MOBILE APPLICATION DEVELOPMENT (3170726)

VVP ENGINEERING COLLEGE

SUBMITTED BY: **DISHEN MAKWANA**

180470107035

G2

V. V. P. Engineering College, Rajkot

Department of Computer Engineering

Vision of the Institute

- To be an exemplary institute, transforming students into competent professionals with human values.

Mission of the Institute

- To provide a conducive academic environment for strengthening technical capabilities of the students.
- To strengthen linkage with industries, alumni and professional bodies.
- To organize various co-curricular and extra-curricular activities for overall development of the students.
- To practice good governance and conduct value- based activities for making students responsible citizens.

Vision of the Department

- Transforming students into globally efficient professionals with moral values.

Mission of the Department

- To provide a strong foundation of computer engineering through effective teaching learning process.
- To enhance industry linkage & alumni network for better placement and real-world exposure.
- To provide various opportunities & platforms for all round development of students &

encourage them for value-based practices.

Program Educational Objectives (PEOs)

Graduates will be able to

- Apply computer engineering theories, principles and skills to meet the challenges of the society.
- Communicate effectively, work collaboratively and manifest professionalism with ethics.
- Exhibit life-long learning attitude and adapt to rapid technological changes in industry.
- Advance their career in industry, pursue higher education or become an entrepreneur.

Program Specific Outcomes (PSO)

Graduates will be able to

- **PSO1**: Apply fundamental knowledge of hardware and software aspects of computer systems.
- **PSO2**: Analyze, model and develop computer applications by adapting emerging technologies and standard practices of software project development to meet the requirements of industry and society.
- **PSO3**: Use different programming languages and open-source platforms.

V.V.P. ENGINEERING COLLEGE

RAJKOT

Certificate

This is to certify that

Mr. DISHEN MAKWANA, Enrollment No: 180470107035, Branch: Computer Engineering, Semester: 7 has satisfactorily completed the course in the subject: **Mobile Application Development (3170726)** within the four walls of V.V.P. Engineering College, Rajkot.

Date of Submission:

Prof. Nivid Limbasiya,
Staff In-Charge

Head of Department,
Department of Computer Engineering,
V.V.P. Engineering College

V. V. P. Engineering College
Department of Computer Engineering
Course Outcomes

Semester: 7th

Subject: Mobile Application Development

Code: 3170726

After learning the course, the students will be able to

Sr. No.	CO statement
CO-1	Understand Android architecture, activities and their life cycle.
CO-2	Apply the knowledge to design user interface using Android UI And Component
CO-3	Manage system database, remote database operations using web services and Firebase
CO-4	Apply knowledge of map, location services, Graphics, android system and background services
CO-5	Publish and distribute Android Application

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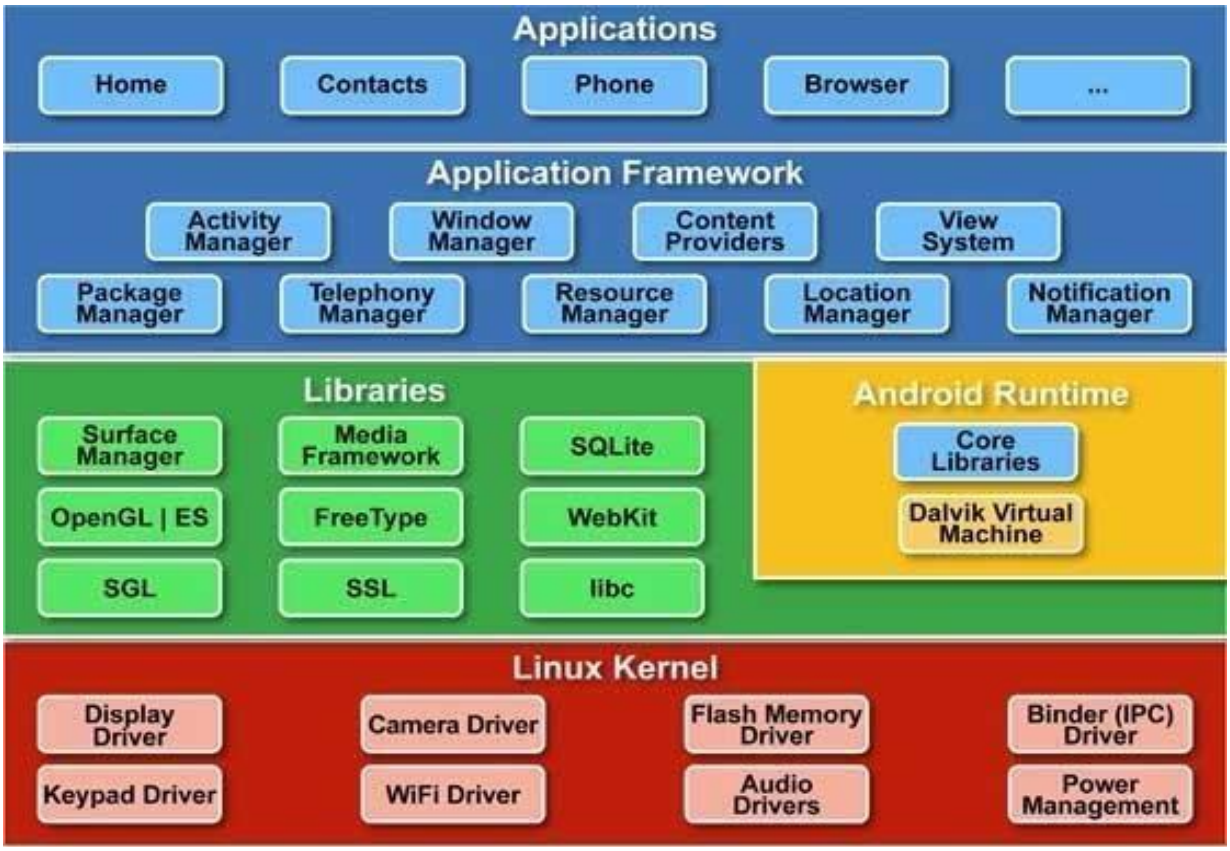
Assignment – 1

1. Explain the Android Architecture.



Android architecture is a software stack of components to support mobile device needs. Android software stack contains a Linux Kernel, collection of c/cpp libraries which are exposed through an application framework services, runtime, and application.

Following are main components of android architecture those are

1. Applications
2. Android Framework
3. Android Runtime
4. Platform Libraries
5. Linux Kernel

In these components, the Linux Kernel is the main component in android to provide its operating system functions to mobile and Dalvik Virtual Machine (DVM) which is responsible for running a mobile application.

Following is the pictorial representation of android architecture with different components.

Applications

The top layer of the android architecture is Applications. The native and third-party applications like contacts, email, music, gallery, clock, games, etc. whatever we will build those will be installed on this layer only.

The application layer runs within the Android run time using the classes and services made available from the application framework.

Application Framework
The Application Framework provides the classes used to create Android applications. It also provides a generic abstraction for hardware access and manages the user interface and application resources. It basically provides the services through which we can create a particular class and make that class helpful for the Application creation.
The application framework includes services like telephony service, location services, notification manager, NFC service, view system, etc. which we can use for application development as per our requirements.

Android Runtime
Android Runtime environment is an important part of Android rather than an internal part and it contains components like core libraries and the Dalvik virtual machine. The Android run time is the engine that powers our applications along with the libraries and it forms the basis for the application framework.

Dalvik Virtual Machine (DVM) is a register-based virtual machine-like Java Virtual Machine (JVM). It is specially designed and optimized for android to ensure that a device can run multiple instances efficiently. It relies on the Linux kernel for threading and low-level memory management.

The core libraries in android runtime will enable us to implement android applications using standard JAVA programming language.

Platform Libraries
The Platform Libraries includes various C/C++ core libraries and Java-based libraries such as SSL, libc, Graphics, SQLite, Webkit, Media, Surface Manger, OpenGL, etc. to provide support for Android development.

The following are the summary details of some core android libraries available for android development.
- Media library for playing and recording audio and video formats
- The Surface manager library to provide a display management
- SGL and OpenGL Graphics libraries for 2D and 3D graphics
- SQLite is for database support and Free Type for font support
- Web-Kit for web browser support and SSL for Internet security.

Linux Kernel
Linux Kernel is a bottom layer and heart of the android architecture. It manages all the drivers such as display drivers, camera drivers, Bluetooth drivers, audio drivers, memory drivers, etc. which are mainly required for the android device during the runtime.

The Linux Kernel will provide an abstraction layer between the device hardware and the remainder of the stack. It is responsible for memory management, power management, device management, resource access, etc.

2. Implement Calculator.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="horizontal">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="90dp"
            android:textSize="30sp"
            android:id="@+id/textViewHistroy"
            android:gravity="center|end"
            android:background="@color/white"
            android:textColor="@color/black"/>

        <TextView
            android:id="@+id/textViewResult"
            android:layout_width="match_parent"
            android:layout_height="106dp"
            android:background="@color/white"
            android:gravity="center|end"
            android:text="0"
            android:textColor="@color/black"
            android:textSize="60sp" />

        <androidx.gridlayout.widget.GridLayout
            android:layout_width="match_parent"
            android:layout_height="411dp"
            app:columnCount="4"
            app:rowCount="5">

            <Button
                android:id="@+id/btnDel"
                android:layout_width="80dp"
                android:layout_height="wrap_content"
                android:text="DEL"
                android:textColor="@color/orange"
                android:textSize="30sp"
                app:backgroundTint="#FDFDFD"
                app:layout_column="1"
```

```
    app:layout_columnWeight="1"
    app:layout_row="0"/>

<Button
    android:id="@+id/btn8"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="8"
    android:textColor="@color/black"
    android:textSize="30sp"
    app:backgroundTint="#FDFDFD"
    app:layout_column="1"
    app:layout_columnWeight="1"
    app:layout_row="1" />

<Button
    android:id="@+id/btn9"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="9"
    android:textColor="@color/black"
    android:textSize="30sp"
    app:backgroundTint="#FDFDFD"
    app:layout_column="2"
    app:layout_columnWeight="1"
    app:layout_row="1" />

<Button
    android:id="@+id/btnMinus"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="-"
    android:textColor="@color/orange"
    android:textSize="30sp"
    app:backgroundTint="#FDFDFD"
    app:layout_column="3"
    app:layout_columnWeight="1"
    app:layout_row="1" />

<Button
    android:id="@+id/btn4"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="4"
    android:textColor="@color/black"
    android:textSize="30sp"
    app:backgroundTint="#FDFDFD"
    app:layout_column="0"
    app:layout_columnWeight="1"
    app:layout_row="2" />
```

```
<Button
    android:id="@+id/btn3"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="3"
    android:textColor="@color/black"
    android:textSize="30sp"
    app:backgroundTint="#FDFDFD"
    app:layout_column="2"
    app:layout_columnWeight="1"
    app:layout_row="3" />
<Button
    android:id="@+id/btnEqualto"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="="
    android:textColor="@color/white"
    android:textSize="30sp"
    app:backgroundTint="@color/orange"
    app:layout_column="3"
    app:layout_columnWeight="1"
    app:layout_row="3"
    app:layout_rowWeight="1"
    app:layout_rowSpan="2"/>
<Button
    android:id="@+id/btn0"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="0"
    android:textColor="@color/black"
    android:textSize="30sp"
    app:backgroundTint="@color/white"
    app:layout_column="1"
    app:layout_columnWeight="1"
    app:layout_row="4"
    app:layout_rowWeight="1"
    app:layout_columnSpan="2"/>
<Button
    android:id="@+id/btndot"
    android:layout_width="80dp"
    android:layout_height="wrap_content"
    android:text="."
    android:textColor="@color/black"
    android:textSize="30sp"
    app:backgroundTint="@color/white"
    app:layout_column="0"
    app:layout_columnWeight="1"
    app:layout_row="4"
    app:layout_rowWeight="1"/>
```

```
        </androidx.gridlayout.widget.GridLayout>

    </LinearLayout>

</LinearLayout>
```

MainActivity.java

```
package com.company.calculator;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {

    private Button
btn0,btn1,btn2,btn3,btn4,btn5,btn6,btn7,btn8,btn9,btnAc,btnDel,btnPlus,btnMinus,btnDivide,bt
nMulti,btnDot,btnEqual;
    private TextView textViewresult,textViewHistory;
    private String number = null;
    double first_number=0;
    double last_number=0;

    String status = null;
    boolean operator = false;
    DecimalFormat myformatter =new DecimalFormat("######.######");

