

**DESIGN AND DEVELOPMENT OF AN ANDROID APP BASED
APPLICATION FOR SECURE YOUR CHILD**

BY

Mohammad Raihan Uddin Shafat

ID: 153 – 15 – 6508

Abul Hasan

ID: 153 – 15 – 6587

Md. Tarequr Rahman

ID: 152– 15– 5529

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering.

Supervised By

Mr. ABDUS SATTAR

Assistant Professor

Department of CSE

Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

September 08, 2019


APPROVAL

This Project/internship titled “**Secure Your Child**”, submitted by Mohammad Raihan Uddin Shafat ID: 153 – 15 – 6508 Abul Hasan ID: 153 – 15 – 6587 Md. Tarequr Rahman ID: 152– 15– 5529 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.

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Mr. Abdus Sattar, Assistant Professor of CSE Department**, 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.

Supervised by:



Mr. Abdus Sattar
Assistant Professor
Department of CSE
Daffodil International University

Submitted by:

Mohammad Raihan Uddin Shafat
ID: 153-15-6508
Department of CSE
Daffodil International University

Md. Tarequr Rahman
ID: 152-15-5529
Department of CSE
Daffodil International University

Abul Hasan
ID No: 153-15-6587
Department of CSE
Daffodil International University

ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year project/internship successfully.

We really grateful and wish our profound our indebtedness to **Mr. Abdus Sattar, Assistant Professor of CSE Department, Daffodil International University**. Deep Knowledge & keen interest of our supervisor in the field of “*Android App Development*” to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to Prof. Dr. Syed Akhter Hossain and Head, Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

Parents are always worry about their children and try to make sure their present and future is always safe and secure. But now a days it's very difficult to always be with their children. That's why we took the initiative to create an app which give more relaxation about their child security. In this app there use real-time tracking option, that's why parent get always update location of their children. If any family has two or more children this app has option to add all of them for locating at a time. By Geo-fence system parents can set the specific area, when children enter the Geo-fence area parent will get a notification that "Your child enter in Geo-fence". When out from the Geo-fence parents will get notification that "child is out from the area". If two or more children enter or out from the Geo-fence at a time, then parent will also get all the notification at a time. In this app there use QR code generator and scanning option when add child in parent app, so that any miscreant can't track or observe other children. This app help parents to always monitoring their children. Now-a-days this app will be very helpful for those parent who are busy for job and business purpose.

TABLE OF CONTENTS

CONTENS	PAGE
Approval	i
Declaration	ii
Acknowledgements	iii
Abstract	iv
CHAPTER	
CHAPTER 1: INTRODUCTION	1-3
1.0 Introduction	1
1.1 Motivation	1
1.2 Objectives	1
1.3 Expected Outcome	2
1.4 Report Layout	3
CHAPTER 2: BACKGROUND	4-9
2.0 Introduction	4
2.1 Related Works	4-9
2.2 Comparative Studies	9
2.3 Challenges	9
CHAPTER 3: REQUIREMENT SPECIFICATION	10-13
3.0 Requirement Collection and Analysis	10
3.1 Design Requirements	10-11
3.2 Use Case Modeling and Description	11-12
3.3 Entity Relationship Diagram and Description	12

CHAPTER 4: DESIGN SPECIFICATION	13-20
4.0 Front-end Design	13-19
4.1 Back-end Design	20
CHAPTER 5: IMPLEMENTATION AND TESTING	21-22
5.0 Requirements for Implementation	21
5.1 Testing Implementation	22
CHAPTER 6: CONCLUSION AND FUTURE SCOPE	23
6.0 Discussion and Conclusion	23
6.1 Scope for Further Developments	23
APPENDIX	24
APPENDIX	25
REPORT	26

LIST OF FIGURES

Figure 1.0: Searching Kids	1
Figure 2.1.1: FAMILYTIME (ANDROID AND IOS)	4
Figure 2.1.2: QUSTODIO (ANDROID, IOS, KINDLE, NOOK)	5
Figure 2.1.3: ESET PARENTAL CONTROL (ANDROID)	5
Figure 2.1.4: WEB WATCHER (ANDROID AND IOS)	6
Figure 2.1.5: NORTON FAMILY PREMIER (ANDROID AND IOS)	6
Figure 2.1.6: KASPERSKY SAFE KID	7
Figure 2.1.7: LOCATEGY (ANDROID)	7
Figure 2.1.8: FAMILY LOCATOR GPS TRACKER	8
Figure 2.1.9: MSPY	8
Figure 2.1.10: OURPACT	9
Figure 3.2: Use Case Model	11
Figure 3.3: ER Diagram	12
Figure 4.0.1: Landing Page of Both Application	13
Figure 4.0.2: Registration Process for Parent and Child	14
Figure 4.0.3: Location and Profile Showing of Parent and Child	15
Figure 4.0.4: Menu for Parent and Child	16
Figure 4.0.5: Connecting with Parent Application	16
Figure 4.0.6: Adding Child on Parent Application	17
Figure 4.0.7: Selecting Location by Geo-Fence	18
Figure 4.0.8: Notification for Geo-Fence Entrance and Exits	19
Figure 4.0.9: Show All Child List and Delete	19
Figure 4.1: Back-end Design (Firebase)	20
Figure 5.0: Application Icon for Child and Parent	21
Table 5.1: Testing Implementation	22

CHAPTER 1

INTRODUCTION

1.0 Introduction

As a parent, your child's safety is of utmost importance. Although this a world of instant communication, sometimes a smartphone simply isn't enough to ensure the safety of your children. Here we came with an idea by which we can keep in touch with our child's all the time through an app in our smart phone. We can also monitor our kids from everywhere by this app. This app will help us to ensure where our kids are staying now. It will also help us by ensuring our kids are in safe zone.

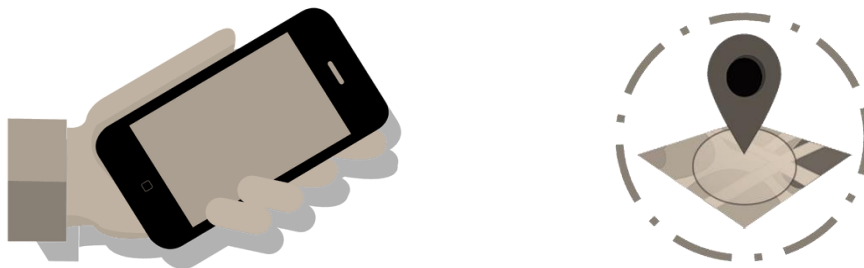


Figure 1.0: Searching Kids using smart phone

1.1 Motivation

Our main motivation of this project is to keep eyes on our children's all the time. Nowadays people are getting pretty much busy in their work places for this reason they cannot monitor their children's many times. For this they will face many difficulties to communicate with their children's and know about the children's current situation and position.

1.2 Objectives

- Keep your loved ones safe.
- Determine a child's location.
- Monitor children with mental/behavioral disorders.

