

**FINAL YEAR PROJECT REPORT ON ANDROID SMART PHONE BASED
BIKE ACCIDENT DETECTION AND SOS ALERT SYSTEM**

BY

**MD REZWAN KABIR
ID: 171-15-9271**

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

Supervised By

Md Tarek Habib
Assistant Professor
Department of CSE
Daffodil International University

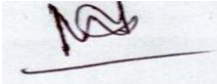


**DAFFODIL INTERNATIONAL UNIVERSITY
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APPROVAL

This Project/internship titled “**Android Smart Phone Based Bike Accident Detection and SOS Alert System**”, submitted by Md Rezwan Kabir, ID No: 171-15-9271 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 2th January, 2022.

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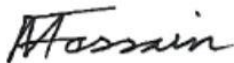
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Faculty of Science & Information Technology

Daffodil International University



Dr. Md. Fokhray Hossain

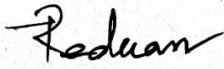
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Professor

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University



Internal Examiner

Md. Reduanul Haque

Assistant Professor

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Daffodil International University



External Examiner

Dr. Mohammad Shorif Uddin

Professor

Department of Computer Science and Engineering

Jahangirnagar University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Md Tarek Habib, Assistant Professor, 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.

Supervised by:



Md Tarek Habib
Assistant Professor
Department of CSE
Daffodil International University

Submitted by:



Md. Rezwan Kabir
ID: 171-15-9271
Department of CSE
Daffodil International University

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ABSTRACT

An accident is an unpredicted and unintentional event. Considering the alarming increase in the number of motor bike riders and the number of accidents happening in our country. As bike accidents are becoming quite an alarming issue. The situation become worst when the family members or emergency services are not informed in time, this causes delayed emergency service response time, which can lead to an individual's death or cause severe injury, I felt the need of an improved bike safety system, The purpose of this work is to reduce the response time of emergency services in situations like traffic accidents, and other services like women safety and medical emergencies. By utilizing onboard sensors of a smartphone to detect vehicular accidents and send SMS with accident spot location to family member's number also to make a Phone call automatically to family member, this will drastically increase the chances of survival for emergency victims, and also help save emergency services time and resources

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CHAPTER 1

Introduction

1.1 Introduction

According to Bangladesh Road Transport Authority (BRTA), the number of motorcycles has approximately threefold increased from four lakhs to thirty-four lakhs in the last 2 years (2018-2021). The number of deaths in road crashes were 4,439 in 2018, 5,227 in 2019, 6,686 in 2020 and 513 in 2021. According to the 2021 survey, among the accidents, 28.65% were motorcycles [1]. Therefore, we can see that road accidents are on the rise. When accidents occur, in most cases the injured do not get immediate help because the people on the spot are not responsive enough for the first 10-20 minutes. Because of this ignorance, the victims do not get proper treatment at the right time, Sometimes it happens where the people of that area were not near the accident spot. Hence, we chose to make a device that can detect accidents and send alert messages with accident spot location, also make a siren noise to take attention of people nearby for instantaneous help also it will automatically make a phone call to victim family's member. If we consider the present accident conditions of our country, our idea is very influential.

1.2 Motivation

The main motivation behind my work is to help the injured people at the right time on the accident spot. Recently, my cousin, died in a bike accident. His sudden death gave a serious shock to me and my family. Sometimes serious accidents are caused by negligence of bike riders. If proper treatment is not provided the damages can be immense. My motivation behind this project came from these types of accidents.

1.3 Objectives

- i. Detect motorbike accident

- ii. Data Collection for current division emergency number
- iii. Providing women safety
- iv. Working on offline salutation

1.4 Expected Outcome

1. Increase the chances of survival for emergency victims
2. Easily detect accident by using only smart phone
3. Providing safety of women
4. Getting nearby emergency service (hospital, police station)
5. Can be used while no internet connection

CHAPTER 2

Background

2.1 Introduction

Bike accident detection app-based system work on real time, the app is design in such a way that when it detects accident first of all it will make siren noise and send SMS to family member with current location and it will make a phone call automatically to those number that he/he has saved is call list in apps. Not only bike accident but also this apps provide some extra features like Women safety and emergency service like hospital, police station, fire service contact number, The women safety works when the volume up button was pressed twice after 5 second the app will send SMS with current location and it will make a phone call according the number that she saved in apps, This apps works in offline means without internet it will send SMS with current location and also can make phone call, this apps work even in lock Screen once the service is started it will be ongoing until he/she turn off the service inside app.

2.2 Related Works

Looking into papers similar to my, many approaches to prevent bike accidents have been found, I have found that maximum papers work on preventing bike accidents Md. Motaharul Islam, PhD propose a device attached to the bike they have used different microcontrollers. Arduino processes the data from MPU6050 and Raspberry PI determines whether to send the message or not [2]. J. Santa et al. proposed a device which is attached to the rider's helmet, when rider of vehicles approach dangerously close it warns rider. They used 5GHz band WIFI technology for positioning and to make vehicles communicate between them [3]. My accident detection system is very different from these paper's because I focus on minimizing the further damage done by detecting whether an unfortunate accident has occurred using an accelerometer and alerting the nearby people with siren noise and inform relatives. Moreover, I mainly focus on bikes and women safety also emergency service like hospital fire service and

police station but they are focusing on all types of vehicles. Therefore, the papers are similar yet contrasting.

2.3 Comparative Studies

Individuals wish to see the Bike detection system, Apps in a far better and coordinated structure consistently. The utilization of this Apps is to detect bike accident and take initiative step to reduce damage of the rider. Also providing women safety which is far hotter topic in Bangladesh. Although this app can inform to theirs relative about the situation which they can take imitative step. Normally this app concern about the safety of the user I hope this app can reduce death which happen by not taking proper step after accident happen in Bangladesh.

2.4 Scope of the Problems

Since my project is accelerometer sensor-based application, the commonly issue will be happened if the phone accidently drops by the user the application will take that as accident and start its process, at present the world is changing quickly and our structure demand a guideline simultaneousness between two states of phone whether the accelerometer detects actual accident or just phone fall from hands. Some of the area of our country doesn't have the proper contact number of emergency place like hospital police station and fire station, getting trap on those area feels like nightmare.

2.5 Challenge

There are various impediments when each new thing is planned. I furthermore faced various inconveniences and challenges.

- Gather the information of emergency service around the district like hospital, police station, fire service name and number
- Setting the accurate value for accelerometer which will consider as accident situation

- Facing the problem using background service in android 10 and higher
- Memory leak while using background service
- Back-end online database call in asynchronous manner
- Finding the way to design responsive for all device screen size
- Taking screen Overlay permission for starting activity while apps in screen lock
- Taking permission like run apps in background notification sound from different vendor mobile like Xaomi, Huawei, Lenovo.
- Updating data when internet connection is available.
- Getting accurate location using mobile network and GPS while no internet connection or no sim network

CHAPTER 3

Requirement Specification

3.1 Requirement Collection and Analysis

Requirement analysis refers to software interface with other system elements and also establishes some constraints. A programmer expands on essential necessities set up during before prerequisite designing undertakings that permits prerequisite investigation. If my project team fails to collect all necessary requirements for a structure or solution, then I will face a massive problem. So, in such a situation requirement collection should be a primary responsibility of a project. In my project Waterfall Model has been used for development and the software architecture is used in this application is MVVM (Model-View-ViewModel) which is a famous android architecture [4]. Because according to my project feature its very effective, simple and easy to understand

