**MOBILE COMPUTING LAB**

A Practical Lab Manual Submitted in Fulfillment of the Degree of

**MASTER**

**In COMPUTER APPLICATION**

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By

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CERTIFICATE

This is to certify that, this Practical Lab Manual for Subject **Mobile Application Programming Lab** is a record of work carried out by **Ms. Borole Dimple Dattatraya Harshala (Seat No.: 806214),** student of **MCA Semester - III** class and is submitted to University of Mumbai, in partial fulfilment of the requirement for the award of the degree of **Master in Computer Application**. The Practical Lab Manual has been approved.

Subject Teacher External Examiner Coordinator – M.C.A

**ACKNOWLEDGMENT**

After the completion of this work, words are not enough to express my feelings about all those who helped me to reach my goal; feeling above this is my indebtedness to the almighty for providing me this moment in my life.

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# Ms. Borole Dimple Dattatraya Harshala

**(Seat No: 806214)**

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# Practical No. 1

**Aim: Introduction to Android**

**1.A] Aim:** Create a simple Hello World application.

# Source Code:

**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">

<TextView android:id="@+id/textView" android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="300dp" android:text="Hello World!" android:textSize="30sp" android:textStyle="bold" />

<Button

android:id="@+id/btn\_click" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="400dp" android:backgroundTint="@color/purple\_200" android:text="Click Me" android:textColor="@color/black" android:textSize="30sp" />

<TextView android:id="@+id/textView2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="200dp"

android:text="Hello Android Application" android:textColor="#FF5722" android:textSize="30sp" android:textStyle="bold" />

</RelativeLayout>

# MainActivity.java

package com.idol.helloworld;

import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;

import android.view.View; import android.widget.Button; import android.widget.Toast;

public class MainActivity extends AppCompatActivity { Button btnCLick;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

btnCLick = (Button) findViewById(R.id.btn\_click); btnCLick.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) { Toast.makeText(getApplicationContext(), "Welcome to Android",

Toast.LENGTH\_LONG).show();

