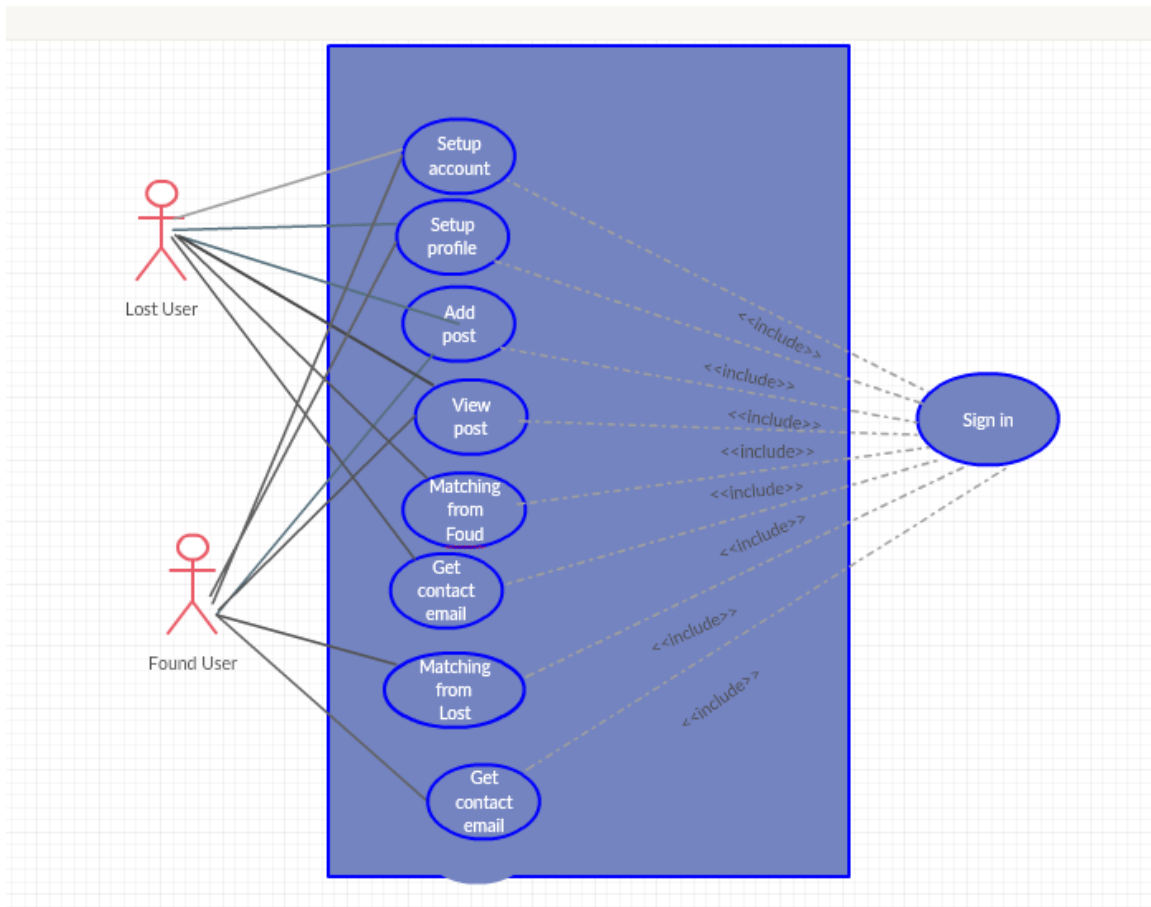


Figure 3.1: Use case Modeling and designing

Lost user : 1st of all they set up their profile and then sign in the system. They can add a post, view post. They can also check a matching option to know whether the product matched or not

Found user : they also need a setup profile. They can also add a post, view post. They can also check the matching option to know whether the product matched or not.

3.3 Business process model

Using Business process model we achieve some convenience and a proper conformation. We will be using it for depicting our application. We get some benefits from it. These are-

- ❖ Enhance avail

- ❖ Enforce exercise and standardization
- ❖ Process velocity
- ❖ Transparency

Lost user:

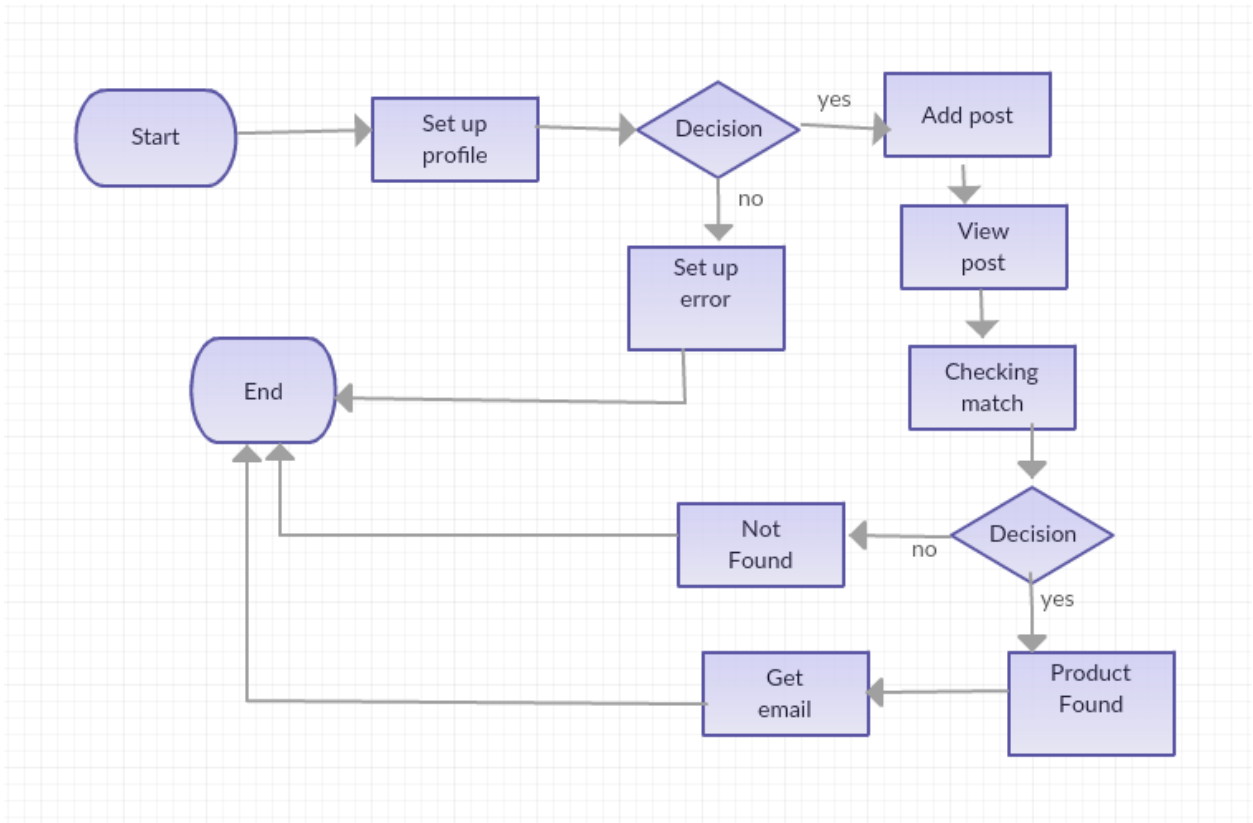


Figure 3.2: Business Process Model (Lost user)