    String history , currentResult ;//create two variable for maintain history
    boolean dot = true;

    boolean btnACcontrol = true;
    boolean btnEqualControl = false;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn0=findViewById(R.id.btn0); btn1=findViewById(R.id.btn1);
btn2=findViewById(R.id.btn2);  btn3=findViewById(R.id.btn3);
btn4=findViewById(R.id.btn4);  btn5=findViewById(R.id.btn5);
btn6=findViewById(R.id.btn6);  btn7=findViewById(R.id.btn7);
btn8=findViewById(R.id.btn8);  btn9=findViewById(R.id.btn9);

        btnAc=findViewById(R.id.btnAC);
        btnDel=findViewById(R.id.btnDel);
        btnDot=findViewById(R.id.btndot);
        btnEqual=findViewById(R.id.btnEqualto);

        btnPlus=findViewById(R.id.btnPlus);
        btnMinus=findViewById(R.id.btnMinus);
        btnDivide=findViewById(R.id.btnDivide);
        btnMulti=findViewById(R.id.btnMulti);
        textViewresult=findViewById(R.id.textViewResult);
        textViewHistory=findViewById(R.id.textViewHistroy);
        btn0.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
    public void onClick(View view) {
        numberClick("0");

    }
});
btn1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("1");

    }
});
btn2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("2");

    }
});
btn3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("3");

    }
});
btn4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("4");

    }
});
btn5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("5");

    }
});
btn6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("6");

    }
});
btn7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
```

```
        numberClick("7");

    }
});
btn8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("8");

    }
});
btn9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        numberClick("9");

    }
});
btnAc.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
      number=null;
      status=null;
      textViewresult.setText("0");
      textViewHistory.setText("");
      first_number=0;
      last_number=0;
      dot = true;
      btnACcontrol = true;

    }
});
btnDel.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if(btnACcontrol)
        {
            textViewresult.setText("0");
        }
        else
        {
            number=number.substring(0,number.length()-1);

            if(number.length()==0)//string length
            {
                btnDel.setClickable(false);//after press del button the data is deleted
            }
            else if(number.contains("."))
            {
                dot = false;
            }
```

```
            else
            {
                dot = true;
            }
            textViewresult.setText(number);
        }
    }
});

btnPlus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        history = textViewHistory.getText().toString();
        currentResult = textViewresult.getText().toString();
        textViewHistory.setText(history+currentResult+"+");
        if(operator)
        {
            if(status == "multiplication")
            {
                multiply();
            }
            else if (status=="division")
            {
                divide();
            }
            else if(status=="subtraction")
            {
                minus();
            }
            else
            {
                plus();
            }

        }
        status="sum";
        operator=false;
        number=null;
    }
});
btnMinus.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        history = textViewHistory.getText().toString();
        currentResult = textViewresult.getText().toString();
        textViewHistory.setText(history+currentResult+"-");
        if(operator)
        {
            if(status=="multiplication")
            {
                multiply();
```

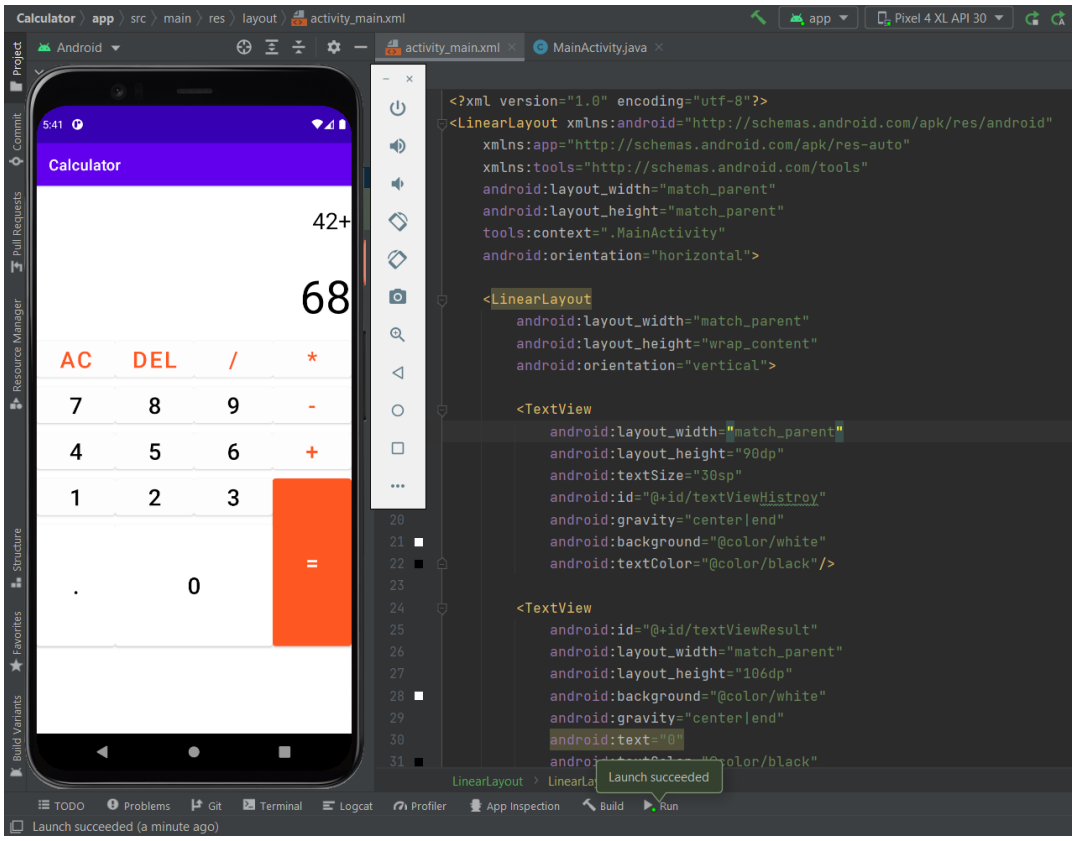
```
            }
            else if(status=="division")
            {
                divide();
            }
            else if(status=="sum")
            {
                plus();
            }
            else
            {
                minus();
            }
        }
        status="subtraction";
        operator=false;
        number=null;

    }
});
btnMulti.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        history = textViewHistory.getText().toString();
        currentResult = textViewresult.getText().toString();
        textViewHistory.setText(history+currentResult+"*");
        if(operator)
        {
            if(status=="sum")
            {
                plus();
            }
            else if(status=="division")
            {
                divide();
            }
            else if(status=="subtraction")
            {
                divide();
            }
            else
            {
                multiply();
            }
        }
        status="multiplication";
        operator=false;
        number=null;
    }
});
btnDivide.setOnClickListener(new View.OnClickListener() {
```

```
    @Override
    public void onClick(View view) {
        history = textViewHistory.getText().toString();
        currentResult = textViewresult.getText().toString();
        textViewHistory.setText(history+currentResult+"/");

        if(operator)
        {
            if(status=="multiplication")
            {
                multiply();
            }
            else if(status=="sum")
            {
                plus();
            }
            else if(status=="subtraction")
            {
                minus();
            }
            else
            {
                divide();
            }
        }
        status="division";
        operator=false;
        number=null;

    }
});
btnEqual.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if(operator)
        {
            if(status == "sum")
            {
                plus();
            }
            else if(status=="subtraction")
            {
              minus();
            }
            else if(status=="multiplication")
            {
                multiply();
            }
            else if(status=="division")
            {
                divide();
```

```
            }
            else
            {
                first_number=Double.parseDouble(textViewresult.getText().toString());
            }
        }

        operator=false;
        btnEqualControl = true;
    }
});

btnDot.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {

        if(dot) {

            if (number == null) {
                number = "0.";
            } else {
                number = number + ".";
            }
        }

        textViewresult.setText(number);

        dot =false;

    }
});
}
  public void numberClick(String view)
  {
    if(number==null)
    {
        number=view;
    }
    else if (btnEqualControl)
    {
        first_number = 0;
        last_number = 0;
        number = view;
    }
    else
    {
        number=number + view;
    }

    textViewresult.setText(number);
    operator = true;
```

```
  btnACcontrol = false;
  btnDel.setClickable(true);
  btnEqualControl = false;
}

public void plus()
{
   last_number=Double.parseDouble(textViewresult.getText().toString());
   first_number=first_number + last_number;
   textViewresult.setText(myformatter.format(first_number));

   dot = true;
}
public void minus()
{
   if(first_number==0)
   {
      first_number=Double.parseDouble(textViewresult.getText().toString());
   }
   else
   {
      last_number=Double.parseDouble(textViewresult.getText().toString());
      first_number = first_number - last_number;
   }

   textViewresult.setText(myformatter.format(first_number));
   dot = true;
}
public void multiply()
{
   if(first_number==0)
   {
      first_number=1;
      last_number=Double.parseDouble(textViewresult.getText().toString());
      first_number=first_number*last_number;
   }
   else
   {
      last_number=Double.parseDouble(textViewresult.getText().toString());
      first_number=first_number*last_number;
   }
   textViewresult.setText(myformatter.format(first_number));
   dot = true;
}
public void divide()
{
   if(first_number == 0)
   {
      last_number =Double.parseDouble(textViewresult.getText().toString());
      first_number=last_number/1;
   }
```

```
            else
            {
               last_number =Double.parseDouble(textViewresult.getText().toString());
               first_number=last_number/last_number;

            }
            textViewresult.setText(myformatter.format(first_number));
            dot = true;
        }
    }
```



3. Implement Intent project.

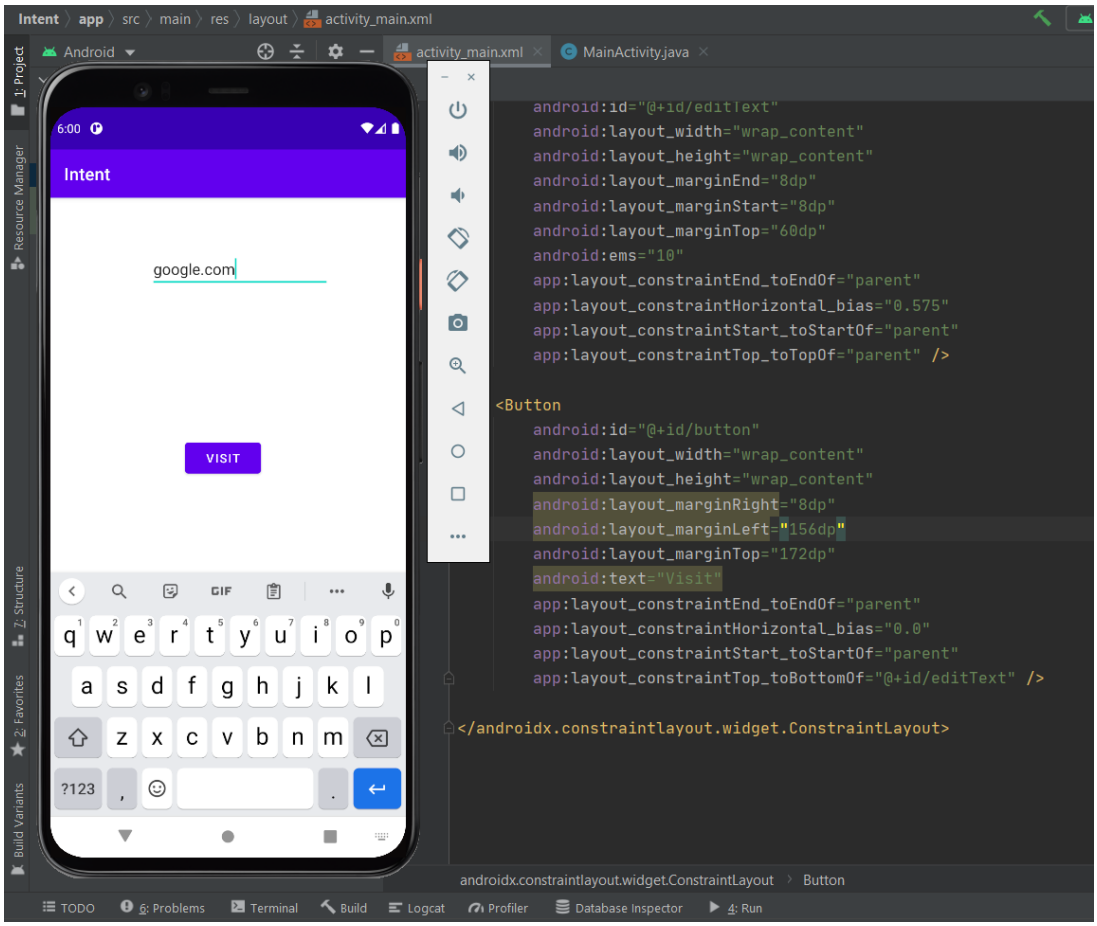
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="8dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="60dp"
        android:ems="10"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.575"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginRight="8dp"
        android:layout_marginLeft="156dp"
        android:layout_marginTop="172dp"
        android:text="Visit"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.intent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
```

```
    Button button;
    EditText editText;

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

        button = findViewById(R.id.button);
        editText =  findViewById(R.id.editText);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String url=editText.getText().toString();
                Intent intent=new Intent(Intent.ACTION_VIEW, Uri.parse(url));
                startActivity(intent);
            }
        });
    }
}
```



