AUTOMATION OF COVID-19 HEALTHCARE

TRACKING AND ALERTING SYSTEM

Submitted in partial fulfilment for the award of the degree of

Bachelor of Computer Application

by

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SCHOOL OF INFORMATION TECHNOLOGY & ENGINEERING

VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

April, 2022

DECLARATION

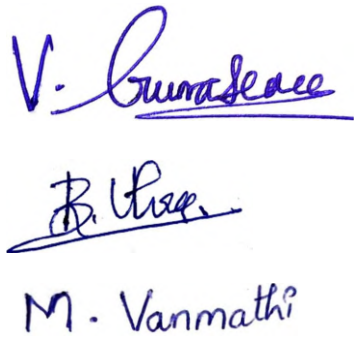
I hereby declare that the thesis entitled "AUTOMATION OF COVID-19 HEALTHCARE TRACKING AND ALERTING SYSTEM" submitted by me, for the award of the degree of Specify the *Bachelor Of Technology in Computer Application* to VIT is a record of bonafide work carried out by me under the supervision of Kumaresan P.

I further declare that the work reported in this thesis has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Place: Vellore

Date: 22.04.2022

Signature of the Candidate



CERTIFICATE

This is to certify that the thesis entitled "Automation of Covid-19 Healthcare Tracking and Alerting System" submitted by **Gunasekaran.V-19BCA0020, Uthra.B-19BCA0032 & Vanmathi.M-19BCA0034, School Of Information Technology & Engineering**, VIT, for the award of the degree of *Bachelor of Technology in Computer Application* is a record of bonafide work carried out by him/her under my supervision, as per the VIT code of academic and research ethics.

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Place: Vellore

Date: 22.04.2022

Signature of the Guide **Signature of the HOD**

Internal Examiner **External Examiner**

CERTIFICATE BY THE EXTERNAL GUIDE

This is to certify that the project report entitled "**AUTOMATION OF COVID-19 HEALTHCARE TRACKING AND ALERTING SYSTEM"** submitted by **Gunasekaran.V-19BCA0020, Uthra.B-19BCA0032 & Vanmathi.M-19BCA0034** to Vellore Institute of Technology in partial fulfilment of the requirement for the award of the degree of *Bachelor of Technology in Computer Application* in *Vellore* is a record of bonafide work carried out by him/her under my guidance. The project fulfils the requirements as per the regulations of this Institute and in my opinion meets the necessary standards for submission. The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Signature of the External Supervisor

EXTERNAL SUPERVISOR

ABSTRACT

Coronavirus (COVID-19) is a highly contagious infection that has drawn the world's attention by forcing lockdowns and straining the people health care systems. The COVID-19 pandemic continues to affect the way of everyone life. In this time Mobile apps are considered to be a valuable tool for citizens, health professions, and self-management and decision makers facing the critical challenges by the pandemic, such as reducing the burden of hospitals, providing access to credible information. An automation of Covid-19 Healthcare Tracking and alerting system based on the android application. The main feature in this application is tracing. It helps to automatically generate the number of peoples affected, recovered, and death by this virus. This tracking technology will improve the tracking capability of health authorities. It still faces many concerns from users, data protection agencies and researchers. There are many important features also available like the various helpline numbers, self-registration for vaccine and the details about Omicron and Covid-19 viruses. Additionally, we made the simple quiz set by set of question which is default set by developers his/her select the answers based on their symptoms. It will display an alert message in popup for the users to get alerted by this notification.

ACKNOWLEDGEMENT

It is my pleasure to express with deep sense of gratitude to KUMARESAN P, Assistant Professor Sr. Grade 1, School of Information Technology & Engineering, Vellore Institute of Technology, for his/her constant guidance, continual encouragement, and understanding; more than all, he taught me patience in my endeavour. My association with him is not confined to academics only, but it is a great opportunity on my part of work with an intellectual and expert in the field of Computer Application.

I would like to express my gratitude to Honourable Chancellor, Dr. G. Viswanathan, esteemed Vice-President, Shri. Sankar Viswanathan, Shri. Sekar Viswanathan and Shri. G.V. Selvam, respected Vice Chancellor, Dr. Rambabu Kodali, Respected Pro-Vice Chancellor Dr. S. Narayana, Dean Dr. S. Sumathy, SITE, for providing with an environment to work in and for his inspiration during the tenure of the course.

In jubilant mood I express ingeniously my whole-hearted thanks to Dr. Parimala M. HOD (Associate Professor Grade 1), all teaching staff and members working as limbs of our university for their not-self-centred enthusiasm coupled with timely encouragements showered on me with zeal, which prompted the acquirement of the requisite knowledge to finalize my course study successfully. I would like to thank my parents for their support.

It is indeed a pleasure to thank my friends who persuaded and encouraged me to take up and complete this task. At last but not least, I express my gratitude and appreciation to all those who have helped me directly or indirectly toward the successful completion of this project.

Place: Vellore

Date: 22.04.2022 **Name of the student**

Gunasekaran V

Uthra B

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LIST OF ABBREVIATIONS

API	Application Programming Interface
VM	Virtual Machine
ADK	Android Development Kit
DDMS	Dalvik Debug Monitor Service
JDK	Java Development Kit
OS	Operating System
APK	Android Application Package
ADT	Android Development Tools
AVD	Android Virtual Device
ADB	Android Debug Bridge
AIDL	Android Interface Definition Language
AOSP	Android Open Source Project
DDMS	Dalvik Debug Monitor Service
JRE	Java Runtime Environment

Chapter 1

1. INTRODUCTION

In this time Mobile apps are considered to be a valuable tool for citizens, health professions, and self-management and decision makers facing the critical challenges by the pandemic, such as reducing the burden of hospitals, providing access to credible information. It helps to automatically generate the number of peoples affected, recovered, and death by this virus. This tracking technology will improve the tracking capability of health authorities. It still faces many concerns from users, data protection agencies and researchers.

1.1 OBJECTIVE

- The ultimate goal for developing this application is to make awareness about Covid-19 among the people. Taking "Aarogya Setu", the official application for the updates of widely spreading Corona, we have taken steps to develop this app with fundamental requirements of alerting and tracking system.

1.2 MOTIVATION

- The application is not only helpful for finding facts about covid-19, once we are free from this pandemic, the additional information included in the application will be helpful for parents since it will work as E-Vaccination and Reminder system.

1.3 PROJECT DESCRIPTION

- The main feature in this application is tracing. It helps to automatically generate the number of peoples affected, recovered, and death by this virus.
- It still faces many concerns from users, data protection agencies and researchers. There are many important features also available like the various

helpline numbers, self-registration for vaccine and the details about Omicron and Covid-19 viruses.

- Additionally, we made the simple quiz set by set of question which is default set by developers his/her select the answers based on their symptoms. Displays an alert message in popup for the users to get alerted by this notification.

Chapter 2

2. PROJECT DESCRIPTION AND GOALS

2.1 LITERATURE SURVEY

Title: Smart healthcare support for remote patient monitoring during covid-19 quarantine

Author: Olutosin Taiwo and Absalom E. Ezugwu

Year: 2020

Publication: Elsevier

This paper focuses, we propose a mobile application-based prototype smart home healthcare system for efficient and effective health monitoring for the elderly and disabled for their convenient and independent living while at home. A section of the proposed system allows the patient to remotely upload or capture essential health symptoms information during an era of a pandemic such as the ongoing COVID-19 disease for their doctor's assisted diagnosis. This system is also designed to send a reminder to patients on the use of certain medications with input supplied by the user.

It is designed to achieve the following goals. They are:

- In this proposed system, patients can be remotely monitored from their homes, and can also live a more comfortable life through the use of some features on their phones.
- The application tracks and monitors the daily activities of the user and server as a reminder for the scheduled activities of the user and serves as a remainder for the scheduled activities of the patient.

- The system also gives the alerts in case of incomplete, critical and affected details of the patient's numbers.

Title: An Automated Patient Self-Monitoring System to Reduce Health Care System during the COVID-19 Pandemic in Malaysia

Author: Hooi Min Lim, Chin Hai Teo, Chrik Jenn Ng, Thiam Kian Chiew, Wei Leik Ng, Adina Abdullah, Haireen Abdul Hadi, Chee Sun Liew and Chee Seng Chan

Year: 2021

Published In: JMIR

This paper is aimed to develop an automated COVID-19 Symptom Monitoring System to reduce the burden on the health care system and to provide better self-monitoring at home. The system helps to next pandemic, especially in the developing countries we describe all the essential steps from the clinical perspective and our technical approach in designing, developing and integrating the system into practice during the COVID-19 pandemic as well as from this development process.

- An systematic approach of development involving this clinical experts, evidence-based clinical guidelines, data security and privacy considerations of this app during a pandemic.
- Using this existing digital platform would be more user friendly for patients, users as they all are familiar with this application.
- The development process of COVID-19 symptom monitoring system prioritized the health and safety of patients and healthcare providers.

Title: COVID-19 Mobile Apps – A Systematic Review and Literature

Author: Haridimos Kondylakis, Dimitrios G katehakis, Angelina Kouroubali, Fokion Logothetidis, Andreas Triantafyllidis, llias Kalamaras, Konstantinos Votis, and Dimitrios Tzovaras

Year: 2020

Published In: JMIR

In this paper is aimed to develop the Systematic Review of COVID-19 Mobile Apps. In particular, mobile apps can help in solving several COVID-19–related challenges by increasing the reach of reliable information to both citizens and health professionals, decreasing misinformation and confusion, tracking symptoms and mental health of citizens, home monitoring and isolation, discovering new predictors, optimizing health care resource allocation, and reducing the burden of hospitals. The following main goals are discussed in this paper

- Mobile apps are accessible, acceptable, and easily adopted, and have the ability to support social distancing efforts.
- An interactive map of user demographics and health status was discussed in many of the papers.
- Mobile app sensing revealed that, during the COVID-19 pandemic, individuals were more sedentary, visited fewer locations, and showed increases in anxiety and depression.