Found user:

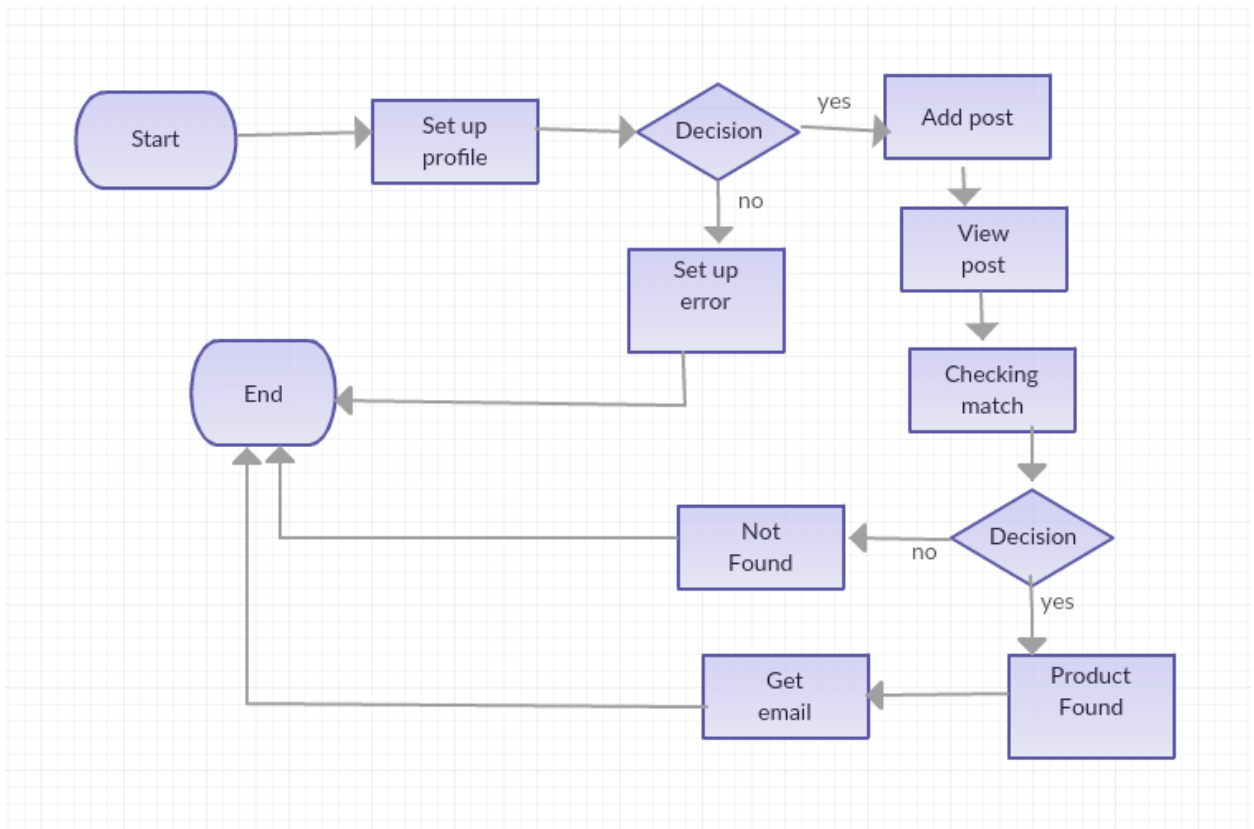


Figure 3.2: Business Process Model (Found user)

3.4 ER-diagram

We use entity relationship model to introduce with interconnection between entity and its attributes. It also acquainted as logical data model. An ER-diagram is a rational and representation model of data and it used to introduce the entity skeleton design.