4. Implement Math Game.

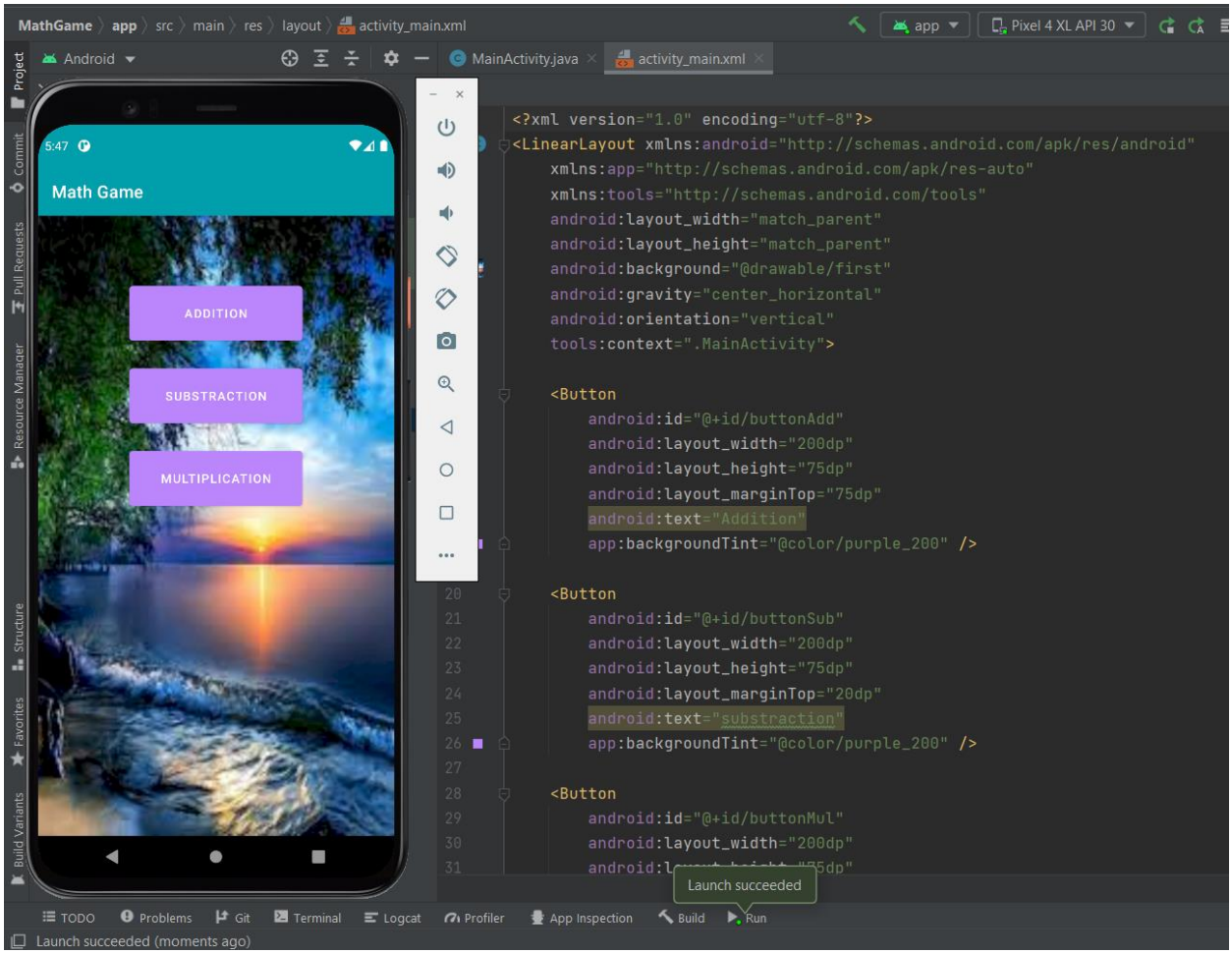
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@drawable/first"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/buttonAdd"
        android:layout_width="200dp"
        android:layout_height="75dp"
        android:layout_marginTop="75dp"
        android:text="Addition"
        app:backgroundTint="@color/purple_200" />

    <Button
        android:id="@+id/buttonSub"
        android:layout_width="200dp"
        android:layout_height="75dp"
        android:layout_marginTop="20dp"
        android:text="substraction"
        app:backgroundTint="@color/purple_200" />

    <Button
        android:id="@+id/buttonMul"
        android:layout_width="200dp"
        android:layout_height="75dp"
        android:layout_marginTop="20dp"
```

```
        android:text="multiplication"
        app:backgroundTint="@color/purple_200" />
</LinearLayout>
```

MainActivity.java

```
package com.company.mathgame;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    Button addition;
    Button subtraction;
    Button multi;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        addition=findViewById(R.id.buttonAdd);
        subtraction=findViewById(R.id.buttonSub);
        multi=findViewById(R.id.buttonMul);
        addition.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {//open second activity
                Intent intent = new Intent(MainActivity.this,Game.class);
                startActivity(intent);
            }
        });
    }
}
```


MathGame app src main res layout activity_main.xml
app
Pixel 4 XL API 30
Android
MainActivity.java
activity_main.xml
5:47
Math Game
ADDITION
SUBSTRACTION
MULTIPLICATION
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout 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:layout_width="match_parent"
android:layout_height="match_parent"
android:background="@drawable/first"
android:gravity="center_horizontal"
android:orientation="vertical"
tools:context=".MainActivity">
<Button
android:id="@+id/buttonAdd"
android:layout_width="200dp"
android:layout_height="75dp"
android:layout_marginTop="75dp"
android:text="Addition"
app:backgroundTint="@color/purple_200" />
<Button
android:id="@+id/buttonSub"
android:layout_width="200dp"
android:layout_height="75dp"
android:layout_marginTop="20dp"
android:text="substraction"
app:backgroundTint="@color/purple_200" />
<Button
android:id="@+id/buttonMul"
android:layout_width="200dp"
Launch succeeded
TODO
Problems
Git
Terminal
Logcat
Profiler
App Inspection
Build
Run
Launch succeeded (moments ago)

5. Implement MP3 Player.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">

<LinearLayout
   android:id="@+id/linearLayout"
   android:layout_width="match_parent"
   android:layout_height="200dp"
   android:background="@drawable/backround_card_view"
   android:orientation="horizontal"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toTopOf="parent">

   <ImageView
      android:id="@+id/imageView"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_weight="1"
      android:padding="20dp"
      android:scaleType="fitCenter"
      app:srcCompat="@drawable/note" />
</LinearLayout>

<androidx.recyclerview.widget.RecyclerView
   android:id="@+id/recyclerView"
   android:layout_width="match_parent"
   android:layout_height="0dp"
```

```
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/linearLayout"
        tools:listitem="@layout/card_music" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

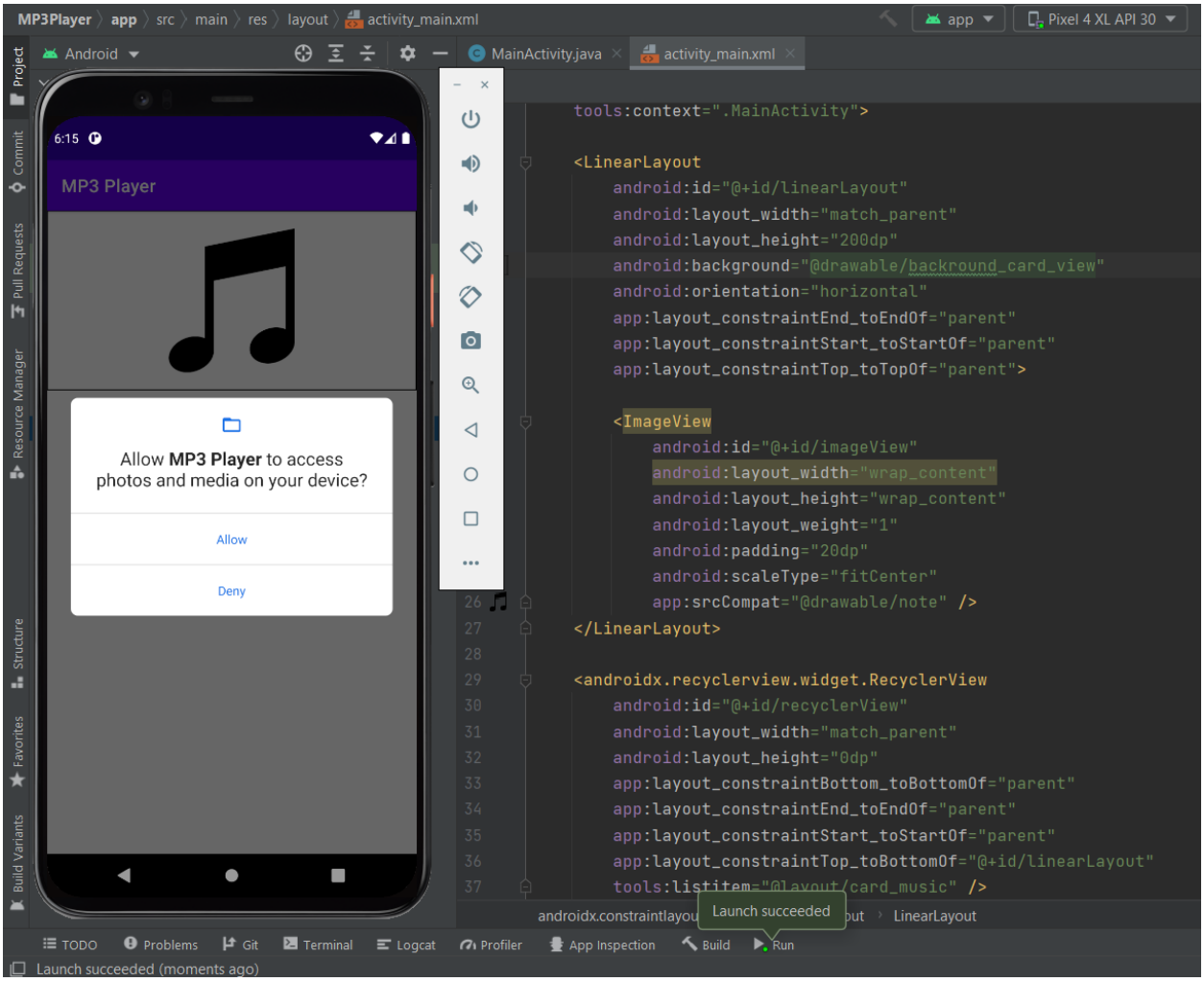
MainActivity.java

```
package com.company.mp3player;
import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.os.Environment;
import android.util.Log;
import java.io.File;
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {
    private RecyclerView recyclerView;
    private final static String MEDIA_PATH =
Environment.getExternalStorageDirectory().getPath()+"/";//need to access the main storage directory.
    private ArrayList<String> songList = new ArrayList<>();
    private MusicAdapter adapter;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.e("Media path",MEDIA_PATH);
        recyclerView = findViewById(R.id.recyclerView);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));//using these method audio file
sorted one by one
        //recyclerView.setLayoutManager(new
StaggeredGridLayoutManager(2,StaggeredGridLayoutManager.VERTICAL));
```

```
    if (ContextCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.READ_EXTERNAL_STORAGE)//for the permission
            != PackageManager.PERMISSION_GRANTED)
    {
        ActivityCompat.requestPermissions(MainActivity.this
                ,new String[]{Manifest.permission.READ_EXTERNAL_STORAGE},1);
    }
    else
    {
        getAllAudioFiles();
    }
}

public void getAllAudioFiles()//get all audio files method.
{
    if (MEDIA_PATH != null)
    {
        File mainFile = new File(MEDIA_PATH);// media path object as the constructor
        File[] fileList = mainFile.listFiles();
        for (File file : fileList)
        {
            Log.e("Media path",file.toString());
            if (file.isDirectory())
            {
                scanDirectory(file);
            }
            else
            {
                String path = file.getAbsolutePath();
                if (path.endsWith(".mp3"))
                {
                    songList.add(path);
                    adapter.notifyDataSetChanged();
                }
            }
```

```
        }
    }
    adapter = new MusicAdapter(songList,MainActivity.this);
    recyclerView.setAdapter(adapter);
}
public void scanDirectory(File directory)
{
    if (directory != null)
    {
        File[] fileList = directory.listFiles();
        for (File file : fileList)
        {
            Log.e("Media path",file.toString());
            if (file.isDirectory())
            {
                scanDirectory(file);
            }
            else
            {
                String path = file.getAbsolutePath();
                if (path.endsWith(".mp3"))
                {
                    songList.add(path);
                }
            }
        }
    }
}
@Override
public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
    super.onRequestPermissionsResult(requestCode, permissions, grantResults);

    if (requestCode == 1 && grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED)
```

