

Child Monitoring System

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

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5th November 2019

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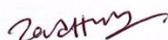
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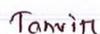
I am declared that, this project has been done by me under the supervision of **Md Zahid Hasan, Assistant Professor, Department of CSE, Daffodil International University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

Now days parents are very concerned about their children's, in this reason parents want to monitor their children's every time. That's why they want a complete track for their children's. This is impossible physically ,in this reason we introduce Child Monitoring system .This system can help parents for monitoring and tracking their child and it can perform anywhere in the universe .These days one of the main problem is child missing .This problem can be solved with the help of Child Monitoring system. It is useful for these parents who want to track their child every steps .This system can play a vital role for this kind of problem. This android application uses GPS and telephony services to allocate their child location. Using this application, it can secretly reclaim all the call logs, messages, contact list and location without children authorization and child have no knowledge as this application runs their phone background and the main advantage of this feature is, if child reboots the phone background process beginning as the reboot is complete, this process is never ending. Every 15 minutes interval, Children Monitoring system application sends all the data from the child mobile phone to the parents phone .This Child Monitoring system Application divided into 2 parts, one is for parents and other is the child .The parents part where they can see all the activities of their child and the child part where they only can see a calculator.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

All over the world technology reaches child hands .This world children use mobile phones for various purposes. Parents worry for their child's emotional, educational, social development about the effect of this very open world. Overcome this worried, parents need to check and track their children device by using some controlling technology. On our world children used most tablet device. To observe and track the time and quality of their children device, parents will need to have automated technologies [2][3].

1.2 Motivation

Nowadays child missing and child Crime is the big issue in the world. So parents are too much worried about their children. Child Monitoring System app is a app that will be reduced parents worried because parent can track their child location and they will be able to see their child's message, contact and call log. This is the good news for parents that they can monitor their child. If a child says parents, mother/father I am going to school but he/she don't go. In this case mother/father easily see that where is their child. If child is kidnaped then parent could be able to track them. So after all we can say that this app will be help of the parents.

1.3 Objectives

The main objectives of child monitoring system is to provide GPS location child part to parent part .This system is mainly same as spy system.

The goals of our system are:

- Child part provide location to parent part.
- Child part provide message to parent part.
- Child part provide contact number to parent part.
- Child part provide phone log to parent part.
- Easily locate a missing child.
- Track the real and exact position of the child.

- Validate and confirm the child's position.
- Allows parents to keep track on their children [4].

1.4 Expected Outcome

Our Project is Child Monitoring System. So it is a tracking app. In this app we want to track location, message, Contact, Call log from child app to parent app. Now a days child kidnaping and child crime is a common issue. Use this app we can reduce child kidnaping and parent can know that their child what are doing. So this is our expected outcome.

1.5 Report Layout

We all know, practical knowledge is more important than theory. In our graduation degree we learn a lot of things. This project gives us scope to share our knowledge and utilize our thought. By doing this project we can implement our skill more effectively. First Chapter contains the Introduction, Objectives, Motivation, Expected Outcome and Report layout of the project. Then second chapter contains Project Introduction, Related Work, Comparative Studies, Scope of the problem and also Challenges of our project. Our third chapter contain all about Requirement Specification which are Use Case Modeling and Description, Logical Data Model, Design Requirements. Fourth Chapter describes our full Mobile application description which is related to Design Specification like user interface design, Back-end Design, Implementation Requirements, Interaction Design and UX. Our fifth chapter is all about Implementation and Testing. This contains Implementation of Database, Testing Implementation, Front-end Design, Interactions and Test Results and Reports. Our last chapter contain conclusion of the full project. This report contains all about our Mobile application system, its problem, solution and use of the system.

CHAPTER 2

BACKGROUND

1.2 Introduction

Child Monitoring is the most popular topic nowadays. There are many papers, reports and development works are published about this topic. Because of it is a very important issue. Every parent are worried about their children. Because they can't know that their child what is doing in mobile device and outside of the house. A Child monitoring app will be helpful for parent because parent never monitoring their child hole day physically. So when I think about my project I always read about Child security, child monitoring. And I also think that how can we monitor our child every movement. For this I choose mobile device for developed my project. Because it is a very common that now a days most of the Children use it [3][4].

2.2 Related Works

There are many related work has published in play Store like as Kaspersky Safe Kids, EleBaby Simple Baby Activity Tracker with wearsOS, Kid Place-Parental Control, Parental Control-Screen Time & Location Tracker, Contract and location tracker etc [9-13].

2.3 Comparative Studies

Table 2.1: Comparative study of several related works

Related Works	Description
Kaspersky Safe Kids[9]	This is a app that has two part, one is Child part Another is Parent part. Parent Can add child and child will be added just his/her name and birthdate
EleBaby Simple Baby Activity Tracker with wearsOS[10]	This app use for baby caring. Such as timely feeding, timely diaper change etc.
Kid Place-Parental Control[11]	It is also a tracking app.

Parental Control-Screen Time & Location Tracker[12]	It is a location and time tracking app.
Contract and location tracker	This app can track only Location and Contract number
Spyfone[13]	The cell phone monitoring application

2.4 Scope of the Problems:

- Data connection must be on.
- Smart phones are a must have.
- Child's phone must have child part installed.
- Parent phones must have the parent part installed.
- The location of the child's phone must be on.

2.5 Challenges

As if it is a common topic but when I thought about this my knowledge was zero about it.

Programing and Database

At first started to learn Android programing because I don't know it. So it was my first challenge. After that I start to learn database.

Message sent Problem

When the child was logged in, the message from the child's part to the parent was not being sent. That was the big problem. The other challenge was manage a free server to send message. Because all server want to money for sent free message. The another big Challenge was send data right away child's part data to parent part.

CHAPTER 3

SOFTWARE REQUIREMENT SPECIFICATION

3.1 Business Process Model

Business process modeling is the analytical and graphical representation of company's business process that gives everyone a clear idea that what is the business plan. But we have no business plan .It will totally free .If it is payable then all class of people will not use it [14][16].

3.2 Use Case Model

When different types of users interact with the system to solve a problem then we called this is use case model. In Child Monitoring System application, there are two types of actors. One actor is a parent and other actor is a child. First of all parent and child has to do login child monitoring system application. When child login this application a verification code will send parent's phone atomically. When login will complete child can only see a calculator and use this calculator for different calculation. Parent can see child locations, contacts, call logs, messages. There are seven use case used in Child Monitoring System application (login, location, message, call log, contact, verification code, add child).All the information child store in the firebase database and after ten minutes later this information retrieve parent phone. From the prospective of the base use cases, parent can observe and monitoring their children [16][17].