Title: COVID-19 Prediction models – a systematic literature review

Author: Sheikh Muzaffar Shakeel, Nithya Sathya Kumar, Pranita Pandurang Madalli, Rashmi Srinivasaiah and Devappa Renuka Swamy

Year: 2021

Published In: PubMed Central

This paper aimed to collate information on COVID-19 prediction models. A prediction model is a method for predicting the future scenario based on present facts. Many governments have collected and are trying to analysed data to be better equipped for providing healthcare to COVID-19 patients. Techniques for COVID-19 prediction algorithms are based on commonly used data mining and machine learning techniques to benefit the healthcare sector. The following main goals are discussed in this paper are:

- A prediction model is a method of becoming aware of a future scenario beforehand based on available data. Predictive modelling mainly uses statistics to predict outcomes.

- The health system is expected to perform well in all aspects of satisfying the needs of the users whether those users are patients, attending physicians, employers, or functional departments within an organization.

3. TECHNICAL SPECIFICATION

3.1 SYSTEM CONGFIGURATION

HARDWARE CONFIGURATION

Processor	:	Intel i7
Motherboard	:	Genuine Intel
RAM	:	Min 8 GB
Hard Disk	:	120 GB

SOFTWARE CONFIGURATION

Operating system	:	Windows 10
Technology Used	:	Android
IDE	:	Android Studio
Database	:	Firebase

4. DESIGN, METHODOLOGY & DETAILS

4.1 MODULE DESCRIPTION

4.1.1 ANIMATION SCREEN

- This is the launcher activity of this mobile application. This has some animated effects to display our application name. It will direct us to login. Every modules of the application have navigation to every other page easily.

4.1.2 LOGIN

- The primary registration feature may include phone number based authentication, so that the users can login into the application and benefitted from the details given in the app. It is a security measure designed to prevent unauthorized access to confidential data.

4.1.3 SIGN IN

- This module of the application will help the new users to login the application. Here the user should give their Name, Phone Number and Password. So they will become part of this family.

4.1.4 FORGOT PASSWORD

- This module of the application will help the user who lost their password. With the help of this module, the user can change their password and use the application again.

4.1.5 ABOUT US

- This module literally describes about the owner of the application. This may also include the details about the application. This module has some social media links to connect people with us.

4.1.6 RATING

- This module of the application enable the admin to know about the perspective of the users since the user will give the ratings for the application. With that rating, we could improvise the application. Once the user click the rating button the will be shown message based on their rating.

4.1.7 HOMEPAGE

- This module is the homepage for the users. The Home Page will consist of some necessary information for the users like the details about food to be taken to prevent ourselves from COVID-19. The Menus helpful for navigating into other modules will be displayed here. The Bottom Navigation associated with this page will be more useful for traversing the entire application. The Homepage will possess some icons which helps the users to identify the use.

4.1.8 FAQ

- This module includes some random question and answers about the Covid-19 and the Vaccination details. The widely spreading Corona and its variants is not only spreading the infections but also more rumours. To ignore all those rumours we have given the possible correct solutions to the users.

4.1.9 SYMPTOMS CHECKER

- This module will help the users to find out the symptoms by answering the questions by clicking YES or NO. This will help the people to know about the infection level. The prediction will make them relax from frustration.

4.2 SYMPTOMS OF CORONA

- This module will be answering some of basic questions related to Covid-19 and its history. To make it user friendly we have given in list view format.

4.2.1 OMICRON DETAILS

- The world is not sufferings given by Corona. Corona has already started to spread its variants, one such is Omicron. This module will be answering some of basic questions related to Omicron and its history. To make it user friendly we have given in list view format.

4.2.2 IMMUNIZATION DETAILS

- This app is not only meant for Corona. Once the Corona is vanished, the app may be going out of usage. To avoid this situation we have included this module. This module will have the details of vaccines for the children. People may forget to put the vaccination and its dosage to their children in this fast world. Searching each and every vaccine in somewhere will cost more time. In order to avoid that situation we have given the information related to child vaccines in one place.

4.2.3 HELPLINE NUMBERS

- At the time of any emergency situations, people may not know to whom they call. In that panic situation, this module will be really helpful because we have given some useful phone numbers for the emergency. People may get seriously panic because of the Corona, to get some psychological advices from the experts they could gain the assistance from the given phone numbers. The Phone numbers will be visible to them, if they click it, it in turn navigate to the dialler page to seek help.

4.2.4 COVID-19 UPDATES

- This module will help to find the global stats of Corona rate, active cases, recovered cases etc. By having all the details in one place will save the time of users.

4.2.5 REMAINDER

- This module will help to remind the user for the vaccination on that particular day.

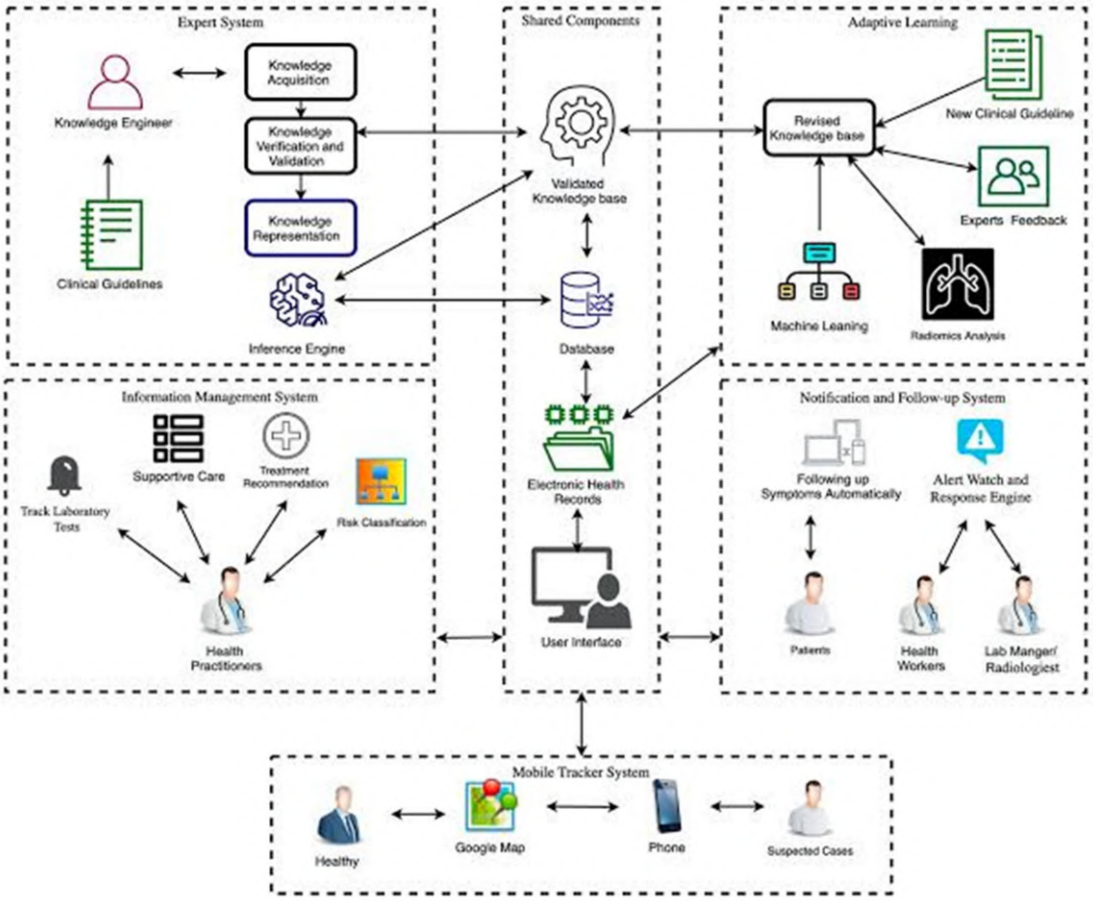
4.2.6 VACCINATION AVAILABILITY

- This module will help to find the vaccination availability place with district id and pin code of the place. It’s easy to users for get vaccinated.

4.2.7 LOGOUT

- This module will use the users to move out of the application.

4.3 SYSTEM ARCHITECTURE



4.4 **UML DIAGRAMS**

4.4.1 USE CASE DIAGRAM

USE CASE DIAGRAM

1. Below is the use case model of the project. This describes the overall structure and interactions in/out of the system.

2. Actors Determined

   - User
   - New User
   - Info-collector
   - Firebase Database
   - Admin
   - Healthcare Department

