**2. Creating an application that displays message based on the screen orientation. activity\_main.xml**

**AndroidManifest.xml**

<?xml version="1.0" encoding="utf-8"?>

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools">

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:supportsRtl="true"

android:theme="@style/Theme.SecondProgram"

tools:targetApi="31">

<activity

android:name=".NextActivity"

android:exported="false" android:screenOrientation="landscape"

/>

<activity

android:name=".MainActivity"

android:exported="true"

android:screenOrientation="portrait">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

<category android:name="android.intent.category.LAUNCHER"

/>

</intent-filter>

</activity>

</application>

</manifest>

**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/button1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginBottom="8dp"

android:layout\_marginTop="112dp"

android:onClick="onClick"

android:text="Launch next activity"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.612"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toBottomOf="@+id/editText1"

app:layout\_constraintVertical\_bias="0.613" />

<TextView

android:id="@+id/editText1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_centerHorizontal="true"

android:layout\_marginEnd="8dp"

android:layout\_marginStart="8dp"

android:layout\_marginTop="124dp"

android:ems="10"

android:textSize="22dp"

android:text="This activity is portrait orientation"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.502"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

**MainActivity.java**

package com.example.secondprogram;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

public class MainActivity extends AppCompatActivity

{ @Override

protected void onCreate(Bundle savedInstanceState)

{

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

}

public void onClick(View v)

{

Intent intent = new Intent(MainActivity.this,NextActivity.class);

startActivity(intent);

}

}

**activity\_next.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=".NextActivity">

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginEnd="8dp"

android:layout\_marginStart="8dp"

android:layout\_marginTop="180dp"

android:text="this is landscape orientation"

android:textSize="22dp"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.502"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

**NextActivity.java**

package com.example.secondprogram;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class NextActivity extends AppCompatActivity

{

@Override

protected void onCreate(Bundle savedInstanceState)

{

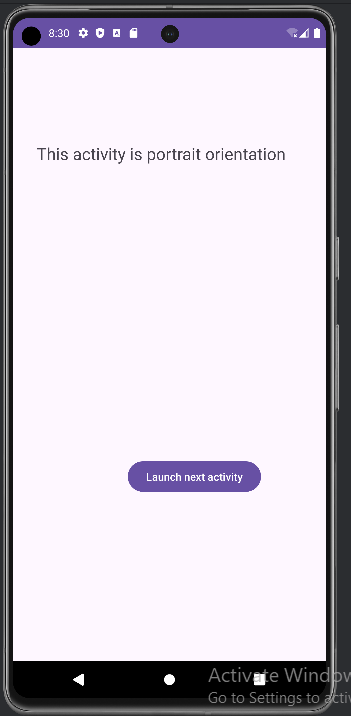
super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_next);

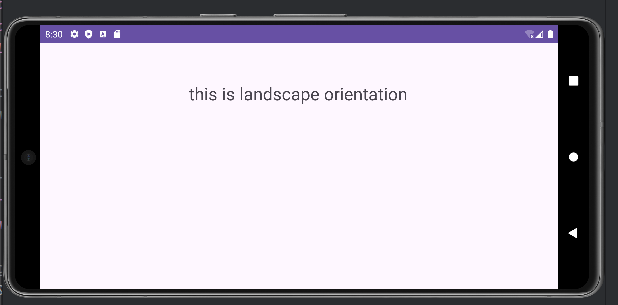
}

}

OUTPUT



After Clicking on Launch Next Activity Button move to next activity in portrait form