```
        {
            getAllAudioFiles();
        }
    }
}
```



6. Implement Note Take App.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
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/layout_constraint"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context="com.rafapps.simplenotes.SettingsActivity">

   <LinearLayout
      android:id="@+id/settingsLayout"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:divider="@drawable/divider_settings"
      android:orientation="vertical"
      android:showDividers="middle|end">

      <LinearLayout
         android:layout_width="match_parent"
         android:layout_height="60dp"
         android:gravity="center_vertical"
         android:onClick="showPicker1"
         android:orientation="horizontal"
         android:paddingBottom="4dp"
         android:paddingTop="8dp">

         <ImageView
            android:id="@+id/image_accent"
            android:layout_width="40dp"
            android:layout_height="40dp"
            android:layout_margin="12dp"
            android:background="@drawable/square"
            android:contentDescription="@string/colour_indicator"
            android:src="@drawable/ic_bg" />

         <TextView
            android:id="@+id/tv_accent"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            android:text="@string/accent_colour"
            android:textSize="16sp" />

      </LinearLayout>

      <LinearLayout
         android:layout_width="match_parent"
```

```
    android:layout_height="60dp"
    android:gravity="center_vertical"
    android:onClick="showPicker2"
    android:orientation="horizontal"
    android:paddingBottom="4dp"
    android:paddingTop="4dp">

    <ImageView
        android:id="@+id/image_font"
        android:layout_width="40dp"
        android:layout_height="40dp"
        android:layout_margin="12dp"
        android:background="@drawable/square"
        android:contentDescription="@string/colour_indicator"
        android:src="@drawable/ic_bg" />

    <TextView
        android:id="@+id/tv_font"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        android:text="@string/font_colour"
        android:textSize="16sp" />


</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="60dp"
    android:gravity="center_vertical"
    android:onClick="toggleCheckBox"
    android:orientation="horizontal"
    android:paddingBottom="4dp"
    android:paddingTop="4dp">

    <CheckBox
        android:id="@+id/checkbox_navigationbar"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="16dp" />

    <TextView
        android:id="@+id/tv_navigationbar"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        android:text="@string/colour_navigation_bar"
        android:textSize="16sp" />

</LinearLayout>
```

```
    </LinearLayout>

    <Button
        android:id="@+id/btn_apply"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_marginBottom="7dp"
        android:onClick="saveSettings"
        android:text="@string/apply_changes"
        android:textColor="@android:color/white"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent" />

    <android.support.constraint.Guideline
        android:id="@+id/guideline"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        app:layout_constraintGuide_begin="20dp" />

    <android.support.constraint.Barrier
        android:id="@+id/barrier2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:barrierDirection="top" />

</android.support.constraint.ConstraintLayout>
```

Main_activity.java

```
package com.rafapps.simplenotes;

import android.text.TextUtils;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.EditText;

public class NoteActivity extends AppCompatActivity {

    private static final String EXTRA_NOTE_TITLE = "EXTRA_NOTE_TITLE";

    private boolean colourNavbar;
    private String title, note;
    private EditText noteText, titleText;
    private AlertDialog dialog;

    private @ColorInt
    int colourPrimary, colourFont, colourBackground;
```

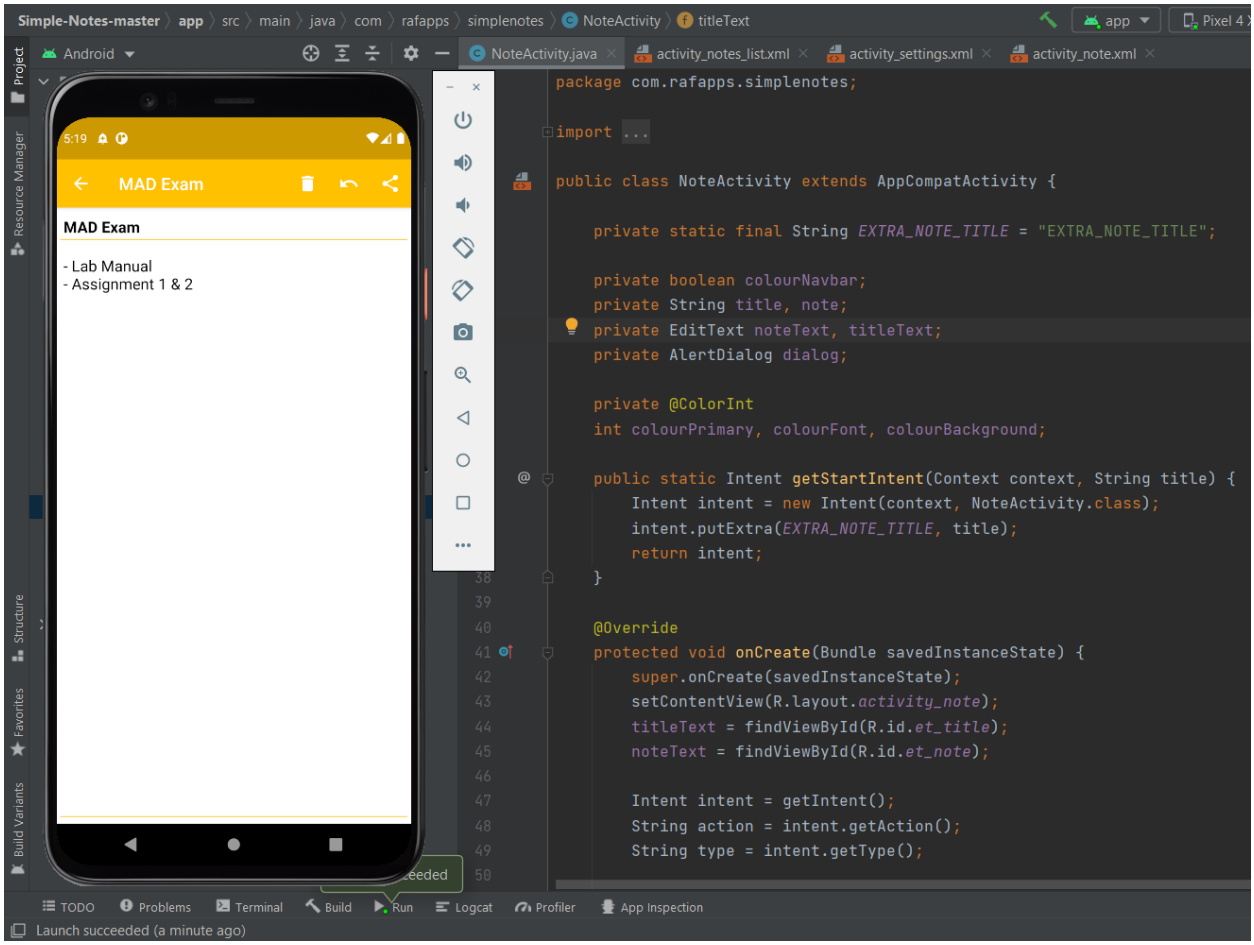
```
public static Intent getStartIntent(Context context, String title) {
    Intent intent = new Intent(context, NoteActivity.class);
    intent.putExtra(EXTRA_NOTE_TITLE, title);
    return intent;
}

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_note);
    titleText = findViewById(R.id.et_title);
    noteText = findViewById(R.id.et_note);

    Intent intent = getIntent();
    String action = intent.getAction();
    String type = intent.getType();

    // If activity started from a share intent
    if (Intent.ACTION_SEND.equals(action) && type != null) {
        if ("text/plain".equals(type)) {
            String sharedText = intent.getStringExtra(Intent.EXTRA_TEXT);
            noteText.setText(sharedText);
            note = sharedText;
            title = "";
        }
    } else { // If activity started from the notes list
        title = intent.getStringExtra(EXTRA_NOTE_TITLE);
        if (title == null || TextUtils.isEmpty(title)) {
            title = "";
            note = "";
            noteText.requestFocus();
            if (getSupportActionBar() != null)
                getSupportActionBar().setTitle(getString(R.string.new_note));
        } else {
            titleText.setText(title);
            note = HelperUtils.readFile(NoteActivity.this, title);
            noteText.setText(note);
            if (getSupportActionBar() != null)
                getSupportActionBar().setTitle(title);
        }
    }

    getSettings(PreferenceManager.getDefaultSharedPreferences(NoteActivity.this));
    applySettings();
}

@Override
public void onRestart() {
    super.onRestart();
    note = noteText.getText().toString().trim();
    if (getCurrentFocus() != null)
```

```
        getCurrentFocus().clearFocus();
}

@Override
public void onPause() {
    if (!isChangingConfigurations()) {
        saveFile();
    }
    if (dialog != null && dialog.isShowing())
        dialog.dismiss();
    dialog = null;
    super.onPause();
}

@Override
public void onBackPressed() {
    super.onBackPressed();
}

@Override
public boolean onSupportNavigateUp() {
    onBackPressed();
    return true;
}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.menu_note, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    switch (item.getItemId()) {
        case R.id.btn_undo:
            noteText.setText(note);
            noteText.setSelection(noteText.getText().length());
            return (true);

        case R.id.btn_share:
            Intent sendIntent = new Intent();
            sendIntent.setAction(Intent.ACTION_SEND);
            sendIntent.putExtra(Intent.EXTRA_TEXT, noteText.getText().toString());
            sendIntent.setType("text/plain");
            startActivity(Intent.createChooser(sendIntent, getString(R.string.share_to)));
            return (true);

        case R.id.btn_delete:
            dialog = new AlertDialog.Builder(NoteActivity.this, R.style.AlertDialogTheme)
                    .setTitle(getString(R.string.confirm_delete))
                    .setMessage(getString(R.string.confirm_delete_text))
```

```
                .setPositiveButton(getString(R.string.yes), new
DialogInterface.OnClickListener() {
                    public void onClick(DialogInterface dialog, int which) {
                        if (HelperUtils.fileExists(NoteActivity.this, title)) {
                            deleteFile(title + HelperUtils.TEXT_FILE_EXTENSION);
                        }
                        title = "";
                        note = "";
                        titleText.setText(title);
                        noteText.setText(note);
                        finish();
                    }
                })
                .setNegativeButton(getString(R.string.no), new
DialogInterface.OnClickListener() {
                    public void onClick(DialogInterface dialog, int which) {

                    }
                })
                .setIcon(ContextCompat.getDrawable(getApplicationContext(),
R.drawable.ic_delete_white_24dp))
                .show();
            if (dialog.getWindow() != null) {
                dialog.getWindow().getDecorView().setBackgroundColor(colourPrimary);
            }

dialog.getButton(DialogInterface.BUTTON_POSITIVE).setTextColor(Color.WHITE);

dialog.getButton(DialogInterface.BUTTON_NEGATIVE).setTextColor(Color.WHITE);
            return (true);
        }
        return (super.onOptionsItemSelected(item));
    }

    private void getSettings(SharedPreferences preferences) {
        colourPrimary = preferences.getInt(HelperUtils.PREFERENCE_COLOUR_PRIMARY,
ContextCompat.getColor(NoteActivity.this, R.color.colorPrimary));
        colourFont = preferences.getInt(HelperUtils.PREFERENCE_COLOUR_FONT,
Color.BLACK);
        colourBackground =
preferences.getInt(HelperUtils.PREFERENCE_COLOUR_BACKGROUND, Color.WHITE);
        colourNavbar =
preferences.getBoolean(HelperUtils.PREFERENCE_COLOUR_NAVBAR, false);
    }

    private void applySettings() {
        HelperUtils.applyColours(NoteActivity.this, colourPrimary, colourNavbar);

        // Set text field underline colour
        noteText.setBackgroundTintList(ColorStateList.valueOf(colourPrimary));
        titleText.setBackgroundTintList(ColorStateList.valueOf(colourPrimary));
```

```
    // Set actionbar and background colour
    findViewById(R.id.scroll_view).setBackgroundColor(colourBackground);
    if (getSupportActionBar() != null)
        getSupportActionBar().setBackgroundDrawable(new ColorDrawable(colourPrimary));

    // Set font colours
    titleText.setTextColor(colourFont);
    noteText.setTextColor(colourFont);

    // Set hint colours
    titleText.setHintTextColor(ColorUtils.setAlphaComponent(colourFont, 120));
    noteText.setHintTextColor(ColorUtils.setAlphaComponent(colourFont, 120));
}

private void saveFile() {
    // Get current title and note
    String newTitle = titleText.getText().toString().trim().replace("/", " ");
    String newNote = noteText.getText().toString().trim();

    // Check if title and note are empty
    if (TextUtils.isEmpty(newTitle) && TextUtils.isEmpty(newNote)) {
        return;
    }

    // Check if title and note are unchanged
    if (newTitle.equals(title) && newNote.equals(note)) {
        return;
    }

    // Get file name to be saved if the title has changed or if it is empty
    if (!title.equals(newTitle) || TextUtils.isEmpty(newTitle)) {
        newTitle = newFileName(newTitle);
        titleText.setText(newTitle);
    }

    // Save the file with the new file name and content
    HelperUtils.writeFile(NoteActivity.this, newTitle, newNote);

    // If the title is not empty and the file name has changed then delete the old file
    if (!TextUtils.isEmpty(title) && !newTitle.equals(title)) {
        deleteFile(title + HelperUtils.TEXT_FILE_EXTENSION);
    }

    // Set the title to be the new saved title for when the home button is pressed
    title = newTitle;

}

private String newFileName(String name) {
    // If it is empty, give it a default title of "Note"
```

```
        if (TextUtils.isEmpty(name)) {
            name = getString(R.string.note);
        }
        // If the name already exists, append a number to it
        if (HelperUtils.fileExists(NoteActivity.this, name)) {
            int i = 1;
            while (true) {
                if (!HelperUtils.fileExists(NoteActivity.this, name + " (" + i + ")") || title.equals(name
+ " (" + i + ")")) {
                    name = (name + " (" + i + ")");
                    break;
                }
                i++;
            }
        }
        return name;
    }

}
```