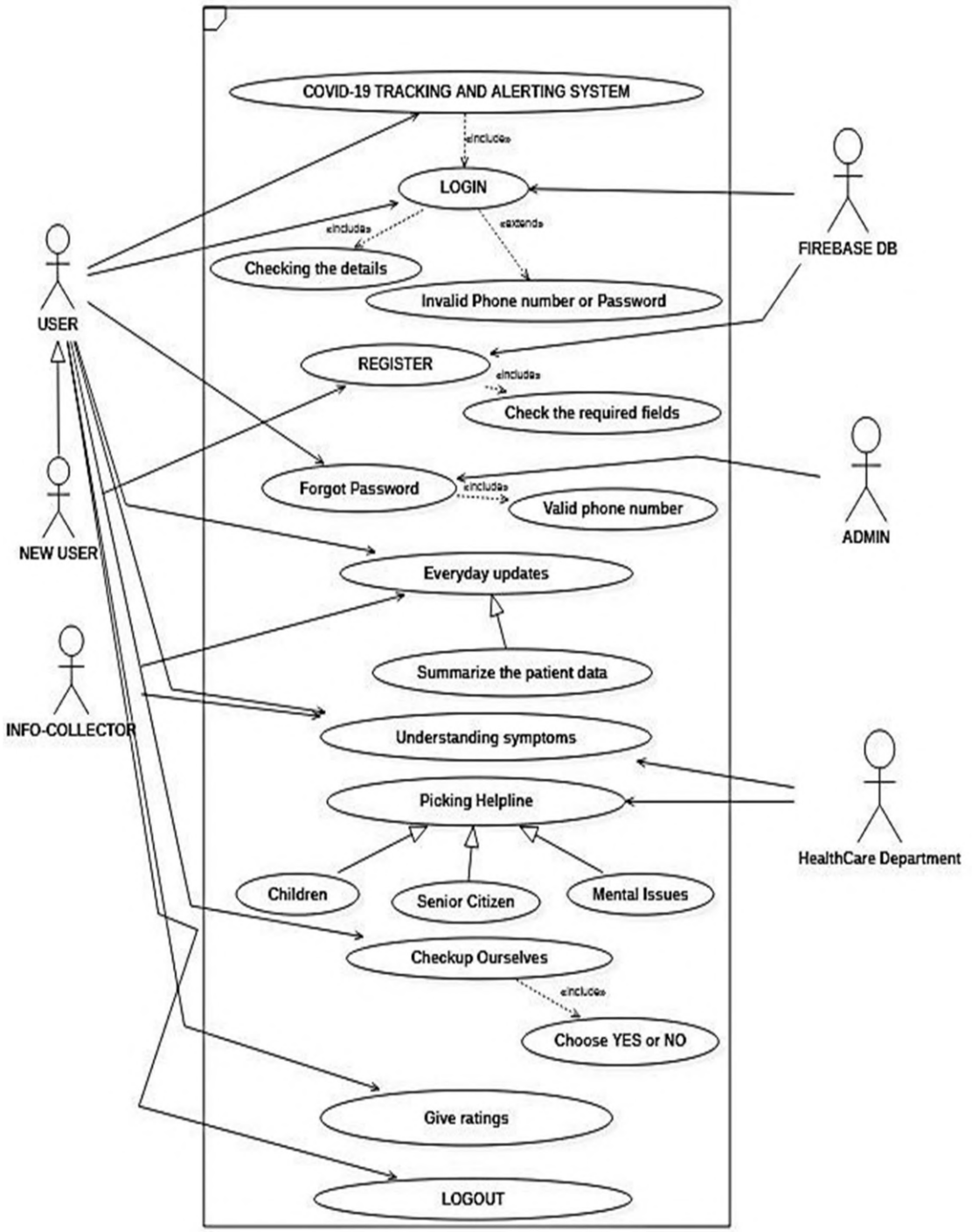


Figure 4.4.1 Use case diagram

4.4.2 SEQUENCE DIAGRAM

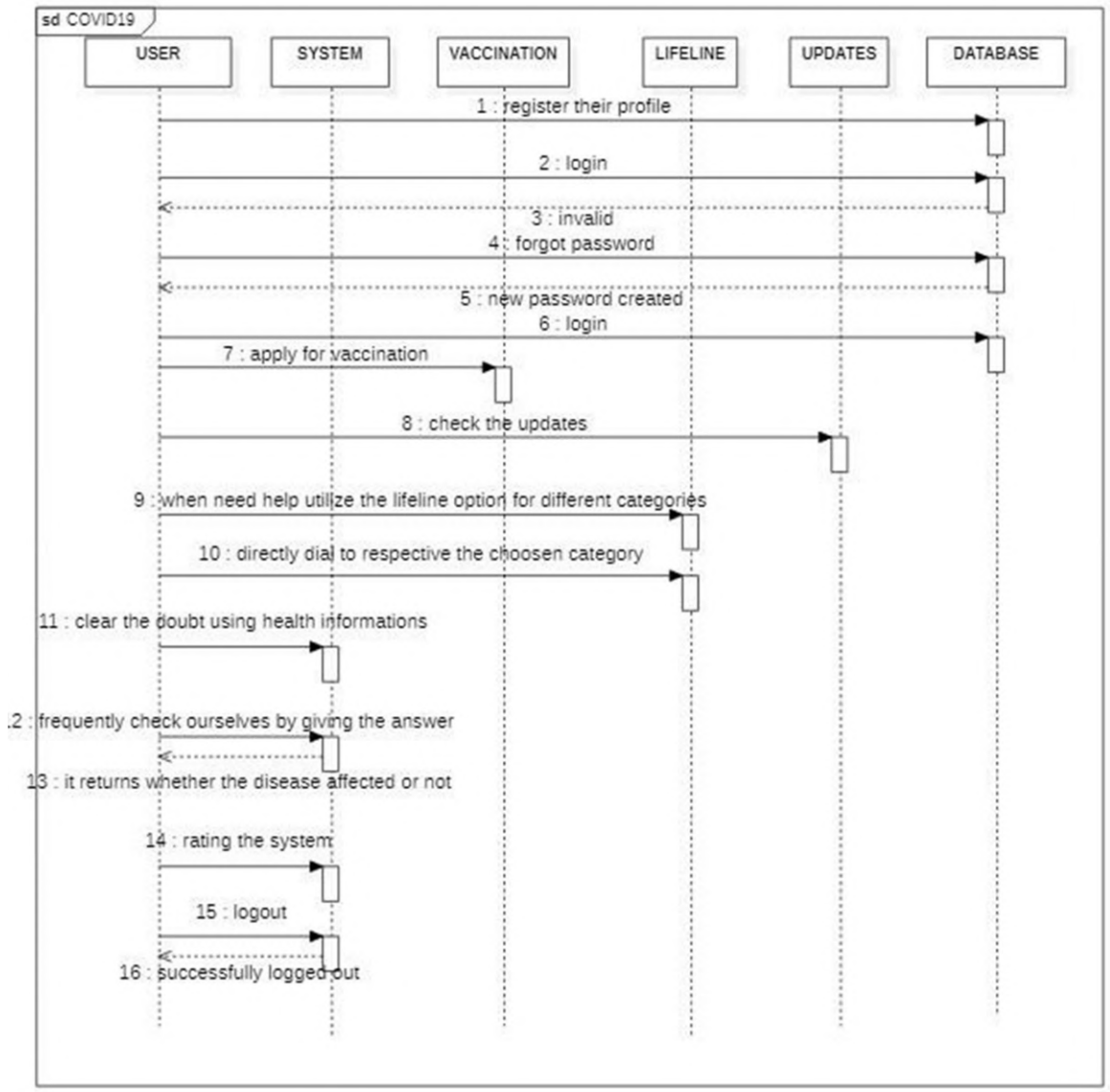


Figure 4.4.2 SEQUENCE DIAGRAM

4.4.3 CLASS DIAGRAM

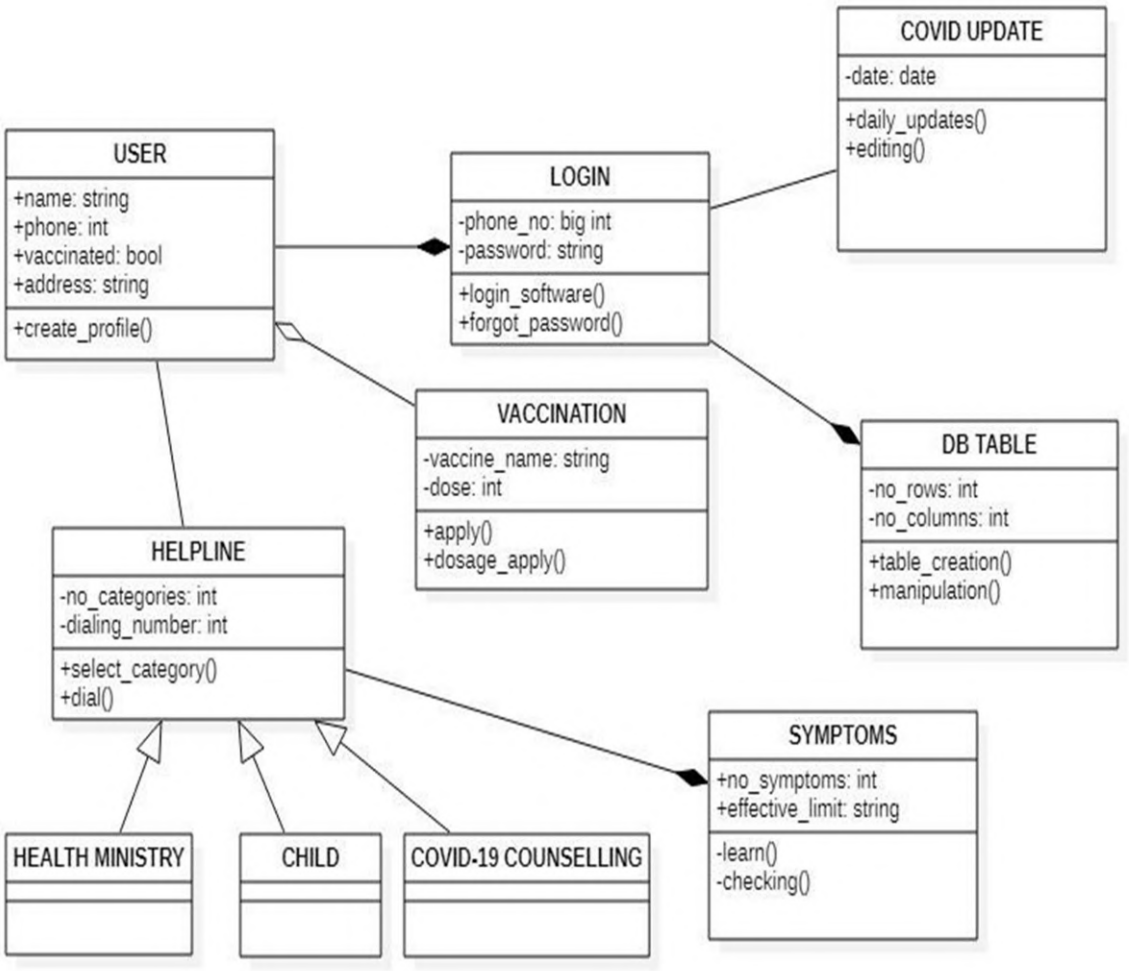


Figure 4.4.3 Class Diagram

4.4.4 ACTIVITY DIAGRAM

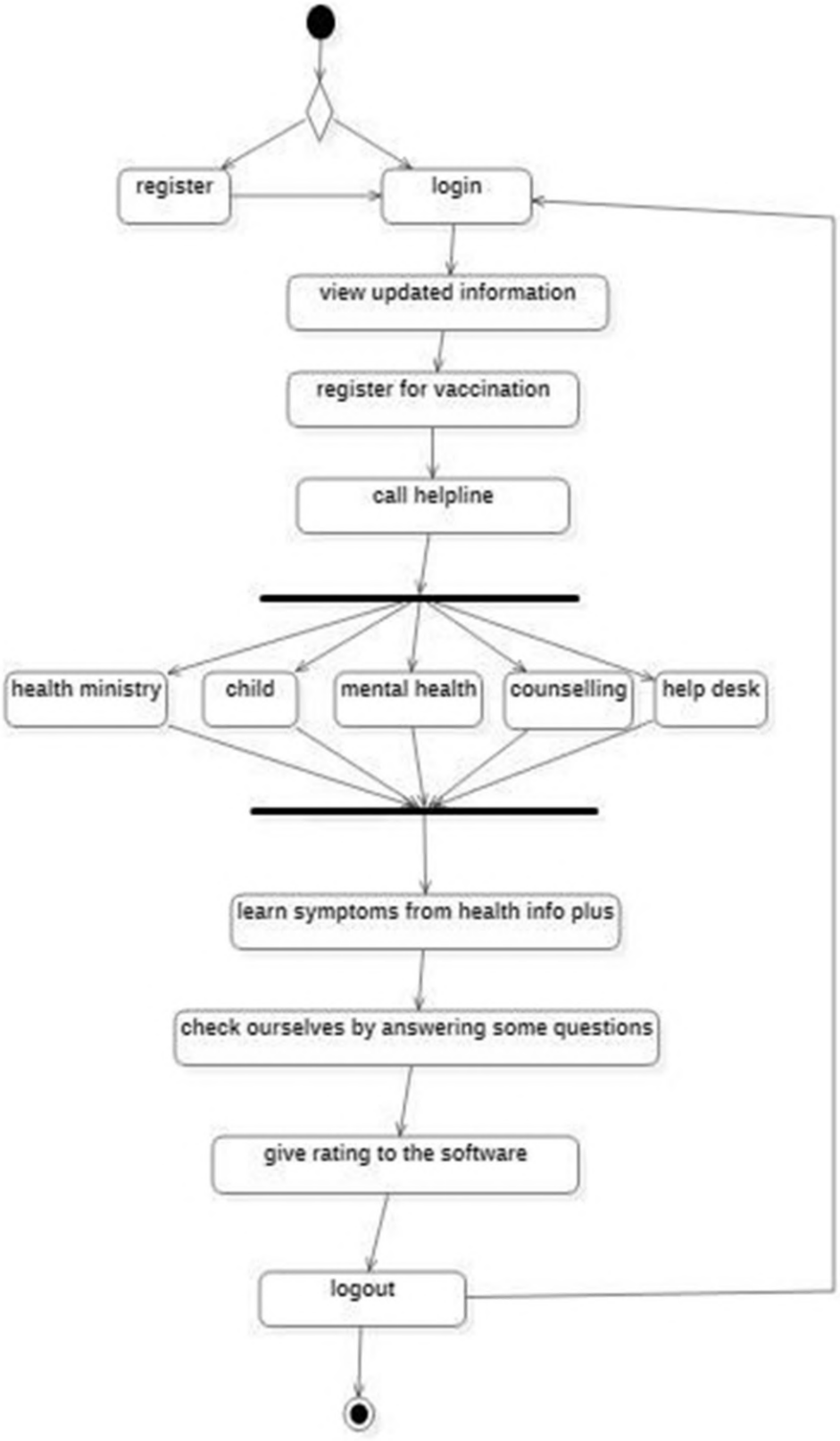


Figure 4.4.4 Activity Diagram

5. PROJECT DESCRIPTION

5.1 SAMPLE CODING

Sample Java code:

```
package com.example.healthinfoplus;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;

import androidx.appcompat.widget.Toolbar;

import android.content.Intent;

import android.net.Uri;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuInflater;

import android.view.MenuItem;

import android.view.View;

import android.widget.Button;

import android.widget.ImageSwitcher;

import android.widget.ImageView;

import android.widget.LinearLayout;

import android.widget.TextView;

import android.widget.ViewSwitcher;


import com.google.android.material.floatingactionbutton.FloatingActionButton;



public class HomeActivity extends AppCompatActivity {

    ImageView coWin,vaccine,quizAccess,phoneList;

    ImageSwitcher imageSwitcher;
```

```
    Button button;
    FloatingActionButton floatingActionButton;


    int imageIdList[] = {R.drawable.stay, R.drawable.sanitizer, R.drawable.distace,
R.drawable.mask,
            R.drawable.doc};
    int count = imageIdList.length;
    // to keep current Index of ImageID array
    int currentIndex = -1;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_home);


        Toolbar mToolbar = (Toolbar) findViewById(R.id.toolbar);
        //mToolbar.setTitle(getString(R.string.app_name));
        mToolbar.setNavigationIcon(R.drawable.ic_baseline_arrow_back_ios_new_24);
        mToolbar.setNavigationOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                finish();
            }
        });
floatingActionButton= findViewById(R.id.floatingActionButton);
        TextView textView = findViewById(R.id.text_view);
        textView.setText(Signup.getValue());
```

```
        //Button
        //phone = findViewById(R.id.phone);
        //Images
        coWin = findViewById(R.id.coWin);
        vaccine = findViewById(R.id.vaccines);
        //Symptoms Checker
        quizAccess = findViewById(R.id.quizAccess);
        //List View
        phoneList = findViewById(R.id.phone);


        button = (Button) findViewById(R.id.next);


        imageSwitcher = (ImageSwitcher) findViewById(R.id.imageswitcher1);
        // Set the ViewFactory of the ImageSwitcher that will create ImageView object
when asked
        imageSwitcher.setFactory(new ViewSwitcher.ViewFactory() {


            public View makeView() {


                // Create a new ImageView and set it's properties
                ImageView imageView = new ImageView(getApplicationContext());
                // set the Height And Width of ImageView To FIll PARENT
                imageView.setLayoutParams(new
ImageSwitcher.LayoutParams(LinearLayout.LayoutParams.WRAP_CONTENT,
LinearLayout.LayoutParams.WRAP_CONTENT));
                return imageView;
            }
```

```
        });

        button.setOnClickListener(new View.OnClickListener() {

            public void onClick(View v) {
                currentIndex++;
                //  Check If index reaches maximum then reset it
                if (currentIndex == count)
                    currentIndex = 0;
                imageSwitcher.setImageResource(imageIdList[currentIndex]); // set the image in ImageSwitcher
            }
        });
floatingActionButton.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent intent = new Intent(getApplicationContext(),ReminderAct.class);
        startActivity(intent);
    }
});
    }

    public void phoneList(View view) {
        if (phoneList.isPressed()) {
            Intent intent = new Intent(getApplicationContext(),HelpActivity.class);