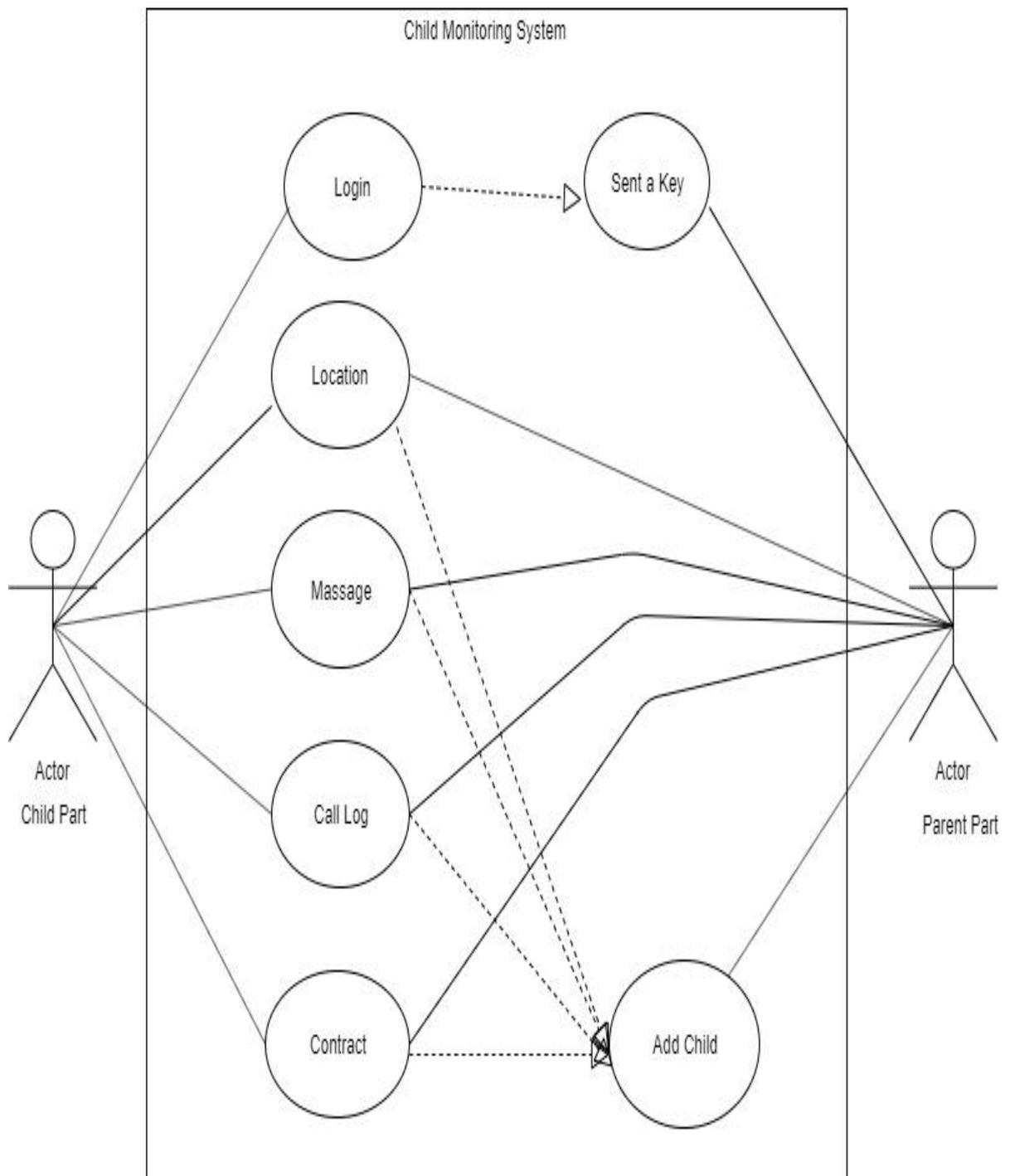


Figure: 3.1 Use case diagram for Child Monitoring System.

Use Case for Login

A child, will login through Name, Child phone number and parent phone number.

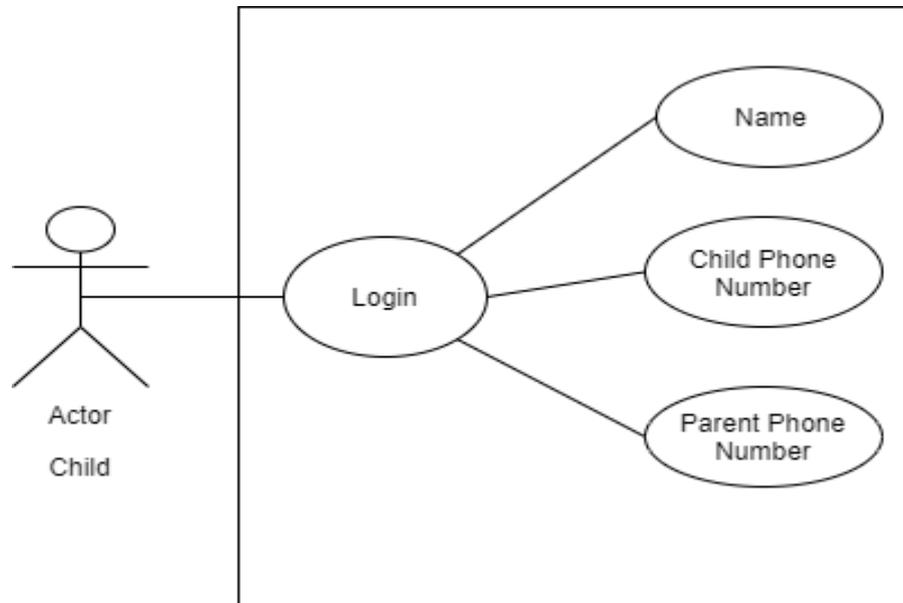


Figure: 3.2 Use case diagram for login.

Use Case Details

Use case name : Login (For Use Calculator)

Precondition : None

Actor : Child

Primary Path :
1. Enter Name
2. Enter Child phone number
3. Enter parent phone number
4. Click "Login" button

Exceptional path : 5. Invalid Name/ Child phone number, parent phone number
back to step 1 or 2 or 3.

Use Case for Registration

A parent, will registration through Name, Email, phone number and Password.