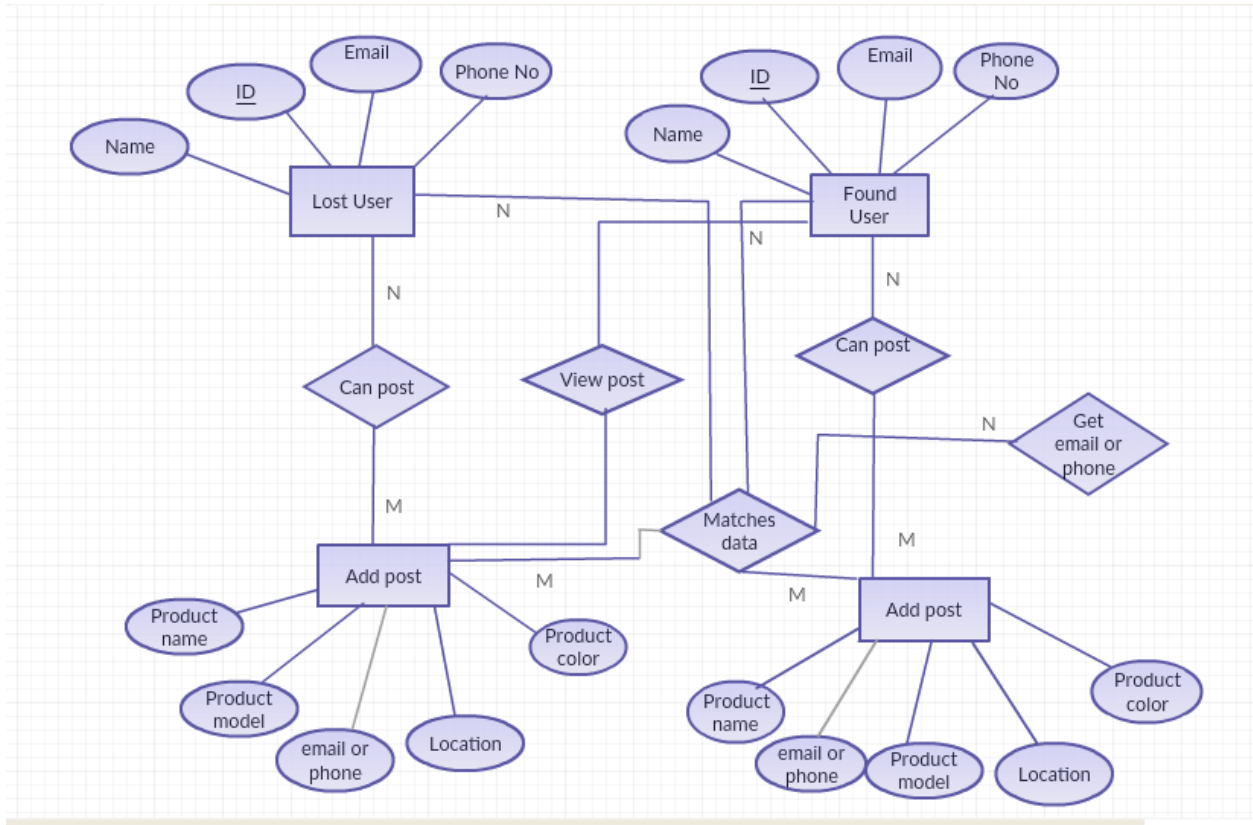


Figure 3.4: E-R Diagram

3.5 Design requirement/analysis

Design analysis is a necessary thing for given a proper infrastructure of our project. We do some successful design to reach our proper destination and appeasement our demand. To develop this application we have to use some tools to design and implements it. At first we use Android Studio IDE to design basic UI and build project.

We have used OOP (Java Programming language) to develop application and xml for designing. For database implementation we have used firebase real time database. We have implemented our basic logo and icon using Adobe Photoshop, which is necessary to provide better, attractive and user friendly interface. The business process model, use case diagram and others diagram are designed using Gliffy (extension of Google chrome) which is more user friendly and reduced time to design a complex diagram.

CHAPTER 4

Design Specification

4.1 Font-end design

Font-end design is a standout amongst the most imperative piece of any application. In the event that the text style end structure of any venture is more troublesome. At that point the client won't utilize the application. Our application made to encourage general individuals so if the UI of our venture isn't reasonable the clients won't be useful by utilizing our application. Assume there are a bunches of highlights in our undertaking however the UI of our application isn't cordial or reasonable then the clients can't utilize the highlights consummately. So we have made the UI of our undertaking neighborly and reasonable with a great deal of highlights in it than the other comparative android applications.

In the figure 4.1 there is a splash screen to welcome a user in our application. Splash screen is a smart feature in android application for welcoming or different purposes. In the splash screen welcome text appears from the top and LOST-FOUND text appears from the bottom.

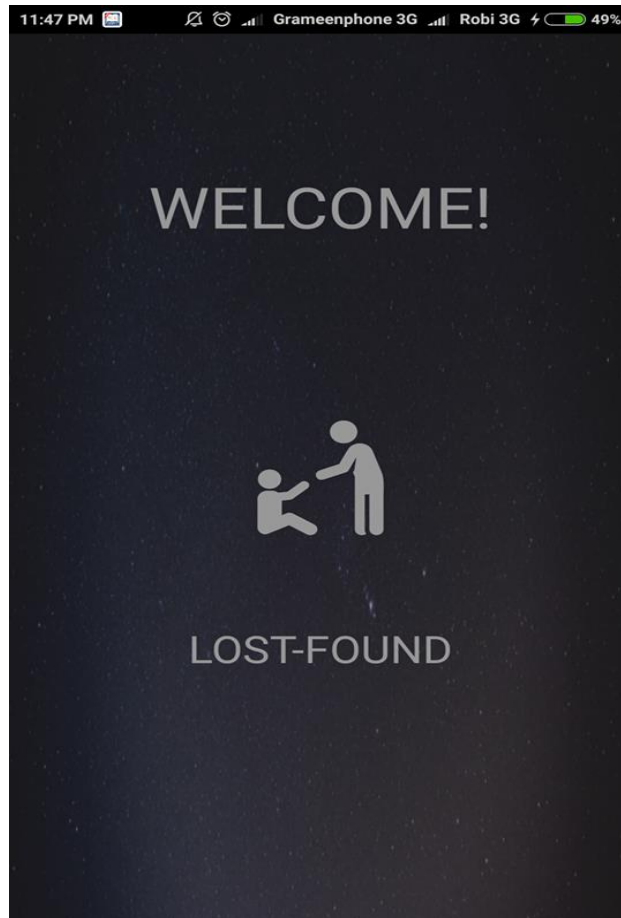


Figure 4.1: Splash screen

In the figure 4.2 there are two buttons, one is Log in and another is Sign up. At the first time user has to complete his/her registration by clicking on Sign up.

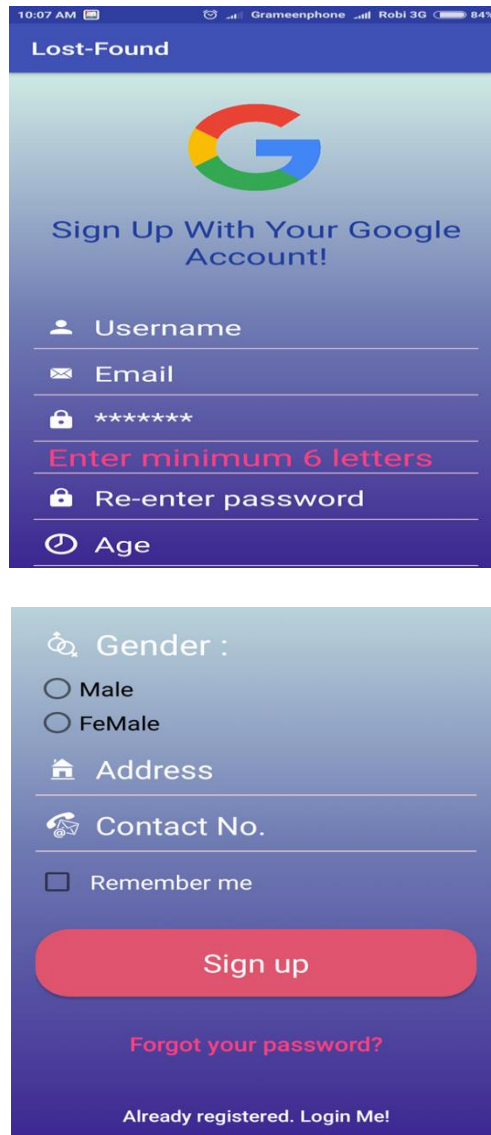


Figure 4.2: Registration Activity

Having clicked on Sign up button user reaches to the figure 4.3 This activity asks the users to put their valid mail and password with authentication. That means the application will sent a mail to that address and user also has to sign in to their mail and verify the registration.