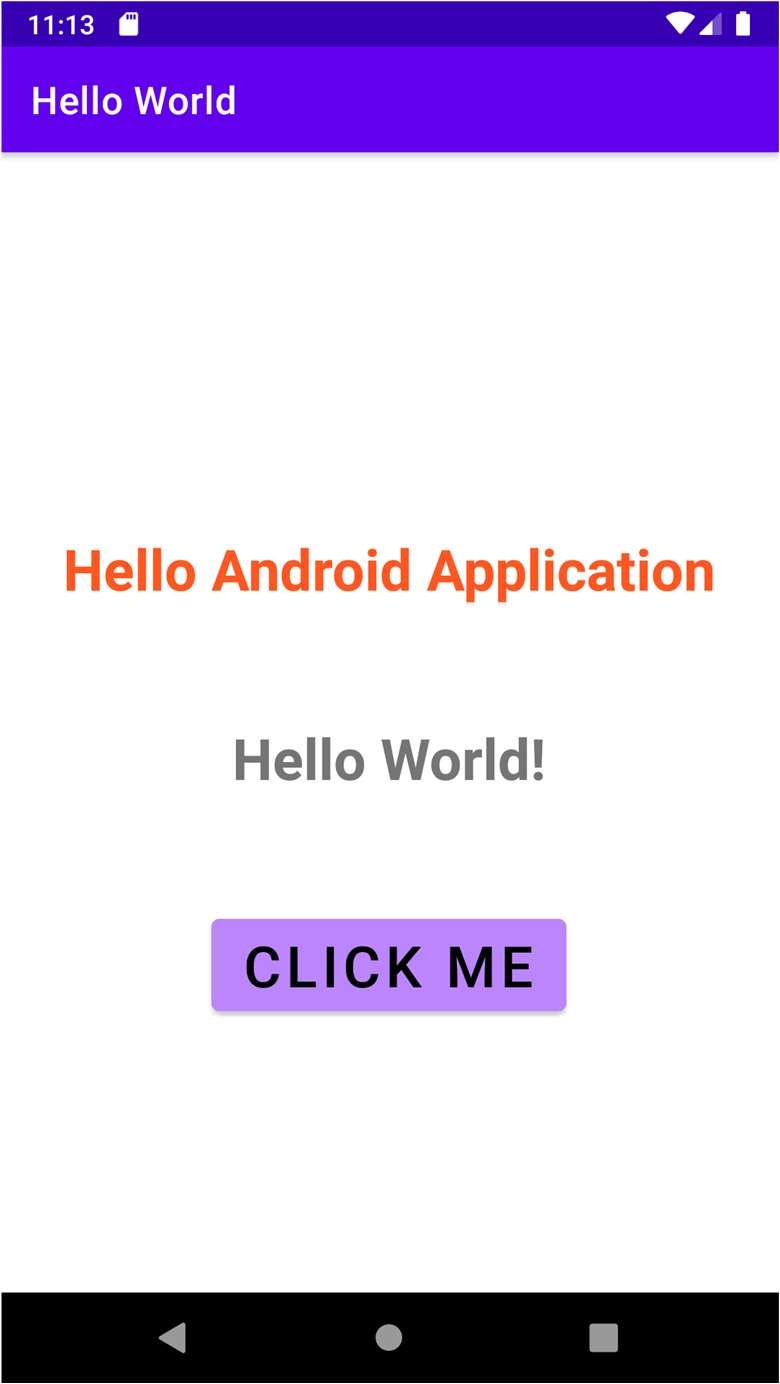
}

});

}

}

**Output:**



**1.B] Aim:** Creating android application for generating user interface for student Registration and feedback form by using all basic UI controls.

# Source Code:

**activity\_main.xml**

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

<RelativeLayout 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:gravity="center" tools:context=".MainActivity" android:background="#95E4DD">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="vertical">

<ImageButton android:id="@+id/imageButton" android:layout\_width="300dp" android:layout\_height="150dp" android:layout\_centerHorizontal="true" android:layout\_marginTop="10dp" android:layout\_marginLeft="50dp" android:layout\_marginRight="50dp" app:srcCompat="@drawable/student"

/>

<EditText android:id="@+id/editTextTextPersonName" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_alignParentTop="true" android:layout\_centerHorizontal="true" android:layout\_marginTop="10dp" android:layout\_marginLeft="100dp" android:ems="10" android:inputType="textPersonName" android:hint="Enter UserName :" android:text="" />

<EditText

android:id="@+id/editTextTextEmailAddress" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_alignParentTop="true" android:layout\_centerHorizontal="true" android:layout\_marginTop="10dp" android:layout\_marginLeft="100dp"

android:ems="10" android:hint="Enter Email ID :"

android:inputType="textEmailAddress" />

<EditText android:id="@+id/editTextPhone" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="10dp" android:layout\_marginLeft="100dp" android:ems="10"

android:hint="Enter Mobile Number :" android:inputType="phone" />

<EditText android:id="@+id/editTextTextPostalAddress" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="10dp" android:layout\_marginLeft="100dp" android:ems="10" android:inputType="textPostalAddress" android:hint="Enter Postal Address :"/>

<CheckBox android:id="@+id/checkBox" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginTop="10dp" android:layout\_marginLeft="100dp" android:text="Reading" />

<CheckBox android:id="@+id/checkBox2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginLeft="100dp" android:layout\_marginTop="10dp" android:text="Writing" />

<RadioGroup android:layout\_width="200dp" android:layout\_height="wrap\_content" android:orientation="horizontal" android:layout\_marginTop="10dp" android:layout\_marginLeft="100dp">

<RadioButton android:id="@+id/radioButton" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:text="Male" />

<RadioButton

android:id="@+id/radioButton2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginLeft="20dp" android:text="Female" />