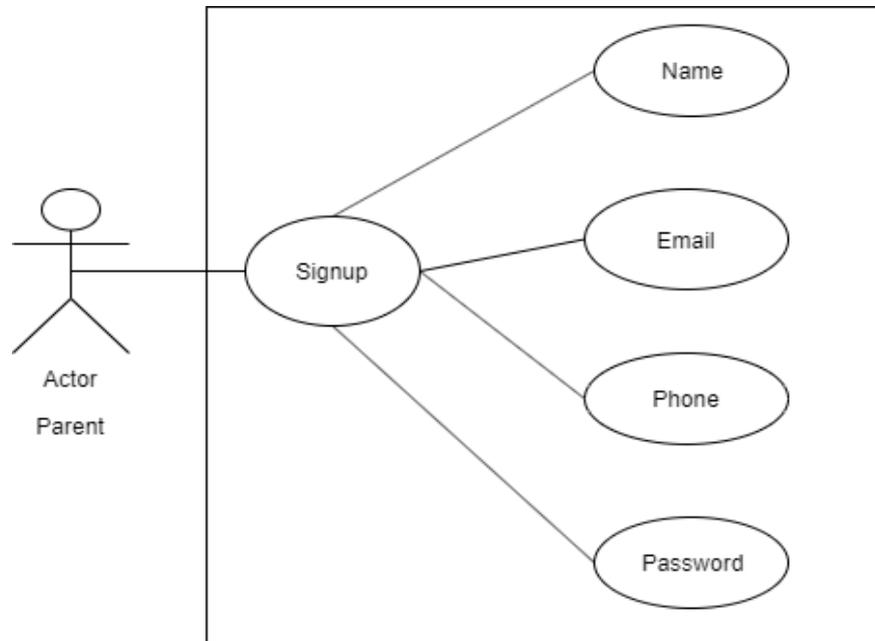


Figure: 3.3 Use case diagram for Ragistration

Use Case Details

Use case name : Registration use case
Precondition : none
Actor : parent

Use case for Child Profile

Parents can see child phone's contacts, call logs, messages and location.

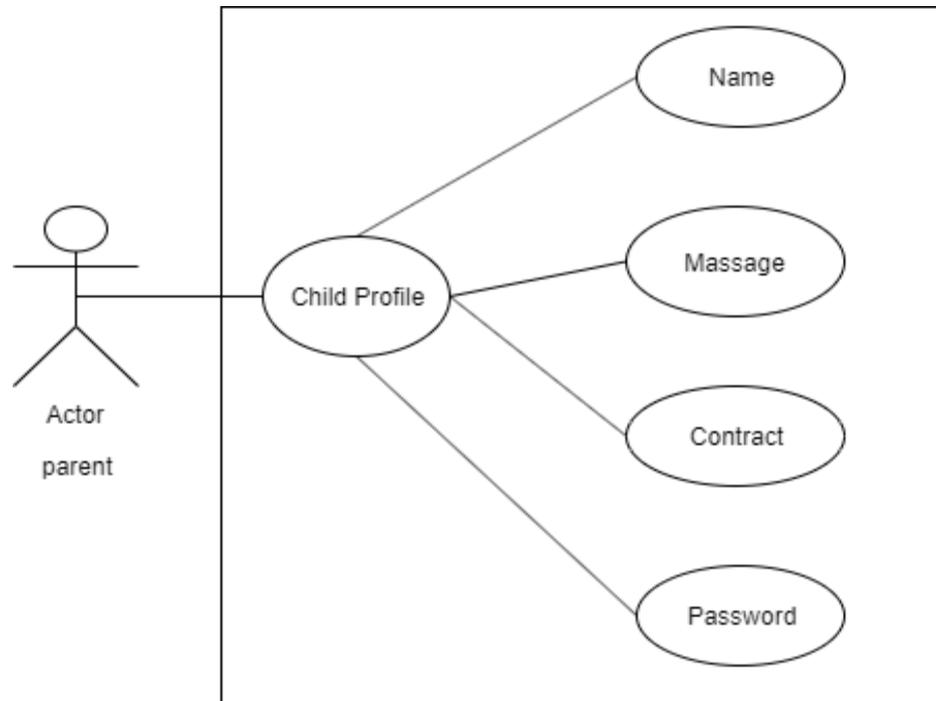


Figure: 3.3 Use case diagram Child Profile.

Use Case Details

- Use case name : Child Profile
- Precondition : Child must be added
- Actor : Parent
- Primary path : 1. Phone location must be on
2. Get Location
3. Get message
4. Get Contract
5. Get Call log
- Exceptional path : 1.1 if location is off, back to 1.

3.3 Implementation Requirements

There are many programming languages for online applications. At first we need to make a plan before start a project work. We should select programming Language based on our project type. This is the Android development project. Java is the official language of android, kotlin is the cross platform of android. C++, C# and python are also a programming language of android. In this project we use java as a programming language and firebase database. Firebase is a real time database.

Java

Java is a high level programming language. Java applications run on most of the Operating System. Java is the object oriented programming language. Java is a internet language and it is very simple because it has no space complexities.

It is a case sensitive programming language and class base programming language. Java is very important for recent IT sector because it is a platform independent Programming language [18].

Google Map API, Google Place API, Google directions API.

Firestore Database

Firestore Database is the realtime database. It is a Cloud hosted No SQL database for this reason we can store and sync between user in realtime. Realtime also help user collaborate with one another .It is a free database for users. Real-time database will payable when realtime database storage will greater than 1GB [8].

Hardware

- Intel core i3 processor
- 4GB RAM
- 1TB Hard drive

3.4 Logical Data Model

Figure 3.5 is the Logical Data Model or ER Diagram of this project which representing the relationship among the entities. They are: Contact, Message, Location, Call log, Child part, View Data, Parent part, Registration. Every entity's has its own attributes [19][20].