7. Implement Number guessing game.

Activity_main.xml

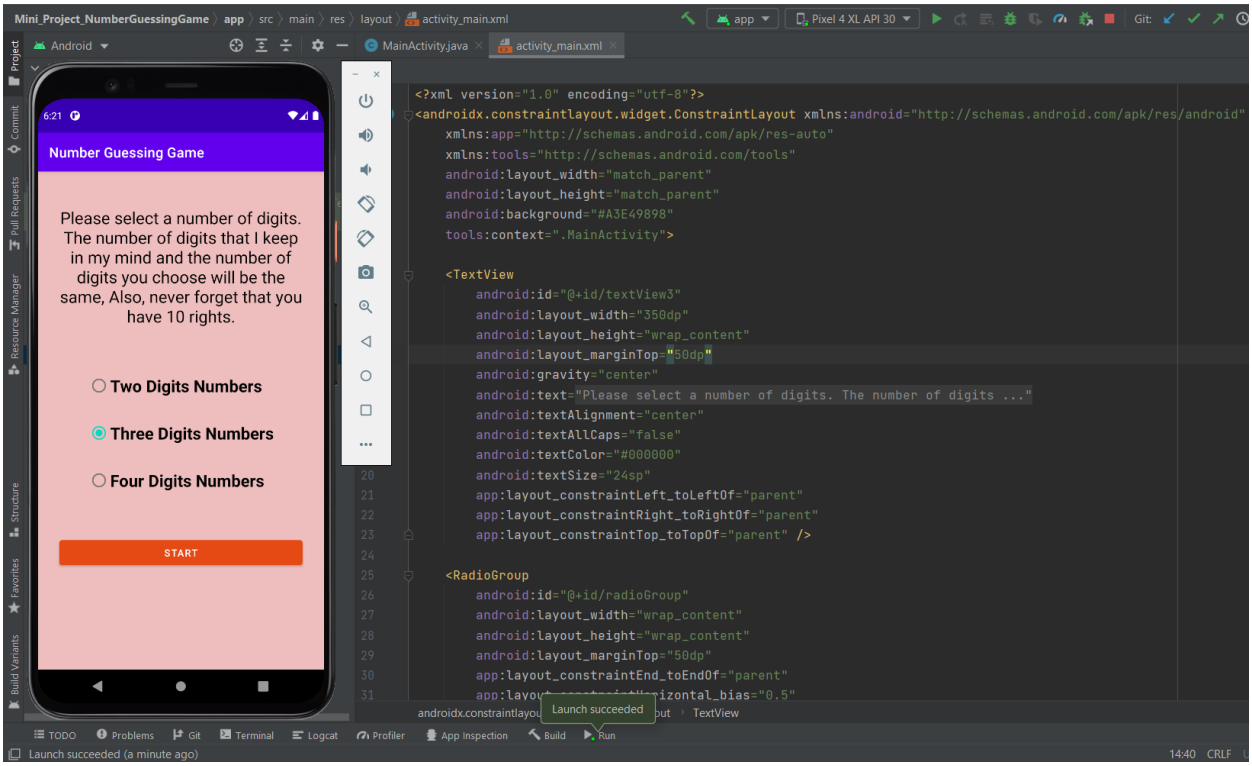
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#A3E49898"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView3"
        android:layout_width="350dp"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:gravity="center"
        android:text="@string/info"
        android:textAlignment="center"
        android:textAllCaps="false"
        android:textColor="#000000"
        android:textSize="24sp"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <RadioGroup
        android:id="@+id/radioGroup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3">

        <RadioButton
            android:id="@+id/radio2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_margin="10dp"
            android:text="Two Digits Numbers"
            android:textColor="#000000"
            android:textSize="24sp"
            android:textStyle="bold" />

        <RadioButton
            android:id="@+id/radio3"
            android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:text="Three Digits Numbers"
        android:textColor="#000000"
        android:textSize="24sp"
        android:textStyle="bold" />

    <RadioButton
        android:id="@+id/radio4"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:text="Four Digits Numbers"
        android:textSize="24sp"
        android:textStyle="bold" />
  </RadioGroup>

  <Button
    android:id="@+id/buttonStart"
    android:layout_width="350dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="46dp"
    android:text="Start"
    app:backgroundTint="#E64A19"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/radioGroup" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.company.numberguessinggame;
import androidx.appcompat.app.AppCompatActivity;
import com.google.android.material.snackbar.Snackbar;

public class MainActivity extends AppCompatActivity {
  private Button buttonStart;
  private RadioButton radio2,radio3,radio4;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    buttonStart=findViewById(R.id.buttonStart);
    radio2=findViewById(R.id.radio2);
    radio3=findViewById(R.id.radio3);
    radio4=findViewById(R.id.radio4);

    buttonStart.setOnClickListener(new View.OnClickListener() {
      @Override
```

```
        public void onClick(View view) {
            Intent intent = new Intent(MainActivity.this,GameActivity.class);
            if (!radio2.isChecked() && !radio3.isChecked() && !radio4.isChecked())
            {
                Snackbar.make(view,"Please select a number of
digits",Snackbar.LENGTH_LONG).show();
            }
            else
            {
                if(radio2.isChecked())
                {
                    intent.putExtra("two",true);
                }
                if(radio3.isChecked())
                {
                    intent.putExtra("three",true);
                }
                if(radio4.isChecked())
                {
                    intent.putExtra("four",true);
                }
                startActivity(intent);
            }
        }
    });
  }
}
```



8. Implement online examination system.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.corp.srihari.deca.LoginActivity"
    tools:layout_editor_absoluteY="81dp"
    tools:layout_editor_absoluteX="0dp"
    android:background="@drawable/background">

    <EditText
        android:id="@+id/login_email_edit"
        android:layout_width="307dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginRight="8dp"
        android:background="@drawable/rectangle_border"
        android:ems="10"
        android:hint="Email"
        android:inputType="textEmailAddress"
        android:padding="10dp"
        android:textColor="@color/white"
        android:textColorHint="@color/white"
        app:layout_constraintBottom_toTopOf="@+id/login_password_edit"
        app:layout_constraintHorizontal_bias="0.511"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/login_logo"
        app:layout_constraintVertical_bias="0.884" />

    <EditText
        android:id="@+id/login_password_edit"
        android:layout_width="307dp"
        android:layout_height="wrap_content"
        android:layout_marginLeft="8dp"
        android:layout_marginRight="8dp"
        android:layout_marginBottom="40dp"
        android:background="@drawable/rectangle_border"
        android:ems="10"
        android:hint="Password"
        android:inputType="textPassword"
        android:padding="10dp"
        android:textColor="@color/white"
        android:textColorHint="@color/white"
```

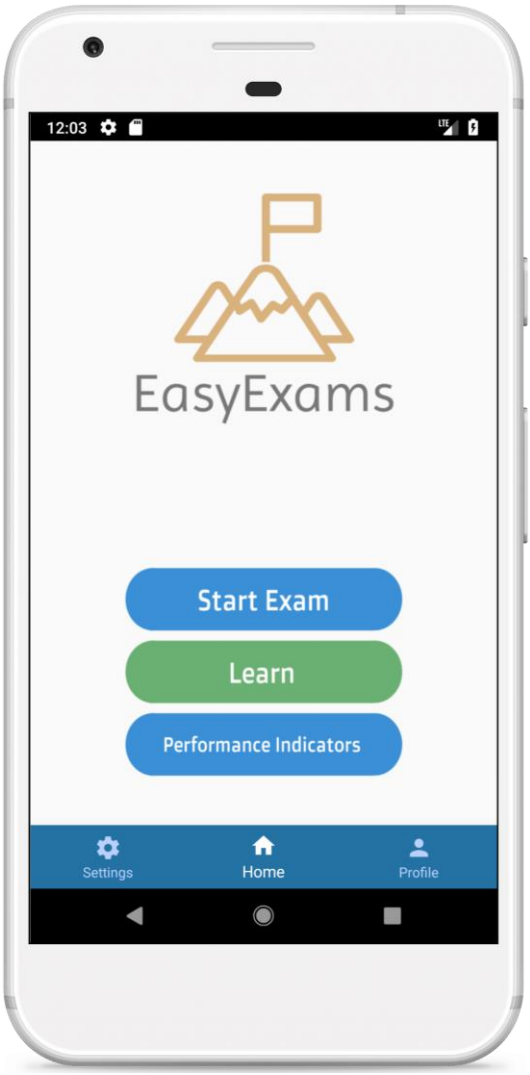
```
    app:layout_constraintBottom_toTopOf="@+id/login_button"
    app:layout_constraintHorizontal_bias="0.511"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent" />


<ImageView
    android:id="@+id/login_logo"
    android:layout_width="410dp"
    android:layout_height="194dp"
    android:layout_marginLeft="8dp"
    android:layout_marginRight="8dp"
    android:layout_marginTop="41dp"
    android:scaleType="fitCenter"
    android:src="@drawable/easy_exams_logo_white"
    android:visibility="visible"
    app:layout_constraintHorizontal_bias="0.517"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<ImageButton
    android:id="@+id/login_button"
    style="@style/Widget.AppCompat.ImageButton"
    android:layout_width="273dp"
    android:layout_height="59dp"
    android:layout_marginLeft="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginRight="8dp"
    android:layout_marginBottom="8dp"
    android:background="#00000000"
    android:scaleType="fitXY"
    android:src="@drawable/login_login"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintHorizontal_bias="0.495"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.725" />

<ImageButton
    android:id="@+id/sign_up_button"
    android:layout_width="272dp"
    android:layout_height="54dp"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:layout_marginBottom="32dp"
    android:background="#00000000"
    android:scaleType="fitXY"
    android:src="@drawable/login_signup"
```

```
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.495"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/login_button"
        app:layout_constraintVertical_bias="0.062" />

    <Button
        android:id="@+id/forgotPassword"
        style="@style/Widget.AppCompat.Button.Borderless"
        android:layout_width="190dp"
        android:layout_height="37dp"
        android:layout_marginStart="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        android:text="Forgot your password?"
        android:textAppearance="@style/TextAppearance.AppCompat.Body2"
        android:textColor="#3579A6"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <ProgressBar
        android:id="@+id/loginloading"
        style="?android:attr/progressBarStyle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="8dp"
        android:layout_marginLeft="8dp"
        android:layout_marginRight="8dp"
        android:layout_marginTop="8dp"
        android:visibility="gone"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.corp.srihari.deca;

import android.os.Bundle;
import android.view.MenuItem;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.Fragment;
import androidx.fragment.app.FragmentTransaction;
```

```
import com.google.android.material.bottomnavigation.BottomNavigationView;

public class MainActivity extends AppCompatActivity {
   private BottomNavigationView navigation;

   private BottomNavigationView.OnNavigationItemSelectedListener
mOnNavigationItemSelectedListener
         = new BottomNavigationView.OnNavigationItemSelectedListener() {

      @Override
      public boolean onNavigationItemSelected(@NonNull MenuItem item) {
         Fragment selectedFragment = null;
         switch (item.getItemId()) {
            case R.id.navigation_home:
               selectedFragment = HomeFragment.newInstance();
               break;
            case R.id.navigation_resources:
               selectedFragment = ResourcesFragment.newInstance();
               break;
            case R.id.navigation_profile:
               selectedFragment = ProfileFragment.newInstance();
               break;
         }
         FragmentTransaction transaction = getSupportFragmentManager().beginTransaction();
         transaction.replace(R.id.frame_layout, selectedFragment);
         transaction.commit();
         return true;
      }
   };

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

      BottomNavigationView navigation = (BottomNavigationView)
findViewById(R.id.navigation);
      navigation.setOnNavigationItemSelectedListener(mOnNavigationItemSelectedListener);

      navigation.setSelectedItemId(R.id.navigation_home);


   }
}
```