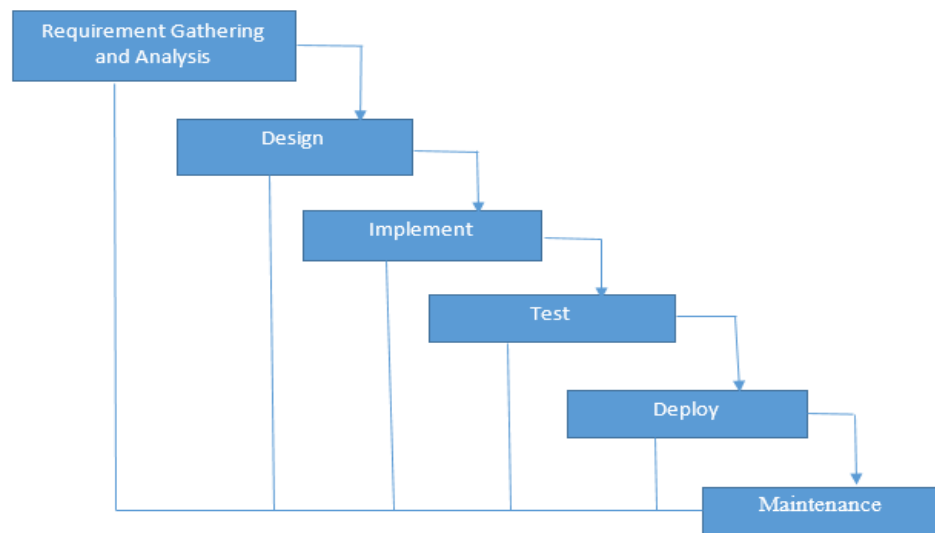


Figure 3.1.1: Waterfall Model.

Here is the representation of waterfall model for my application

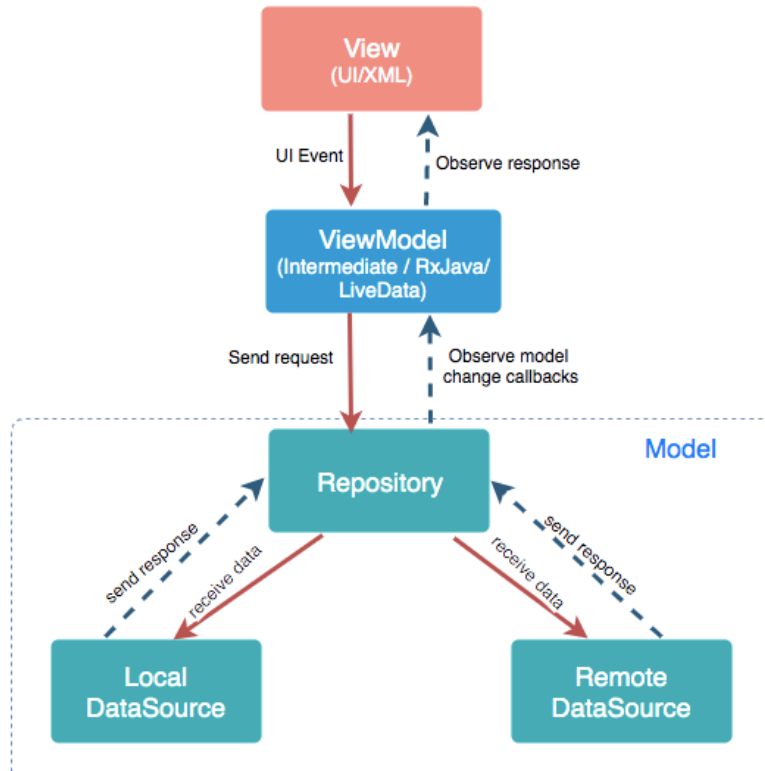


Figure 3.1.2: MVVM (Model-View-ViewModel) Architecture of android.

Here is the representation of Android Architecture named MVVM (Model-View-ViewModel) [5] for my application.

3.2 Logical Data Model

A Logical data model is a general depiction of the data- entities and relationships. But using NoSQL database [6] the relationship is not required like SQL database.

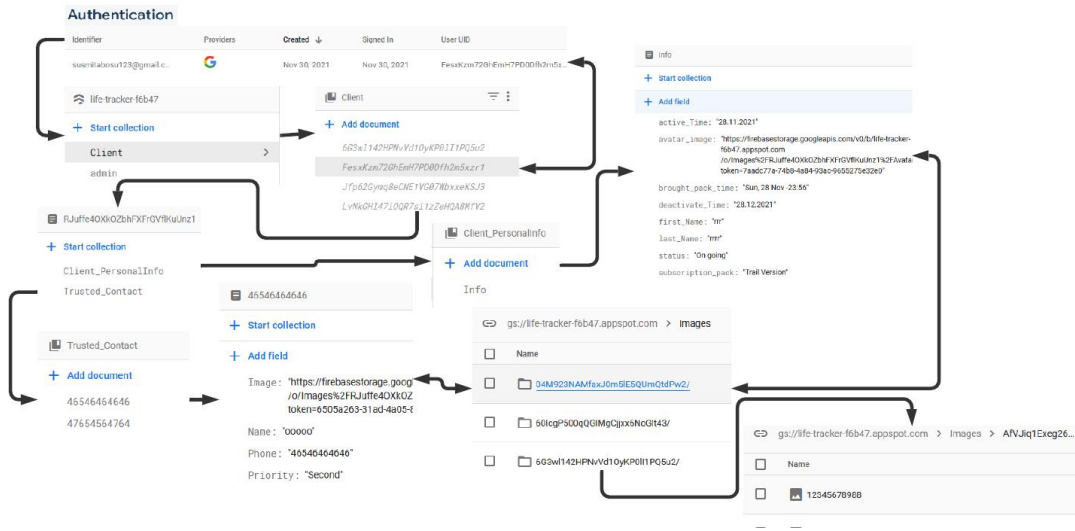
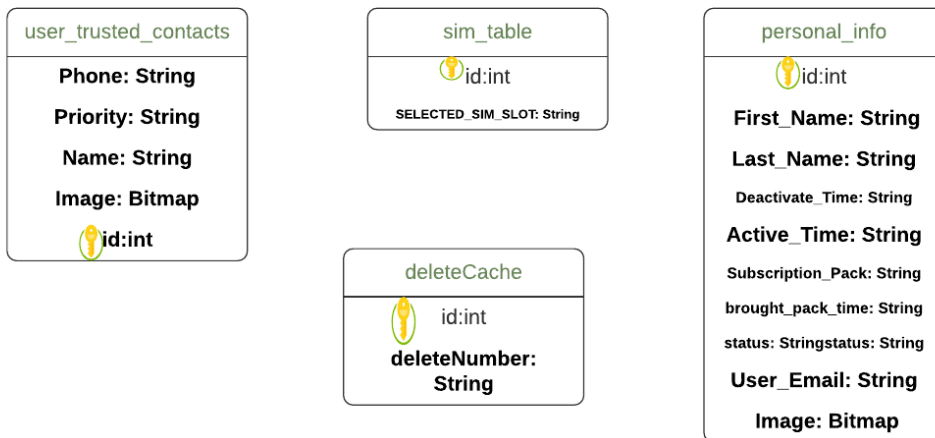


Figure 3.2.1: Logical data model of system of NoSQL database.

Here we can see the logical data model of my apps and also see the NoSQL (Firebase) database table.

As I mention above my application will work in offline mode for that the information must be download from firebase and store in phone device, for that android provide SQLite database [7] but, in this project, I have used Room database which is wrapper on SQLite database.



Figure

3.2.2: Logical data model of system of Room Database.

Here we can see the logical data model of my apps and also see the Room database (SQLite) database table.