**PROGRAM 3: CREATE AN APPLICATION TO DEVELOP LOGIN WINDOW USING UI CONTROLS**

**activity\_main.xml**

**<?xml version="1.0" encoding="utf-8"?>**

**<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"**

**android:layout\_width="match\_parent"**

**android:layout\_height="match\_parent"**

**android:gravity="center\_vertical"**

**android:orientation="vertical"**

**android:padding="16dp">**

**<!-- Username EditText -->**

**<EditText**

**android:id="@+id/editTextUsername"**

**android:layout\_width="match\_parent"**

**android:layout\_height="60dp"**

**android:hint="@string/username"**

**android:inputType="text" />**

**<!-- Password EditText -->**

**<EditText**

**android:id="@+id/editTextPassword"**

**android:layout\_width="match\_parent"**

**android:layout\_height="60dp"**

**android:hint="@string/password"**

**android:inputType="textPassword" />**

**<!-- Login Button -->**

**<Button**

**android:id="@+id/buttonLogin"**

**android:layout\_width="match\_parent"**

**android:layout\_height="wrap\_content"**

**android:rotationX="6"**

**android:text="@string/login" />**

**</LinearLayout>**

**MainActivity.java**

**package com.example.myapplicationlogin;**

**import androidx.appcompat.app.AppCompatActivity;**

**import android.os.Bundle;**

**import android.view.View;**

**import android.widget.Button;**

**import android.widget.EditText;**

**import android.widget.Toast;**

**public class MainActivity extends AppCompatActivity {**

**private EditText editTextUsername, editTextPassword;**

**private Button buttonLogin;**

**@Override**

**protected void onCreate(Bundle savedInstanceState) {**

**super.onCreate(savedInstanceState);**

**setContentView(R.layout.activity\_main);**

**// Initialize UI elements**

**editTextUsername = findViewById(R.id.editTextUsername);**

**editTextPassword = findViewById(R.id.editTextPassword);**

**buttonLogin = findViewById(R.id.buttonLogin);**

**// Set a click listener for the login button**

**buttonLogin.setOnClickListener(new View.OnClickListener() {**

**@Override**

**public void onClick(View view) {**

**// Retrieve entered username and password**

**String username = editTextUsername.getText().toString();**

**String password = editTextPassword.getText().toString();**

**// Implement authentication logic here**

**if (username.equals("Admin") && password.equals("123")) {**

**// Successful login**

**Toast.makeText(MainActivity.this, "Login successful", Toast.LENGTH\_SHORT).show();**

**} else {**

**// Failed login**

**Toast.makeText(MainActivity.this, "Invalid username or password", Toast.LENGTH\_SHORT).show();**

**}**

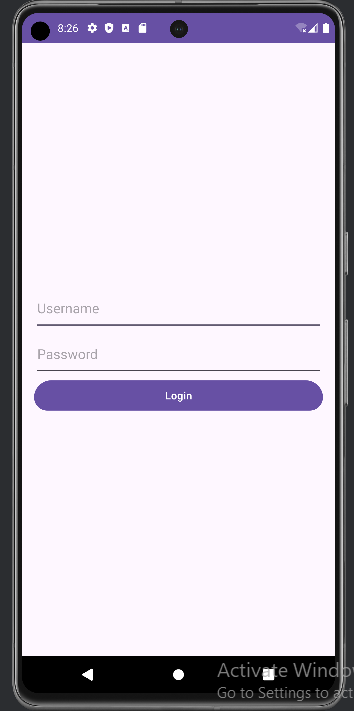
**}**

**});**

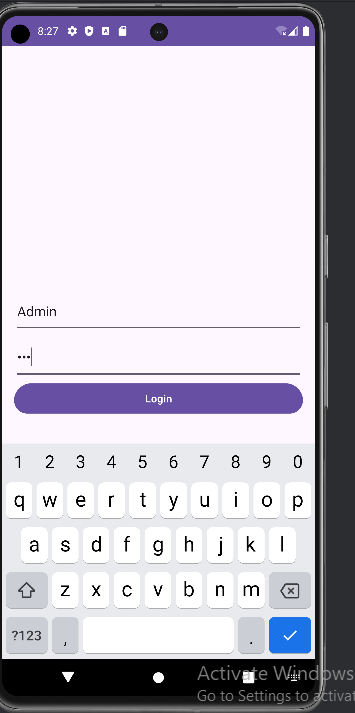
**}**

**}**

**Output**



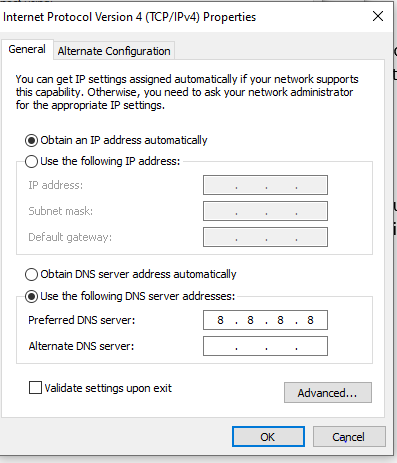
**After clicking a Login msg, receive message as” Login successful”**



4. Create an application to implement new activity using explicit intent and implicit intent.

/\* Explicit Intent: This involves navigating from one activity to another within the same application. Implicit Intent: This involves triggering an action that can be handled by another application. \*/

NOTE:.Goto device manager->select the emulator and wipe out data) and set DNS server IP as 8.8.8.8



**Mainactivity.java**

package com.example.program4;

import android.content.Intent;

import android.net.Uri;

import android.os.Bundle;

import android.view.View;

import androidx.activity.EdgeToEdge;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