1.3 Expected Outcome

- It is an Android application by which parents can directly monitor their children location by real time tracking of location.
- In this application, Parents will receive an alert when their children will out of the Geo-fence and also whenever their children reached any selected place and come back home.
- It is necessary to have a Mobile and Network connection to access the Application by both parents and children.
- The main goal is that feel the safe all time, stay with kids, monitoring when even home away, quick support from the parents.

The proposed project is a great solution for keep our loved one safe and connected with us at any time they needed us. In this Android application can track the location of our children to keep them in our sight all the time. It also can notify us when our children will go somewhere where we don't want them to go by selecting the location using Geo-fence.

1.4 Report Layout

All reports are broadly organizing in three sections:

- Initial staple
- Test
- Back trouble

The Initial matter consists of the title page, approval page, abstract summary, Acknowledgements, table contents, list of tables, list of figures, other lists and the Preface etc. Initial pages are paginated independently from whatever remains of the content. We have organized our report as follows:

Chapter 2, deliberate the background statuses of our project. We also advise about the linked work, the challenges of our project and I am compared too many other candidate systems.

Chapter 3, decide the requirements of the project. We defined the use case diagram and design requirements. I also discussed about the requirement collection and analysis process.

Chapter 4, describe the designing part related to front-end and back-end of the project.

Chapter 5, exhibited the execution of the whole project and we tested every unit of the project weather our application working as expected.

Chapter 6, discussed about conclusion and our next planning regarding the project update.

CHAPTER 2

BACKGROUND

2.0 Introduction

Nowadays people are getting very much attracted to smart phones. They are using many android applications in their android smart phones for making their daily life easier and they also do many different types of work on their android phone by many different applications. There are many applications for tracking people over the world but in our country there are no application to track someone we needed. And day by day the user of smart phone in our country is also increasing. In this chapter we try to give the overall concept of our android application “Secure Your Child”.

2.1 Related Works

2.1.1 FAMILYTIME (ANDROID AND IOS)



Figure 2.1.1: FAMILYTIME (ANDROID AND IOS)

It is basically for monitor kids by managing their daily routine. As like setting up the time for sleep, time for homework etc. It also have the alert system by which you can get notify in terms of emergency. You can also check the calls, text and also the other things what your kids do on mobile. Here you can also specify any area as safe or danger zone for kids.

2.1.2 QUSTODIO (ANDROID, IOS, KINDLE, NOOK)

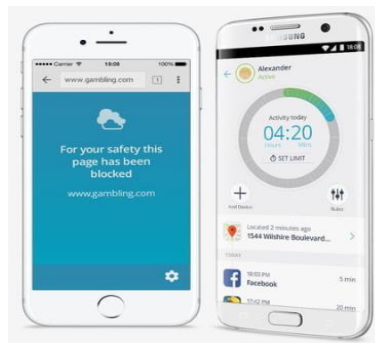


Figure 2.1.2: QUSTODIO (ANDROID, IOS, KINDLE, NOOK)

This can help you by knowing the spending time on social media like Facebook, Instagram, and Twitter etc. You can also see the activity of mobile which your child use. You can also block many bad sites by this.

2.1.3 ESET PARENTAL CONTROL (ANDROID)

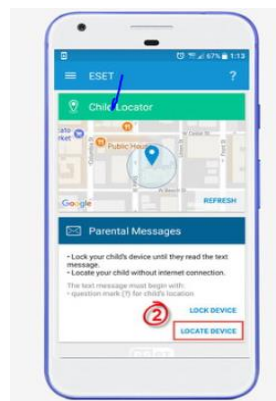


Figure 2.1.3: ESET PARENTAL CONTROL (ANDROID)

This app has two different versions according to features. In the version which is free you can block apps, set a specific time for playing games on mobile. In premium version you can block many websites as you want, track the location of your child and do messaging with your child.

2.1.4 WEB WATCHER (ANDROID AND IOS)

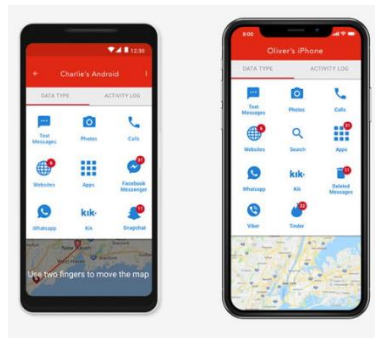


Figure 2.1.4: WEB WATCHER (ANDROID AND IOS)

Here is another option for you to monitor your child by checking all the activity and all the things deleted by the child. It gives you the chance to take screenshots of your child mobile screen from any places. It also have the web monitoring option.

2.1.5 NORTON FAMILY PREMIER (ANDROID AND IOS)

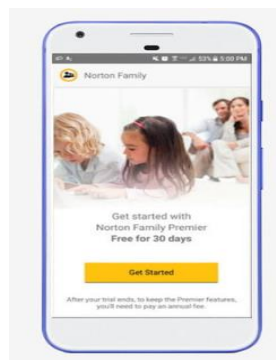


Figure 2.1.5: NORTON FAMILY PREMIER (ANDROID AND IOS)

This is an online monitoring system. It will help you by blocking sites and keep records of the activity. It's just for finding what your child do online.

2.1.6 KASPERSKY SAFE KID



Figure 2.1.6: KASPERSKY SAFE KID

It helps you to real time tracking of your child location and also find the safe areas for them. The best things of this is in times of getting low of battery you can warn them to recharge. You can also have an alert system on it.

2.1.7 LOCATEGY(ANDROID)

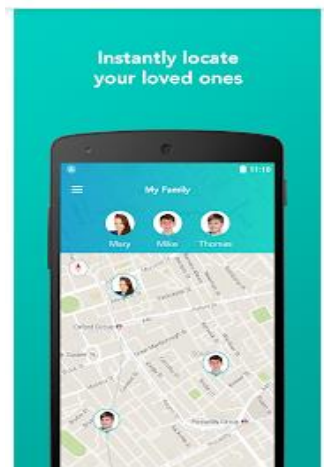


Figure 2.1.7: LOCATEGY(ANDROID)

Most apps are only able to track a cell phone location, but Locategy gives you the option to track all the location details of multiple devices as well as notifications when devices reach or leave an area, panic button for emergency, and ability to remote wipe lost phones or devices.

2.1.8 FAMILY LOCATOR GPS TRAKER



Figure 2.1.8: FAMILY LOCATOR GPS TRAKER

Provides an access to real-time location of all the members

- It has group messaging feature.
- It is very secure and private tool for tracking.

2.1.9 MSPY

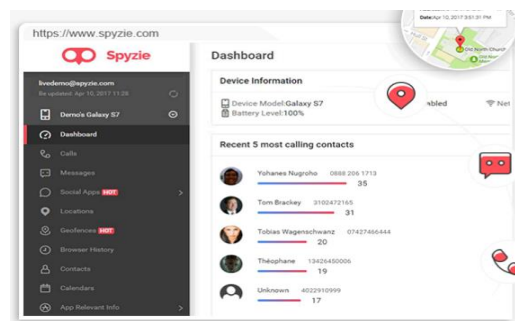


Figure 2.1.9: MSPY

mSpy is a leading parental control app for smartphones that allows parents to monitor text messages, calls, current GPS location, Snap chat, WhatsApp and much more.