12:03
EasyExams
Start Exam
Learn
Performance Indicators
Settings
Home
Profile

9. Implement periodic notification.

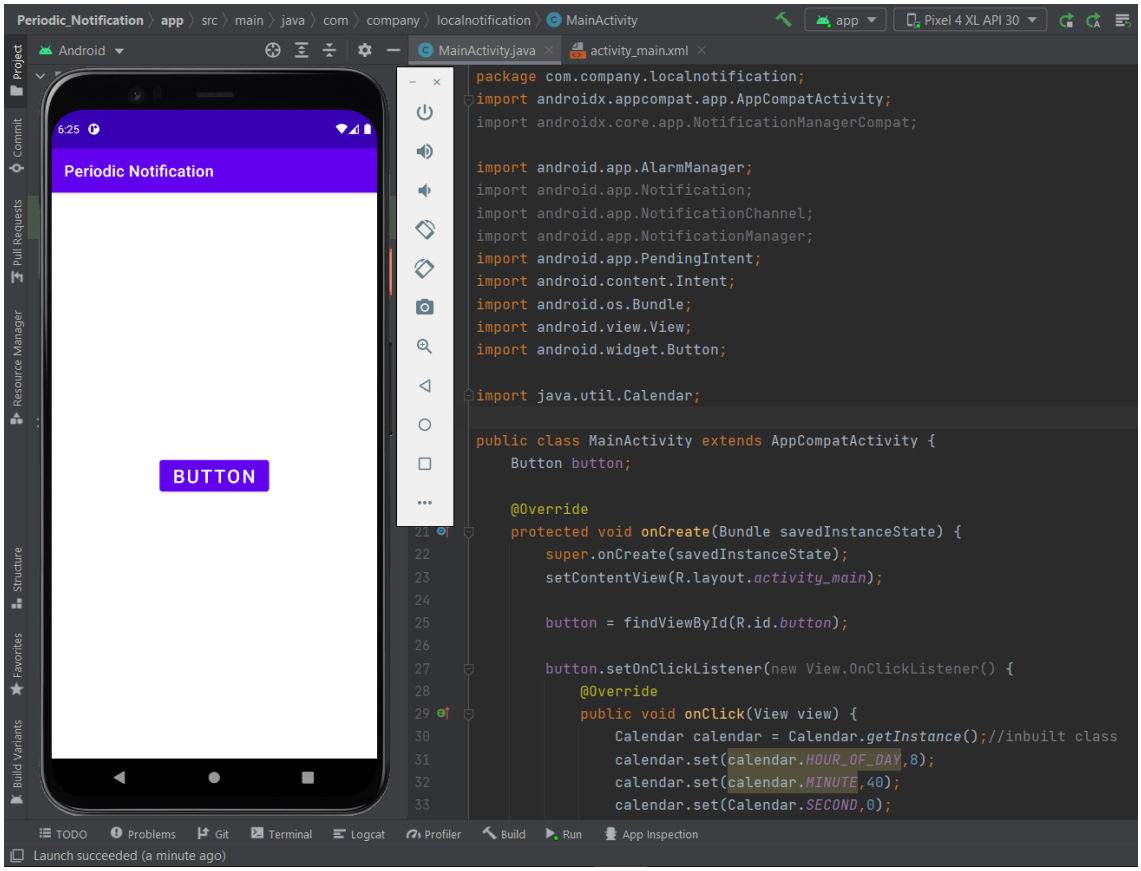
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.company.localnotification;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationManagerCompat;
import java.util.Calendar;

public class MainActivity extends AppCompatActivity {
    Button button;

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

        button = findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Calendar calendar = Calendar.getInstance();//inbuilt class
                calendar.set(calendar.HOUR_OF_DAY,8);
                calendar.set(calendar.MINUTE,40);
                calendar.set(Calendar.SECOND,0);

                Intent i = new Intent(getApplicationContext(),Notification_Receiver.class);
```

```
        PendingIntent pendingIntent =
PendingIntent.getBroadcast(getApplicationContext(),100,i
        ,PendingIntent.FLAG_UPDATE_CURRENT);

        AlarmManager alarmManager =
(AlarmManager)getSystemService(ALARM_SERVICE);//message is received in broadcast
class


alarmManager.setRepeating(AlarmManager.RTC_WAKEUP,calendar.getTimeInMillis(),
                AlarmManager.INTERVAL_DAY,pendingIntent);

            }
        });
    }
}
```



10.Implement phone call app.

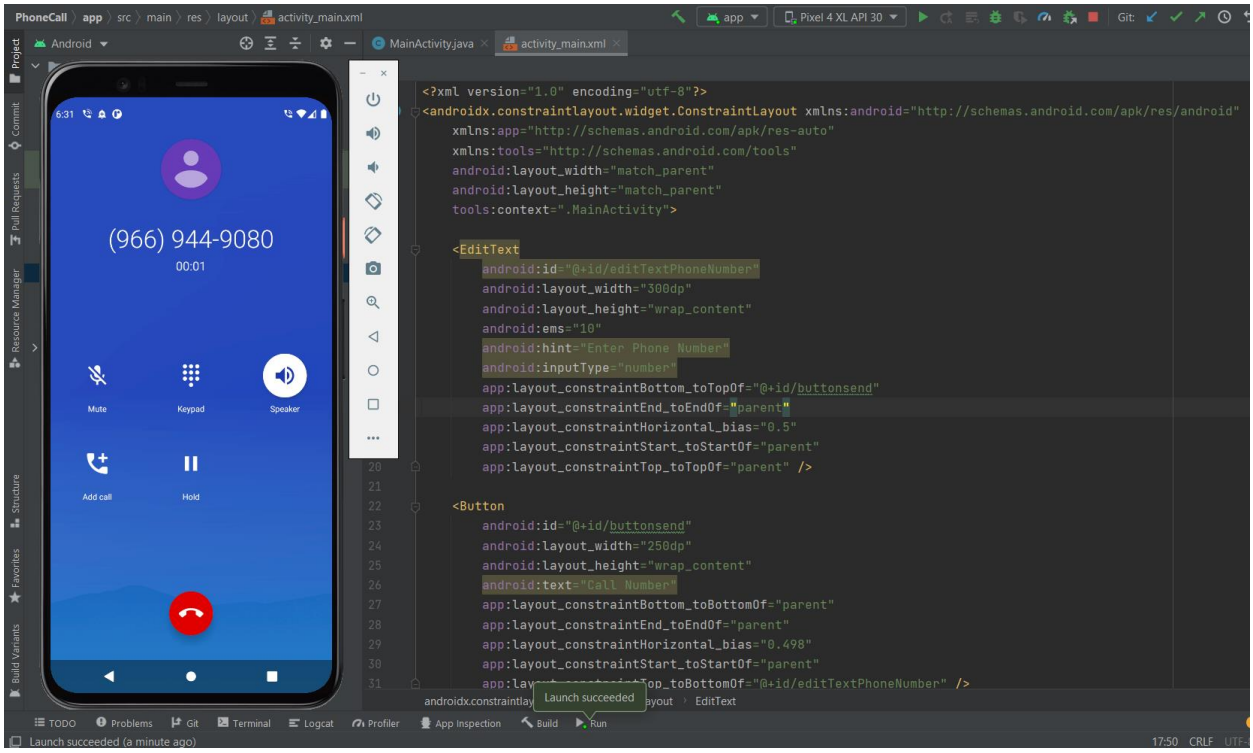
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/editTextPhoneNumber"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Phone Number"
        android:inputType="number"
        app:layout_constraintBottom_toTopOf="@+id/buttonsend"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/buttonsend"
        android:layout_width="250dp"
        android:layout_height="wrap_content"
        android:text="Call Number"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextPhoneNumber" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.company.phonecall;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button call;
    EditText number;
    String userNumber;
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        call=findViewById(R.id.buttonsend);
        number=findViewById(R.id.editTextPhoneNumber);

        call.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                userNumber = number.getText().toString();

                phoneCall(userNumber);
            }
        });
    }

    public void phoneCall(String userNumber)
    {

        if(ContextCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.CALL_PHONE)
        != PackageManager.PERMISSION_GRANTED)
        {
            ActivityCompat.requestPermissions(MainActivity.this
                    ,new String[]{Manifest.permission.CALL_PHONE},100);
        }
        else
        {
            Intent intent = new Intent(Intent.ACTION_CALL);
            intent.setData(Uri.parse("tel:"+ userNumber));
            startActivity(intent);
        }


    }

    @Override
    public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        if(requestCode == 100 && grantResults.length > 0 && grantResults[0]==
PackageManager.PERMISSION_GRANTED)
        {
            Intent intent = new Intent(Intent.ACTION_CALL);
            intent.setData(Uri.parse("tel:"+ userNumber));
            startActivity(intent);
        }

    }
}
```


PhoneCall app src main res layout activity_main.xml
app
Pixel 4 XL API 30
Git:
Android
MainActivity.java
activity_main.xml
(966) 944-9080
00:01
Mute
Keypad
Speaker
Add call
Hold
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout 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:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<EditText
android:id="@+id/editTextPhoneNumber"
android:layout_width="300dp"
android:layout_height="wrap_content"
android:ems="10"
android:hint="Enter Phone Number"
android:inputType="number"
app:layout_constraintBottom_toTopOf="@+id/buttonsend"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.5"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent" />
<Button
android:id="@+id/buttonsend"
android:layout_width="250dp"
android:layout_height="wrap_content"
android:text="Call Number"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.498"
app:layout_constraintStart_toStartOf="parent"
Launch succeeded
EditText
TODO
Problems
Git
Terminal
Logcat
Profiler
App inspection
Build
Run
Launch succeeded (a minute ago)
17:50
CRLF

11.Implement Speech to text app.

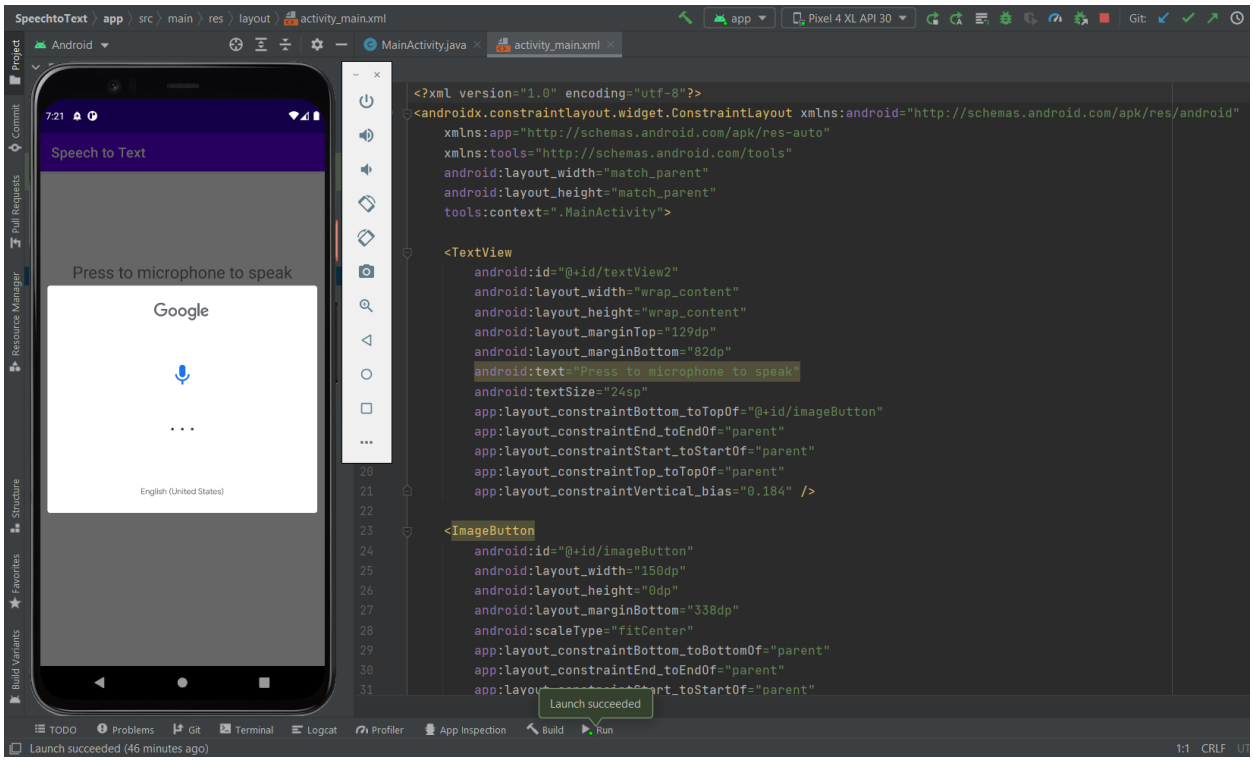
Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="129dp"
        android:layout_marginBottom="82dp"
        android:text="Press to microphone to speak"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/imageButton"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.184" />