EdgeToEdge.enable(this);

setContentView(R.layout.activity\_main);

}

public void onImplicitButtonClicked(View view)

{

Uri url=Uri.parse("https://www.google.com");

Intent i=new Intent(Intent.ACTION\_VIEW, url);

startActivity(i);

}

public void onExplicitButtonClicked(View view )

{

Intent i=new Intent(MainActivity.this, SecondActivity.class);

startActivity(i);

}

}

**SecondActivity.java**

package com.example.program4;

import android.os.Bundle;

import android.widget.Button;

import androidx.appcompat.app.AppCompatActivity;

public class SecondActivity extends AppCompatActivity {

Button btnImplicitContent;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_second);

}

}

**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:id="@+id/main"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center"

tools:context=".MainActivity">

<Button

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="@string/implicit\_intent"

android:onClick="onImplicitButtonClicked"

style="?android:attr/buttonBarButtonStyle" />

<Button

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="@string/explicit\_intent"

android:onClick="onExplicitButtonClicked"

style="?android:attr/buttonBarButtonStyle" />

</LinearLayout>

**Activity\_second.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:id="@+id/main"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".SecondActivity">

<TextView

android:id="@+id/textView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="@string/welcome\_to\_explicit\_intent"

android:textSize="28sp"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

**Manifest file**

<?xml version="1.0" encoding="utf-8"?>

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools">

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.PRogram4"

tools:targetApi="31">

<activity

android:name=".SecondActivity"

android:exported="false">

</activity>

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

<category android:name="android.intent.category.LAUNCHER" />

</intent-filter>

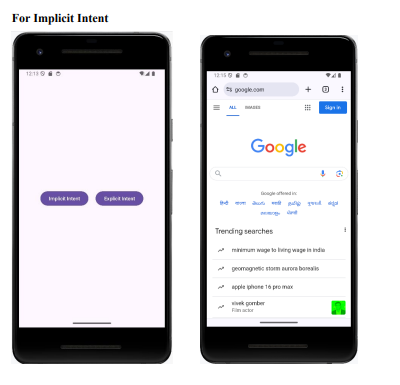
</activity>

</application>

</manifest>

**Output**:

On click of implicit intent button appears below screen



On click of Explicit intent button appears below screen



5. Create an application to send an e-mail.

**Activity\_main.xml**

<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

tools:context=".MainActivity">

<EditText

android:id="@+id/editTextTo"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="@string/to"

android:autofillHints=""

tools:ignore="TextFields" />

<EditText

android:id="@+id/editTextSubject"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@id/editTextTo"

android:hint="@string/subject"

tools:ignore="Autofill,TextFields" />

<EditText

android:id="@+id/editTextMessage"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@id/editTextSubject"

android:hint="@string/message"

android:autofillHints=""

tools:ignore="Autofill,TextFields"/>

<Button

android:id="@+id/buttonSend"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/editTextMessage"

android:text="@string/send"/>

</RelativeLayout>

**Activity.java**

package com.example.emailprogram;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

EditText editTextTo, editTextSubject, editTextMessage;

Button buttonSend;

@Override

protected void onCreate(Bundle savedInstanceState)

{

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editTextTo = findViewById(R.id.editTextTo);

editTextSubject = findViewById(R.id.editTextSubject);

editTextMessage = findViewById(R.id.editTextMessage);

buttonSend = findViewById(R.id.buttonSend);

buttonSend.setOnClickListener(new View.OnClickListener()

{

@Override

public void onClick(View v)

{

sendEmail();

}

});

}

@SuppressLint("QueryPermissionsNeeded")

private void sendEmail() {

String to = editTextTo.getText().toString().trim();

String subject = editTextSubject.getText().toString().trim();

String message = editTextMessage.getText().toString().trim();

Intent intent = new Intent(Intent.ACTION\_SEND);

intent.setType("text/plain");

intent.putExtra(Intent.EXTRA\_EMAIL, new String[]{to});

intent.putExtra(Intent.EXTRA\_SUBJECT, subject);

intent.putExtra(Intent.EXTRA\_TEXT, message);

if (intent.resolveActivity(getPackageManager()) != null)

{

startActivity(Intent.createChooser(intent, "Choose an email client"));

}

}

}

**Program 7 Create menu in Application**

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">

<androidx.appcompat.widget.Toolbar

android:id="@+id/toolbar"

android:layout\_width="0dp"

android:layout\_height="0dp"

android:background="#934C4C"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent">