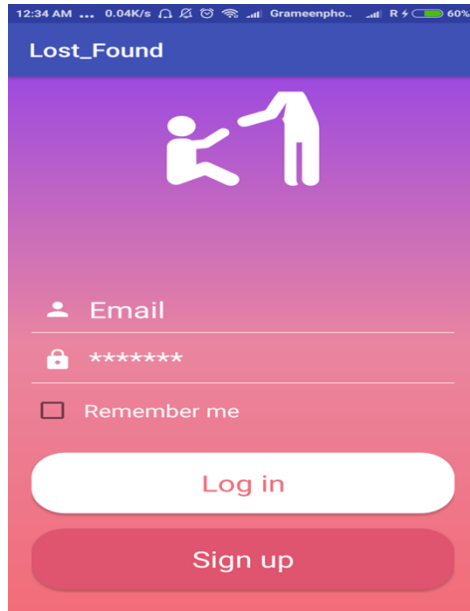


Figure 4.4: Login Activity

In the figure 4.5 it has been shown that if the user just make a registration but not complete the authentication then he might not be able to reach or log in into our desired application.

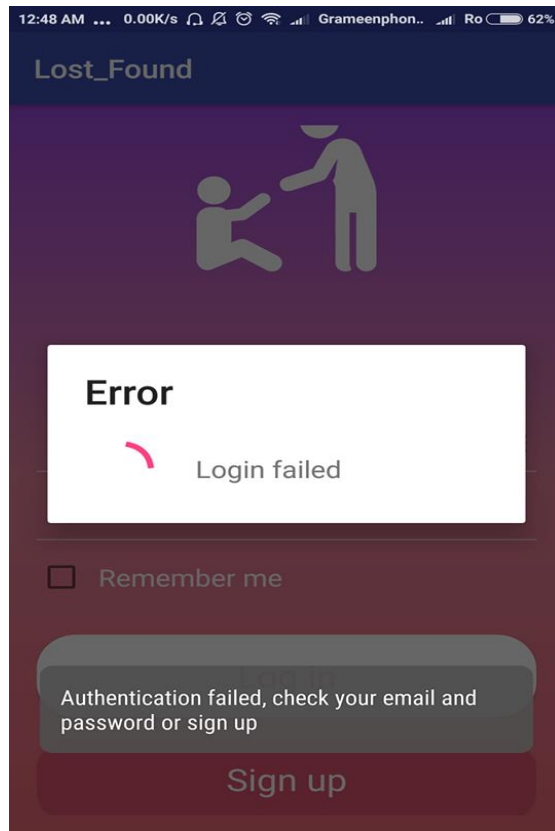
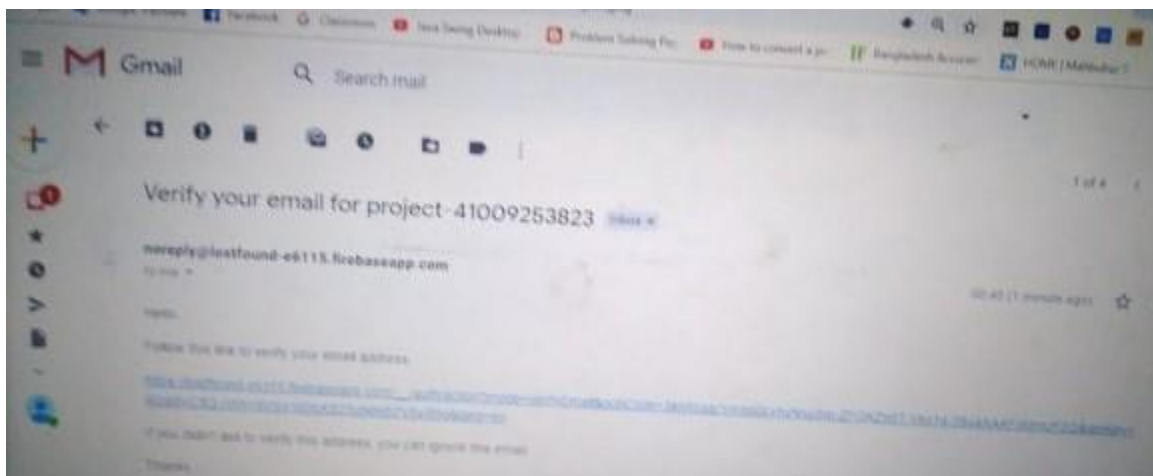


Figure 4.5: Authentication Activity.

So after the registration user needs to verify his email and then can log in into the application.

Figure 4.5.1 shows the verification window.



After clicking on the link email will be verified successfully Figure 4.5.2 shows the notification after successfully verified the email.

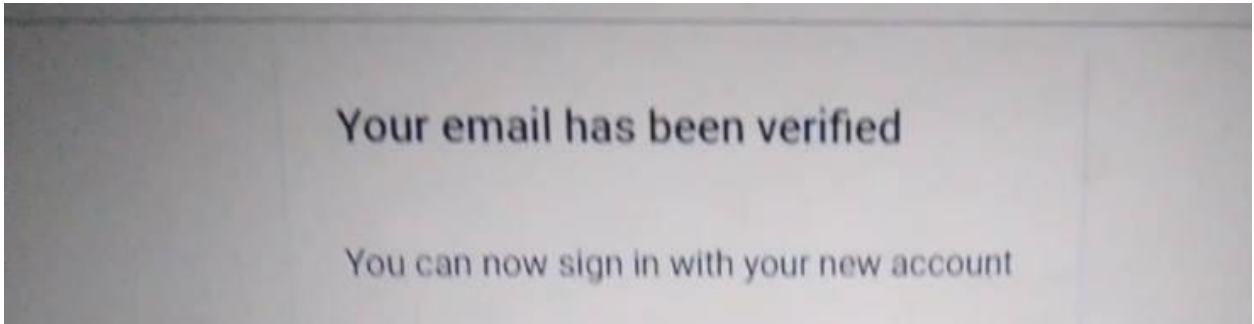


Figure 4.6.2 : Mail verification .

Having completed all the process of confirmation now user in signing in into the application.

In figure 4.5 the user will have to give name, email address and a photo to make a profile. In figure 4.7 it has been shown the home activity. Here there are two main button. Lost item button and Found item button furthermore Navigation Drawer Menu with plus icon.