            startActivity(intent);
        }
```

```
    }

//cowin image action
public void btnCowin(View view) {
        String url = "https://selfregistration.cowin.gov.in/";
    if (coWin.isPressed()) {
        Intent intent = new Intent(Intent.ACTION_VIEW);
        intent.setData(Uri.parse(url));
        startActivity(intent);
    }
}
    //vaccine image action
    public void btnVaccine(View view) {
 Intent intent = new Intent(getApplicationContext(),Vaccine_pincode.class);

            startActivity(intent);


    }
//Symptoms checker
public void quizAccess(View view) {
    if (quizAccess.isPressed()) {
        Intent intent = new Intent(getApplicationContext(),QuizActivity.class);
        startActivity(intent);
    }
}

    public void covidUpdate(View view) {
```

```
    startActivity(new Intent(getApplicationContext()
            , CovidUpdate.class));
    overridePendingTransition(0, 0);
}

public void symptoms(View view) {
    startActivity(new Intent(getApplicationContext()
            , Symptoms.class));
    overridePendingTransition(0, 0);
}

public void immunization(View view) {
    startActivity(new Intent(getApplicationContext()
            , DashBoard.class));
    overridePendingTransition(0, 0);
}
public void btnTrick(View view) {
    startActivity(new Intent(getApplicationContext()
            , TipsActivity.class));
    overridePendingTransition(0, 0);
}
public void btnLab(View view) {
    startActivity(new Intent(getApplicationContext()
            , IMCRLabActivity.class));
    overridePendingTransition(0, 0);
}
```

```
//menu code to include menu file inside the homepage
@Override
public boolean onCreateOptionsMenu(Menu menu) {
   //using inflater we can inflate our menu
   MenuInflater inflater = getMenuInflater();
   //getMenuInflater is an inner class similar to findviewbyid
   inflater.inflate(R.menu.menu, menu);
   //3rd menu is argument of onCreateoptionMenu method
   return true;  //return type of oncreateoptionsmenu is boolean
}

//to have onClicklistener for the menu options
@Override
public boolean onOptionsItemSelected(@NonNull MenuItem item) {
   //MenuItem item is the input
   switch (item.getItemId()) {

      case R.id.help_menu:
         startActivity(new Intent(getApplicationContext()
               , HelpActivity.class));
         overridePendingTransition(0, 0);
         break;
      case R.id.help_num:
         startActivity(new Intent(getApplicationContext()
               , ContactActivity.class));
         overridePendingTransition(0, 0);
```

```
    break;
case R.id.omicron:
    startActivity(new Intent(getApplicationContext()
            , OmicronActivity.class));
    overridePendingTransition(0, 0);
    break;
case R.id.nav_aboutus:
    startActivity(new Intent(getApplicationContext()
            , AboutUs.class));
    overridePendingTransition(0, 0);
    break;
case R.id.nav_rate:
    startActivity(new Intent(getApplicationContext()
            , RatingPage.class));
    overridePendingTransition(0, 0);
    break;
case R.id.faq:
    startActivity(new Intent(getApplicationContext()
            , FAQ.class));
    overridePendingTransition(0, 0);
case R.id.logout:
    startActivity(new Intent(getApplicationContext()
            , LogoutActivity.class));
    overridePendingTransition(0, 0);
    break;
default:
    return super.onOptionsItemSelected(item);
```

```
        }
        return super.onOptionsItemSelected(item);
    }
}
```

Sample xml code:

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/drawer_layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".HomeActivity"
    android:keepScreenOn="true"
    android:fillViewport="true"
    android:scrollbars="none"
    android:layout_weight="1"
    >

 <RelativeLayout
     android:layout_width="match_parent"
     android:layout_height="match_parent"
     android:orientation="vertical" >
    <androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
```