</androidx.appcompat.widget.Toolbar>

</androidx.constraintlayout.widget.ConstraintLayout>

Res/menu/optionmenu.xml

optionmenu.xml

<?xml version="1.0" encoding="utf-8"?>

<menu xmlns:android="http://schemas.android.com/apk/res/android">

<item

android:title="profile"

android:id="@+id/menuProfile">

</item>

<item

android:title="Settings"

android:id="@+id/menuSettings">

</item>

<item

android:title="More\_options"

android:id="@+id/menuMore\_options">

<menu>

<item

android:title="Devices"

android:id="@+id/menuDevices"/>

<item

android:title="Logout"

android:id="@+id/menuLogout"/>

</menu>

</item>

<item

android:title="Exit"

android:id="@+id/Exit">

</item>

</menu>

MainActivity.java

package com.example.myapplication5\_testmenu;

import androidx.annotation.NonNull;

import androidx.appcompat.app.AppCompatActivity;

import androidx.appcompat.view.SupportMenuInflater;

import androidx.appcompat.widget.Toolbar;

import android.widget.Toast;

import android.os.Bundle;

import android.view.Menu;

import android.view.MenuInflater;

import android.view.MenuItem;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

Toolbar toolbar=findViewById(R.id.toolbar);

setSupportActionBar(toolbar);

}

@Override

public boolean onOptionsItemSelected(@NonNull MenuItem item) {

int itemId = item.getItemId();

if (itemId == R.id.menuProfile)

{

Toast.makeText(this, "Profile Selected", Toast.LENGTH\_LONG).show();

}

if (itemId == R.id.menuSettings)

{

Toast.makeText(this, "Setting Selected", Toast.LENGTH\_LONG).show();

}

if (itemId == R.id.menuDevices)

{

Toast.makeText(this, "Devices Selected", Toast.LENGTH\_LONG).show();

}

if (itemId == R.id.menuMore\_options)

{

Toast.makeText(this, "More\_options Selected", Toast.LENGTH\_LONG).show();

}

if (itemId == R.id.menuLogout)

{

Toast.makeText(this, "menuLogout Selected", Toast.LENGTH\_LONG).show();

}

if (itemId == R.id.Exit)

{

Toast.makeText(this, "Exit Selected", Toast.LENGTH\_LONG).show();

}

return true;

}

public boolean onCreateOptionsMenu(Menu menu) {

// Inflate the menu; this adds items to the action bar if it is present.

MenuInflater menuInflater=new MenuInflater(this);

menuInflater.inflate(R.menu.optionmenu, menu);

return true;

}

}

8. Read / Write the Local data.

Mainactivity.java

package com.example.rm9\_readandwritethelocaldata;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.content.Context;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

import java.io.BufferedReader;

import java.io.FileInputStream;

import java.io.FileOutputStream;

import java.io.InputStreamReader;

public class MainActivity extends AppCompatActivity {

private EditText inputText;

private TextView displayText;

private static final String FILE\_NAME = "data.txt";

static final int READ\_BLOCK\_SIZE = 100;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

inputText = findViewById(R.id.inputText);

displayText = findViewById(R.id.displayText);

Button saveButton = findViewById(R.id.saveButton);

Button getButton=findViewById(R.id.getButton);

saveButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

saveData();

}

});

// Load data when activity is created

loadData();

getButton.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

ReadData();

}

});

}

private void saveData() {

String text = inputText.getText().toString();

FileOutputStream fos = null;

try {

fos = openFileOutput(FILE\_NAME, Context.MODE\_PRIVATE);

fos.write(text.getBytes());

inputText.getText().clear();

displayText.setText("Data saved successfully");

} catch (Exception e) {

e.printStackTrace();

} finally {

try {

if (fos != null) {

fos.close();

}

} catch (Exception e) {

e.printStackTrace();

}

}

}

private void loadData()

{

FileInputStream fis = null;

try {

fis = openFileInput(FILE\_NAME);

InputStreamReader inputStreamReader = new InputStreamReader(fis);

BufferedReader bufferedReader = new BufferedReader(inputStreamReader);

StringBuilder stringBuilder = new StringBuilder();

String text;

while ((text = bufferedReader.readLine()) != null) {

stringBuilder.append(text).append("\n");

}

displayText.setText(stringBuilder.toString());

} catch (Exception e) {

e.printStackTrace();

} finally {

try {

if (fis != null) {

fis.close();

}

} catch (Exception e) {

e.printStackTrace();

}

}

}

// Read text from file

public void ReadData() {

//reading text from file

try {

FileInputStream fileIn = openFileInput("data.txt");

InputStreamReader InputRead = new InputStreamReader(fileIn);

char[] inputBuffer = new char[READ\_BLOCK\_SIZE];