2.1.10 OURPACT



Figure 2.1.10: OURPACT

It was intended with the busy families. This system work for two devices which are Android parent and child devices, on Wi-Fi and cellular networks.

2.2 Comparative Studies

“Secure Your Child” the android application is very effective and desired application for every parents who wants to observe their child every time from any places. This application provides the location of child anytime for their parents. This application is undergoing from volume- to value-based service, with an emphasis on quality.

2.3 Challenges

There is a challenge in all the work. No work can be successful without the challenge. Similarly, in our project we also faced some challenges. First of all, we are trying to invent this application with user inspiration resource so we have to complete this application with full fill of user’s requisite and it’s a very challenging for us to encourage user and inspire them.

This Challenge crave to define user-centralize technologies that can raise user performance by discretely monitoring and analyzing activity in the home. The outcomes of these technologies will enable highly personalized user experiences and thinking and also may lead to reduced time, improved the quality of services, enhanced speed of services, and/or improved access to services. That’s Secure Your Child is so much necessary for every parents who are very much aware of their child.

We also faced many other challenges like,

- Work with Geo-fence,
- Notification system and
- Making the user friendly interface.

CHAPTER 3

Requirement Specification

3.0 Requirement Collection and Analysis

This android application is basically for android smart phone user. For smooth work this application requires very simple configuration.

Hardware configuration required:

- Android Smartphone for both child and parent.

Software configuration required:

- OS: Android.
- Tool: android-studio-ide.
- DB: Firebase.
- Server: Firebase.

It also ensures following requirements that is required:

- Data accuracy
- Efficiency of working
- Real time location data show
- User friendly
- Effective

3.1 Design Requirements

- Registration
- Map location
- Parent's Option
- child's Option
- Notification.
- Geo-fence

3.1.1 Features

In the proposed system we have several feature here. These are the main feature.

- Registration by Phone number.
- Verify by code.
- Add child option (QR Code/Manually).
- Show the location.
- Show the distance between parent and child.
- Show all added child serially.
- Set Geo-fence.
- Send notifications when enter or out from Geo-fence.
- Sign out.

3.2 Use Case Modeling and Description

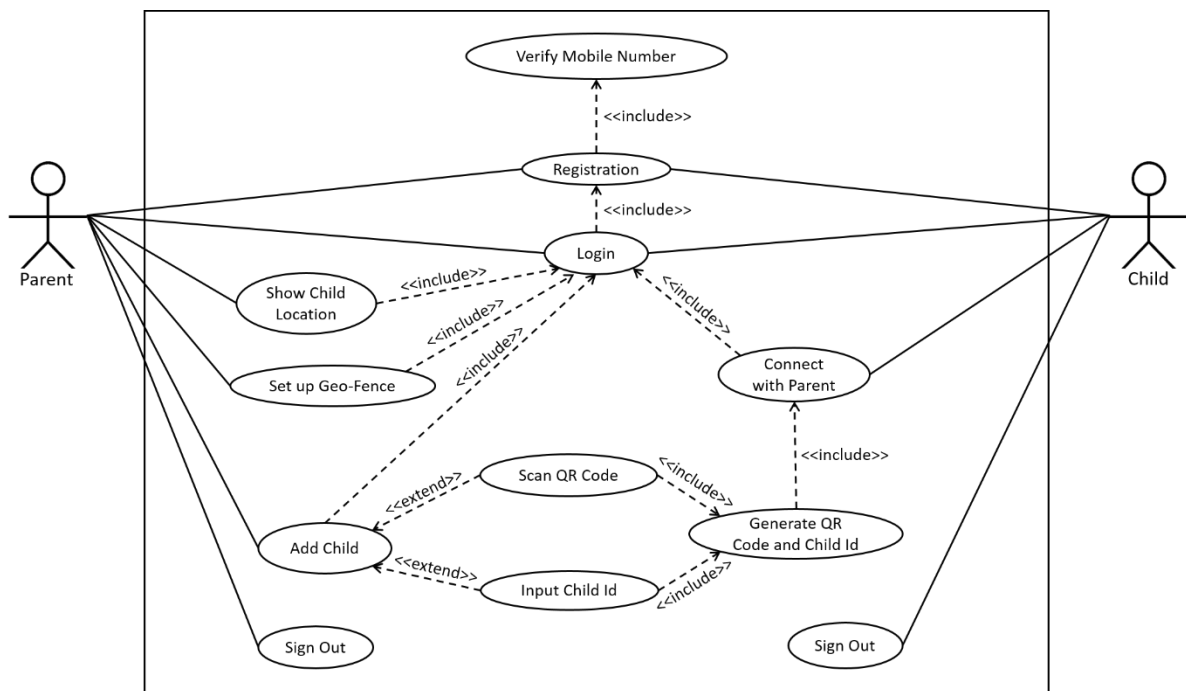


Figure 3.2: Use Case Model

In this Use Case Model there are two actors. One is Parent and another one is Child. Here we can see both actor need valid mobile number for registration. Without verify the mobile number

no one can complete the registration. After registration both actor will directly have logged in the application. Only a registered user can do the next processes of the application.

Parent can add their child into their application using QR code or manual code generated from the child application. Parent can also show the child list if they want to. And also they can remove any child anytime. If a parent signed out they need to register again with a mobile number if the previous mobile number used, then the child history of that mobile number user will show on the list. The child application generates QR code and also a manual code for connect with the parent application. Parent also use the Geo-fence for selecting a specified area to follow their child so carefully.

3.3 Entity Relationship Diagram and Description



Figure 3.3: ER Diagram

In our project, only two entities are working in total application which are parent and child. The parent has a unique mobile number, User name, and Age. As like as parent child also have a unique mobile number, User name and Age. A parent can have more than one child.

CHAPTER 4

DESIGN SPECIFICATION

4.0 Front-end or UI Design

User Interface is the front-end design of an application by which user can interact with the server of the application. The front-end design makes an application more attractive to the users. This design is the development of the application for users. It should be attractive and users should not feel uneasy or annoyed in time of using the application.

4.0.1 Starting Page

Here is the starting page of the application. This design is different for parent and child to identify the applications.