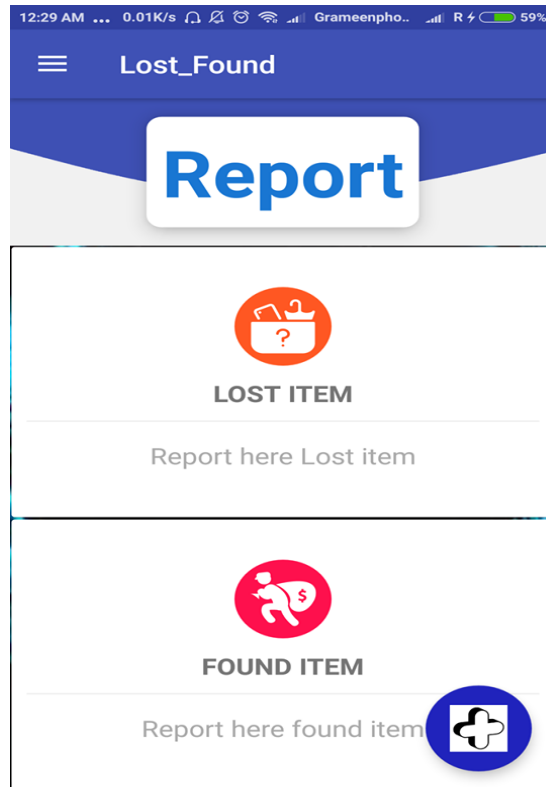


Figure 4.7: Home Activity.

Figure 4.8 shows the navigation drawer menu item activity where we have given two menu item named call and SMS. Clicking on call or SMS menu item any user can contact with us (developers).

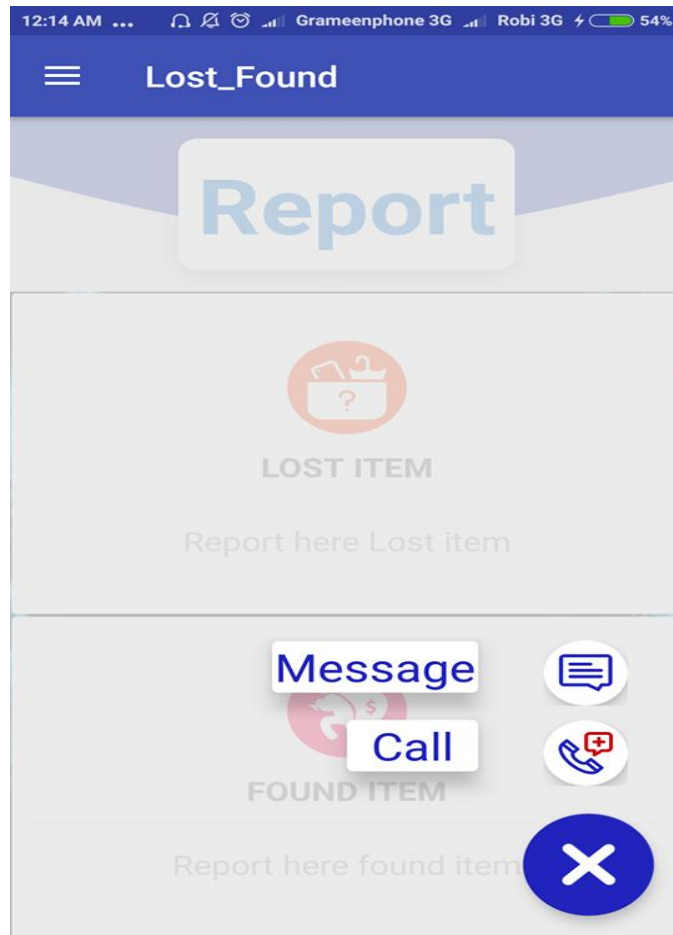


Figure 4.8: Navigation Drawer Details Menu Item Activity.

Figure 4.9 shows Lost activity where user will upload all the lost item information.

10:34 AM ... 0.86K/s ... Grameenpho... Robi... 81%

Lost-Found

Lost

Lost Item's name
Mobile

Lost Item's color
Golden

Lost Item's IMEI
112233

Lost Item's location
Dhanmondi

CHOOSE IMAGE Enter name for Image

↑

SAVE **SHOW** **MATCH**

Figure 4.9: Lost Activity.

In figure 4.9 there are 5 fields for input. They are name, color, model, location and email. Other 3 fields are for action named SAVE, SHOW, MATCH.

SAVE button is used for storing data into firebase database and SHOW button is used for displaying the data having retrieved.

In figure 4.10, it has been shown the result of VIEW action.

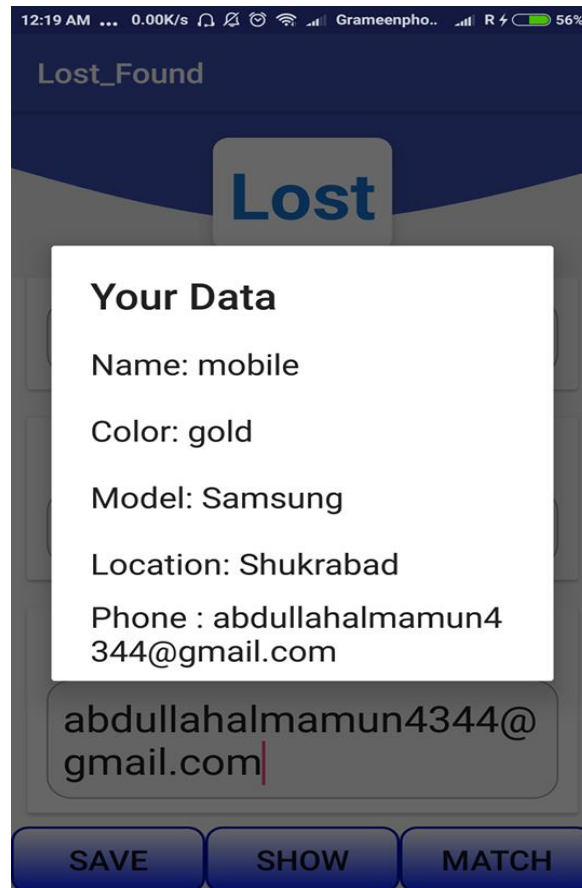


Figure 4.10: View Dialog.

Before going to Match activity we would like to go back into Found activity.

Figure 4.11 shows **Found** activity.