</RadioGroup>

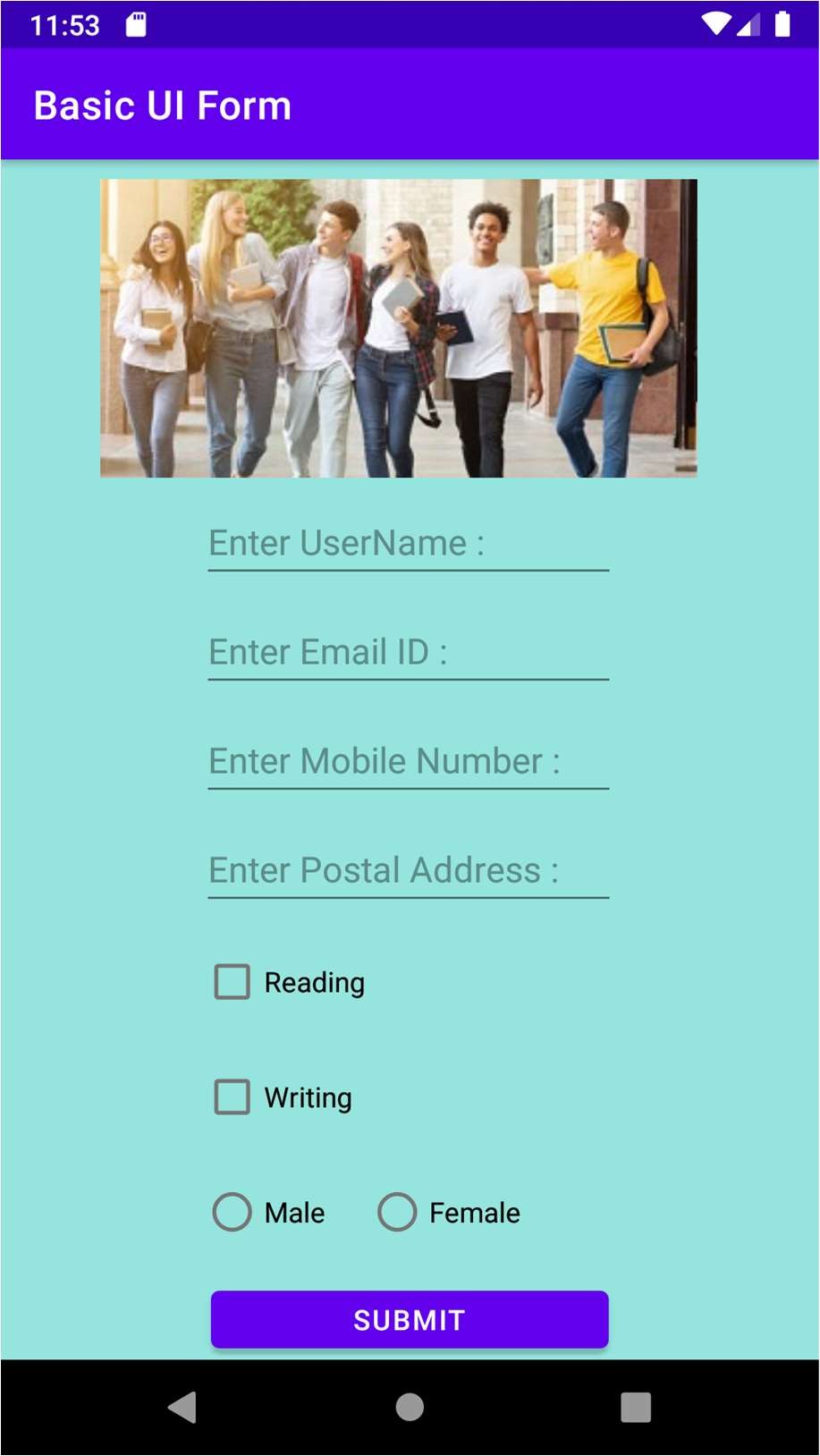
<Button

android:id="@+id/button" android:layout\_width="200dp" android:layout\_height="wrap\_content" android:layout\_marginTop="10dp" android:text="Submit" android:layout\_gravity="center"/>

</LinearLayout>

</RelativeLayout>

# Output:



**Practical No. 2 Aim: Basic Controls and UI Component**

**2.A] Aim:** Program to demonstrate use of Spinner, AutoCompleteTextView, multiline text and TextView control by creating Feedback form.

# Source Code:

**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">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginLeft="20dp" android:layout\_marginRight="30dp" android:layout\_marginTop="20dp" android:orientation="vertical" tools:ignore="MissingConstraints">

<TextView android:id="@+id/textView" android:layout\_width="match\_parent"

android:layout\_height="wrap\_content" android:layout\_marginTop="30dp" android:gravity="center" android:text="Thank You For Visiting!!!!" android:textColor="@color/black" android:textSize="20sp" android:textStyle="bold" />

<TextView android:id="@+id/text\_View" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:gravity="center" android:text="Nexon Auto Shop" android:textColor="@color/black" android:textSize="20sp" android:textStyle="bold" />

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginBottom="40dp" android:orientation="horizontal">

<TextView

android:id="@+id/textView2" android:layout\_width="90dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="Name" android:textSize="15sp" />

<EditText android:id="@+id/editTextTextPersonName" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1" android:ems="10" android:inputType="textPersonName" />

</LinearLayout>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginBottom="40dp" android:orientation="horizontal">

<TextView android:id="@+id/textView4" android:layout\_width="150dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="Country" android:textSize="15sp" />

<Spinner android:id="@+id/spinner"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_weight="1" />

</LinearLayout>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginBottom="40dp" android:orientation="horizontal">