3.3 Flow Chart Diagram

The core functionality of any project can briefly describe by using flow chart. Bike accident detection system has its own flow chart

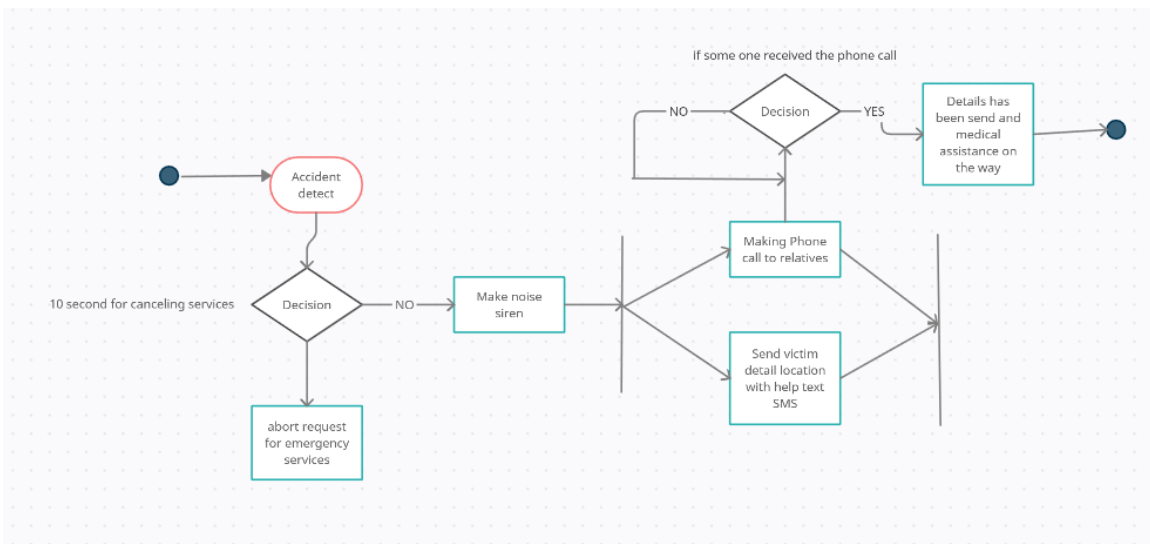


Figure 3.3.1: Application Flow Chart.

3.1 Design Requirement

This section discusses behind the implementation of the system that is an Android based system. In this chapter the whole applications design has been showed. Where project architectural structure, use case diagram, ER diagrams included well. The design of the project is user friendly, good looking, and well organized. The software has many advantages and allowed us to consider future development. Android application development give us opportunity to make such useful tools or apps to make daily life easier.

CHAPTER 4

Research Methodology

4.1 Introduction

Bike Accident detect system can detect an accident in a real time situation by using smartphone own sensors which is accelerometer. User account management, emergency contact management, medical information management and accident detection are the 4 module which is used in my project.

4.2 Process flow

This application can retrieve value of accelerometer while running the application in background, when the values of accelerometer reach more than 71m/s^2 , this application will detect that accident has occurred. Then the allocation will send SMS with current accident spot location to relatives then it will make a call to relatives and emergency services

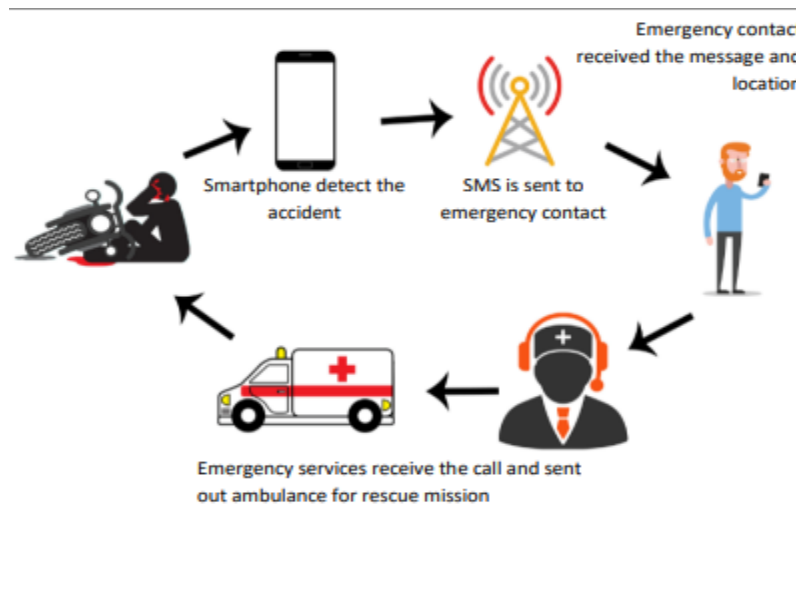


Figure 4.1.1: Process flow

Herer A simplified process flow of the system.

4.3 Design

I designed the application in three components: model, view and ViewModel as shown in Fig. 4.3.1

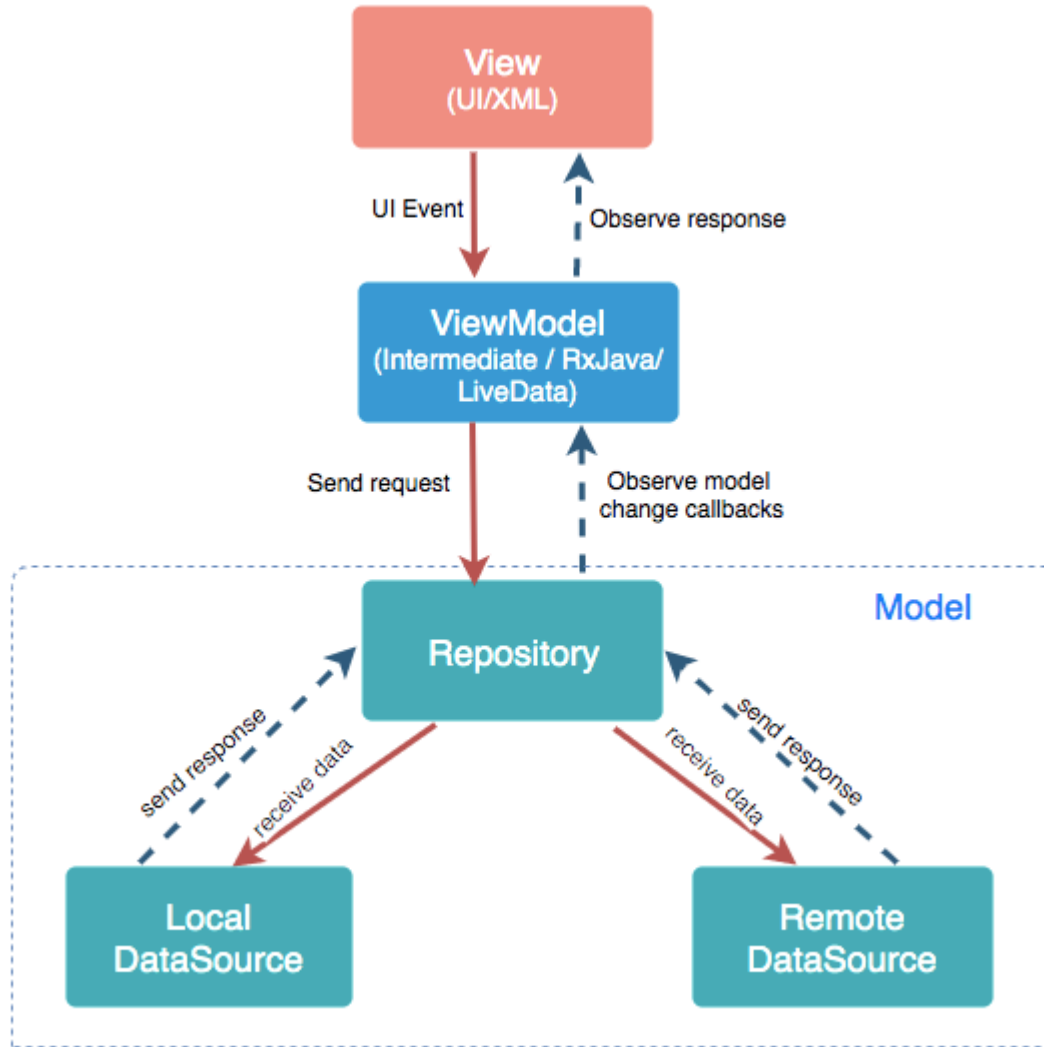


Figure:4.3.1: Application component Architecture

This application has three-layer internet architecture between user interface layer and domain layer (business logic) and data access layer.