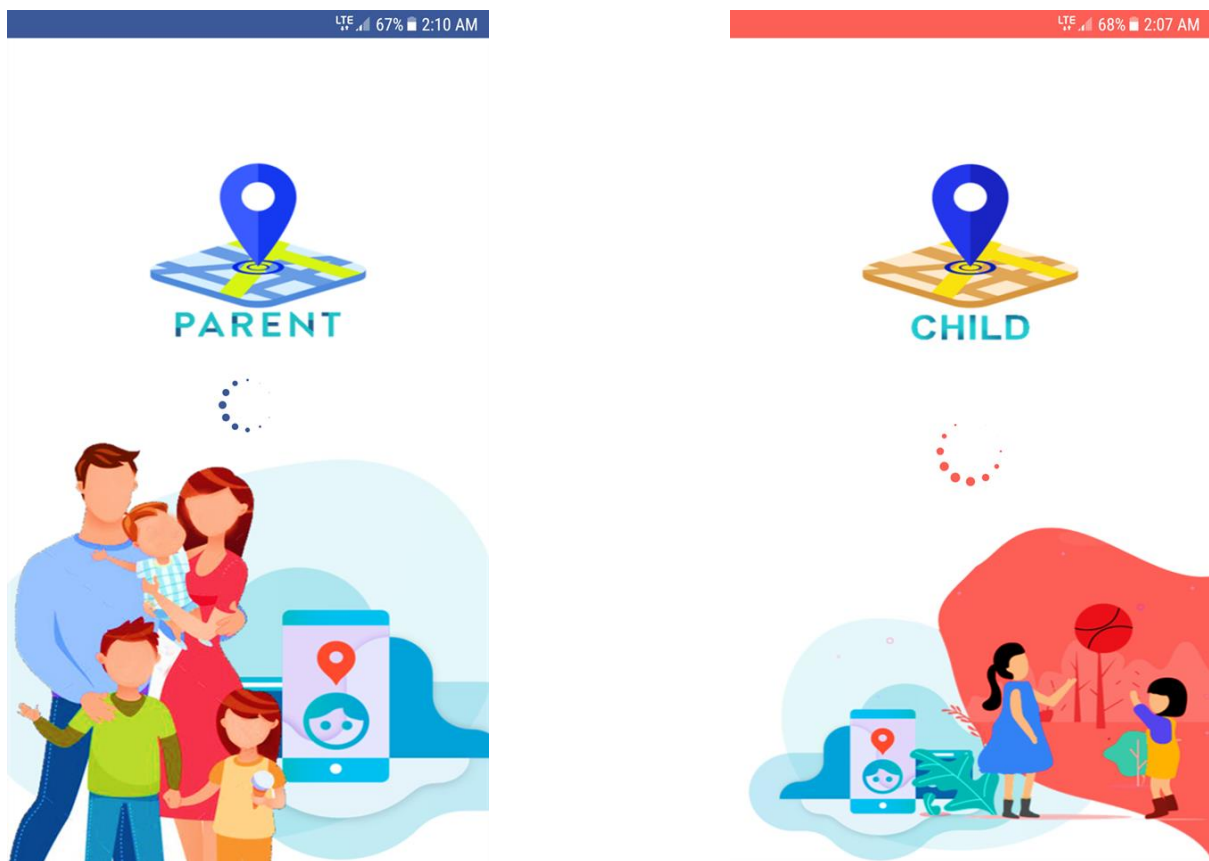


Figure 4.0.1: Landing Page of Both Application

4.0.2 Registration Process for Parent and Child

Here is the registration process pages design for both parent and child. Both need a valid mobile number for registration.

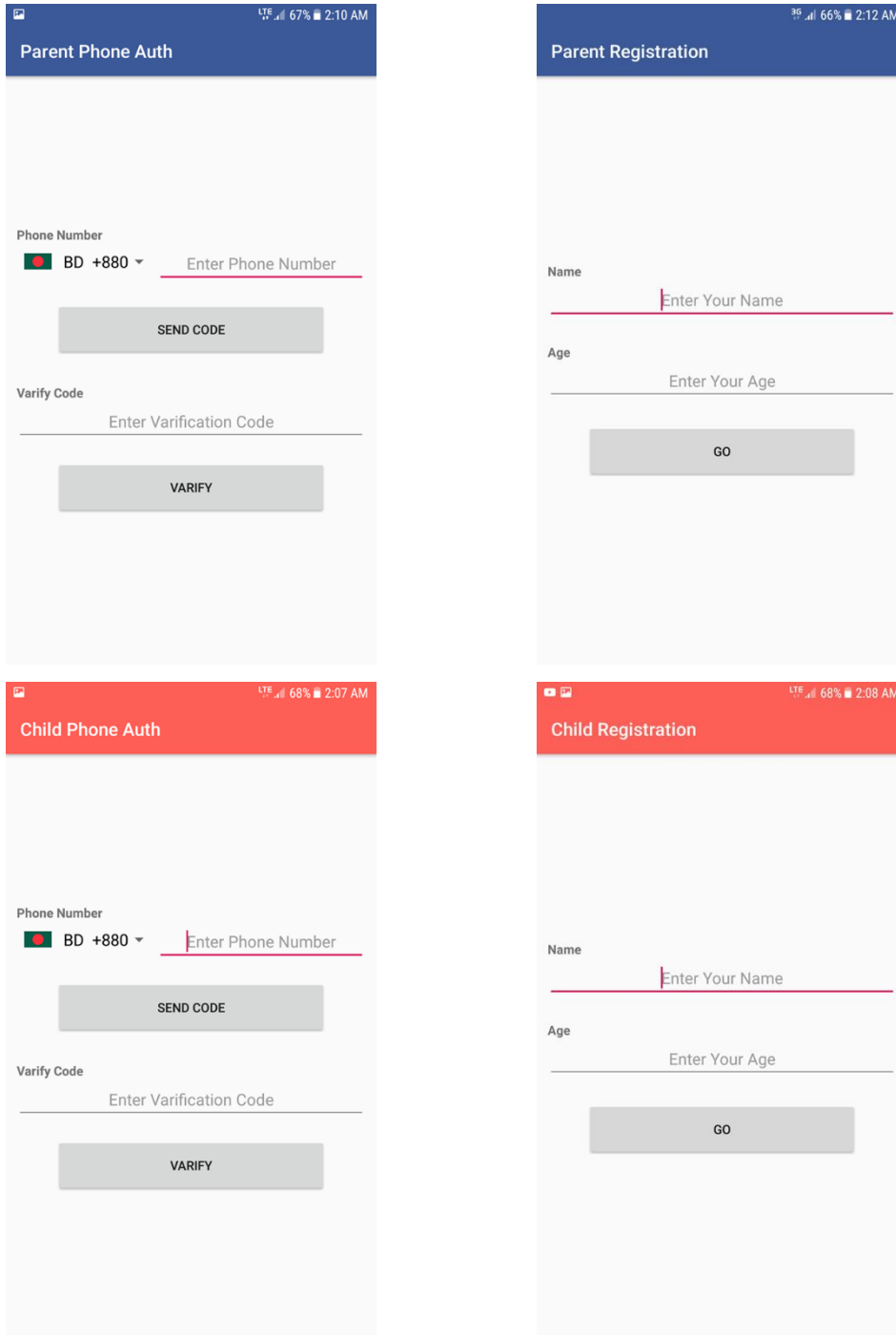


Figure 4.0.2: Registration Process for Parent and Child

4.0.3 Location and Profile Showing of Parent and Child

After registration the user can see their current location and their profile into the individual's applications. Here is the design for these processes.