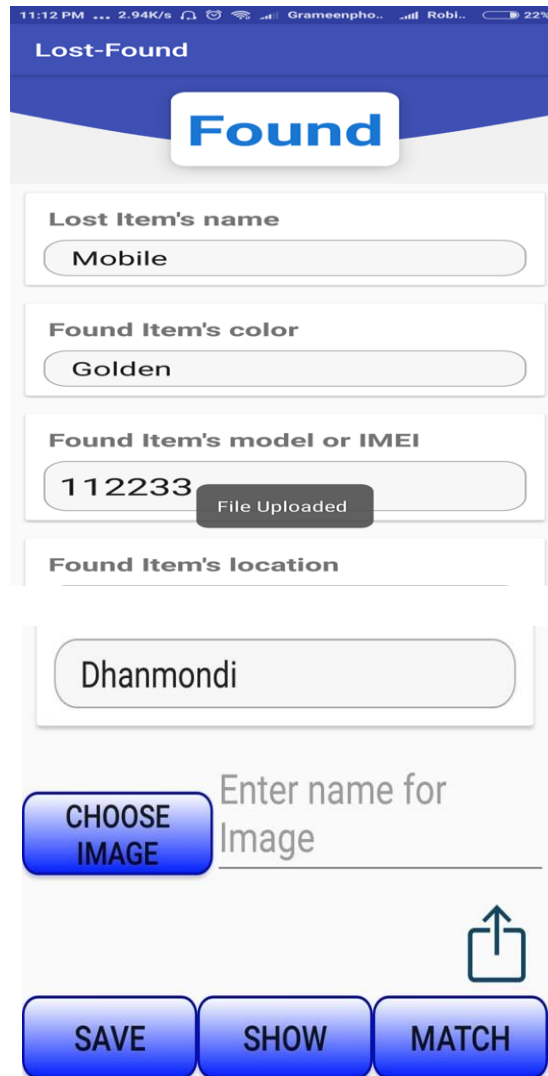


Figure 4.11: Found Activity

In figure 4.11 there are 5 fields for input. They are found_name, found_color, found_model, found_location, and found_email. Other 3 fields are for action named SAVE, SHOW, MATCH.

SAVE button is used for storing data into firebase database and **SHOW** button is used for displaying the data having retrieved.

In figure 4.12, it has been shown the result of **VIEW** action.

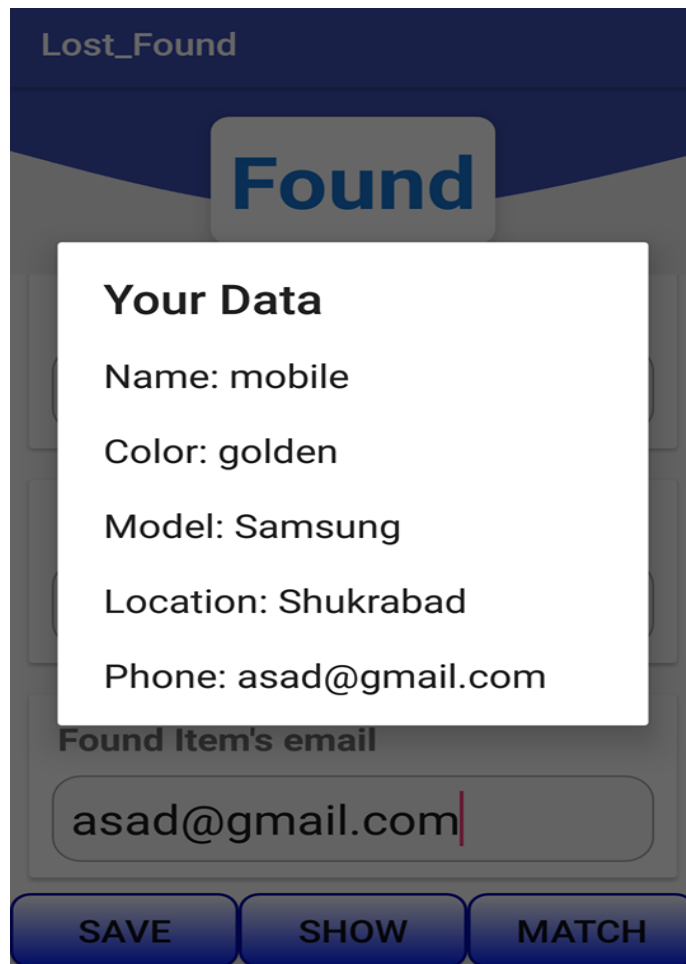


Figure 4.12: Found View

We have developed such a methodology where both of lost and found user can check or compare that it has been matched or not.