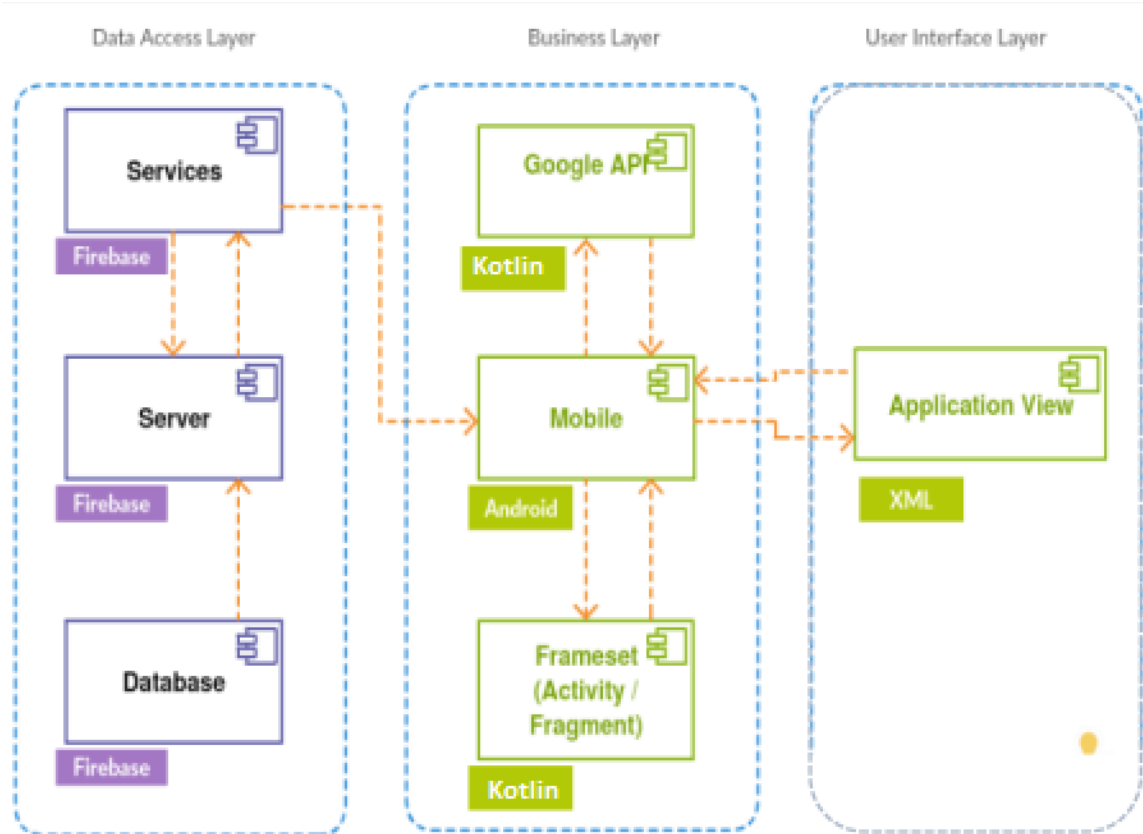


Figure 4.3.2 Component Diagram

4.4 Data access layer

It contains service, server and the database as the application is using NoSQL (fire base) database, this layer handle all operation in Firebase database on the cloud

4.5 Business layer

The system view controller or ModelView will be access by the activity and fragment and the ModelView will get its data from repository that's mean all the business logic will be in repository, this pattern is used for clean architecture all this logic has been written in Kotlin, there are also use of google Api for map and location this all process done on android platform

4.6 Accelerometer Manipulation

For detecting accident, I need to get value from accelerometer that's why a series of experiment has done. An accelerometer is an electromechanical device used to measure acceleration forces such as sense of movement and vibration on smartphone [8]. An application named Sensor Record that can be download from Google play Store and the main author of that application is Golpashin [9] who develop that application to fetch sensor value. For triggering accident detection, I have done few experiments, for accelerometer data, I had recorded of phone linear acceleration data in 4 situations: normal ride, throwing the phone to the ground, dropping the phone from desk and simulated accident situation. Table 1 shows the result.

TABLE 1: ACCELEROMETER EXPERIMENT RESULT

Experiment Situation	Maximum MA Value (m/s ²)
Normal ride	36.90
Simulated	71.70
Throw	65.50
Desk drop	37.80

The value which is need to trigger the accident detection is more than 71m/s². This is a preliminary value as many tests needed to be made, and the experiment needed to be test using other smartphones as the calibration may varied. This experiment was done by two-motorcycle, Yamaha R15 and Suzuki GSX

CHAPTER 5

Design Specification

5.1 Front-end Design

Front-end in android apps development is the act of changing data over to graphical interface for user to see and collaborate with data through computerized connection. Front end design is about UI of the application. My application has built on android platform so the design was done by using XML, some theme is used like google material UI to design those view group user friendly, all the icon was decorated in vector assist and some of them was input as SVG file, The main part of programming improvement is to configuration front end design.