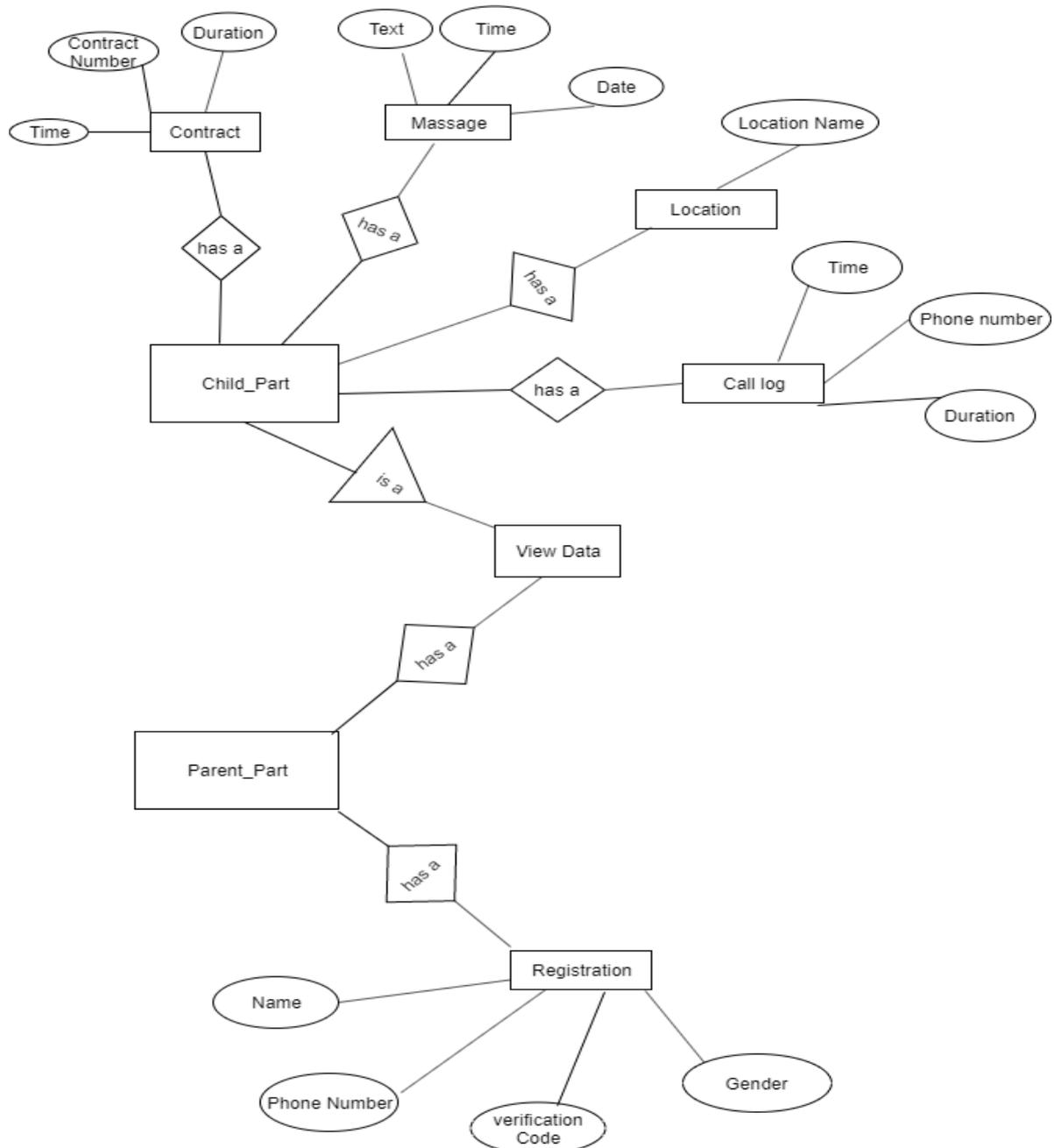


Figure: 3.5 Logical Data Model

CHAPTER 4

DESIGN SPECIFICATION

4.1 System Environment

This system environment design and develop for Child Monitoring System. If Child connected with internet then all data will be uploaded in database and if Parent also connect with internet they can see their Child's current Location, Message, Contract, Call log.

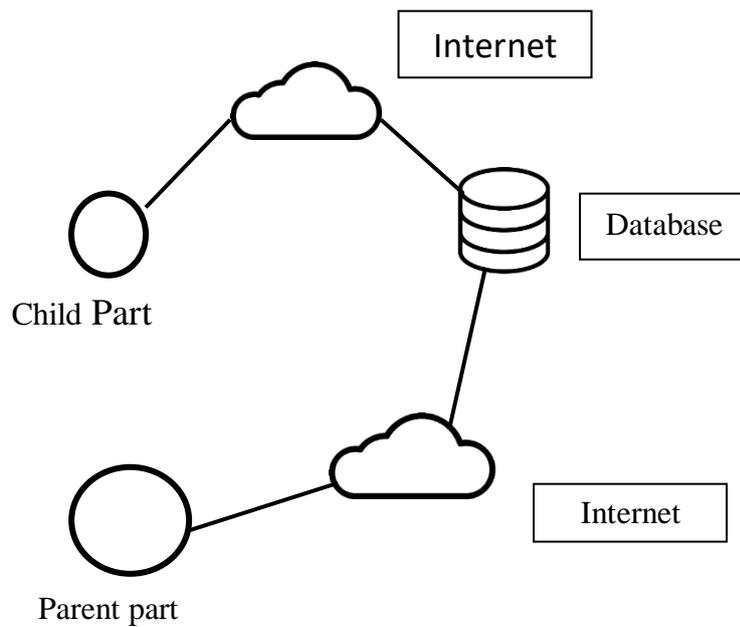


Figure: 4.1 System Environment

4.2 Front-end Design

Child Login Page

The child login page need some child information for verification. Such as(Children name, Children phone number and parent phone number). After submission this information child can log in and a SMS will sent to parent phone with a code and parent can added this child in his/her app through this code .

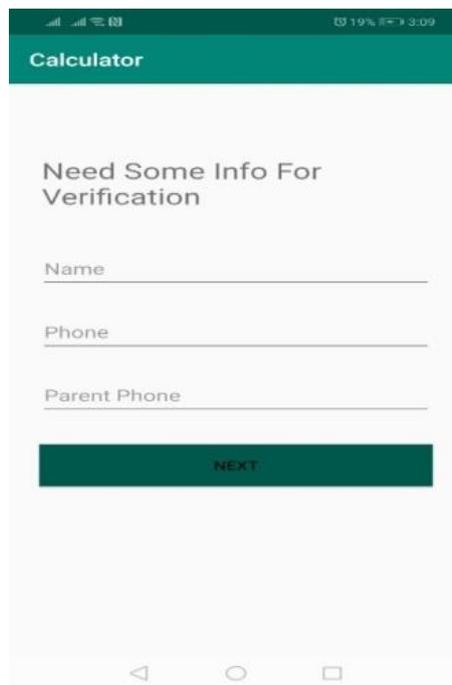
The image shows a mobile application interface for a child login verification page. At the top, there is a dark green header with the word "Calculator" in white. Below the header, the text "Need Some Info For Verification" is displayed in a dark grey font. Underneath, there are three input fields: "Name", "Phone", and "Parent Phone", each with a horizontal line for text entry. At the bottom of the form area, there is a dark green button with the word "NEXT" in white. The background of the page is light grey. At the very bottom, the standard Android navigation bar is visible with back, home, and recent apps icons.