```
    android:layout_height="wrap_content"
    android:background="@color/pinkShade"
    android:minHeight="?attr/actionBarSize"
    android:textAppearance="?android:attr/textAppearanceMedium"
    app:theme="@style/ThemeOverlay.AppCompat.Dark"
    android:layout_gravity="center_horizontal"
    android:layout_centerHorizontal="true"
    android:layout_alignParentTop="true"/>

<TextView
    android:id="@+id/text_view"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="340dp"
    android:layout_marginTop="15dp"
    android:text="@string/admin"
    android:textSize="18sp"
    android:textColor="@color/hotpink" />

<ImageView
    android:id="@+id/img"
    android:layout_width="50dp"
    android:layout_height="50dp"
    android:layout_marginStart="270dp"
    android:src="@drawable/user" />
```

```
<ImageView
    android:id="@+id/coWin"
    android:layout_width="80dp"
    android:layout_height="50dp"
    android:layout_marginStart="5dp"
    android:layout_marginTop="70dp"
    android:onClick="btnCowin"
    android:src="@drawable/ic_cowin" />

<ImageView
    android:id="@+id/vaccines"
    android:layout_width="80dp"
    android:layout_height="50dp"
    android:layout_marginTop="70dp"
    android:layout_marginLeft="100dp"
    android:onClick="btnVaccine"
    android:src="@drawable/ic_vaccine" />

<ImageView
    android:layout_width="80dp"
    android:layout_height="50dp"
    android:layout_marginTop="70dp"
    android:layout_marginLeft="190dp"
    android:src="@drawable/ic_baseline_local_phone_24"
    android:id="@+id/phone"
    android:onClick="phoneList"/>
```

```
<ImageView
   android:layout_width="80dp"
   android:layout_height="50dp"
   android:layout_marginTop="70dp"
   android:layout_marginStart="310dp"
   android:src="@drawable/ic_baseline_pending_actions_24"
   android:id="@+id/quizAccess"
   android:onClick="quizAccess"/>

 <LinearLayout
    android:id="@+id/horizontalLine"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="horizontal">

    <View
       android:layout_width="fill_parent"
       android:layout_height="2dp"
       android:layout_marginTop="160dp"
       android:background="@color/black"

       />

 </LinearLayout>

 <TextView
   android:id="@+id/txtCowin"
```

```
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/coWin"
    android:layout_marginLeft="10dp"
    android:text="@string/co_win"
    android:textColor="@color/pinkShade" />

<TextView
    android:id="@+id/txtVaccine"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/vaccines"
    android:layout_marginLeft="90dp"
    android:text="@string/vaccine"
    android:textColor="@color/pinkShade" />

<TextView
    android:id="@+id/txtPhone"
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/phone"
    android:layout_marginLeft="180dp"
    android:text="@string/call_helpline"
    android:textColor="@color/pinkShade" />

<TextView
    android:id="@+id/txtTest"
```

```
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_below="@+id/quizAccess"
    android:layout_marginLeft="300dp"
    android:text="@string/symptoms_checker"
    android:textColor="@color/pinkShade" />


<TableLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="164dp"
    android:paddingLeft="15dp"
    android:paddingRight="15dp">
    <TableRow android:background="#9C27B0" android:padding="5dp">
        <TextView
            android:text="@string/healthy_food_to_eat_to_stay_healthy"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="18sp"
            android:textColor="@color/white"
            android:layout_weight="1"

            />
    </TableRow>

    <TableRow android:background="#E8B5F1" android:padding="5dp">
```

```
    <TextView
        android:text="@string/_1_citrus_food"
        android:layout_weight="1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="@color/black"
        />
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:src="@drawable/citrus"
       android:layout_weight="1"/>

</TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp">
    <TextView
        android:text="2 Ginger"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:textSize="18sp"
        android:textColor="@color/black"
        />
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
```

```
        android:src="@drawable/ginger"
        android:layout_weight="1"/>

</TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp">
    <TextView
        android:text="3 Greens"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="@color/black"
        android:layout_weight="1"/>
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:src="@drawable/green"
        android:layout_weight="1"/>

</TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp" >
    <TextView
        android:text="4 Vegetables"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="@color/black"
        android:layout_weight="1" />
```

```
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:src="@drawable/vegetables"
        android:layout_weight="1"/>

</TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp">
    <TextView
        android:text="5 Fruits"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="@color/black"
        android:layout_weight="1"/>
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:src="@drawable/fruits"
        android:layout_weight="1"
        android:id="@+id/fruits"/>

</TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp">
    <TextView
        android:text="6 Fish"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="@color/black"
        android:layout_weight="1"/>
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:src="@drawable/fish"
        android:layout_weight="1"
        /></TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp">
    <TextView
        android:text="7 Milk and its products"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="18sp"
        android:textColor="@color/black"
        android:layout_weight="1"/>
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="40dp"
        android:src="@drawable/milk"
        android:layout_weight="1"
        /></TableRow>
<TableRow android:background="#E8B5F1" android:padding="5dp">
    <TextView
        android:text="8 Protein rich foods"
```

```
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:textSize="18sp"
            android:textColor="@color/black"
            android:layout_weight="1"/>
        <ImageView
            android:layout_width="wrap_content"
            android:layout_height="40dp"
            android:src="@drawable/protein"
            android:layout_weight="1"
            /></TableRow>

</TableLayout>

<LinearLayout
    android:id="@+id/switchLinear"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="horizontal"
    android:padding="16dp">

    <Button
        android:id="@+id/next"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="590dp"
        android:backgroundTint="@color/hotpink"
```

```
        android:text="Click this"
        android:textColor="@color/black" />

    <ImageSwitcher
        android:id="@+id/imageswitcher1"
        android:layout_width="wrap_content"
        android:layout_height="110dp"
        android:layout_marginHorizontal="50dp"
        android:layout_marginTop="610dp" />

</LinearLayout>

<ImageView
    android:layout_width="100dp"
    android:layout_height="90dp"
    android:src="@drawable/ic_covidupdate"
    android:layout_marginTop="750dp"
    android:onClick="covidUpdate"

    />
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="750dp"
    android:layout_marginLeft="100dp"
    android:textColor="@color/black"
    android:padding="30dp"
```

```
    android:typeface="serif"
    android:textStyle="bold"
    android:text="Click this icon to check COVID-19 UPDATE"
    />

<ImageView
    android:layout_width="115dp"
    android:layout_height="90dp"
    android:src="@drawable/sanitizer"
    android:layout_marginTop="840dp"
    android:onClick="symptoms"

    />
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="840dp"
    android:layout_marginLeft="100dp"
    android:textColor="@color/black"
    android:typeface="serif"
    android:textStyle="bold"
    android:padding="30dp"
    android:text="Click this icon to check COVID-19 Symptoms"
    />

<ImageView
    android:layout_width="80dp"
```

```
    android:layout_height="80dp"
    android:src="@drawable/ic_vaccine"
    android:layout_marginTop="940dp"
    android:onClick="immunization"
    android:layout_marginLeft="20dp"

    />
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="920dp"
    android:layout_marginLeft="100dp"
    android:textColor="@color/black"
    android:typeface="serif"
    android:textStyle="bold"
    android:padding="30dp"
    android:text="Click this icon to check Some Vaccination for children"
    />

<ImageView
    android:layout_width="115dp"
    android:layout_height="90dp"
    android:src="@drawable/quizhome"
    android:layout_marginTop="1030dp"
    android:onClick="btnTrick"
    android:layout_marginBottom="40dp"
    android:layout_marginLeft="20dp"
```

```
    />
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="1030dp"
    android:layout_marginLeft="100dp"
    android:textColor="@color/black"
    android:typeface="serif"
    android:textStyle="bold"
    android:padding="30dp"
    android:text="Click this icon to check Some healthy measures"
    />
<ImageView
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:src="@drawable/lab"
    android:layout_marginTop="1125dp"
    android:onClick="btnLab"
    android:layout_marginBottom="40dp"
    android:layout_marginLeft="5dp"

    />
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="1125dp"
```

```
        android:layout_marginLeft="100dp"
        android:textColor="@color/black"
        android:typeface="serif"
        android:textStyle="bold"
        android:padding="30dp"
        android:text="Click this icon to check IMCR approved Labs"
        />

    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/floatingActionButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:clickable="true"
        android:layout_marginLeft="350dp"
        android:layout_marginTop="1200dp"
android:src="@drawable/reminder"
        />

</RelativeLayout>
</ScrollView>

<?xml version="1.0" encoding="utf-8"?>
<!--menu is the root node-->
<menu xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto" >
```

```
<item
    android:id="@+id/logout"
    android:icon="@drawable/ic_logout"
    android:title="logout"
    app:showAsAction="ifRoom"
    />
<item
    android:title="@string/help"
    android:id="@+id/help_menu"
    android:icon="@drawable/ic_help"
    app:showAsAction="collapseActionView"></item>
<item
    android:title="@string/contact_number_for_india"
    android:id="@+id/help_num"
    android:icon="@drawable/ic_help"
    app:showAsAction="collapseActionView"></item>
<item
    android:title="@string/omicron_feature"
    android:id="@+id/omicron"
    android:icon="@drawable/ic_omicron"
    app:showAsAction="collapseActionView"></item>
<item
    android:id="@+id/nav_aboutus"
    android:icon="@drawable/ic_aboutus"
    android:title="@string/about_us" />