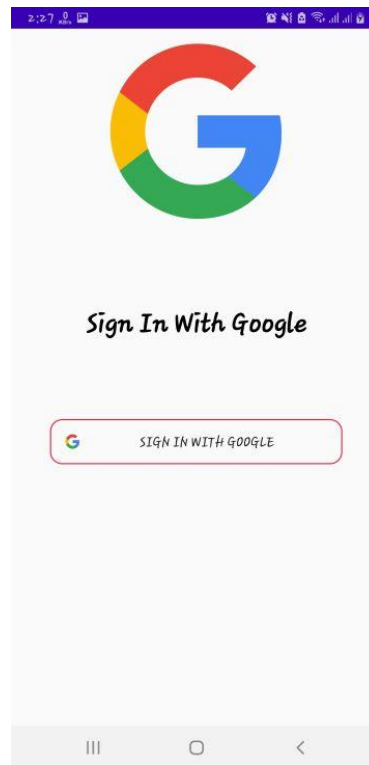


Figure: 5.1.1 Front-end design of Google Login

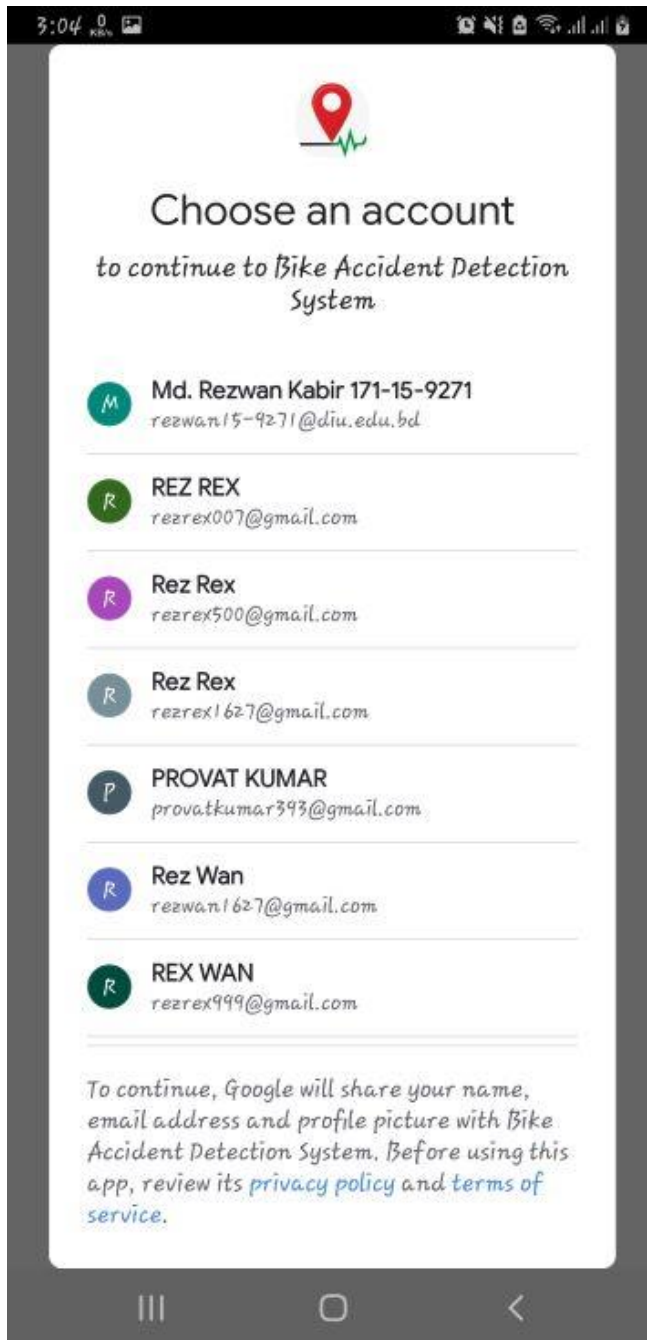


Figure:5.1.2: Front-end design of google account

Here by selecting the google account it will navigate to user interface to take important information.



Figure 5.1.3: front-end design of user interface

Here this interface is taking the picture for profile, email and full name of user

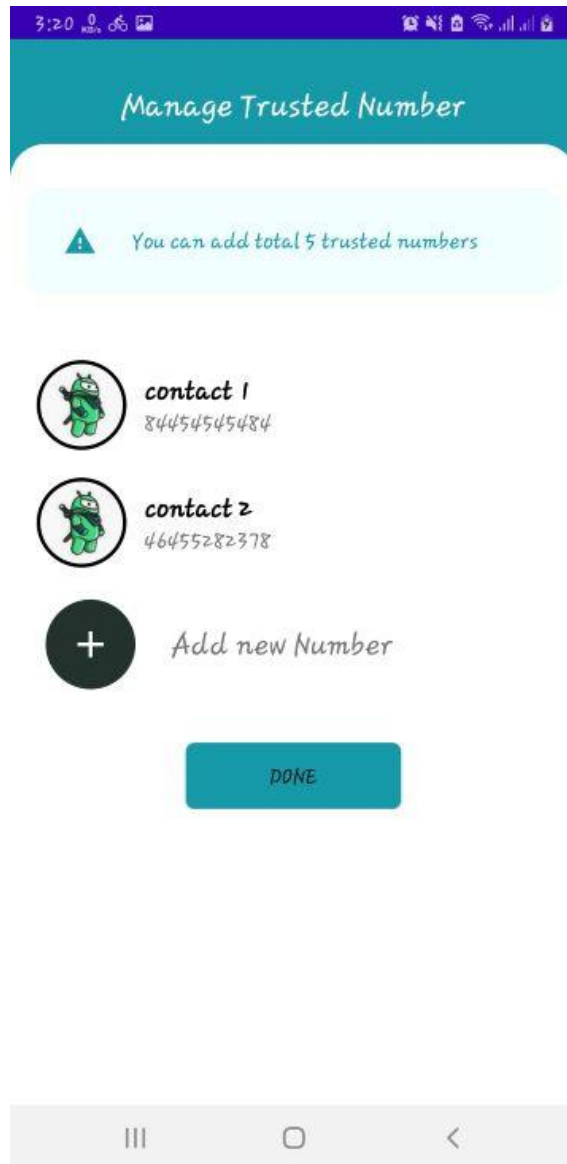


Figure 5.1.4: front-end design of user adding relative's number

Here the user putting his/her relative's number for sending SMS and making a phone call.

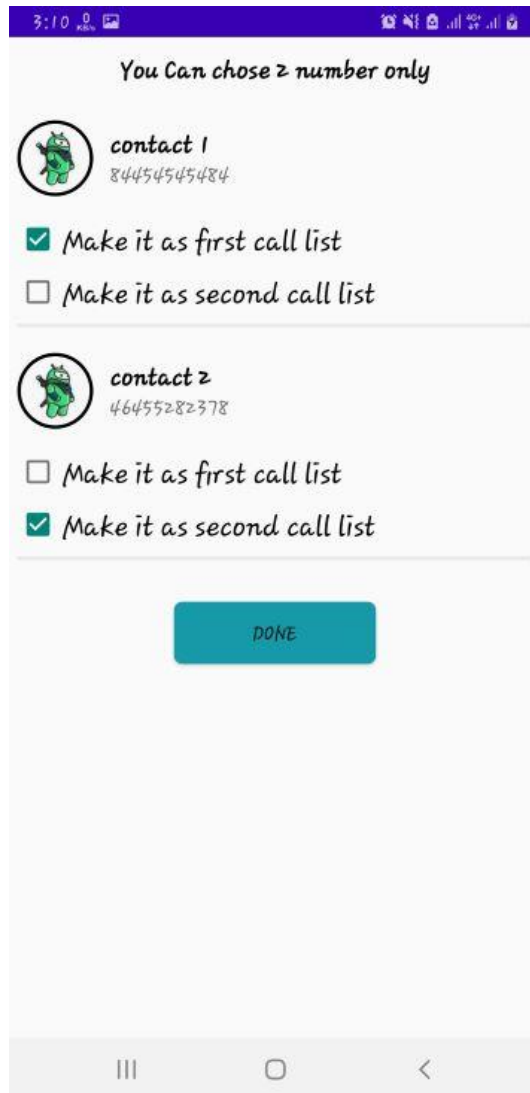


Figure:5.1.5: front-end design of setting priority of contacts

Here giving the priority of contact if phone call is made then which number should it first make a phone call

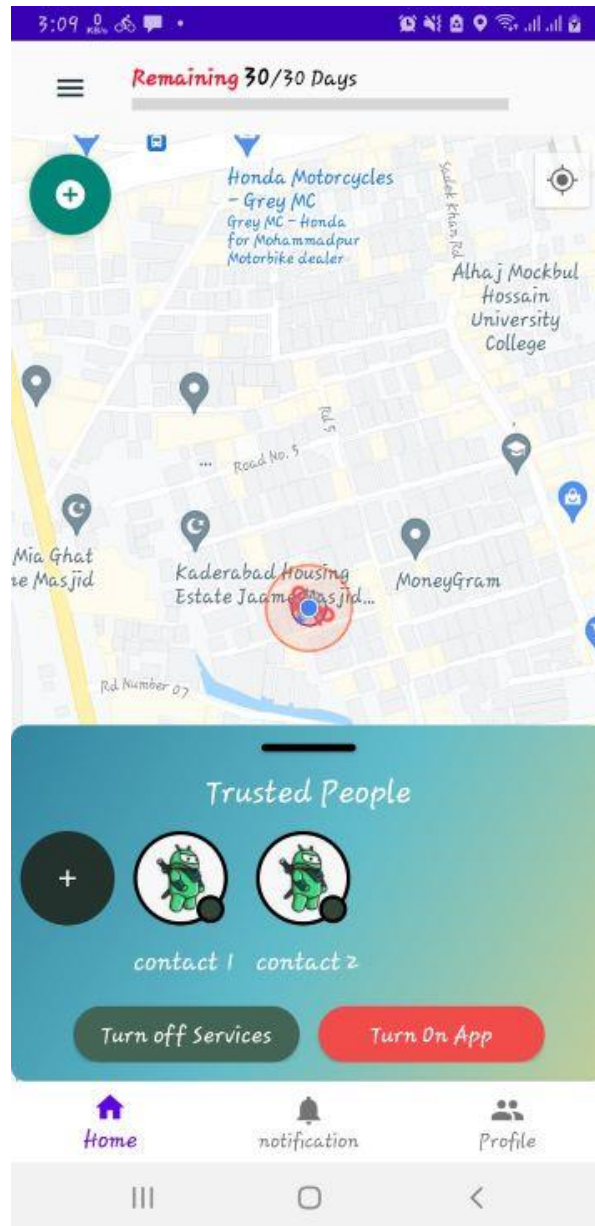


Figure:5.1.6: Front-end design of Main Activity

Here is the main activity where the user can see his movement in real time also here the application service can be controlled by this main activity