Figure: 4.2 Child Login Part of the system

Child Calculator Part

After login this application child can see a calculator. Child can do calculation using this calculator. Calculator does not need to use for data passing.



Figure 4.3 Child Calculator Part of the system

Parent sign up page

Parent need to sign up first for sign in through name, email, phone, password.

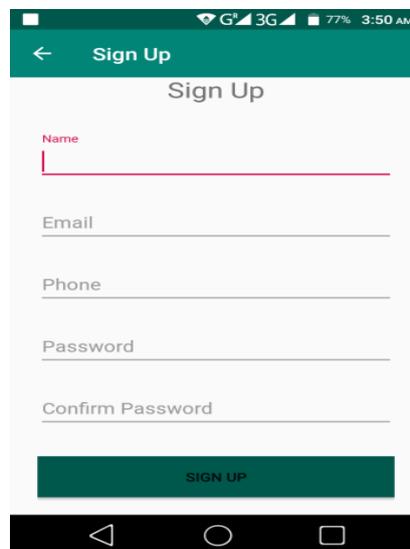


Figure 4.4 Parent sign up part of the system

Parent Sign in page

Parent need to sign in through email and password this application, for getting child information.

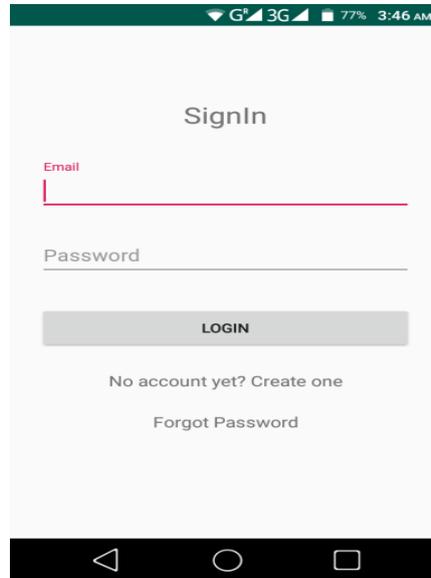


Figure 4.5 Parent sign in part of the system

Child add page

Parent will add child through code that comes from child's phone in this page.

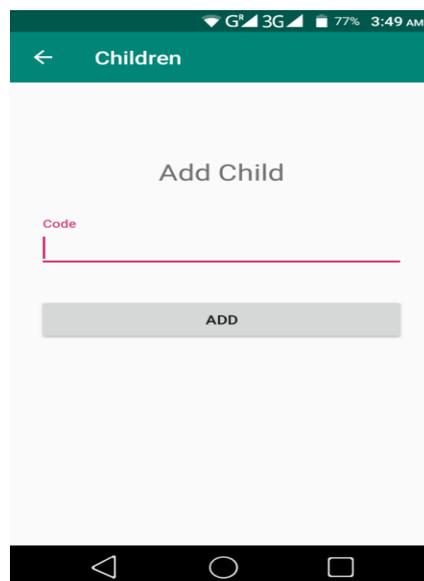


Figure 4.6 Child add page part of the system

Child List Page

This is the child list page. Parent can add more children for monitoring.

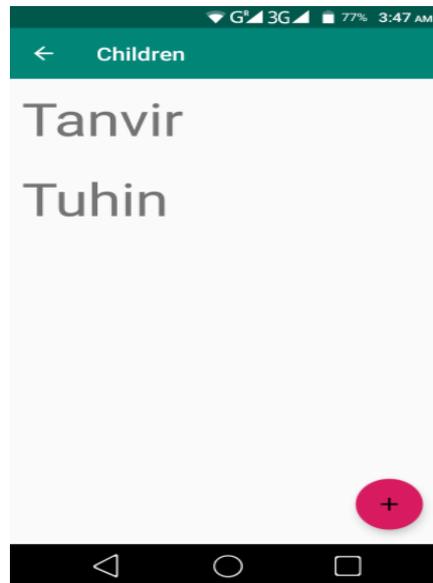


Figure 4.7 Child list page part of the system

Child information list page

Parents can see child phone's contacts, call logs, messages and location.

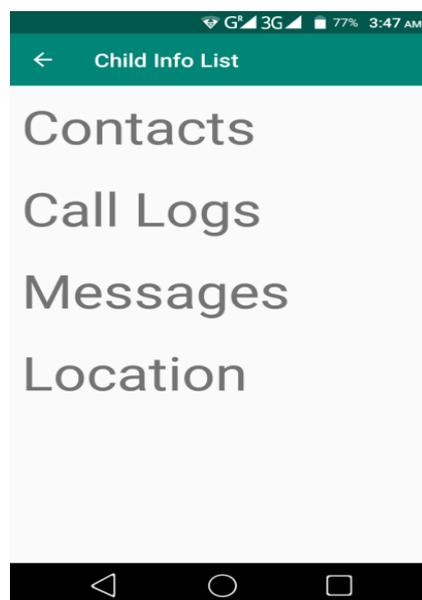


Figure 4.8 Child information page part of the system

Child's Call Log page

This is the child log page. Parents can see child call logs such as (incoming call, outgoing call), time, Date and duration of call.

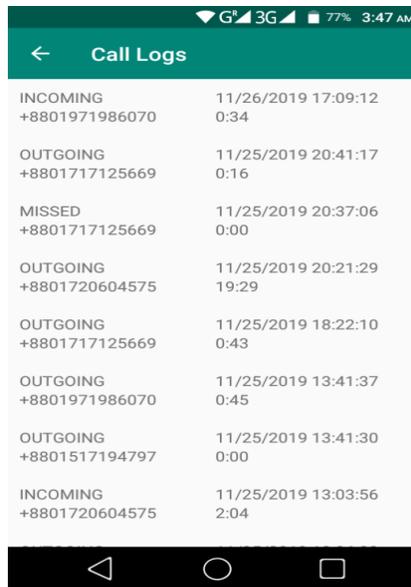


Figure: 4.9 Child's call log page part of the system

Child's Contract page

This is the child contract page. Parent will see child's all Contracts.



Figure 4.10 Child's Contract page part of the system

Child's Location page

In this page parent can track child location and see where are going their children.



Figure 4.11 Child's Location page part of the system

Child's SMS page

Parent can see child's phone's messages and see who send message.