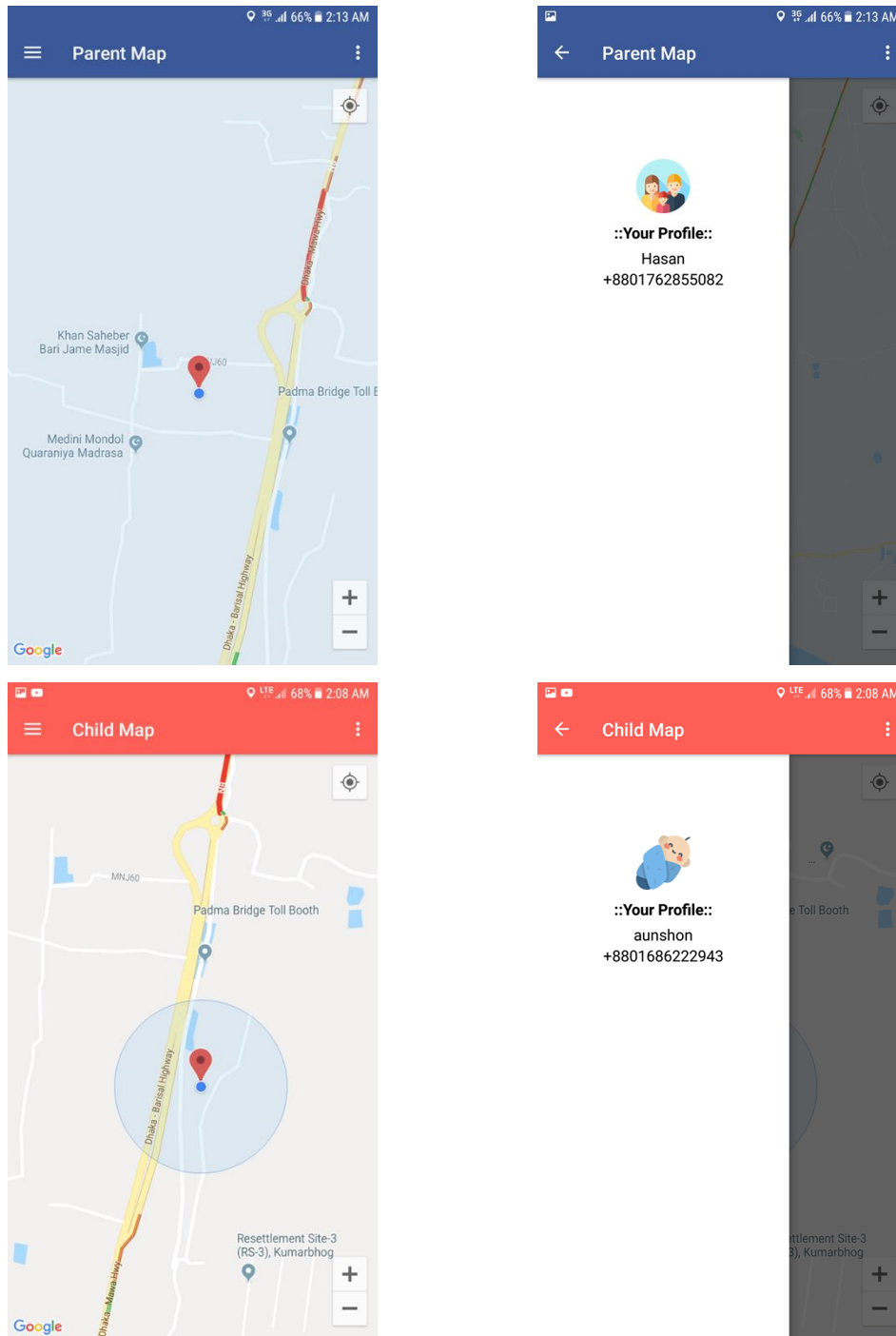


Figure 4.0.3: Location and Profile Showing of Parent and Child

4.0.4 Menu for Parent and Child

The parent and child have different menu. Here is the menu list design for parent and child.

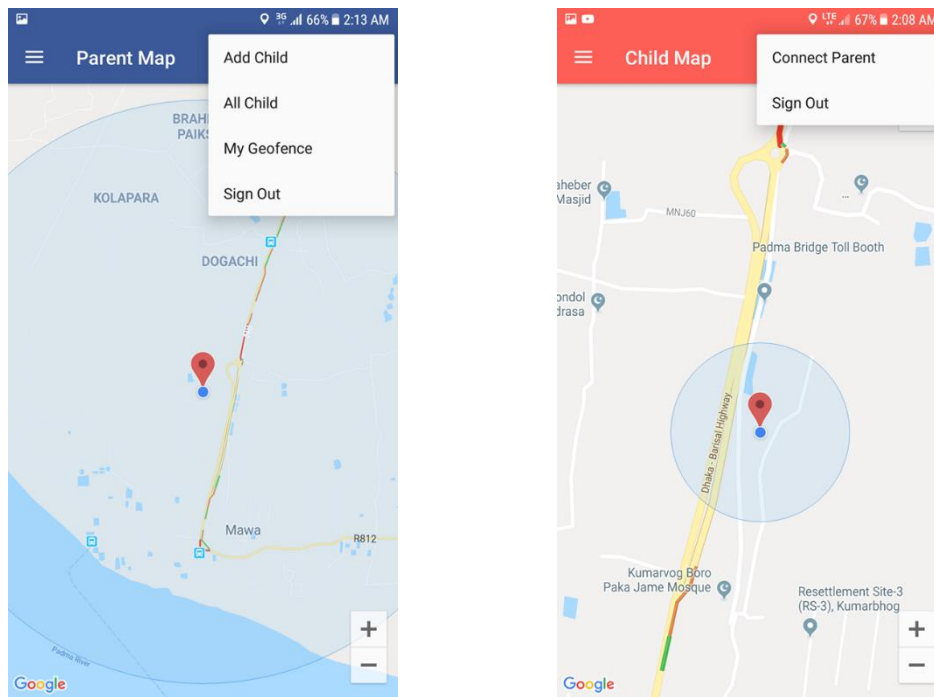


Figure 4.0.4: Menu for Parent and Child

4.0.5 Connecting with Parent Application

In time of adding child in parent application, child application generates QR code and manual code for scanning when parent need that. Here is the design of QR code and manual code generation.