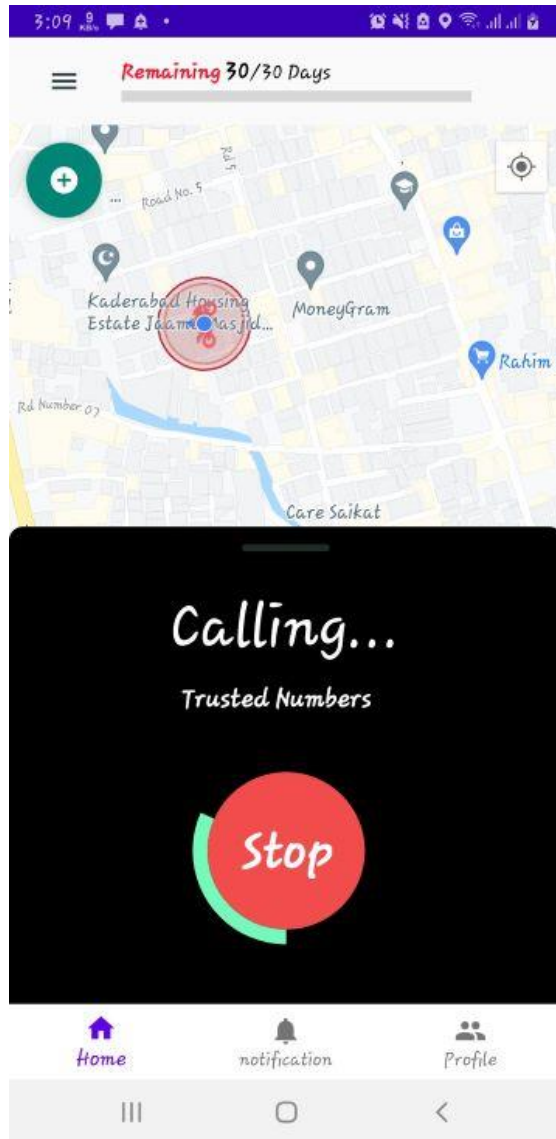


Figure:5.1.7: front-end design of detecting the accident

Here this UI represent that the accident happens and it will start its services like make call send SMS after 10 second that stop button is for if the user accidently drops the phone, to cancel all emergency service because of false alarm

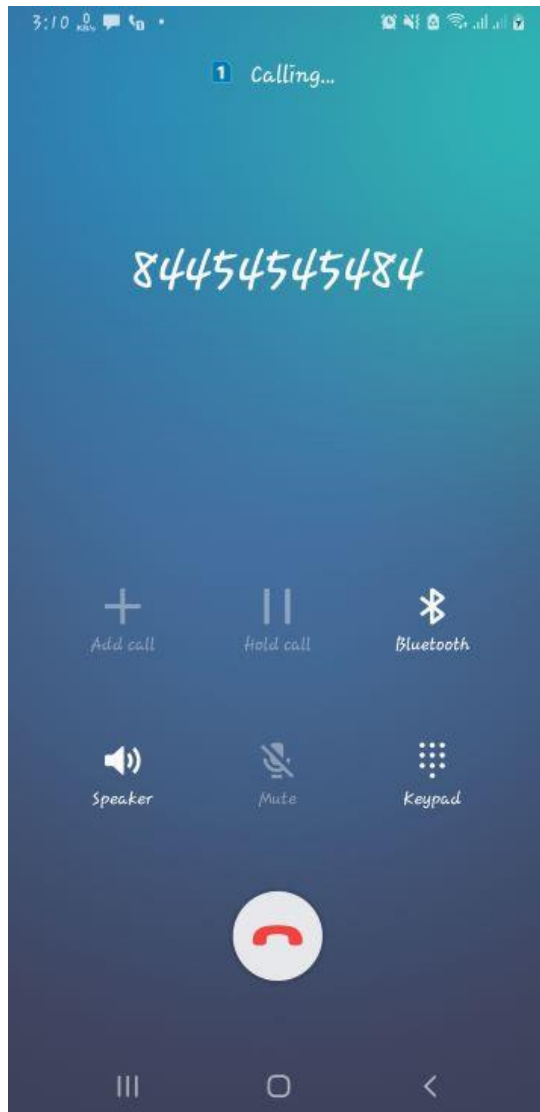


Figure 5.1.8: making call to relatives

Here it making the call that has been saved as emergency relatives contacts

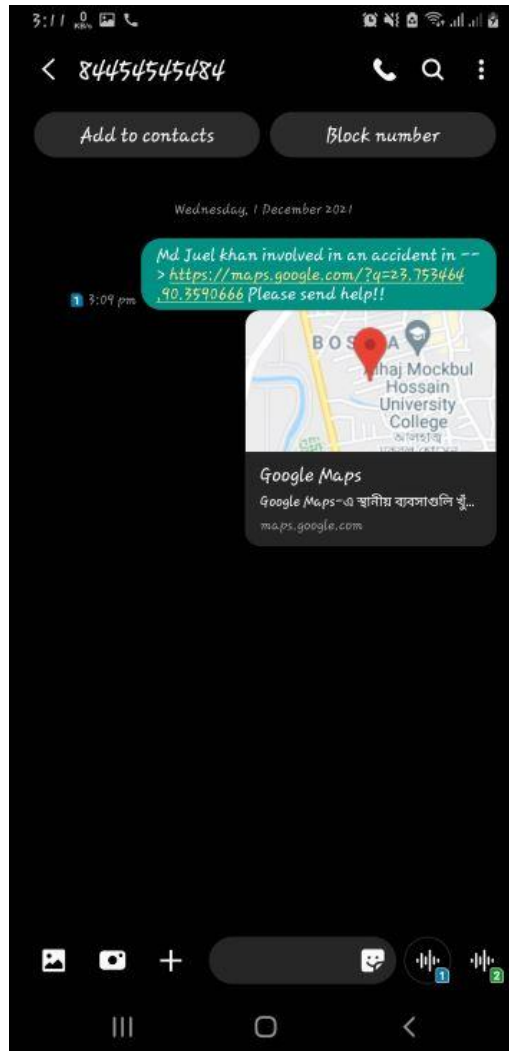


Figure 5.1.9: SMS send to saved number with location

Here the SMS has been sent to the saved relative's number with name and current location.

5.2 XML

XML stands for Extensible Markup Language. This is a markup language like HTML. In android it is used to design UI and for inserting data, being its light weight, it doesn't make android layout heavy, XML only contain tags, some tags refer as view group, layout like `<LinearLayout>` in here the view must declare such as `<TextView>`" Text" `</TextView>` `</LinearLayout>` [10]

```
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Remaining "
        android:textColor="@color/RED"
        android:textStyle="bold" />
```

Figure: 5.2.1: simple code of XML

Here simple code of XML how the view and view group is written.