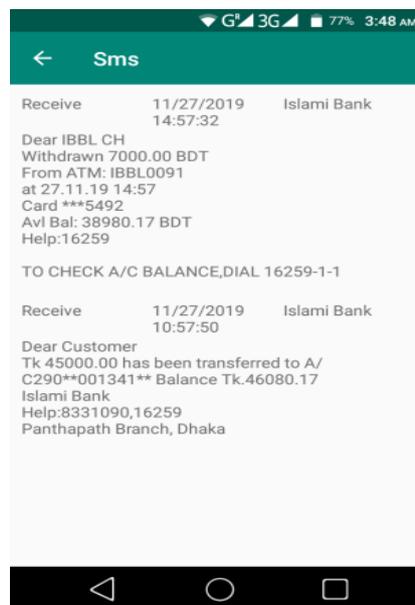


Figure 4.11 Child's Location page part of the system

4.3 Back-end Design

Child Database

This is the child database page. In this database, is stored child's phone call logs, contacts, messages, location.

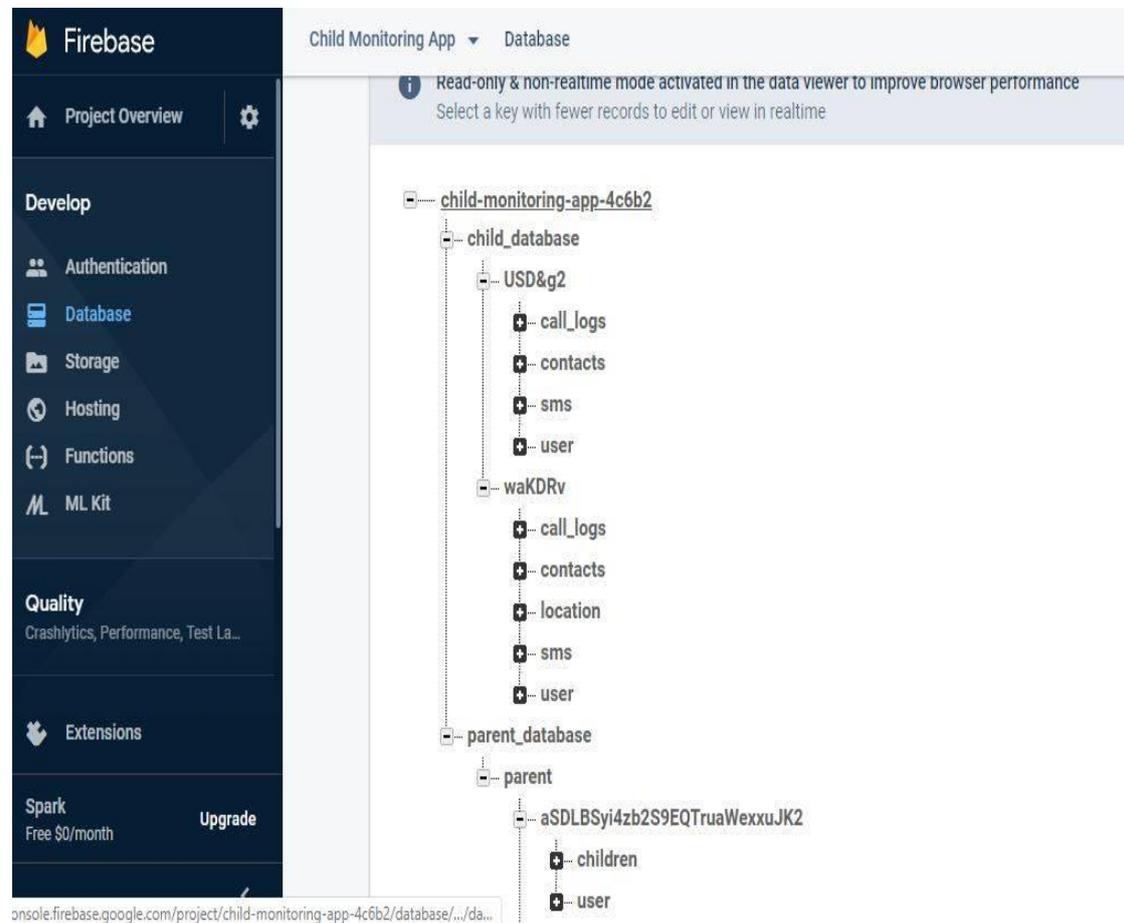


Figure 4.12 Child's database page part of the system

Parent Database

This is the parent database page. There is two part one is children and another is user. In user part are store parent's email, phone number, user id and User Name. On the other side in children part are stored all child location, SMS, Contract, Call log.