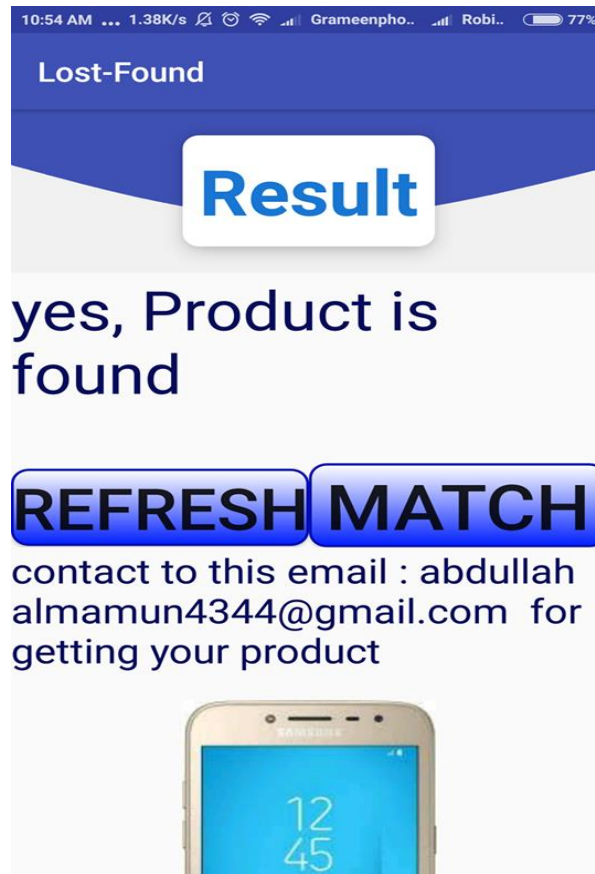


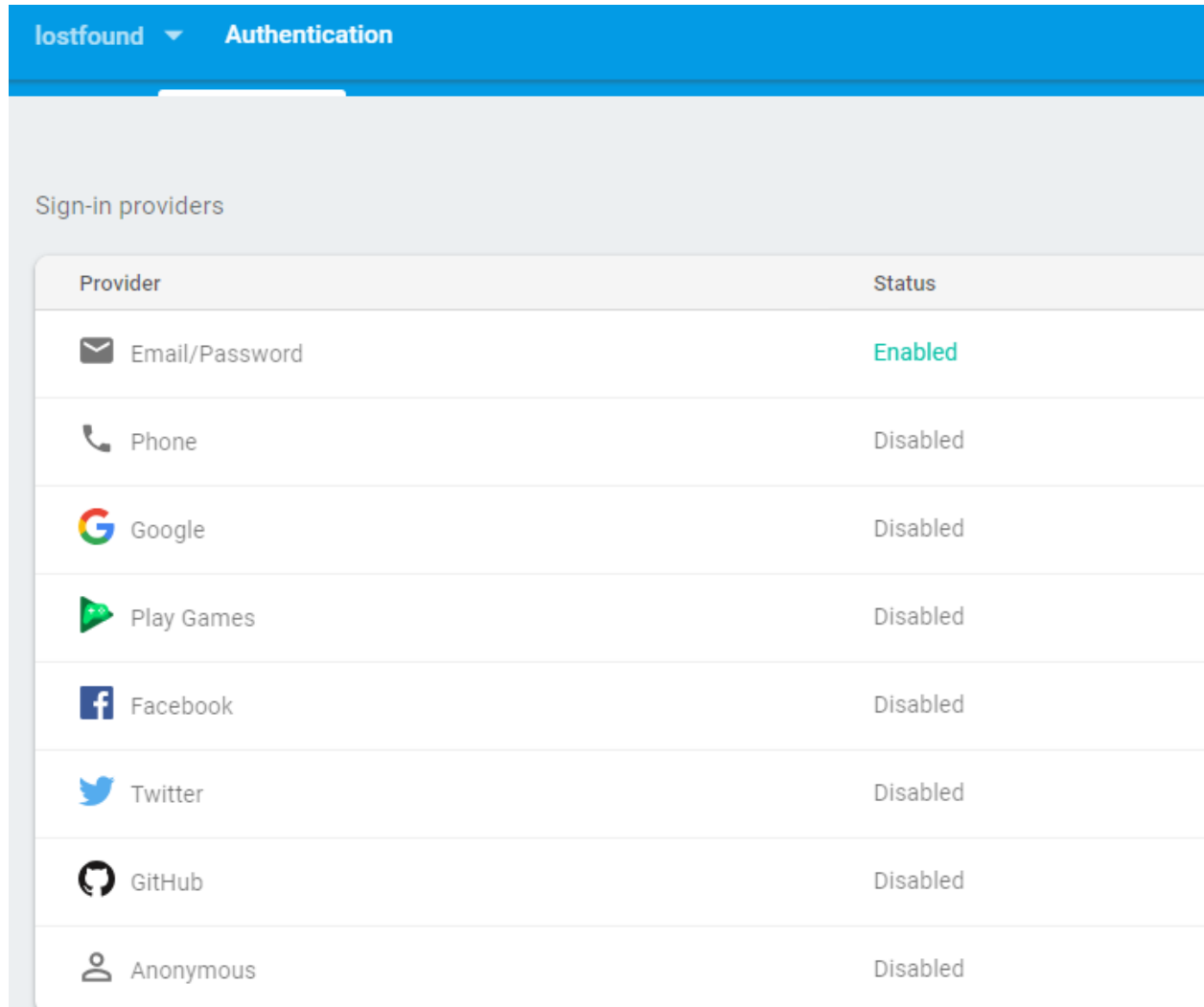
Figure 4.13: Matching Activity

At the previous point we have created two accounts and uploaded both of lost and found users to the firebase online database to match with each other. And we observed that both of lost and found data are same. So when user will click on match button then we will see that item is matched and showed other email address in a textView.

4.2 Back-end design

Back-end configuration is a standout amongst the most vital parts for any sorts of use advancement. It is regularly not unmistakable to the ordinary clients this is noticeable for the designers of a specific undertaking. It enables the text style to end configuration to work legitimately to accomplish the primary objective of any applications. For the most part, the back-end configuration does everything behind to keep up the servers and the databases utilized in the applications and controlling any sorts of activities made by the clients. So we needed to deal with the information precisely to make our application more helpful.

We attached our back-end design as follow:











Provider	Status
 Email/Password	Enabled
 Phone	Disabled
 Google	Disabled
 Play Games	Disabled
 Facebook	Disabled
 Twitter	Disabled
 GitHub	Disabled
 Anonymous	Disabled

Figure 4.16: Authentication Type.

Figure 4.14 shows the authentication table of our database. We used email verifications for signing up any kinds of users in our application. So here we can see the email authentication is enabled.

<input type="text" value="Search by email address, phone number, or user UID"/> Add user ↻ ⋮ 				
Identifier	Providers	Created	Signed In	User UID ↑
almamun4344@diu.edu.bd	✉	Nov 20, 2018	Nov 20, 2018	SGZfJZLuFvQuKp7JFMNbPskPX...
asadtapos@gmail.com	✉	Nov 17, 2018	Nov 20, 2018	SRduZKjH8LgjB8ERuPRQ3eKgk9x1
islamrobiul772@gmail.com	✉	Nov 17, 2018	Nov 17, 2018	VHfxTQMdvQRptZ4seNqcdq1bcC...
researchpaperfall18@gmail...	✉	Nov 20, 2018	Nov 20, 2018	ZWZfLxC88QaYe4g2gYtm2Yfpcn...
golam35-2380@diu.edu.bd	✉	Nov 20, 2018	Nov 20, 2018	cYTY2XChHsOnaVOTmltM5C53z...
abdullahalmamun4344@gm...	✉	Nov 20, 2018	Nov 20, 2018	otjl9F6jJxXmdLIVSVtVRyu9PH32

Figure 4.17: User Authentication.

Figure 4.15 shows the list of users sign upped in our application.

4.3 Interaction design and UX

Back-end configuration is a standout amongst the most vital parts for any sorts of use advancement. It is ordinarily not unmistakable to the ordinary clients this is obvious for the designers of a specific venture. It enables the textual style to end configuration to work appropriately to accomplish the fundamental objective of any applications. Principally the back-end configuration does everything behind to keep up the servers and the databases utilized in the applications and controlling any sorts of activities made by the clients. We utilized Firebase as our database keeping up the back-end of a firebase database is troublesome so we needed to deal with the information precisely to make our application more helpful.

4.4 Implementation requirements

For implementing our project there are some requirements we needed to fulfill. Requirements mean the particular objects and materials essential for our project implementation.

4.4.1 Android studio

Our application is an android based application so our IDE must be between Android Studio or Eclipse we choose android studio as the platform of our project development. Android studio is a property of Google for android application development. Android studio uses java library and OOP concepts.