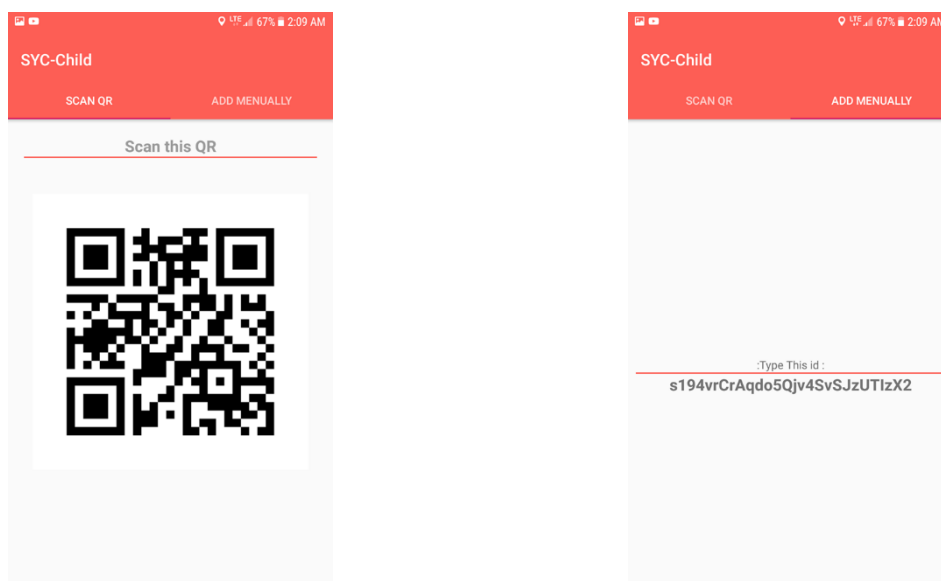


Figure 4.0.5: Connecting with Parent Application

4.0.6 Adding Child on Parent Application

Parent need to add their child device into their application. The design of the process is given below.

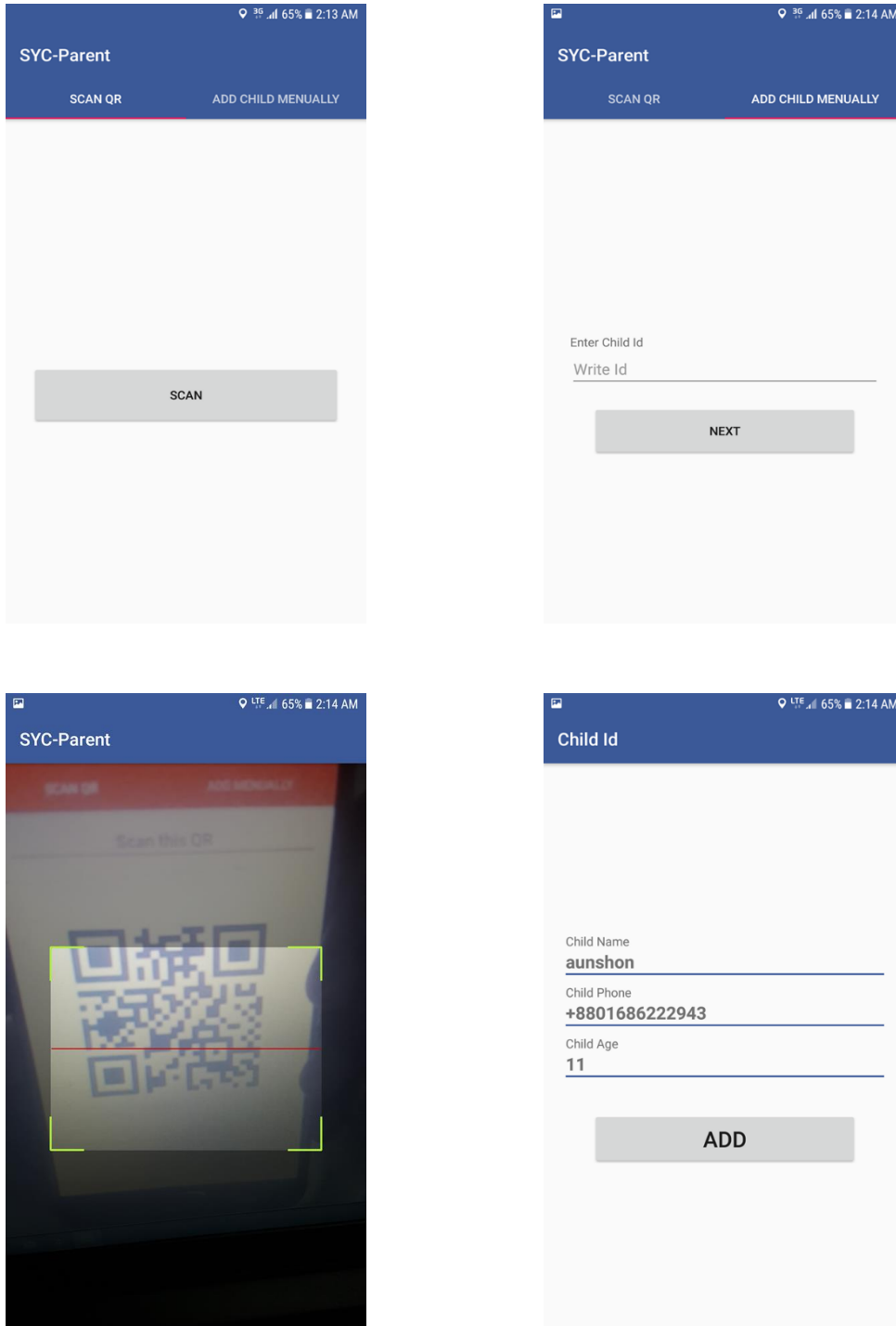


Figure 4.0.6: Adding Child on Parent Application

4.0.7 Selecting Location by Geo-Fence

Parent can select an area using Geo-fence by which they can create a safe zone or danger zone for their child. Here is the UI design for that.