<item
```

```
        android:id="@+id/faq"
        android:icon="@drawable/ic_faq"
        android:title="@string/faq_about_covid" />
    <item
        android:id="@+id/nav_rate"
        android:icon="@drawable/ic_rateus"
        android:title="@string/rate_us"
        />
</menu>
```

5.2 SNAPSHOTS

Fig: SPLASH SCREEN

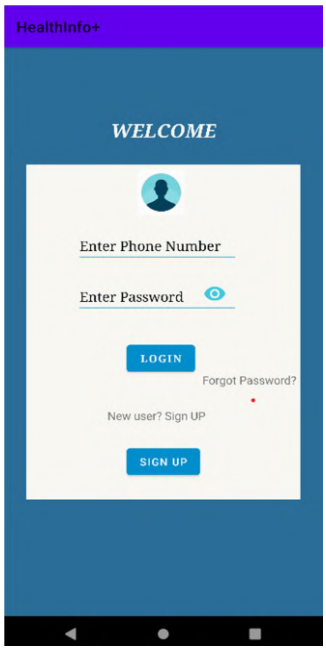


Fig: LOGIN SCREEN

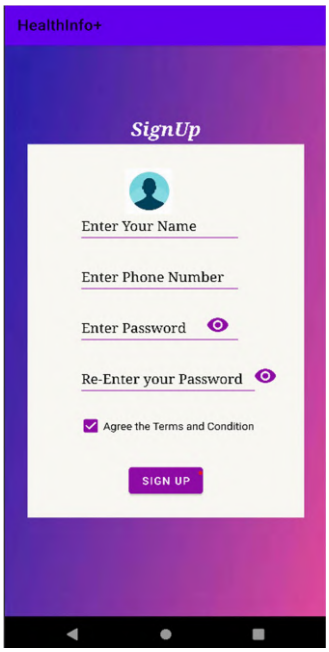


Fig: SIGNUP SCREEN

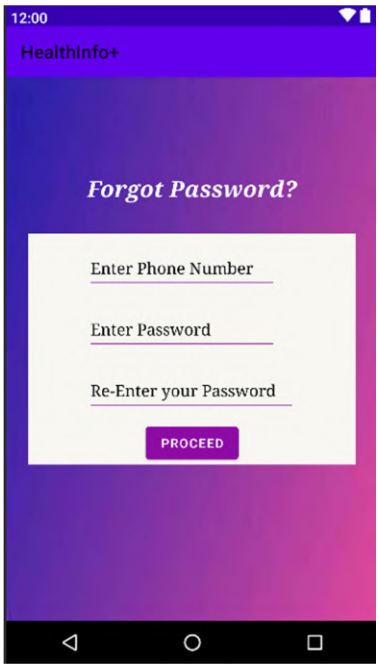


Fig: FORGOT PASSWORD

Fig: HOME PAGE

Fig: FAQ ABOUT COVID-19

Fig: COVID UPDATE

Fig Country Details

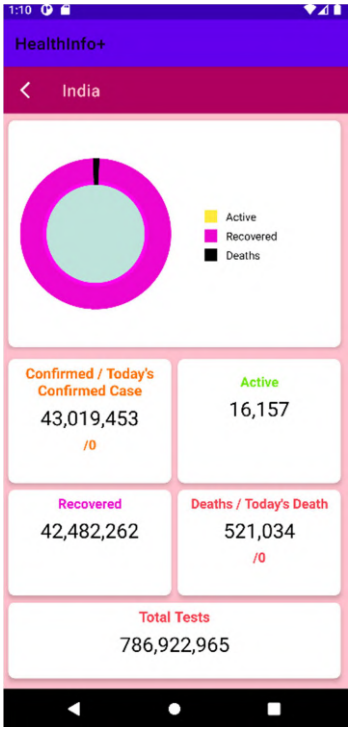


Fig: Each Country Data

Fig: COVID DETAILS

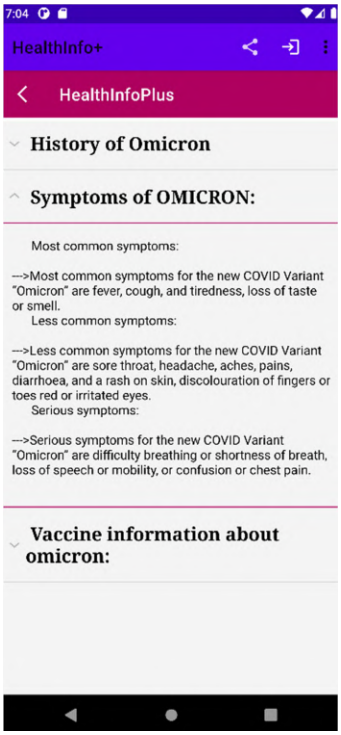


Fig: OMICRON DETAILS

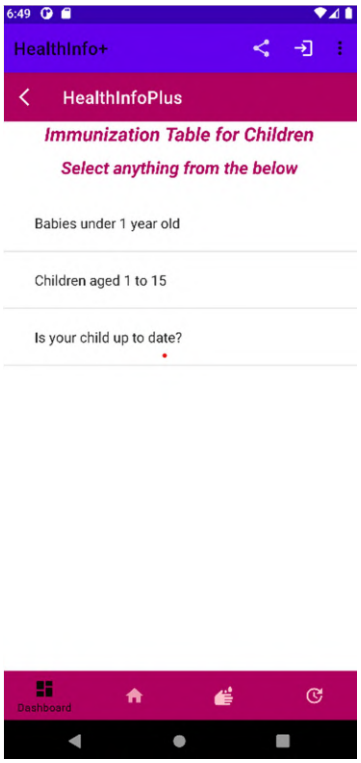
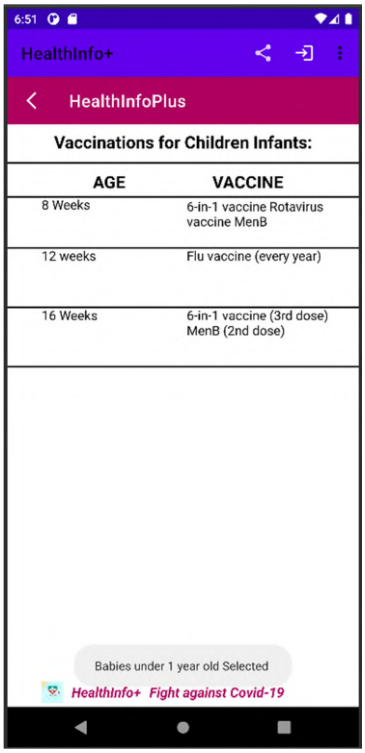
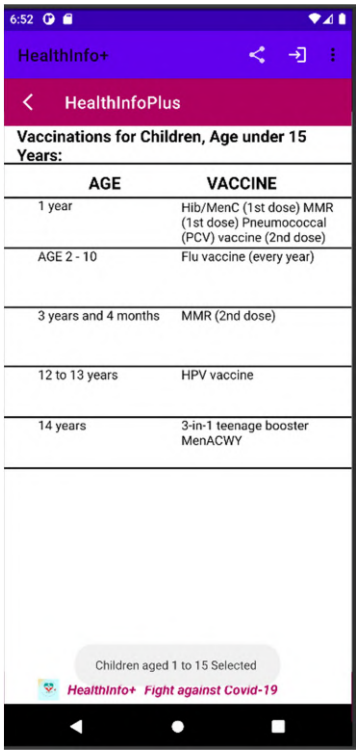
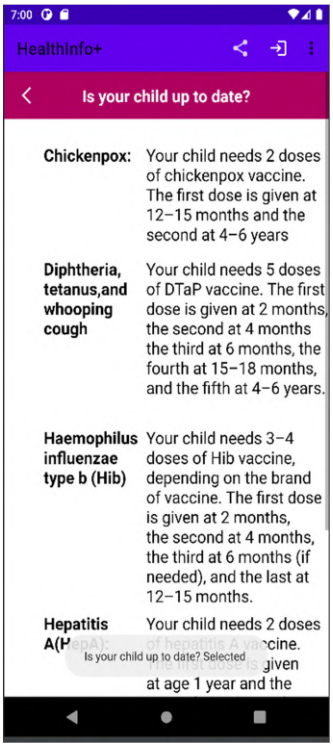
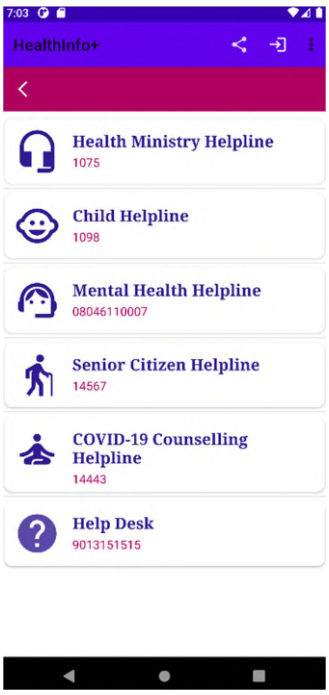


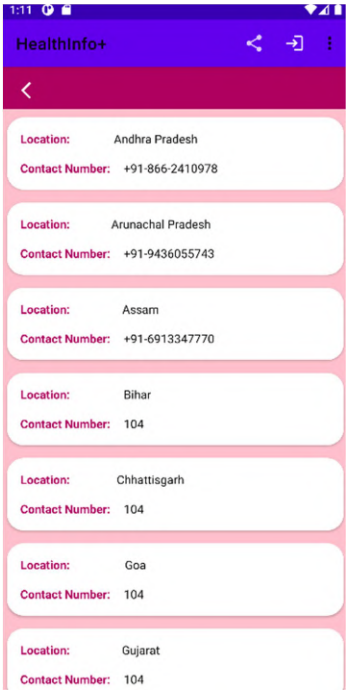
Fig: IMMUNIZATION DETAILS











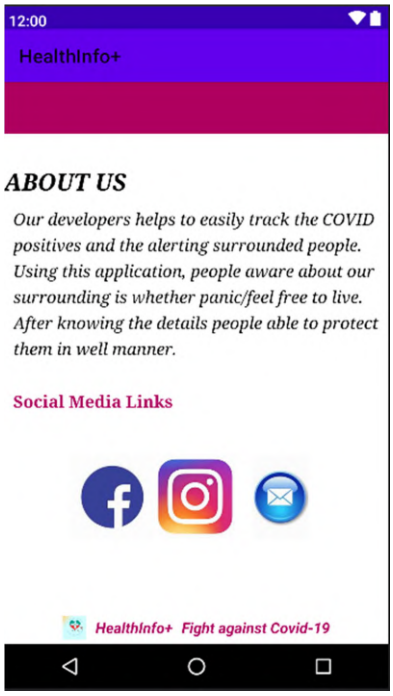
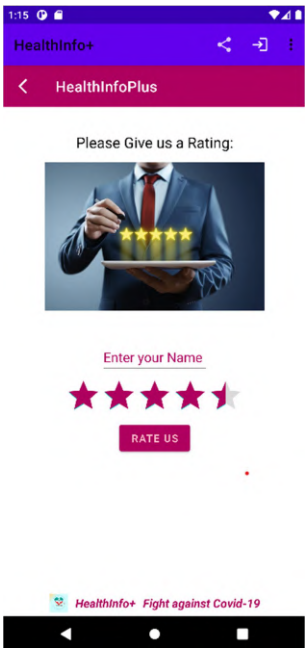
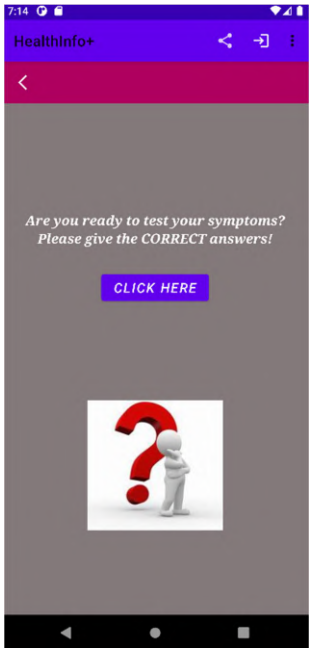


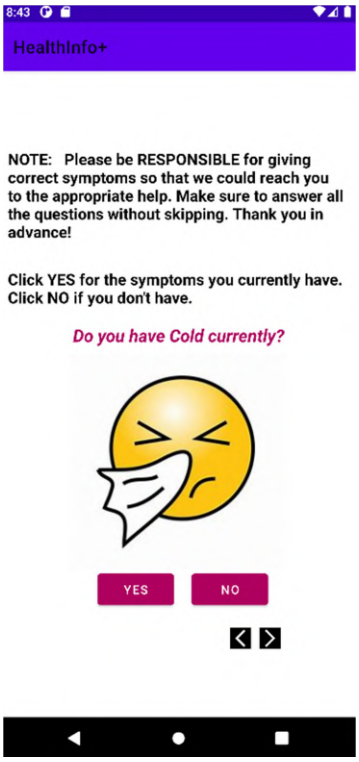
Fig: HELPLINE NUMBERS **Fig: ABOUT US**



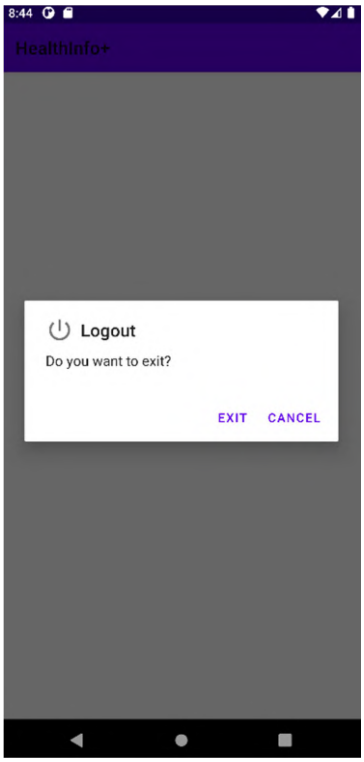


RATING PAGE **TIPS SCREEN** **SYMPTOMS CHECKER**

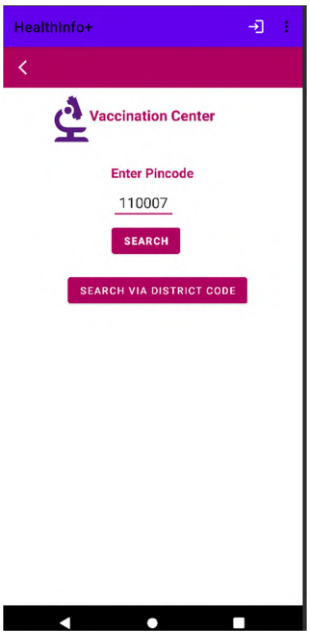
LAB DETAILS



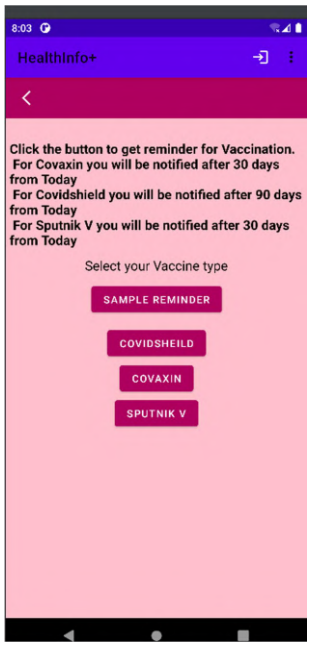
SAMPLE QUIZ

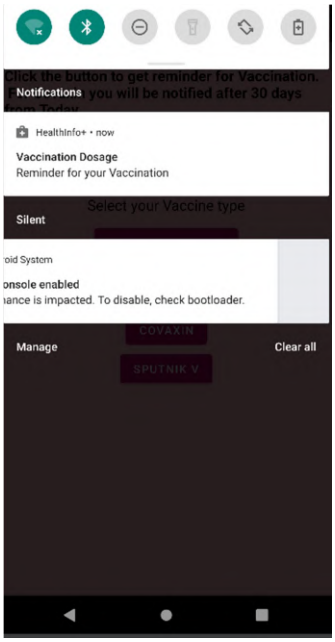


LOGOUT



VACCINATION AVAILABILITY

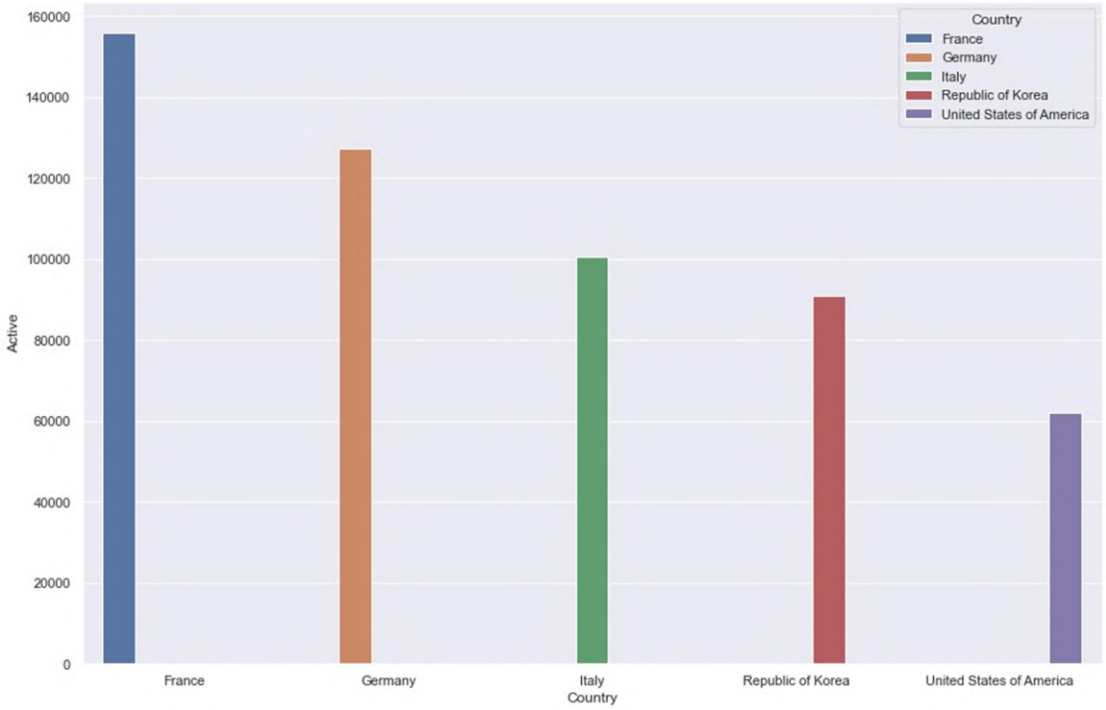


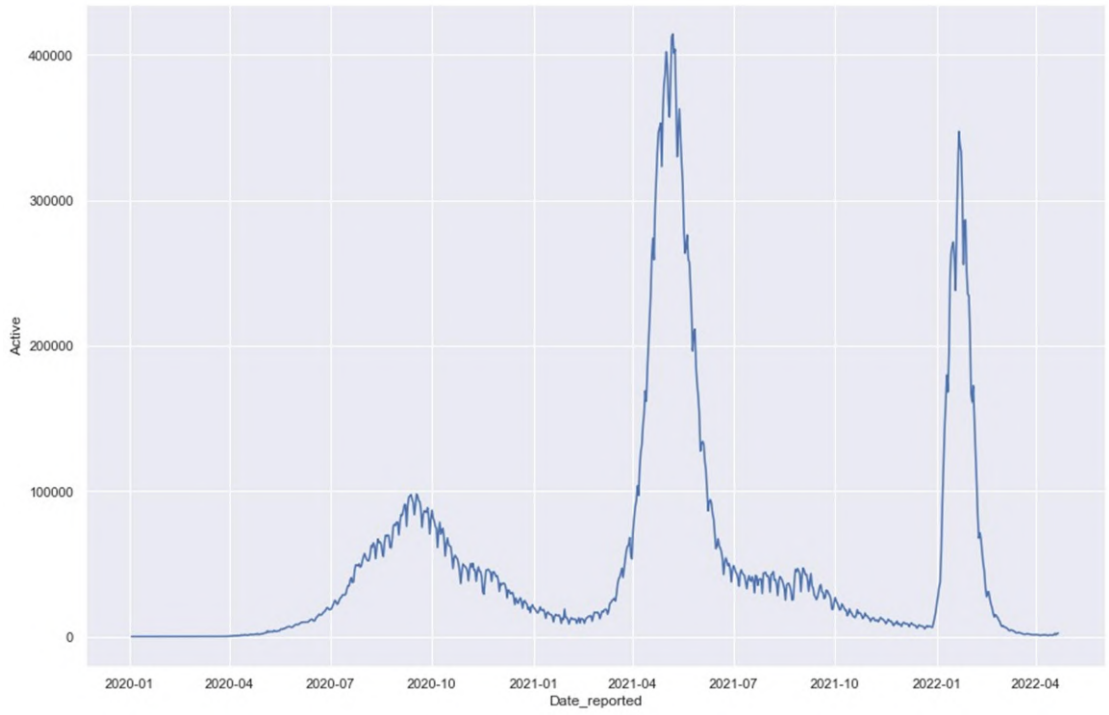


REMINDER

Prediction of COVID – 19 Data:

Predicting COVID-19 in India using Machine Learning. We will take a COVID-19 dataset and understand how the disease has spread across different states in India. We will perform some data manipulation and data visualization operations on top of the Covid dataset. We will also be implementing a linear regression algorithm to understand the number of active and death cases for global and India data.





6. TESTINGS

Testing a software application before it gets deployed and reaches end-users is indispensable in the software development process.

6.1 TESTING OBJECTIVES

The main objective of testing is to check the errors in the least possible of execution time.

- Testing is a process of executing the program to finding an error or a bug with the help of internet.
- Testing can be efficient to check without having any error in the application before it reaches to the end-users.

6.2 TESTING LEVELS

Software testing ensures that a particular software product functions according to the requirements specified by a client or end-users. It identifies all possible unnoticed bugs, errors, or defects in a software product before it goes to users.

6.2.1 UNIT TESTING

Unit testing is the process of checking the quality and efficiency of individual features developed by the users. This white box testing is smallest of unit testing, making sure each feature / user story works from a design and

technical perspective. Identifying and fixing issues at the unit level is more cost effective than finding these issues later when many dependencies are present. In mobile application development, unit tests will need to be run locally and also instrumented against each mobile OS (iOS / Android) to check for dependencies.

6.2.2 INTEGRATION TESTING

Integrated testing which involves the systematic testing for constructing the program structure. That addresses the issues associated with the dual problems of verification the program construction. In mobile application development you can have validated units that fail to work when combined. Your integration tests look at system wide performance, ensuring the functionality between your units.