String s = "";

int charRead;

while ((charRead = InputRead.read(inputBuffer)) > 0) {

// char to string conversion

String readstring = String.copyValueOf(inputBuffer, 0, charRead);

s += readstring;

}

InputRead.close();

displayText.setText(s);

} catch (Exception e) {

e.printStackTrace();

}

}

}

Activitymain.xml

<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical">

<EditText

android:id="@+id/inputText"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Enter text to save"

android:layout\_margin="16dp"

android:inputType="text"/>

<Button

android:id="@+id/saveButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/inputText"

android:layout\_marginStart="16dp"

android:layout\_marginTop="28dp"

android:text="Write Data" />

<Button

android:id="@+id/getButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/inputText"

android:layout\_marginStart="250dp"

android:layout\_marginTop="28dp"

android:text="Load Data" />

<TextView

android:id="@+id/displayText"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@id/saveButton"

android:layout\_marginStart="16dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="16dp"

android:layout\_marginBottom="16dp"

android:text="" />

</RelativeLayout>

1. Create / Read / Write data with database (SQL Lite)

**colors.xml (res/values/colors.xml)**

*<?*xml version="1.0" encoding="utf-8"*?>*<resources>  
  
  
<color name="colorAccent">#FF6200EE</color>  
<color name="colorPrimary">#FF3700B3</color>  
<color name="colorPrimaryDark">#FF3700B3</color>  
  
</resources>

**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:orientation="vertical"  
 android:gravity="center"  
 tools:context=".MainActivity">  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Course Registation"  
 android:textColor="@color/colorAccent"  
 android:textSize="30dp"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Name"  
 />  
  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/name"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Course"  
  
 />  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/course"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Fee"  
 />  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/fee"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/bt1"  
 android:text="Ok"  
 android:background="@color/colorPrimary"  
 />  
  
 <Button  
 android:id="@+id/bt2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:background="@color/colorAccent"  
 android:text="View" />  
 </LinearLayout>  
</LinearLayout>

**MainActiviy.java**

package com.example.sqlprogram;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.Context;  
import android.content.Intent;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteStatement;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
public class MainActivity extends AppCompatActivity {  
 EditText ed1,ed2,ed3;  
 Button b1,b2;  
 @Override  
  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 ed1 = findViewById(R.id.*name*);  
 ed2 = findViewById(R.id.*course*);  
 ed3 = findViewById(R.id.*fee*);  
 b1 = findViewById(R.id.*bt1*);  
 b2 = findViewById(R.id.*bt2*);  
  
 b2.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v)  
 {  
 Intent i = new Intent(getApplicationContext(),ViewActivity.class);  
 startActivity(i);  
 }  
 });  
  
 b1.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 insert();  
 }  
 });  
 }  
  
 public void insert()  
 {  
 try  
 {  
 String name = ed1.getText().toString();  
 String course = ed2.getText().toString();  
 String fee = ed3.getText().toString();  
 SQLiteDatabase db = openOrCreateDatabase("SliteDb", Context.*MODE\_PRIVATE*,null);  
 db.execSQL("CREATE TABLE IF NOT EXISTS records(id INTEGER PRIMARY KEY AUTOINCREMENT,name VARCHAR,course VARCHAR,fee VARCHAR)");  
 String sql = "insert into records(name,course,fee)values('" +  
 name + "','" + course + "','" + fee + "')";  
 SQLiteStatement statement = db.compileStatement(sql);  
 statement.execute();  
 Toast.*makeText*(this,"Record addded",Toast.*LENGTH\_LONG*).show();  
 ed1.setText("");  
  
 ed2.setText("");  
 ed3.setText("");  
 ed1.requestFocus();  
 }  
 catch (Exception ex)  
 {  
 Toast.*makeText*(this,"Record Fail",Toast.*LENGTH\_LONG*).show();  
 }  
 }  
}

/\* Add Student.class file (Right click on package name \*/

**Student.class**

package com.example.sqlprogram;  
public class Student {  
 String id;  
 String name;  
 String course;  
 String fee;  
 String titles;  
}

**activity\_view.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=".ViewActivity"  
 android:orientation="vertical">  
 <ListView  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:id="@+id/lst1"  
 />  
</LinearLayout>

**ViewActivity.java**

package com.example.sqlprogram;  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.Context;  
import android.content.Intent;  
import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.AdapterView;  
import android.widget.ArrayAdapter;  
import android.widget.ListView;  
import java.util.ArrayList;  
public class ViewActivity extends AppCompatActivity {  
 ListView lst1;  
 ArrayList<String> titles = new ArrayList<String>();  
  