    <ImageButton
        android:id="@+id/imageButton"
        android:layout_width="150dp"
        android:layout_height="0dp"
        android:layout_marginBottom="338dp"
        android:scaleType="fitCenter"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2"
        app:srcCompat="@drawable/ic_baseline_mic_24" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.company.speechtotext;

import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;

import android.view.View;

import android.widget.ImageButton;
import android.widget.TextView;
import java.util.ArrayList;
import java.util.Locale;
```

```
public class MainActivity extends AppCompatActivity {

    TextView result;
    ImageButton mic;

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

        result=findViewById(R.id.textView2);
        mic=findViewById(R.id.imageButton);

        mic.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                convertSpeech();

            }
        });
    }

    public void convertSpeech()
    {
        Intent intent = new Intent(RecognizerIntent.ACTION_RECOGNIZE_SPEECH);
intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_MODEL,RecognizerIntent.LANGUA
GE_MODEL_FREE_FORM);
        intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE, Locale.getDefault());
        startActivityForResult(intent,1);
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        if(requestCode == 1 && resultCode == RESULT_OK)
        {
            ArrayList<String> speakResults =
 data.getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
            result.setText(speakResults.get(0));
        }
    }
}
```


SpeechtoText app src main res layout activity_main.xml
app
Pixel 4 XL API 30
Git:
Android
MainActivity.java
activity_main.xml
Speech to Text
Press to microphone to speak
Google
English (United States)
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout 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:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<TextView
android:id="@+id/textView2"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="129dp"
android:layout_marginBottom="82dp"
android:text="Press to microphone to speak"
android:textSize="24sp"
app:layout_constraintBottom_toTopOf="@+id/imageButton"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.184" />
<ImageButton
android:id="@+id/imageButton"
android:layout_width="150dp"
android:layout_height="0dp"
android:layout_marginBottom="338dp"
android:scaleType="fitCenter"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
Launch succeeded
TODO
Problems
Git
Terminal
Logcat
Profiler
App Inspection
Build
Run
Launch succeeded (46 minutes ago)
1:1
CRLF

12.Implement Weather app.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:orientation="vertical"
    android:background="#1E90FF"
    android:id="@+id/linear_layout">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/textViewCity"
        android:layout_gravity="center"
        android:layout_margin="7dp"
        android:text="London , GB"
        android:textSize="30sp"
        android:textColor="#FFFFFF"/>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        android:layout_marginTop="3dp">

        <ImageView
            android:id="@+id/imageView"
            android:layout_width="100dp"
            android:layout_height="100dp"
            android:layout_marginStart="25dp"
            android:scaleType="fitXY"
            android:src="@drawable/ic_launcher_background"/>

        <LinearLayout
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            android:layout_marginStart="10dp">

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:id="@+id/textViewTemp"
                android:text="25 C"
```

```
            android:textSize="50sp"
            android:textColor="#FFFFFF"
            android:layout_gravity="center"/>
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/textViewWeatherCondition"
            android:text="Few Clouds"
            android:textSize="30sp"
            android:textColor="#FFFFFF"
            android:textAlignment="center"/>
    </LinearLayout>

</LinearLayout>

<TextView
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Details :"
    android:textSize="30sp"
    android:textColor="#FFFFFF"
    android:layout_marginStart="25dp"
    android:layout_marginBottom="10dp"/>

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

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:layout_marginStart="10dp"
        android:layout_marginTop="5dp">

        <TextView
            android:id="@+id/textViewHumidity"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=": 50%"
            android:textColor="#FFFFFF"
            android:textSize="24sp"
            android:layout_marginTop="5dp"/>

        <TextView
            android:id="@+id/textViewMaxTemp"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=": 25 C"
            android:textColor="#FFFFFF"
```

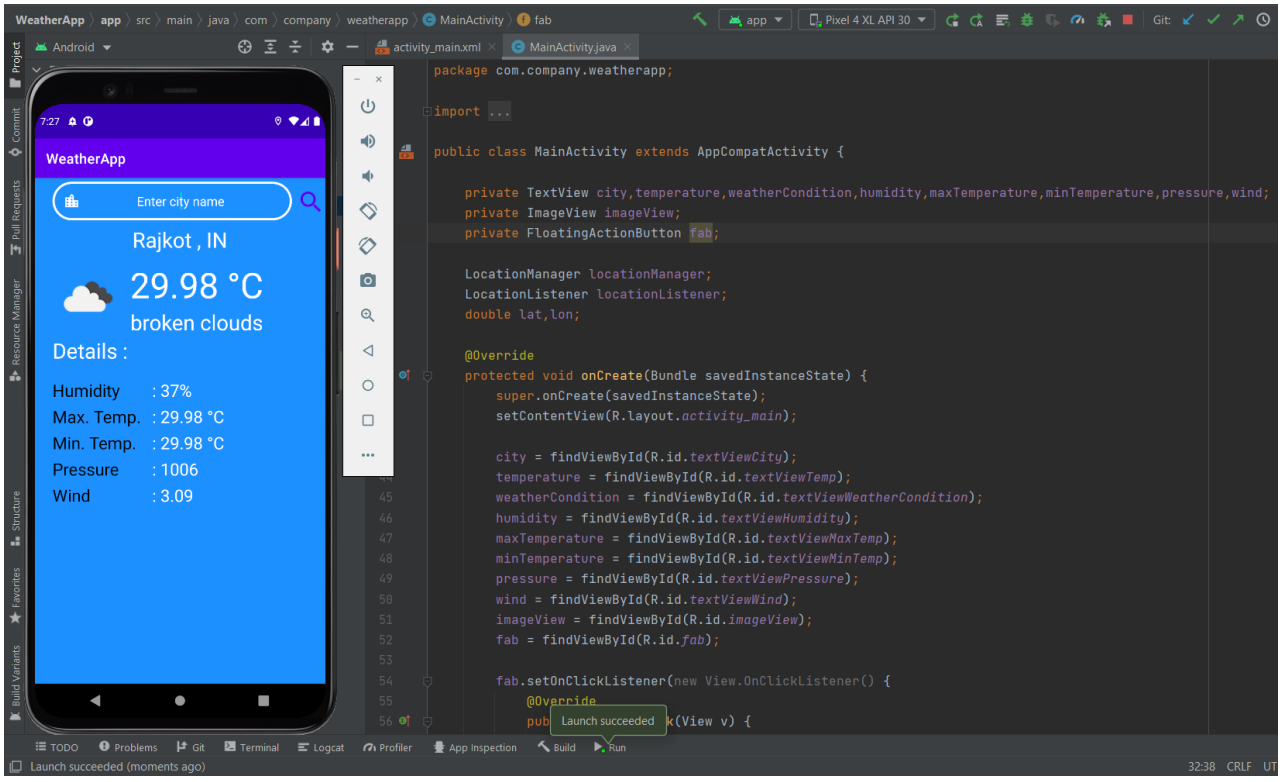
```
            android:textSize="24sp"
            android:layout_marginTop="5dp"/>

        <TextView
            android:id="@+id/textViewMinTemp"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=": 25 C"
            android:textColor="#FFFFFF"
            android:textSize="24sp"
            android:layout_marginTop="5dp"/>
        <TextView
            android:id="@+id/textViewPressure"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=": 50"
            android:textColor="#FFFFFF"
            android:textSize="24sp"
            android:layout_marginTop="5dp"/>
        <TextView
            android:id="@+id/textViewWind"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=": 5"
            android:textColor="#FFFFFF"
            android:textSize="24sp"
            android:layout_marginTop="5dp"/>
    </LinearLayout>

</LinearLayout>

<androidx.constraintlayout.widget.ConstraintLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/fab"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="20dp"
        android:layout_marginBottom="20dp"
        android:clickable="true"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:srcCompat="@drawable/add"
        android:layout_marginRight="20dp"
        tools:ignore="VectorDrawableCompat" />
</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>
```

MainActivity.java

```
package com.company.weatherapp;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import retrofit2.Call;
import retrofit2.Callback;
import retrofit2.Response;
public class MainActivity extends AppCompatActivity {
   private TextView
city,temperature,weatherCondition,humidity,maxTemperature,minTemperature,pressure,wind;
   private ImageView imageView;
   private FloatingActionButton fab;
   LocationManager locationManager;
   LocationListener locationListener;
   double lat,lon;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      city = findViewById(R.id.textViewCity);
      temperature = findViewById(R.id.textViewTemp);
      weatherCondition = findViewById(R.id.textViewWeatherCondition);
      humidity = findViewById(R.id.textViewHumidity);
      maxTemperature = findViewById(R.id.textViewMaxTemp);
      minTemperature = findViewById(R.id.textViewMinTemp);
      pressure = findViewById(R.id.textViewPressure);
      wind = findViewById(R.id.textViewWind);
      imageView = findViewById(R.id.imageView);
      fab = findViewById(R.id.fab);
      fab.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this,WeatherActivity.class);
            startActivity(intent);
         }
      });

      locationManager =
(LocationManager)getSystemService(Context.LOCATION_SERVICE);
      locationListener = new LocationListener() {
         @Override
         public void onLocationChanged(Location location) {
            lat = location.getLatitude();
            lon = location.getLongitude();

            Log.e("lat : ",String.valueOf(lat));
```

```
            Log.e("lon : ",String.valueOf(lon));
            getWeatherData(lat,lon);
        }
        @Override
        public void onStatusChanged(String provider, int status, Bundle extras) {
        }
        @Override
        public void onProviderEnabled(String provider) {
        }
        @Override
        public void onProviderDisabled(String provider) {
        }
    };
    if
(ContextCompat.checkSelfPermission(this,Manifest.permission.ACCESS_FINE_LOCATION)
            != PackageManager.PERMISSION_GRANTED)
    {
        ActivityCompat.requestPermissions(this,new
String[]{Manifest.permission.ACCESS_FINE_LOCATION}
                ,1);
    }
    else
    {
locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER,400,50,location
Listener);
    }
  }

  @Override
  public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
    super.onRequestPermissionsResult(requestCode, permissions, grantResults);

    if (requestCode == 1 && permissions.length > 0 &&
ContextCompat.checkSelfPermission(this
            ,Manifest.permission.ACCESS_FINE_LOCATION) ==
PackageManager.PERMISSION_GRANTED)
    {
locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER,400,50,location
Listener);
    }
  }

  public void getWeatherData(double lat,double lon)
  {
    WeatherAPI weatherAPI = RetrofitWeather.getClient().create(WeatherAPI.class);
    Call<OpenWeathwerMap> call = weatherAPI.getWeatherWithLocation(lat,lon);
    call.enqueue(new Callback<OpenWeathwerMap>() {
      @Override
      public void onResponse(Call<OpenWeathwerMap> call,
Response<OpenWeathwerMap> response) {
```

```
                city.setText(response.body().getName()+" , "+response.body().getSys().getCountry());
                temperature.setText(response.body().getMain().getTemp()+" °C");
                weatherCondition.setText(response.body().getWeather().get(0).getDescription());
                humidity.setText(" : "+response.body().getMain().getHumidity()+"%");
                maxTemperature.setText(" : "+response.body().getMain().getTempMax()+" °C");
                minTemperature.setText(" : "+response.body().getMain().getTempMin()+" °C");
                pressure.setText(" : "+response.body().getMain().getPressure());
                wind.setText(" : "+response.body().getWind().getSpeed());
                String iconCode = response.body().getWeather().get(0).getIcon();
                Picasso.get().load("https://openweathermap.org/img/wn/"+iconCode+"@2x.png")
                        .placeholder(R.drawable.ic_launcher_background)
                        .into(imageView);

            }
            @Override
            public void onFailure(Call<OpenWeathwerMap> call, Throwable t) {

            }
        });
    }
}
```