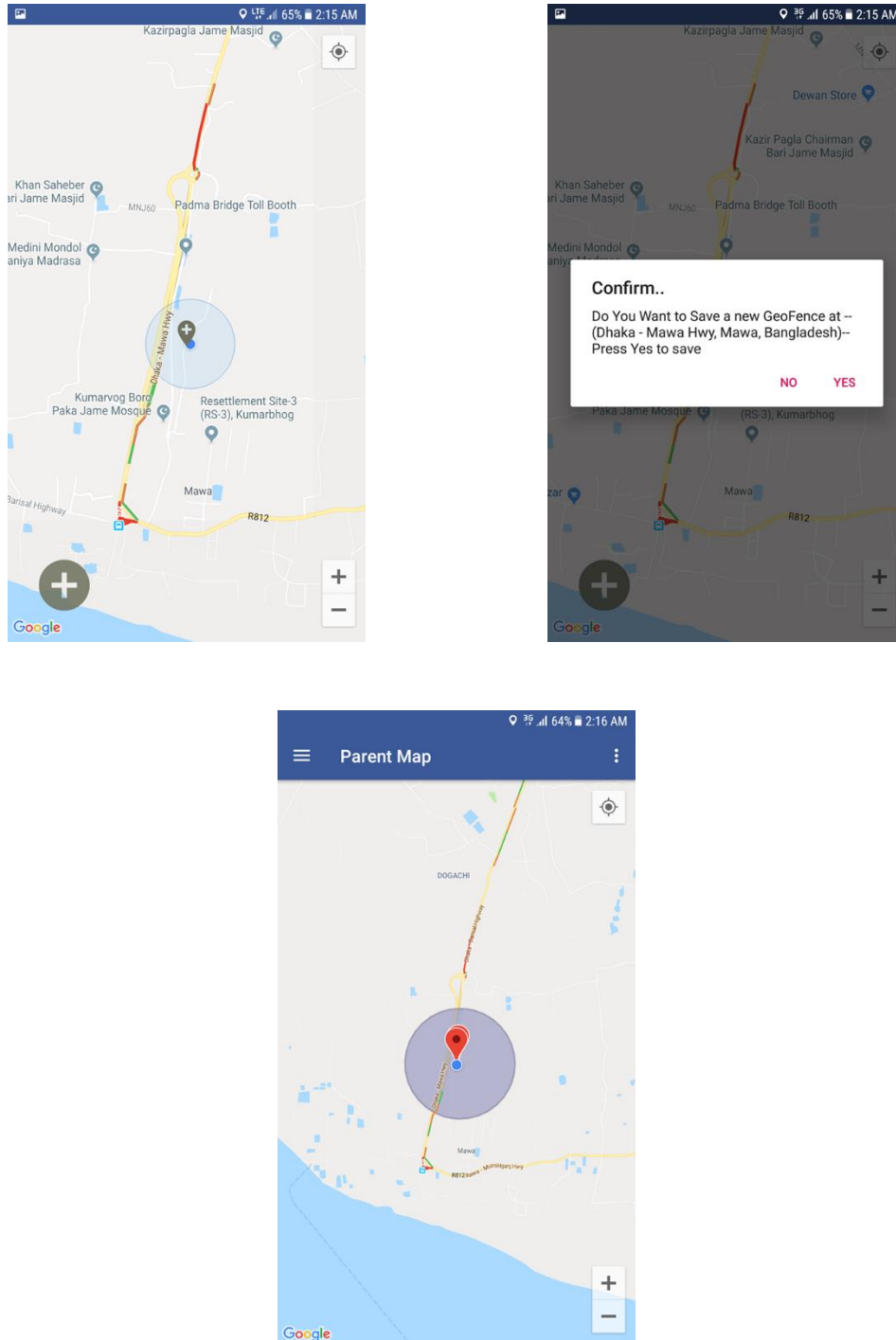


Figure 4.0.7: Selecting Location by Geo-Fence

4.0.8 Notification for Geo-Fence Entrance and Exit

When a child enters into the selected Geo-fence then a notification will send to parent that the child is inside the selected area and when a child goes out from the selected Geo-fence then a notification will send to parent that the child is outside the selected area.

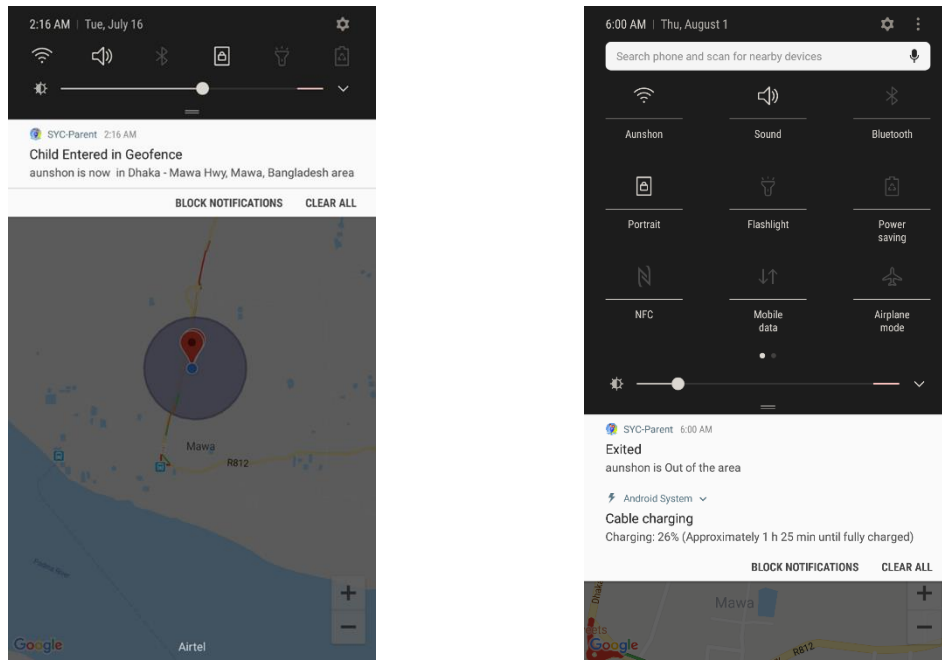


Figure 4.0.8: Notification for Geo-Fence Entrance and Exits

4.0.9 Show All Child List and Delete

Here is the UI design for showing the list of child in parent application and deleting child from that list.

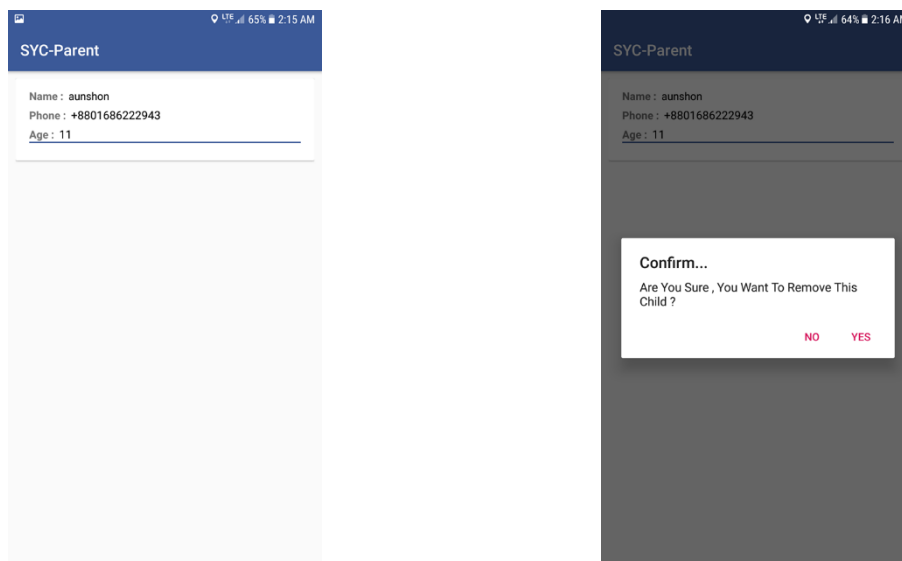


Figure 4.0.9: Show All Child List and Delete

4.1 Back-end Design

The back-end design of an application is generally the design of database. The database is related to the connectivity between the user and the server. In our project the back-end design is design of firebase. We used firebase as our database server.