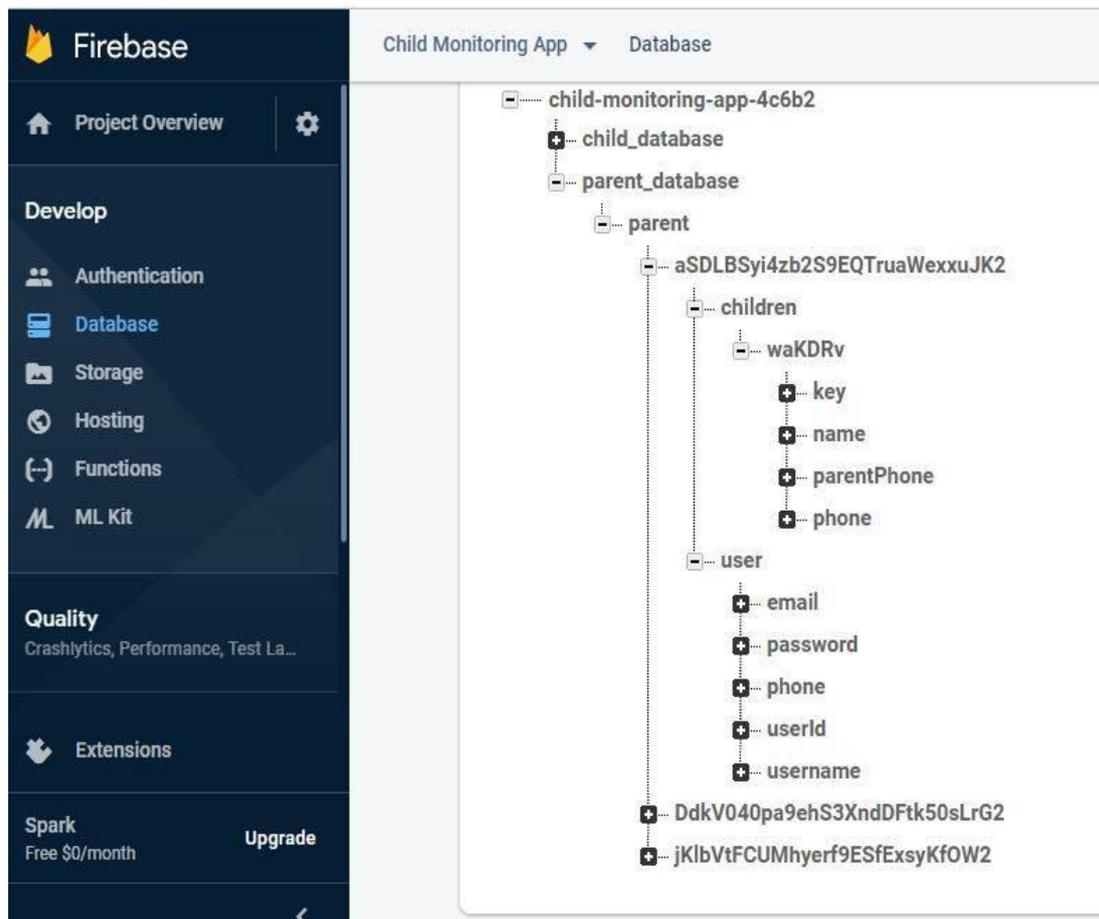


Figure 4.13 Parent database page part of the system

4.4 Testing and Integration

Testing and integration is most important because app already working or not this kind information we can get using this. That means all functionality of project must be checked. It is the software testing phase. Integration testing is conducted to evaluate the compliance of a system or component with specified functional requirements. It is occurs after unit testing and before validation testing.

Location Testing

Parent shall tracking children location through add child in his app.

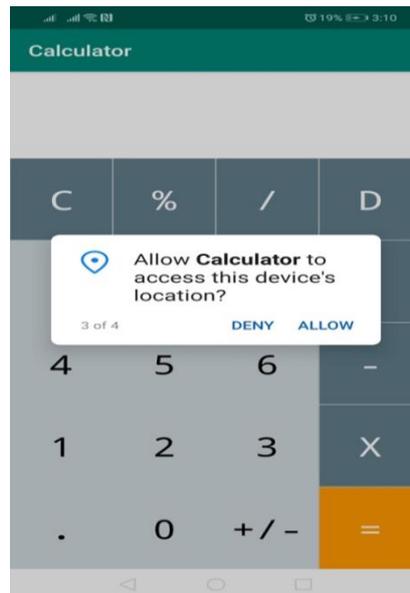


Figure 4.14 Location testing page part of the system

Contact Testing

Parent can know child's phone's contact doing contact testing. Figure 4.15 shows the Contract testing of the system.

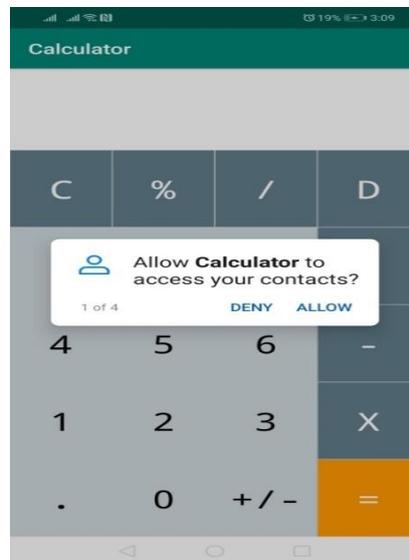


Figure 4.15 Contract testing page part of the system

Message Testing

Because of message testing parent can see child's phone messages.

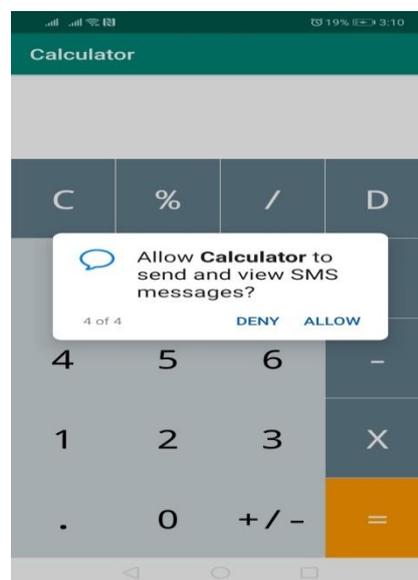


Figure 4.16 Message testing page part of the system

Call log Testing

Doing call log testing we know child's phone's incoming and outgoing call with date, time and duration.

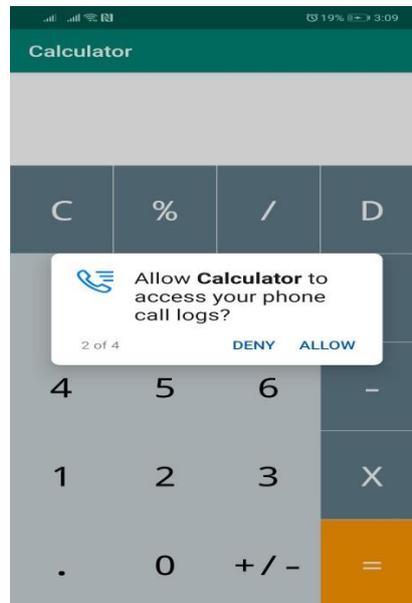


Figure: 4.17 Call log testing page part of the system

Message Verification Testing

This is the Message verification testing page of the system. When child will login his/her application then a verification code will go to parent phone.

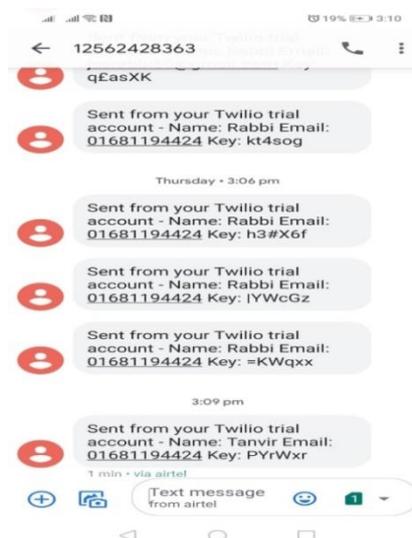


Figure 4.18 Message testing page part of the system

Sign Up Testing

This is the parent sign up page. Parent will sign up through Name, Email, Phone Number and Password.