It does not verify that you get the right next step, but simply that the process to connect to the database to verify authentication works and there can be dependencies in this testing. While continually running the test ensures that new code / features do not create new bugs or performance issues.

6.2.3 ACCEPTANCE TESTING

Acceptance testing involves with respect to user needs, requirements, and business processes conducted to determine whether or not a system satisfies the acceptance criteria and to enable the user, customers or other authorized entity to determine whether or not to accept the system. In the Mobile applications meet the requirements, traceability between the requirements and implementation as well as between the requirements and acceptance tests is needed. By using acceptance tests, the need for continuous check on the app performance is reduced, and changes or improvements can be easily made with every new release of operating systems and devices.

6.2.4 VALIDATION TESTING

In Validation testing the user interface are checked for its correctness. It means the fields in the interface are validated depending on the user input in order to avoid invalid inputs. Thus, this testing is carried out to check if the user inputs are valid or not.

6.2.5 FUNCTIONAL TESTING

Functional Testing is a type of black-box testing where the software system is tested to check whether it adheres to the specified functional requirements, often requiring checks of the database, client/server communication, and user interface (UI) and any other functional component or call (API). The functional test will look at both the output of the test as well as its performance, examining the basic functionality, usability, accessibility, and error conditions of the application.

6.2.6 AUTOMATION TESTING

Automation testing involves testing the software application using special tools and scripts. In this type of testing, test cases are executed automatically using specialized testing tools, and the obtained results are compared with the expected ones. It has made the testing process effortless. All the repetitive testing actions those are time consuming and difficult to perform manually. So, in this testing there is no human interference in automation testing.

7. DATABASE DESIGN

7.1 FIREBASE DATABASE

The Firebase Real time Database is a cloud-hosted database. When you build cross platform apps with our Apple platforms, Android, and JavaScript SDKs, all of your clients share one Real time Database instance and automatically receive updates with the newest data.

7.2 Data stored in Firebase

Firebase Real time Database is a NoSQL cloud database that is used to store and sync the data. The data from the database can be synced at a time across all the clients such as android, web as well as IOS. The data in the database is stored in the JSON format and it updates in real-time with every connected client.

7.3 Firebase a server or database

Firebase is a Backend-as-a-Service — BaaS — that started as a YC11 start-up and grew up into a next-generation app-development platform on Google Cloud Platform. Firebase is our server, our API and our data store, all written so generically that you can modify it to suit most needs.

7.4 USERS TABLE:

Table 7.4 Users Table

FIELDS	TYPE	DESCRIPTION
Name	String	Name of the user
Phone Number	Long	Mobile number of the user
Password	String	Password of the user
Re-Password	String	Password of the user

7.5 RATING TABLE

Table 7.5 Rating Table

FIELDS	TYPE	DESCRIPTION
Name	String	Name of the user
Rating Number	Long	User rating

7.6 CONTACT TABLE

Table 7.6 Contact Table

FIELDS	TYPE	DESCRIPTION
State Name	String	State
Regional Number	Long	Regional number of the user