 ArrayAdapter arrayAdapter;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_view*);  
 SQLiteDatabase db = openOrCreateDatabase("SliteDb", Context.*MODE\_PRIVATE*,null);  
 lst1 = findViewById(R.id.*lst1*);  
 final Cursor c = db.rawQuery("select \* from records",null);  
 int id = c.getColumnIndex("id");  
 int name = c.getColumnIndex("name");  
 int course = c.getColumnIndex("course");  
 int fee = c.getColumnIndex("fee");  
 titles.clear();  
 arrayAdapter = new ArrayAdapter(this,  
 androidx.appcompat.R.layout.*support\_simple\_spinner\_dropdown\_item*,titles);  
 lst1.setAdapter(arrayAdapter);  
 final ArrayList<Student> stud = new ArrayList<Student>();  
 if(c.moveToFirst())  
 {  
  
 do{  
 Student stu = new Student();  
 stu.id = c.getString(id);  
 stu.name = c.getString(name);  
 stu.course = c.getString(course);  
 stu.fee = c.getString(fee);  
 stud.add(stu);  
 titles.add(c.getString(id) + " \t " + c.getString(name) + " \t " + c.getString(course) + " \t " + c.getString(fee) );  
 } while(c.moveToNext());  
 arrayAdapter.notifyDataSetChanged();  
 lst1.invalidateViews();  
 }  
 lst1.setOnItemClickListener(new AdapterView.OnItemClickListener() {  
 @Override  
 public void onItemClick(AdapterView<?> parent, View view, int  
 position, long id) {  
 String aa = titles.get(position).toString();  
 Student stu = stud.get(position);  
 Intent i = new Intent(getApplicationContext(),EditActivity.class);  
  
 i.putExtra("id",stu.id);  
 i.putExtra("name",stu.name);  
 i.putExtra("course",stu.course);  
 i.putExtra("fee",stu.fee);  
 startActivity(i);  
 }  
 });  
 }  
}

**activity\_edit.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=".EditActivity"  
 android:orientation="vertical">  
  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Course Registation"  
 android:textColor="@color/colorAccent"  
 android:textSize="30dp"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
  
 android:layout\_height="wrap\_content"  
 android:text="ID"  
 />  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/id"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
  
 android:text="Name"  
 />  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/name"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Course"  
  
 />  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/course"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Fee"  
 />  
  
 <EditText  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:ems="10"  
 android:id="@+id/fee"  
 android:textAlignment="center"  
 />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:gravity="center">  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/bt1"  
 android:text="Edit"  
  
 android:background="@color/colorPrimary"  
 />  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/bt2"  
 android:text="Delete"  
 android:background="@color/colorAccent"  
 />  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/bt3"  
 android:text="Back"  
 android:background="@color/colorPrimaryDark"  
 />  
 </LinearLayout>  
</LinearLayout>

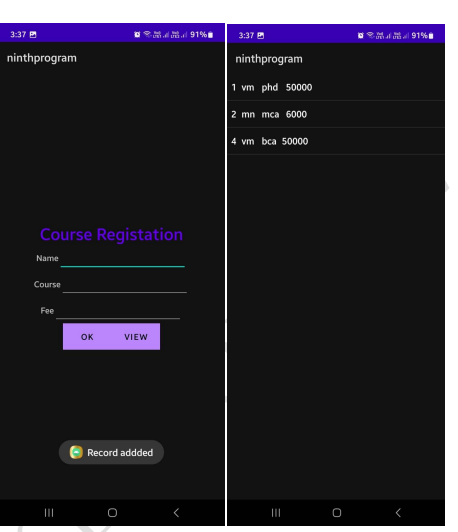
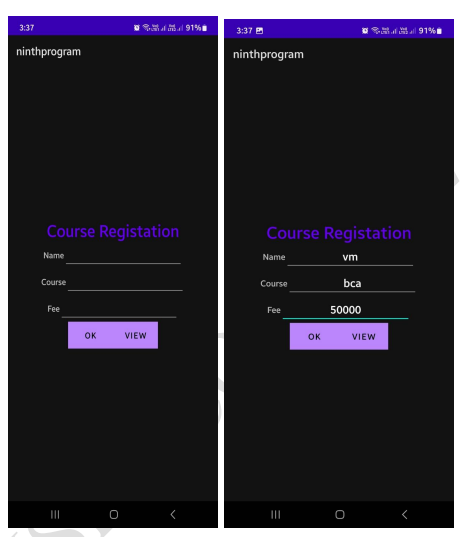
**EditActivity.java**