4.4.2 Basic android overview

For executing our undertaking there are a few necessities we expected to satisfy. Necessities mean the specific labor venture is an android based application so we must have a reasonable thought regarding the android. This is the open source working framework by Google. Utilizing the devices and the casing work one can without much of a stretch form an android application. Forgetting venture thoughts and application promoting there is a gigantic commercial center named play store this is likewise made by Google and materials fundamental for our task execution.

4.4.3 Firebase

We utilize firebase as our database. Firebase is a stage additionally created by Google. By utilizing JSON the firebase handle the ongoing information in the database. Firebase database can likewise be utilized in various stages like web structuring And IOS. So in not so distant future in the event that we need to make our application in cross stages it will be significantly simpler for us.

4.5 Implementation Requirements

For actualizing the application we need to keep up some requirements. Because our undertaking is an android based application so the running stage must be android. The base API dimension of the android form should 5.1.1 Lollipop. After establishment there, we must have the web association since we utilize firebase as our database. Firebase is a constant database so the web association must be turned on. Another necessity of our application is the GPS must be turned on at a high precision.

CHAPTER 5

Implementation and Testing

5.1 Implementation of database

The execution stage is the place we introduce the DBMS on the required equipment, improve the database to run best on that equipment and programming stage, and make the database and load the information. Usage of the database encourages the engineers to deal with the information about the application synchronized. We can stack the related information in our database and get them at whatever point we require them that is a database must be actualized in any application to make it more powerful.

5.1.1 Database management

There is a database implemented in our project. We used firebase as our main database. Firebase is a real-time database. This is a blessing of Google. Firebase has some facilities like real-time Database, Crash reporting, Hosting, Authentication, Cloud storage, and many other features. We had to put some kinds of authentication. Firebase supports Google+, Github, Facebook and many kinds of authentication we could use any of these but due to a more secure process, we have used Gmail authentication system [4].

The firebase is a Non-SQL database we don't have to write any query for fetching and sending data in our back-end designing. We also don't have to sort the data in firebase. It generates the table on its own. All we have to do is to call the data by the unique id of the database table in which the data is situated.

The real-time Database API is designed to only allow the actions taken by the users can be fulfilled as fast as possible. The real-time database gives a great experience that can serve millions of users without any problem at a time through the internet. Because of this, it is important to think about how users need to access their data and how they can fetch the data.

5.1.2 Storing process of data

We use firebase as our main database. This is a real time data base so we don't have to write any query to fetch and send any kind of data. When any kinds of user signed up by using phone number authentication the database by itself gives the user a unique ID.

Identifier	Providers	Created	Signed In	User UID ↑
almamun4344@diu.edu.bd	✉	Nov 20, 2018	Nov 20, 2018	SGZfJZLuFvQuKp7JFMNbPskPX...
asadtapos@gmail.com	✉	Nov 17, 2018	Nov 20, 2018	SRduZKjH8LgjB8ERuPRQ3eKgk9x1
islamrobiul772@gmail.com	✉	Nov 17, 2018	Nov 17, 2018	VHfxTQMdvQRptZ4seNqcdq1bcC...
researchpaperfall18@gmail...	✉	Nov 20, 2018	Nov 20, 2018	ZWZfLxC88QaYe4g2gYtm2Yfpcn...
golam35-2380@diu.edu.bd	✉	Nov 20, 2018	Nov 20, 2018	cYTY2XChsOnaVOTmltM5C53z...
abdullahalmamun4344@gm...	✉	Nov 20, 2018	Nov 20, 2018	otjI9F6jJxXmdLIVSVtVRyu9PH32

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Figure 5.1: Authentication Table

5.5 Implementation of front-end design

The screenshot shows a mobile application interface for reporting a lost item. The app is titled "Lost_Found" and features a prominent "Lost" button. Below the button, there are three input fields for user input:

- Lost Item's name:** The input field contains the text "mobile".
- Lost Item's color:** The input field contains the text "gold".
- Lost Item's model:** The input field contains the text "Samsung".

Lost Item's location

Shukrabad

Lost Item's Emil

abdullahalmamun4344@
gmail.com

SAVE SHOW MATCH

Figure 5.5: Add Post Activity.

In figure 5.5 the user save their data and the data will store into firebase.

5.3 Implementation and interaction

Usage implies merging the front-end and back-end. Moreover, connection infers to relate customers to the application. Our application is to a great degree straightforward and easy to use. We use advance trade and toast in every movement where there could be an inconvenience for the customers thusly what we completed our in application

5.4 Testing Implementation:

Table 5.4 Implementation Test case and Result

Test case	Test Input	Actual Output	Result	Tested On
Installation	Install in different android versions.	Successfully installed	Passed	22/11/2018
Check internet connection	Turn off internet connection	Toast showed	passed	22/11/2018
Email verification	Input email by user	Code sent to the inputted email	passed	22/11/2018
Check handler	Turn on the internet connection after turning it off	Goes to the next page after showing the progress dialog	passed	22/11/2018
Show the	Press the	The user can	Passed	22/11/2018

users posts.	show button	see current posts added by him/her		
Retrieve all data	Press Refresh button	The user have To retrieve all data for matching	Passed	22/11/2018
Matched or not	Press the matched button	The user can check whether matched or not	Passed	22/11/2018
Retrieved matched user email	Press the matched button	The user can see the specific email	Passed	22/11/2018

5.5 Test results and reports

Test result is important for to visualize the outcome of our project how it running successfully. Test case is a reflection of workability of an application. It is a process that given a structure of our application operational implementation.

We testing our application in 5.4 where we show test case, test input, actual output and eventually we get the proper result. Our application is very user friendly.

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and conclusion

Lost-Found is an android based portable application which has been effectively actualized from the perspective of expert improvement criteria, however, we have endeavored to worry as conceivable as we can as a client. We are grateful to our decent administrator who causes us a considerable measure to finish this venture effectively. We have tried our application in different sorts of gadgets and it worked splendidly. We plan this application exceptionally easy to understand. So any individual who have the least information about android telephone they can without much of a stretch utilize it.

There is a chance of upgrading the system further more. In this chapter we will like to discuss about the goal of the project development, project limitation and further improvement ideas of the project.

Outcomes of this project which one we have achieved to,

- Learn, how to architect a project
- Team work
- Storing data into 2d array and matching technique
- Firebase online database

6.2 Limitation

Our application has some limitations. We will overcome those limitations in near future. Some of the main limitations are-

- ❖ We have only developed the application for android application.
- ❖ We have used firebase online database so without internet connection the communication will not be possible.

- ❖ We need to increase more functionality in future.

6.3 Scope for future development

- ❖ We will add more additional features to make this application more dynamic and attractive as well as user friendly.
- ❖ We will try to publish a research paper regarding this application.

In future we will try to make this application for all platforms.

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