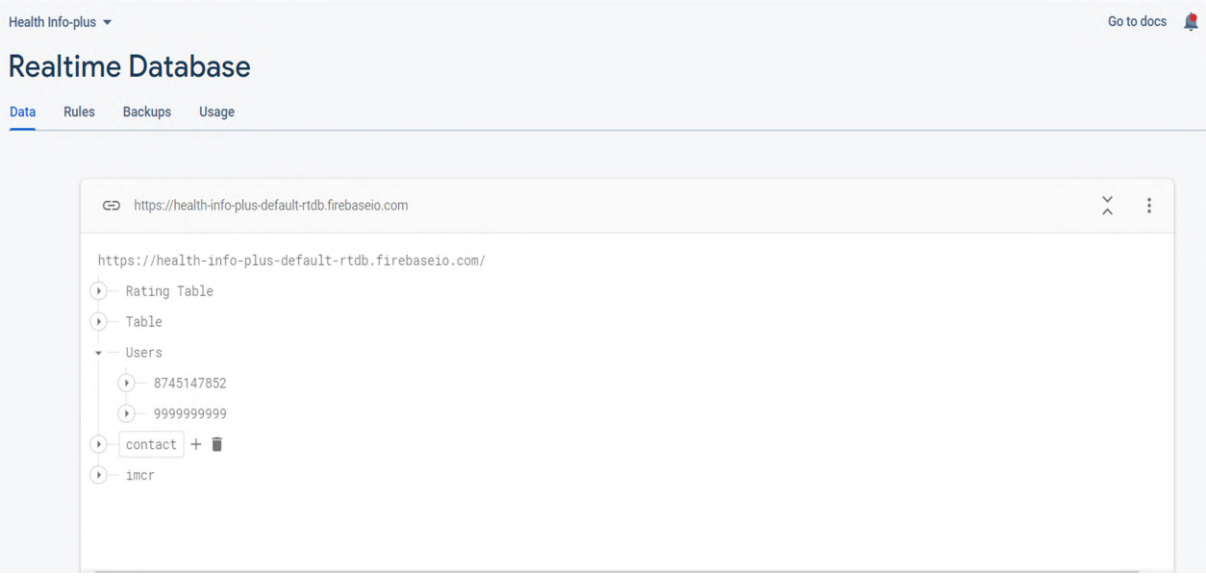
7.7 LAB NAME TABLE

Table 7.7 Lab Name Table

FIELDS	TYPE	DESCRIPTION
Name of laboratories	String	Name of the lab

State	String	Name of the state

7.8 DATABASE STRUCTURE IN FIREBASE



7.8.1 RATING DATABASE STRUCTURE IN FIREBASE

After user gave the rating of our application the rating number with username can be stored in the database. By using this developer can easily analysis that rating details.

7.8.2 LAB NAME DATABASE STRUCTURE IN DATABASE

The available lab name of the hospitals in all the states is already stored in the database. The user can easily identify the availability of lab by selecting the states in respective activity. By this information user get the details within a minute not roaming anywhere. This feature plays a vital role in our application.

8. CONCLUSION & FUTURE WORK

An automation of Covid-19 Healthcare Tracking and alerting system based on the android application. It helps to generate the number of peoples affected, recovered, and death by this virus. It still faces many concerns from users, data protection agencies and researchers. There are many important features like the various helpline numbers, self-registration for vaccine and the details about Omicron and Covid-19 viruses. Additionally, we made the simple quiz set by set

of question which is default set by developers his/her select the answers based on their symptoms. For reminding about the vaccination dosage we asked the users to select it, which in turn will display an alert message in notification for the users.

- In future we will create a multi-language access for users.
- For better safety reasons, we have an idea of encrypting the user's password.

APPENDICES

In this technical world everything will be done easily within a minute without roaming anywhere. This application will help user to know about the details about the virus during this pandemic situation. It also helps user easily identify the rating percentage of the Covid cases by graphical representation. It does will send the alerting message before the vaccination date. We predict and analyse the Covid-19 dataset from world health organization (global data) by using python programming in Jupyter tool.

9. REFERENCE

Nature. (2020). Show evidence that apps for COVID-19 contact-tracing are secure and effective. *Nature*, *580*(7805), 563.

Yordanov, Y., Dechartres, A., Lescure, X., Apra, C., Villie, P., Marchand-Arvier, J., ... & Jourdain, P. (2020). Covidom, a telesurveillance solution for home monitoring patients with COVID-19. *Journal of medical Internet research*, *22*(10), e20748.

World Health Organization. (2020). *Considerations for quarantine of contacts of COVID-19 cases: interim guidance, 19 August 2020* (No. WHO/2019-nCoV/IHR_Quarantine/2020.3). World Health Organization.

Elengoe, A. (2020). COVID-19 outbreak in Malaysia. *Osong public health and research perspectives*, *11*(3), 93.

Matthew-Maich, N., Harris, L., Ploeg, J., Markle-Reid, M., Valaitis, R., Ibrahim, S., ... & Isaacs, S. (2016). Designing, implementing, and evaluating mobile health technologies for managing chronic conditions in older adults: a scoping review. *JMIR mHealth and uHealth*, *4*(2), e5127.

Ros, M., & Neuwirth, L. S. (2020). Increasing global awareness of timely COVID-19 healthcare guidelines through FPV training tutorials: Portable public health crises teaching method. *Nurse education today*, *91*, 104479.

Yamamoto, K., Takahashi, T., Urasaki, M., Nagayasu, Y., Shimamoto, T., Tateyama, Y., ... & Iwami, T. (2020). Health observation app for COVID-19 symptom tracking integrated with personal health records: proof of concept and practical use study. *JMIR mHealth and uHealth*, *8*(7), e19902.