package com.example.sqlprogram;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.Context;  
import android.content.Intent;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteStatement;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
public class EditActivity extends AppCompatActivity {  
 EditText ed1,ed2,ed3,ed4;  
 Button b1,b2,b3;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_edit*);  
 ed1 = findViewById(R.id.*name*);  
 ed2 = findViewById(R.id.*course*);  
 ed3 = findViewById(R.id.*fee*);  
 ed4 = findViewById(R.id.*id*);  
 b1 = findViewById(R.id.*bt1*);  
 b2 = findViewById(R.id.*bt2*);  
 b3 = findViewById(R.id.*bt3*);  
 Intent i = getIntent();  
 String t1 = i.getStringExtra("id").toString();  
 String t2 = i.getStringExtra("name").toString();  
 String t3 = i.getStringExtra("course").toString();  
 String t4 = i.getStringExtra("fee").toString();  
 ed4.setText(t1);  
 ed1.setText(t2);  
 ed2.setText(t3);  
 ed3.setText(t4);  
  
 b2.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 try  
 {  
 String id = ed4.getText().toString();  
 SQLiteDatabase db = openOrCreateDatabase("SliteDb",Context.*MODE\_PRIVATE*,null);  
 String sql = "delete from records where id = " + id + "";  
 SQLiteStatement statement = db.compileStatement(sql);  
 statement.execute();  
 Toast.*makeText*(EditActivity.this,"Record Deleted",Toast.*LENGTH\_LONG*).show();  
 ed1.setText("");  
 ed2.setText("");  
 ed3.setText("");  
 ed1.requestFocus();  
 }  
 catch (Exception ex)  
 {  
  
 Toast.*makeText*(EditActivity.this,"Record Fail",Toast.*LENGTH\_LONG*).show();  
 }  
 }  
 });  
 b3.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent i = new Intent(getApplicationContext(),ViewActivity.class);  
 startActivity(i);  
 }  
 });  
 b1.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 try {  
 String name = ed1.getText().toString();  
 String course = ed2.getText().toString();  
 String fee = ed3.getText().toString();  
 String id = ed4.getText().toString();  
  
 SQLiteDatabase db = openOrCreateDatabase("SliteDb",  
 Context.*MODE\_PRIVATE*, null);  
 String sql = "update records set name = '" + name + "',course='" +  
 course + "',fee='" + fee + "' where id= " + id + "";  
 SQLiteStatement statement = db.compileStatement(sql);  
 statement.execute();  
 Toast.*makeText*(EditActivity.this, "Record Updated",  
 Toast.*LENGTH\_LONG*).show();  
 ed1.setText("");  
 ed2.setText("");  
 ed3.setText("");  
 ed1.requestFocus();  
 } catch (Exception ex) {  
 Toast.*makeText*(EditActivity.this, "Record Fail",  
 Toast.*LENGTH\_LONG*).show();  
 }  
 }  
 });  
 }  
}

**AndroidManifest.xml**

*<?*xml version="1.0" encoding="utf-8"*?>*<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools">  
  
 <application  
 android:allowBackup="true"  
 android:dataExtractionRules="@xml/data\_extraction\_rules"  
 android:fullBackupContent="@xml/backup\_rules"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.SQLprogram"  
 tools:targetApi="31">  
  
 <activity  
 android:name=".ViewActivity"  
 android:exported="false" />  
  
  
 <activity  
 android:name=".EditActivity"  
 android:exported="false" />  
  
 <activity  
 android:name=".MainActivity"  
 android:exported="true">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
  
 <category android:name="android.intent.category.LAUNCHER" />  
 </intent-filter>  
 </activity>  
 </application>  
  
</manifest>

**Output:**



**Program 10. Create an application to send SMS and receive SMS**

**Mainactivity.java**

package com.example.sms;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import androidx.core.app.ActivityCompat;

import androidx.core.content.ContextCompat;

import android.content.BroadcastReceiver;

import android.content.Context;

import android.content.Intent;

import android.content.IntentFilter;

import android.content.pm.PackageManager;

import android.telephony.SmsManager;

import android.telephony.SmsMessage;

import android.view.View;

import android.widget.EditText;

import android.widget.TextView;

import android.widget.Toast;

import android.Manifest;

public class MainActivity extends AppCompatActivity {

private static final int SMS\_PERMISSION\_CODE = 101;

private EditText editTextPhoneNumber;

private EditText editTextMessage;

private TextView textViewReceivedMessages;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

editTextPhoneNumber = findViewById(R.id.editTextPhoneNumber);

editTextMessage = findViewById(R.id.editTextMessage);

textViewReceivedMessages = findViewById(R.id.textViewReceivedMessages);