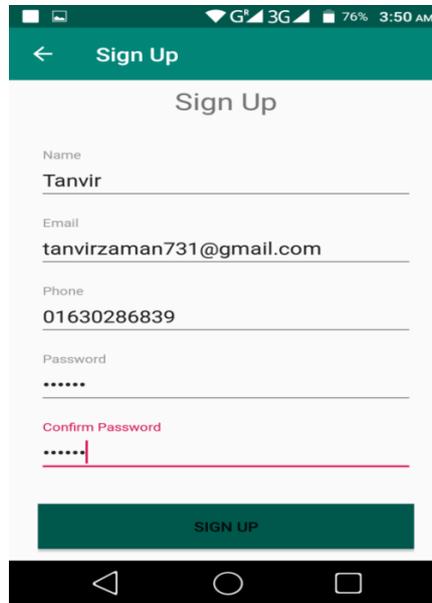


Figure 4.19 Sign up testing page part of the system

Sign in Testing

This is the sign in page. Parent must sign in for see child data.

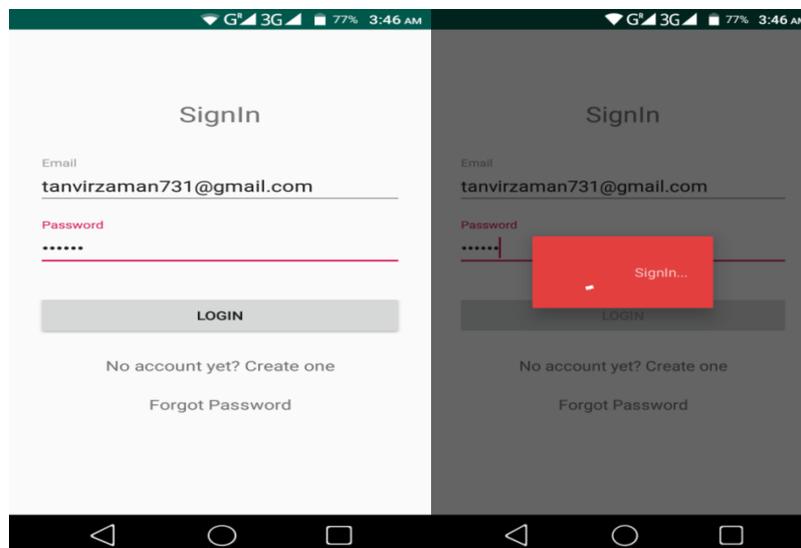


Figure 4.20 Sign in testing page part of the system

CHAPTER 5

CONCLUSION & FUTURE SCOPE

5.1 Conclusion

Child Monitoring System application exhibited a discussion on developing systems and accesses to control, manage and monitor the use of different electronic devices this. This project talking about some of monitoring mobile devices and some of developed techniques .Similarly, this project resolved main challenges when researching this area including trouble to maintain privacy and providing clear data when the mobile device using Besides, the sowing of the monitoring system the project is included that's called Time's up application, this will help parents to control and track their child use of mobile devices [3].

5.2 Future Scope

Our Project is Child Monitoring System. It has four kinds of features. That was our Primary idea. In Future it will upgraded with some new features.

1. File Manager Tracking.
2. Gallery Tracking.
3. Browser history Tracking.

Reference

- [1] Nevonprojects, "Child Monitoring System App", 2019 [Online], Available: <http://nevonprojects.com/> [Accessed: 01 October, 2019].
- [2] ReserchGate, "Developing a Children Monitoring System for Mobile Devices", May 2016 [Online], Available: https://www.researchgate.net/publication/302583667_Developing_a_Children_Monitoring_System_for_Mobile_Devices [Accessed 01 October 2019].
- [3] Rita H. Pawade, Dr. Arun N. Gaikwad,"Android Based Children Tracking System", International Journal of Science, Engineering and Technology Research (IJSETR), Year : June 2015.
- [4] Dr/Ayman Mohamed Afif," Using of Tracking systems for devices designing to face children Kidnapping Phenomenon ", International Journal of Scientific and Research Publications, Year : October 2013.
- [5] Ahmed M. Elmogy, Khawater Elkhawiter," Parental Control System for Mobile Devices", International Journal of Computer Applications, Year : November 2017.
- [6] Maghade Satish, Chavhan Nandlal, Gore Sandip," Child Tracking System using Android phones", International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), Year : April 2015.
- [7] Fairuz Rauf, Gothiswary Subramaniam, Zuraidy Adnan," Child Tracking System", International Journal of Computer Applications, Year: July 2018.
- [8] Firebase,"Firebase Realtime Database",[Online], Available:<https://firebase.google.com/docs/database/>? [Accessed 03 November 2019].
- [9] Google Play,"EleBaby Simple Baby Activity Tracker with WearOS", 12 October 2019 [Online], Available: https://play.google.com/store/apps/details?id=com.shameronstudios.babytracker&hl=en_US [Accessed 03 November 2019].
- [10] Kaspersky, "Designed to help you protect your kids online and beyond",[Online], Available:<https://www.kaspersky.co.in/safe-kids> [Accessed 03 November 2019].
- [11] Google Play,"Kids Place - Parental Control",[Online], Available: <https://play.google.com/store/apps/details?id=com.kid-doware.kidsplace&hl=en> [Accessed 03 November 2019].
- [12] Google Play," Parental Control - Screen Time & Location Tracker",[Online], Available: <https://play.google.com/store/apps/details?id=com.screentime.rc&hl=en>. [Accessed 03 November 2019].
- [13] Spyfone,"Cell phone monitoring app",[Online]. Available:https://spyfone.com/gclid=EAIAIQobChMI8sGMz8mV5gIVmgsrCh0KgwNBAAAYASAAEgLOe_D_BwE [Accessed 15 October 2019].
- [14] Tallyfy,"Business Process Modeling",[Online], Available: <https://tallyfy.com/business-process-modeling/> [Accessed 15 October 2019].
- [15] Wikipedia,"Business Process Modeling",[Online], Available: https://en.wikipedia.org/wiki/Business_process_modeling [Accessed 15 October 2019].

- [16] Google,"Use Case Model",[Online],Available:<https://www.google.com/search?q=use+case+model&oq=use+case+model&aqs>. [Accessed 15 October 2019].
- [17] Wikipedia,"Use Case Model ",[Online],Available: https://en.wikipedia.org/wiki/Use_case [Accessed 01 November 2019].
- [18] Wikipedia,"Java Programming Language",[Online].Available: <https://en.wikipedia.org/wiki/Java> [Accessed 01 November 2019].
- [19] 1keydata," Logical Data Model",[Online].Available: <https://www.1keydata.com/datawarehousing/logical-data-model.html> [Accessed 26 November 2019].
- [20] Wikipedia," Logical Data Model ",[Online].Available: https://en.wikipedia.org/wiki/Logical_schema [Accessed 30 November 2019].

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