5.3 Kotlin

Kotlin is an open-source, statically-typed programming language that supports both object-oriented and functional programming [7]. All the core functionality is written in Kotlin, connection between fragment to activity, fragment to fragment, all database CRUD, network operation is managed and written in Kotlin, google has declare the native language of developing android application is Kotlin alongside java.

```

class SignIn : AppCompatActivity() {
    private lateinit var binding: ActivitySignInBinding

    private lateinit var signInViewModel: SignInViewModel
    private lateinit var googleSignInClient: GoogleSignInClient
    private var isInternetConnected = false
    private var internetDisposable: Disposable? = null
    private lateinit var localDatabaseViewModel: LocalDatabaseViewModel

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        binding = ActivitySignInBinding.inflate(layoutInflater)
        setContentView(binding.root)

        if (intent.getStringExtra("nuke") == "YES") {
            localDatabaseViewModel = ViewModelProvider(owner = this).get(LocalDatabaseViewModel::class.java)
            localDatabaseViewModel.nukeTable()
        }

        intiSignInViewModel()
        signInMethod()

        binding.apply { this@ActivitySignInBinding
            gsignIn.setOnClickListener { @View()
                if (isInternetConnected) {
                    // getFirestoreDataToLocalDatabase()
                    signIn()
                    Log.d(TAG, "onCreate: signin is clicked")
                    return@setOnClickListener
                } else {
                    Toast.makeText(
                        context = this@SignIn,
                        text = "Check Your Internet Connection",
                        Toast.LENGTH_SHORT
                    ).show()
                    return@setOnClickListener
                }
            }
        }
    }
}

```

Figure 5.3.1: simple Kotlin code of Sign in Activity

5.4 Back-end Design

The back end refers to parts of a computer application or a program's code that allow it to operate and that cannot be accessed by a user. It also refers as data access layer of software or hardware. As my project is written in Kotlin so the backend language is Kotlin. All the variable needs to show for user all the business logic, all background operation, permission is written in Kotlin, there are more language which can be used as backend but Kotlin is more readable short and easy to deploy.

5.5 Room Database

The room persistence library it is an abstraction layer over SQLite. It works like wrapper around SQLite [8]. The problem of using direct SQLite is to maintain code for future development because of writing so many codes for CRUD operation and for relationship, where Room can code it for me by its self just to write human readable code, Room use as singleton pattern so the memory leakage will not happen

and the instance of Room is same whether it create new or update existence Data Table

```
@Entity(  
    tableName = "personal_info",  
  
    indices = [Index(  
        value = [  
            "First_Name", "Last_Name",  
            "Deactivate_Time",  
            "Active_Time",  
            "Subscription_Pack",  
            "brought_pack_time",  
            "status",  
            "User_Email",  
        ], unique = true  
    )  
]  
)  
  
data class PersonalInformation_Entity(  
  
    @PrimaryKey(autoGenerate = false)  
    val id: Int,  
    @ColumnInfo(name = "First_Name")  
    val First_Name: String,  
    @ColumnInfo(name = "Last_Name")  
    val Last_Name: String,  
    @ColumnInfo(name = "Deactivate_Time")  
    val Deactivate_Time: String,  
    @ColumnInfo(name = "Active_Time")  
    val Active_Time: String,  
    @ColumnInfo(name = "Subscription_Pack")  
    val Subscription_Pack: String,  
    @ColumnInfo(name = "brought_pack_time")  
    val brought_pack_time: String,  
    @ColumnInfo(name = "status")  
    val status: String,  
    @ColumnInfo(name = "User_Email")  
    val User_Email: String,  
    @ColumnInfo(name = "Image")  
    var Image: Bitmap? = null  
)
```

Figure: 5.5.1: room database code to creating Table

Here @Entites annotation refers the compile to write SQLite code to create Table
@ColumUnfo annotation refers to create Colum, @Primerykey annotation refers to
create primary key of that table with auto increment.

```

@Dao
interface OfflineDataBaseDao {
    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun addContacts(TrustedContactsEntity: TrustedContacts_Entity)

    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun addUserInfo(personalInformationEntity: PersonalInformation_Entity)

    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun addSIMSlot(simCardEntity: SIMCard_Entity)

    @Insert(onConflict = OnConflictStrategy.REPLACE)
    suspend fun addCache(DeleteCache_Entity: DeleteCache_Entity)

    @Update
    suspend fun updateContacts(TrustedContactsEntity: TrustedContacts_Entity)

```

Figure 5.5.2: this is Dao class for CRUD in database

Here @Insert annotation refers to insert value in given table but in figure there is no query because of room, the query is already written by room in background

5.6 Firebase

Firestore is a platform developed by Google for creating mobile and web applications, mainly it used for online database, hosting web site and for Machine learning of application [11]. It also provides push notification for mobile application which is written in Node.js, as my project is online base so I need to save data in fire base fire store, because firebase is real time database so its handy to update and maintain. Furthermore, firebase is NoSQL data base that's why it's easy to create and easy to retrieve data from database

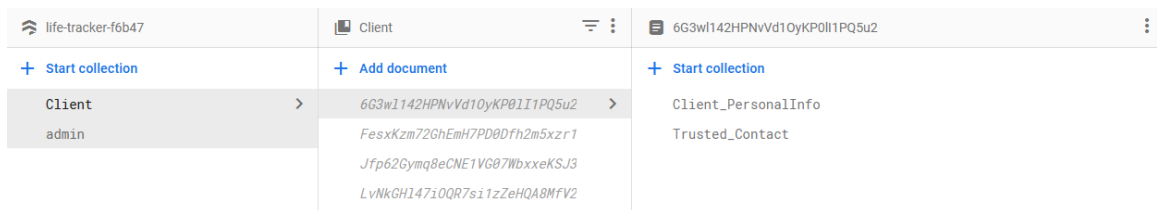


Figure 5.6.1: Firebase Fire store database

Here it represents how my application data is stored in fire base fire store database

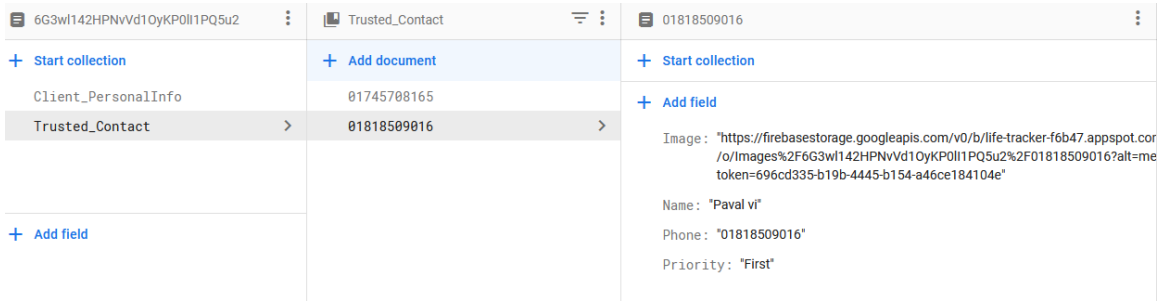


Figure:5.6.2: storing relatives' number in database

here it shown that how the emergency of relative's number is stored in database

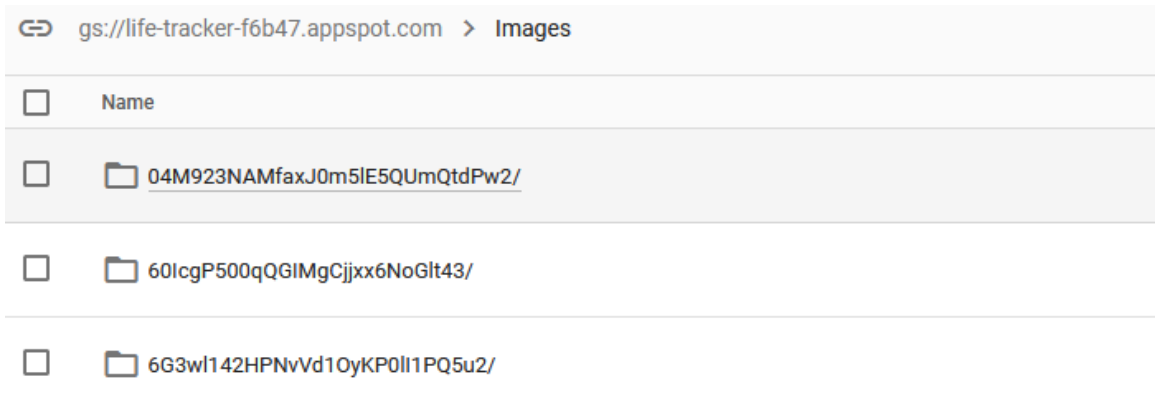


Figure 5.6.3: storing picture of user profile and relatives contacts.