// Request SMS permissions if not granted

if (!checkSMSPermission()) {

requestSMSPermission();

}

// Register SMS receiver

IntentFilter intentFilter = new IntentFilter();

intentFilter.addAction("android.provider.Telephony.SMS\_RECEIVED");

registerReceiver(smsReceiver, intentFilter);

}

@Override

protected void onDestroy() {

super.onDestroy();

unregisterReceiver(smsReceiver);

}

// Button click listener for sending SMS

public void sendMessage(View view) {

String phoneNumber =

editTextPhoneNumber.getText().toString().trim();

String message = editTextMessage.getText().toString();

if (phoneNumber.isEmpty()) {

Toast.makeText(this, "Please enter a valid phone number",

Toast.LENGTH\_SHORT).show();

return;

}

try {

SmsManager smsManager = SmsManager.getDefault();

smsManager.sendTextMessage(phoneNumber, null, message, null, null);

Toast.makeText(this, "Message sent", Toast.LENGTH\_SHORT).show();

} catch (IllegalArgumentException e) {

Toast.makeText(this, "Invalid phone number format",

Toast.LENGTH\_SHORT).show();

} catch (Exception e) {

Toast.makeText(this, "Failed to send message",

Toast.LENGTH\_SHORT).show();

e.printStackTrace();

}

}

// Check if SMS permission is granted

private boolean checkSMSPermission() {

return ContextCompat.checkSelfPermission(this,

Manifest.permission.SEND\_SMS) == PackageManager.PERMISSION\_GRANTED;

}

// Request SMS permission

private void requestSMSPermission() {

ActivityCompat.requestPermissions(this, new

String[]{Manifest.permission.SEND\_SMS}, SMS\_PERMISSION\_CODE);

}

// SMS receiver

private final BroadcastReceiver smsReceiver = new BroadcastReceiver() {

@Override

public void onReceive(Context context, Intent intent) {

Bundle bundle = intent.getExtras();

if (bundle != null) {

Object[] pdus = (Object[]) bundle.get("pdus");

if (pdus != null) {

for (Object pdu : pdus) {

SmsMessage smsMessage = SmsMessage.createFromPdu((byte[]) pdu);

String senderPhoneNumber = smsMessage.getDisplayOriginatingAddress();

String messageBody = smsMessage.getMessageBody();

textViewReceivedMessages.append("From: " +

senderPhoneNumber + "\n");

textViewReceivedMessages.append("Message: " +

messageBody + "\n\n");

}

}

}

}

};

}

**Activity\_main.xml**

<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout

xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:background="@color/white"

tools:context=".MainActivity">

<EditText

android:id="@+id/editTextPhoneNumber"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_marginStart="16dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="16dp"

android:layout\_marginBottom="16dp"

android:autofillHints="Enter phone number"

android:hint="Enter phone number"

android:inputType="phone" />

<EditText

android:id="@+id/editTextMessage"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@id/editTextPhoneNumber"

android:layout\_marginStart="16dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="16dp"

android:layout\_marginBottom="16dp"

android:autofillHints="Enter Message"

android:hint="Enter Message" />

<Button

android:id="@+id/buttonSend"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Send"

android:layout\_below="@id/editTextMessage"

android:layout\_alignParentEnd="true"

android:layout\_marginEnd="16dp"

android:onClick="sendMessage"

tools:ignore="HardcodedText,UsingOnClickInXml" />

<TextView

android:id="@+id/textViewReceivedMessages"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_below="@id/buttonSend"

android:layout\_marginStart="16dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="16dp"

android:layout\_marginBottom="16dp"

android:textColor="@color/black" />

</RelativeLayout>

AndroidManifest.xml File

<?xml version="1.0" encoding="utf-8"?>

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools">

<uses-feature

android:name="android.hardware.telephony"

android:required="false" />

<uses-permission android:name="android.permission.SEND\_SMS"/>

<uses-permission android:name="android.permission.RECEIVE\_SMS"/>

<uses-permission android:name="android.permission.READ\_SMS"/>

<application

android:allowBackup="true"

android:dataExtractionRules="@xml/data\_extraction\_rules"

android:fullBackupContent="@xml/backup\_rules"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.SMS"

tools:targetApi="31">

<activity

android:name=".MainActivity"

android:exported="true">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

<category android:name="android.intent.category.LAUNCHER" />

</intent-filter>

</activity>

</application>

</manifest>

**Output:**

1.Goto Emulator Contact -> Store some contacts

2. Send sms to those contacts

3. Goto message in emulator and check sms