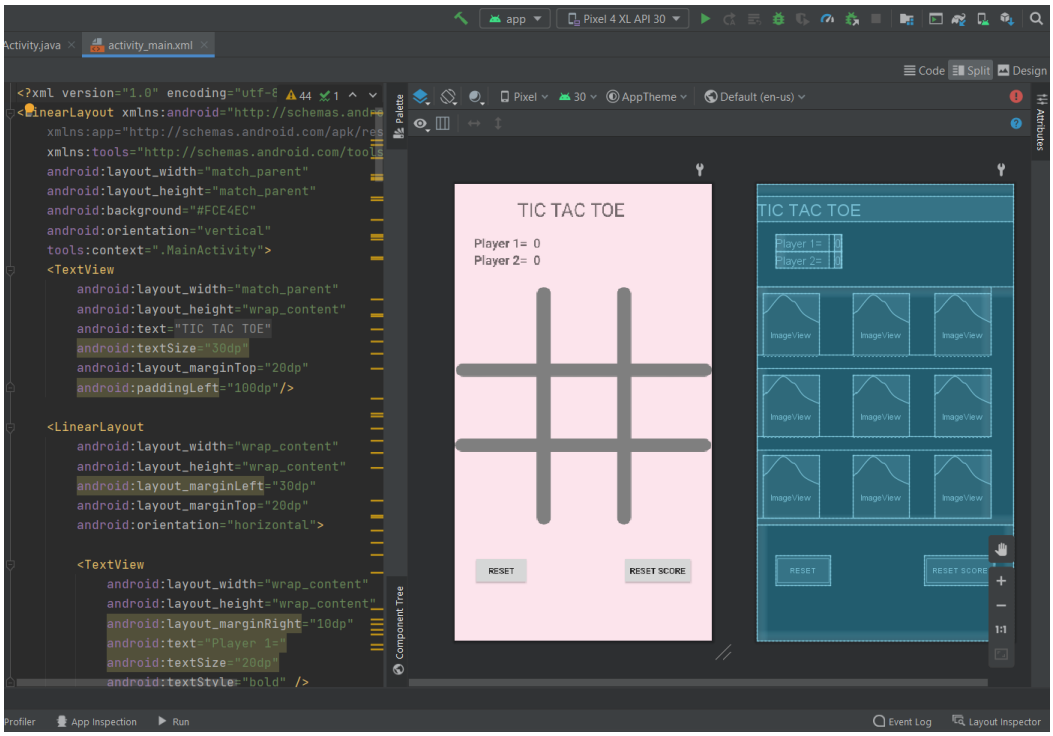


Assignment – 2

1. Mini Project: Tic-Tac-Toe Game

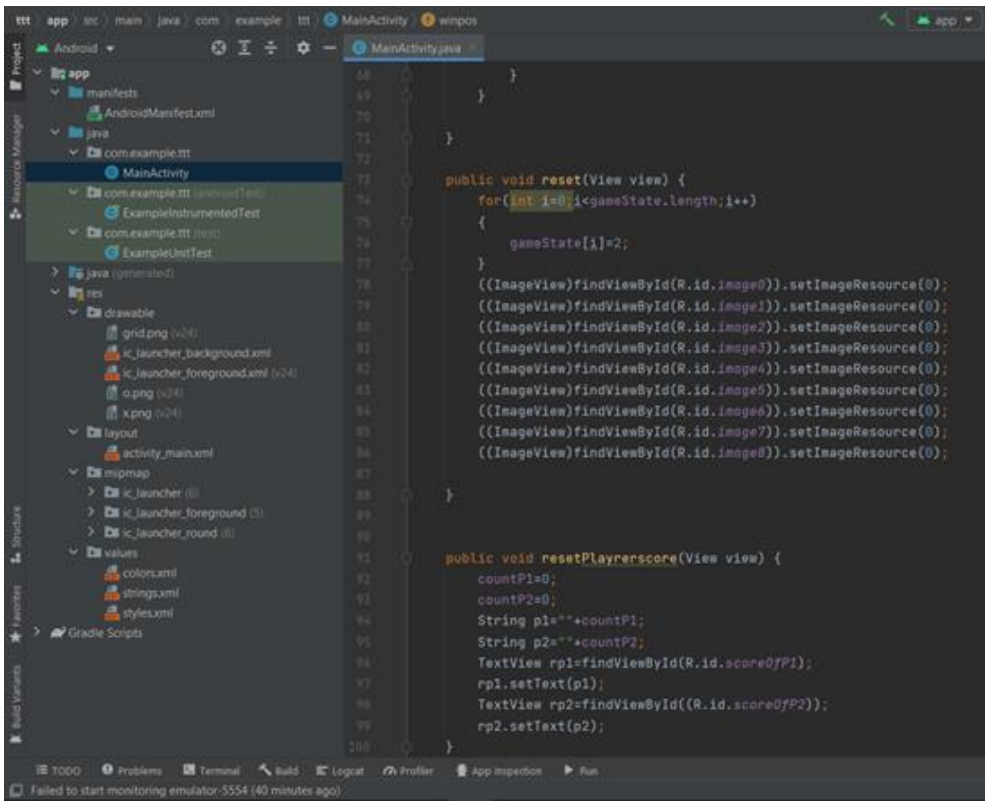
Code link - https://github.com/Darshan-upadhyay1110/MyAndroidApps/tree/master/ttt

Activity_main.xml

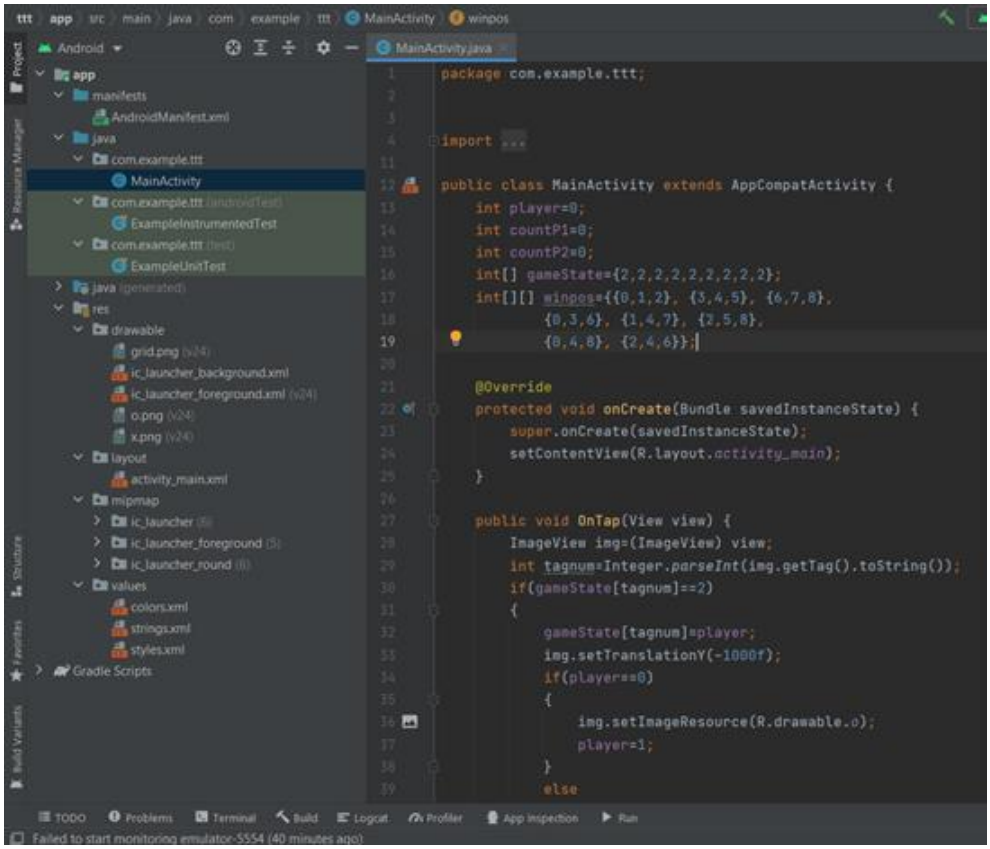



```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FCE4EC"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="TIC TAC TOE"
        android:textSize="30dp"
        android:layout_marginTop="20dp"
        android:paddingLeft="100dp"/>

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="30dp"
        android:layout_marginTop="20dp"
        android:orientation="horizontal">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginRight="10dp"
            android:text="Player 1="
            android:textSize="20dp"
            android:textStyle="bold" />
```

MainActivity.java



```
        }
    }

}

public void reset(View view) {
    for(int i=0;i<gameState.length;i++)
    {
        gameState[i]=2;
    }
    ((ImageView)findViewById(R.id.image0)).setImageResource(0);
    ((ImageView)findViewById(R.id.image1)).setImageResource(0);
    ((ImageView)findViewById(R.id.image2)).setImageResource(0);
    ((ImageView)findViewById(R.id.image3)).setImageResource(0);
    ((ImageView)findViewById(R.id.image4)).setImageResource(0);
    ((ImageView)findViewById(R.id.image5)).setImageResource(0);
    ((ImageView)findViewById(R.id.image6)).setImageResource(0);
    ((ImageView)findViewById(R.id.image7)).setImageResource(0);
    ((ImageView)findViewById(R.id.image8)).setImageResource(0);

}


public void resetPlayrerscore(View view) {
    countP1=0;
    countP2=0;
    String p1=""+countP1;
    String p2=""+countP2;
    TextView rp1=findViewById(R.id.scoreOfP1);
    rp1.setText(p1);
    TextView rp2=findViewById((R.id.scoreOfP2));
    rp2.setText(p2);
}
```



```
package com.example.ttt;


import ...

public class MainActivity extends AppCompatActivity {
    int player=0;
    int countP1=0;
    int countP2=0;
    int[] gameState={2,2,2,2,2,2,2,2,2};
    int[][] winpos={{0,1,2}, {3,4,5}, {6,7,8},
            {0,3,6}, {1,4,7}, {2,5,8},
            {0,4,8}, {2,4,6}};

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

    public void OnTap(View view) {
        ImageView img=(ImageView) view;
        int tagnum=Integer.parseInt(img.getTag().toString());
        if(gameState[tagnum]==2)
        {
            gameState[tagnum]=player;
            img.setTranslationY(-1000f);
            if(player==0)
            {
                img.setImageResource(R.drawable.o);
                player=1;
            }
            else
```

```
package com.example.ttt;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {
    int player=0;  int countP1=0; int countP2=0;
    int[] gameState={2,2,2,2,2,2,2,2,2};
    int[][] winpos={{0,1,2}, {3,4,5}, {6,7,8},
            {0,3,6}, {1,4,7}, {2,5,8},
            {0,4,8}, {2,4,6}};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void OnTap(View view) {
        ImageView img=(ImageView) view;
        int tagnum=Integer.parseInt(img.getTag().toString());
        if(gameState[tagnum]==2)
        {
            gameState[tagnum]=player;
            img.setTranslationY(-1000f);
            if(player==0)\{
                img.setImageResource(R.drawable.o);
                player=1;
            }
            else{
                img.setImageResource(R.drawable.x);
                player=0;
            }
            img.animate().translationYBy(1000f).setDuration(300);
        }
        for(int[] a:winpos) {
            if(gameState[a[0]]==gameState[a[1]]&&gameState[a[1]]==gameState[a[2]]&&gameState[a[0]]!=2) {
                if(gameState[a[0]]==0)
                {
```

```
            Toast.makeText(this,"Player 1 Win",Toast.LENGTH_SHORT).show();
            countP1++;
            TextView p1=(TextView)findViewById(R.id.scoreOfP1);
            String setp1=""+countP1;
            p1.setText(setp1);
            reset(view);
        }
        else
        {
            Toast.makeText(this,"Player 2 Win",Toast.LENGTH_SHORT).show();
            countP2++;
            TextView p2=(TextView)findViewById(R.id.scoreOfP2);
            String setP2=""+countP2;
            p2.setText(setP2);
            reset(view);
        }       }          }          }
public void reset(View view) {
   for(int i=0;i<gameState.length;i++)
   {
      gameState[i]=2;
   }
   ((ImageView)findViewById(R.id.image0)).setImageResource(0);
   ((ImageView)findViewById(R.id.image1)).setImageResource(0);
   ((ImageView)findViewById(R.id.image2)).setImageResource(0);
   ((ImageView)findViewById(R.id.image3)).setImageResource(0);
   ((ImageView)findViewById(R.id.image4)).setImageResource(0);
   ((ImageView)findViewById(R.id.image5)).setImageResource(0);
   ((ImageView)findViewById(R.id.image6)).setImageResource(0);
   ((ImageView)findViewById(R.id.image7)).setImageResource(0);
   ((ImageView)findViewById(R.id.image8)).setImageResource(0);
}
public void resetPlayrerscore(View view) {
   countP1=0;
   countP2=0;
   String p1=""+countP1;
   String p2=""+countP2;
   TextView rp1=findViewById(R.id.scoreOfP1);
```

```
        rp1.setText(p1);
        TextView rp2=findViewById((R.id.scoreOfP2));
        rp2.setText(p2);
    }
}
```