<TextView android:id="@+id/textView5" android:layout\_width="100dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="This Feedback is :" android:textSize="15sp" />

<AutoCompleteTextView android:id="@+id/autoCompleteTextView" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1" />

</LinearLayout>

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginBottom="40dp" android:orientation="horizontal">

<TextView android:id="@+id/textView6" android:layout\_width="200dp" android:layout\_height="wrap\_content" android:layout\_weight="1" android:text="Additional Comment" android:textSize="15sp" />

<EditText android:id="@+id/editTextTextMultiLine" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_weight="1" android:ems="10" android:gravity="start|top" android:inputType="textMultiLine" />

</LinearLayout>

<Button

android:id="@+id/button" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Submit" />

</LinearLayout>

</RelativeLayout>

# MainActivity.java

package com.idol.basicuicomponent;

import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;

import android.view.View;

import android.widget.AdapterView;

import android.widget.AdapterView.OnItemSelectedListener; import android.widget.ArrayAdapter;

import android.widget.Spinner;

import android.widget.AutoCompleteTextView;

public class MainActivity extends AppCompatActivity implements OnItemSelectedListener

{

String[] Country = {"India", "Nepal", "China", "Srilanka", "Australia"}; String[] feedback = {"suggestion", "compliment", "complaint", "other"}; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

Spinner spin = (Spinner) findViewById(R.id.spinner); spin.setOnItemSelectedListener(this);

ArrayAdapter aa = new ArrayAdapter(this, android.R.layout.simple\_spinner\_item, Country);

ArrayAdapter<String> adapter = new ArrayAdapter<String>(this, android.R.layout.simple\_dropdown\_item\_1line, feedback);

AutoCompleteTextView autoCompleteTextView = (AutoCompleteTextView) findViewById(R.id.autoCompleteTextView);

autoCompleteTextView.setThreshold(1); autoCompleteTextView.setAdapter(adapter); aa.setDropDownViewResource(android.R.layout.simple\_spinner\_dropdown\_item);

//Setting the ArrayAdapter data on the Spinner spin.setAdapter(aa);

}

@Override

public void onItemSelected(AdapterView<?> adapterView, View view, int i, long l) {