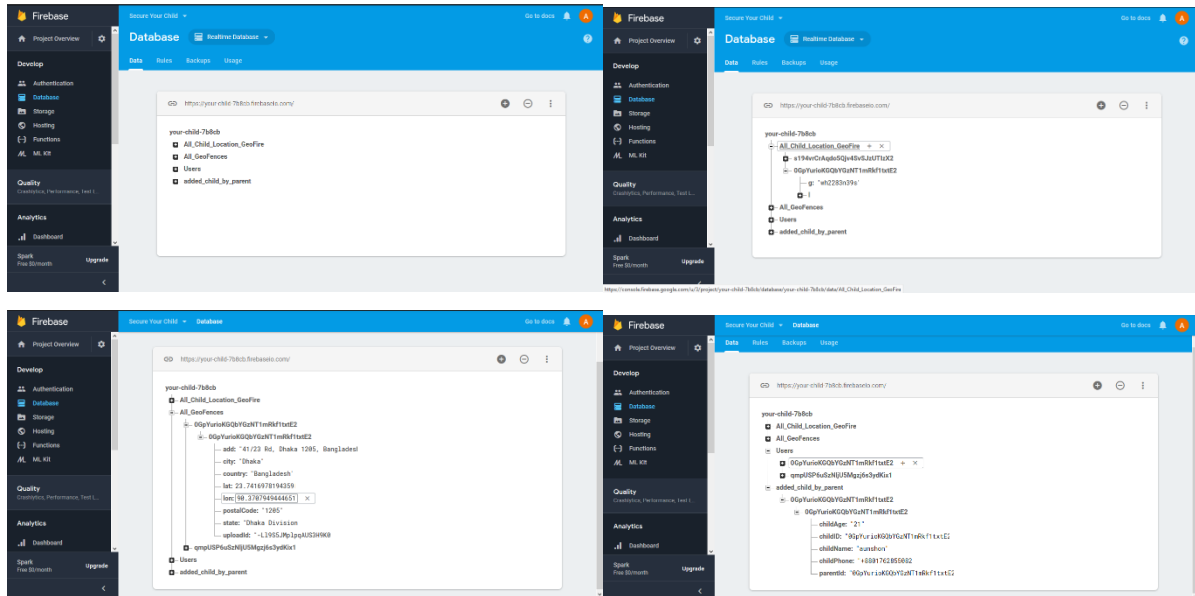


Figure 4.1: Back-end Design (Firebase)

In our project we need to show the location of users instantly so we have to use real-time database. In this case, firebase was the best option for us to showing the location instantly. Firebase also very fast and efficient database where we can easily save data within short time and also the database of firebase response to the app very fast. Firebase is one of the best database for any kind of android, iOS, and also web application. Its work process is very simple and easy to maintain.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.0 Requirements for Implementation

For the implementation of our project we need some basic requirements. Without those things we cannot run our application as we want to run for achieving our goal. The implementation process will start after fill those requirements which we mentioned below.

- Internet connection for Parent and Child
- Android Mobile for both Parent and Child
- Install the Parent application in Parent's mobile
- Install the Child application in Child's mobile
- Both Parent and Child need valid mobile number
- Both Parent and Child should be in same city or country.
- Turn on the GPS of Parent's and Child's mobile



Figure 5.0: Application Icon for Child and Parent

5.1 Testing Implementation

This is the process that can consider as in where an application tester or it can be the builder of that application will be able to check many cases for the completion of the application and specification. But maybe there have the limitation in the application at the initial stage or in next.

Table 5.1: Testing Implementation

Test case	Test input	Expected outcome	Obtained outcome	Passed/Failed	Testing Period
Registration	Registered by valid info	Successfully registered	Successfully registered	Passed	16-07-2019
Registration	Registered by invalid mobile number	Re-enter warning for failure	Registered denied	Passed	16-07-2019
Registration	Registration with empty field	Re-enter warning for failure	Registration denied	Passed	16-07-2019
Add child	Add by QR code	Successfully added	Successfully added	Passed	18-07-2019
Add child	Add by manual code	Successfully added	Successfully added	Passed	18-07-2019
Display location	Select valid child	Location detected	Location detected	Passed	18-07-2019
Geo-fence set up and notification	Location selection from map	Area selected	Entry and go out notification for selected area	Passed	23-07-2019
Sign out	Return to the Registration Process	Task successful	Task successful	Passed	24-07-2019

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.0 Discussion and Conclusion

Finally, our work has been completed. It was the rise of time to create a “Secure Your Child” in our University. We want to create successfully. This is especially made for every parent who love their child and who want keep in touch always with them. The testing some piece of this was to create a simple to use framework that limits the work for the client. It is also capable of providing location information very correctly.

6.1 Scope for Further Developments

We have plans to adding more facilities to this application. This system has a lot of future scope to make it more users friendly. Firstly, we will make iOS based application for all iPhone users. Now, this application is working for only smartphone user child. In future development, our application will be work in Smart Watch.

APPENDIX

Appendices A

Projection Reflection: From Spring-2018 semester we started our flight for make a “Secure Your Child” for public. We shadowed the project for enhancement to implement and monitor our invention, and were able to reach our aim.

Appendices B

Abbreviations and Acronyms

XML: Extensible Markup Language

UI: User Interface.

API: Application Programming Interface.

SDK: Software Development Kit.

iOS: iPhone Operating System.

REFERENCES

- [1] In software and systems engineering, a use case is https://en.wikipedia.org/wiki/Use_case [Accessed May 20, 2019].
- [2] Basics and Different XML Files Used in Android <https://abhiandroid.com/ui/xml> [Accessed May 31, 2019].
- [3] XML is a markup language similar to https://developer.mozilla.org/en-US/docs/Web/XML/XML_introduction [Accessed June 5, 2019].
- [4] Firebase helps mobile and web app teams https://firebase.google.com/?gclid=EAIaIQobChMIwszA6r3i4wIVQwwrCh187AkmEAAAYASAAEgIgJfD_BwE [Accessed June 12, 2019].
- [5] Geofencing combines awareness of the <https://developer.android.com/training/location/geofencing> [Accessed June 20, 2019].
- [6] Notifications provide short, timely information about <https://developer.android.com/training/notify-user/build-notification> [Accessed June 28, 2019].

Secure Child Plagiarism Report

ORIGINALITY REPORT

4%	3%	0%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	trackimo.com Internet Source	1%
2	hdmi-kabel.ru Internet Source	1%
3	Submitted to Staffordshire University Student Paper	<1%
4	Submitted to University of Reading Student Paper	<1%
5	www.cse.dmu.ac.uk Internet Source	<1%
6	Submitted to BITS, Pilani-Dubai Student Paper	<1%
7	Submitted to Tennessee State University Student Paper	<1%
8	Submitted to University Tun Hussein Onn Malaysia Student Paper	<1%
9	Submitted to University of Keele	

Student Paper

<1%