Here the picture is stored as bucket of folder in fire base storage system

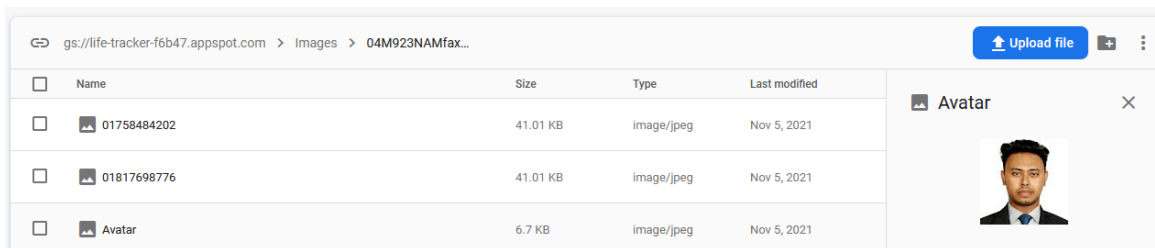


Figure 5.6.4: storing the image inside folder of firebase storage

Here inside the image folder, there is another folder which is created by user uid inside that folder contain user profile picture

Name	Size	Type	Last modified
Barisal.xlsx	12.41 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Chittagong.xlsx	19.59 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Dhaka.xlsx	27.01 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Khulna.xlsx	33.83 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Mymensingh.xlsx	20.68 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Rajshahi.xlsx	35.1 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Rangpur.xlsx	16.24 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021
Sylhet.xlsx	13.88 KB	application/vnd.openofficedocument.spreadsheetml.sheet	Nov 29, 2021

Figure 5.6.5: showing excel sheet of emergency services

Here all the division emergency services are stored in excel file where the application used its current location and define which file should show to the user

Thana	Hospital Name	Hospital number	Fire Service	fire service telephone number	OS number
বিলুপ্ত থানা	Khikhet Diagnostic Centre	N/A	Khilgaon Fire Station	1915663594	১৯১০০০৯৯৪
বিলুপ্ত থানা	Medtech General Hospital	01732-071985	Khilgaon Fire Station	1915663594	১৯১০০০৯৯৪
বিলুপ্ত থানা	Trim Diagnostic Center	01933-191875	Khilgaon Fire Station	1915663594	১৯১০০০৯৯৪
কাকডল থানা	Hi-Tech Multicare Hospital	01678-129126	N/A	N/A	1713373191
কাকডল থানা	Combined Hospital Ltd	01968-773207	N/A	N/A	1713373191
কাকডল থানা	Combined Military Hospital (CMH)	01724-579521	N/A	N/A	1713373191
ধানমন্ডি থানা	1 Labaid Specialized Hospital		9666710606 Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	2.Marie Stopes		28114392 Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	3.Mojbunnessa Eye Hospital Limited		28628512 Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	4.Millennium Heart & General Hospital Ltd	0 2 9122115	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	5.Liver, Gastric, General Hospital & Research Institute	0 1720250291	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	6.Medinova Medical Services Ltd.	01768-122393	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	7.Kidney Hospital & Dialysis Centre	8802-8122019	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Labaid Cardiac Hospital	0966671606, 86107938	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Harun Eye Foundation & Green Hospital	0 2 8612412, 8619068, 9663183	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Green Eye & General Hospital	0 2 8612412, 8619068	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Ibn Sina D. Lab. & Consultation Center	+880-2-9126625-6, 9126835-7	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Ibn Sina Consultation Center	+880-2-8618007, 9666497	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Farabi General Hospital	+ 800 2 81222471, 9140442	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Green Life Hospital Limited	+880-2-8612345-54, 8615412, 8628820-1	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Dr.Salahuddin Hospital	+880 2 9122264, 9121779	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Dr. Refatullah Eye Care Centre	+9659472	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Gonoshahthya Nagar Hospital	+880 2 8617208, 9673512, 8617383	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Dr. Refatullah Medi Care Centre	+9659472	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Doctors Diagnostic Center Ltd.	+880-2-8115300, 9123060	Tejaon Fire Station	9698187	১৯১০০০৯৯৪
ধানমন্ডি থানা	Phaka Pol (Far. Naka. Thana) Hospital	+ 880 2 8617601, 8611988	Tejaon Fire Station	9698187	১৯১০০০৯৯৪

Figure: 5.6.6: inside of excel sheet of emergency service

Here is the formatted sheet of emergency contact all over thana to give user all the services number in the time of need, this sheet was selected by the application by its own using the current district name that can be found using GPS.

5.7 Implementation Requirements

- Android bases operating system Smart phone
- Accelerometer of Smart phone to measure movement of devices
- Android Studio IDE (Integrated Development Environment) for development the application
- Kotlin is used to create interface, service, backend-service and all development functionality
- XML is used to make the skull and refining or colorized, designing perfectly for all the device optimization.
- Room Database is used to store information in database for offline use
- Google Map Api is used for Map view with current location
- Google location service to get current user location
- Firebase is used to store information on online database
- MVVM (Model-View-ViewModel) this architecture is used for clean code and manage directory as readable manner.
- Coroutine for asynchronous network and internal operation also for background thread operation
- SDP – a scalable size unit library for responsive UI design for every screen size [12]
- Poi-3.12 and poi-ooxml-schemas-3.12 jar file used to read excel sheet [13]
- Reactive Network library for checking internet connection [14]

CHAPTER 6

Discussion and Conclusion

6.1 Discussion and Conclusion

This project represents an accident detection mechanism based on android smartphone, to conclude, my project is unique and better than anything out there. My project deals with the aftermath of bike accidents to makes huge possibility of surviving, also it informs relatives about the salutation on its own which is not presented in other application. Also, this application provides women security for that not only bike riders but also regular human can use this apps just push of volume up button twice can safe life from threaten people. This application also provides emergency service contacts near user district, in many projects this feature is not include or not developed. More over this project doesn't need extra module just need a smartphone which is availed and affordable for every class of people, I sincerely hope that my project will be used by all bikers in our city contributing to reduction of the lives lost in road accidents.

6.2 Scope for Further Developments

In future my thought of vehicle accident can be utilize for not only bike but also every vehicle, there are without a doubt, not many data of emergency service are present in excel sheet, in future those emergency number will be taken from internet. In future I can make this alert system even advanced like giving alert about 3 min earlier from the actual accident will be happened, this feature can be added by installing a vehicle distance measure module and the speed of vehicle which can be analyze by GPS the distance between starting point and current point of location. Also, this application can be used as anti-thief alert system. If the device is stolen just send a message to that device thought another device and the stolen device recognize the message and it will start making noise and it will send back the image of thief and the location that phone, when this service began to start on stolen phone the thief cannot use phone it will lock

it will not turn off by pressing turn-off button the volume will not be reduce. In future I am willing to make this kind of advance change on my project.

APPENDIX

Project Reflection

In the term of definite protection, three choices are accessible Thesis, project and temporary job. I decide to make a project since I figured it would give me a chance for make an application which is valuable. It is my assessment that each understudy ought to accomplish some information available expertise in genuine life and apply well. Each software engineer ought to use their experience for making a few projects. It will help me a great deal, I didn't know before the number of models has a place for build up an application.

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