}

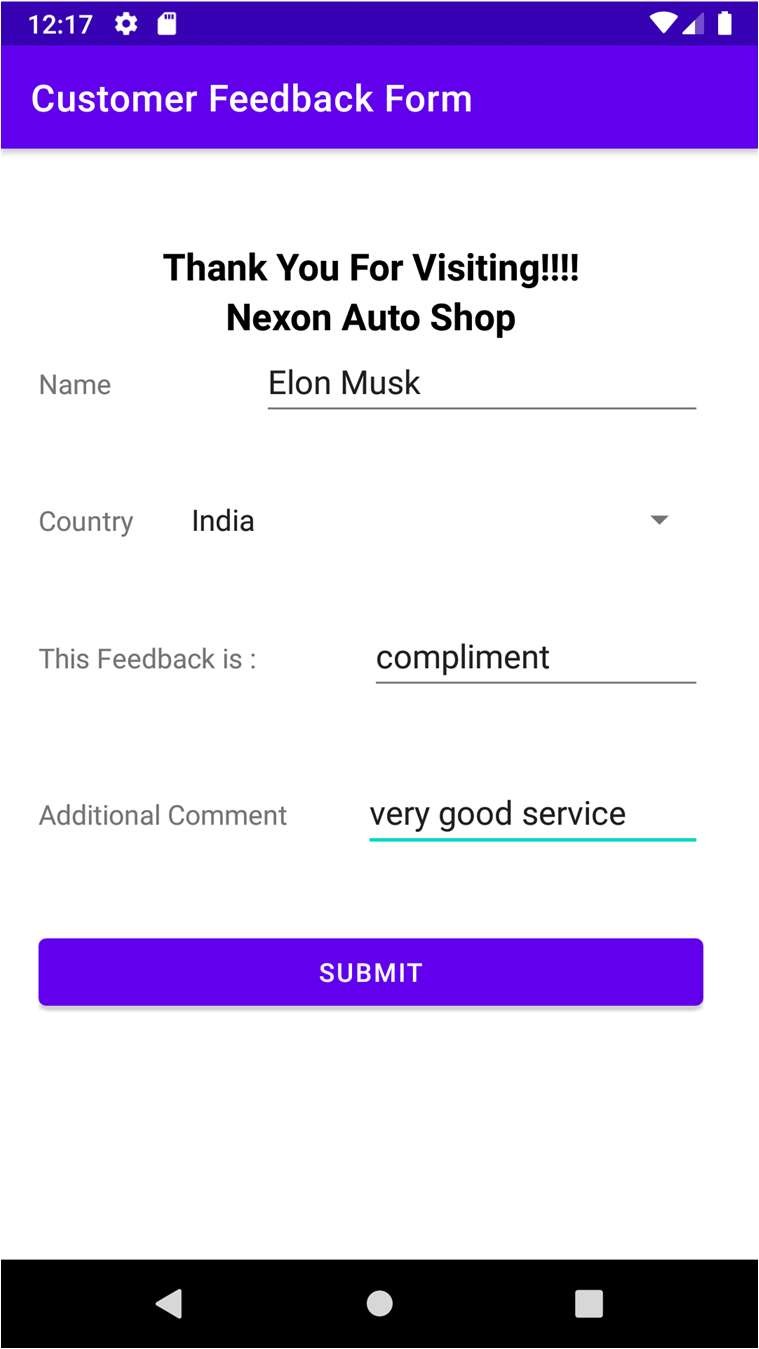
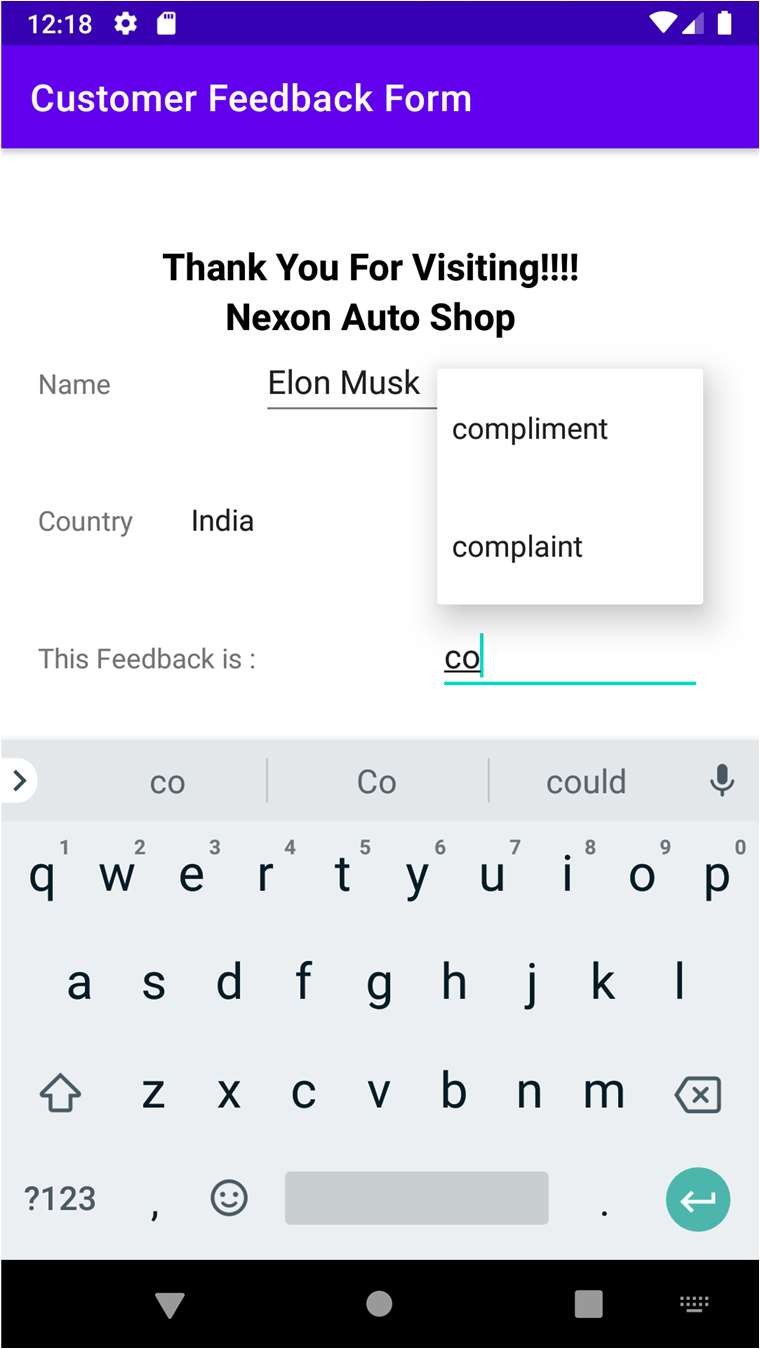
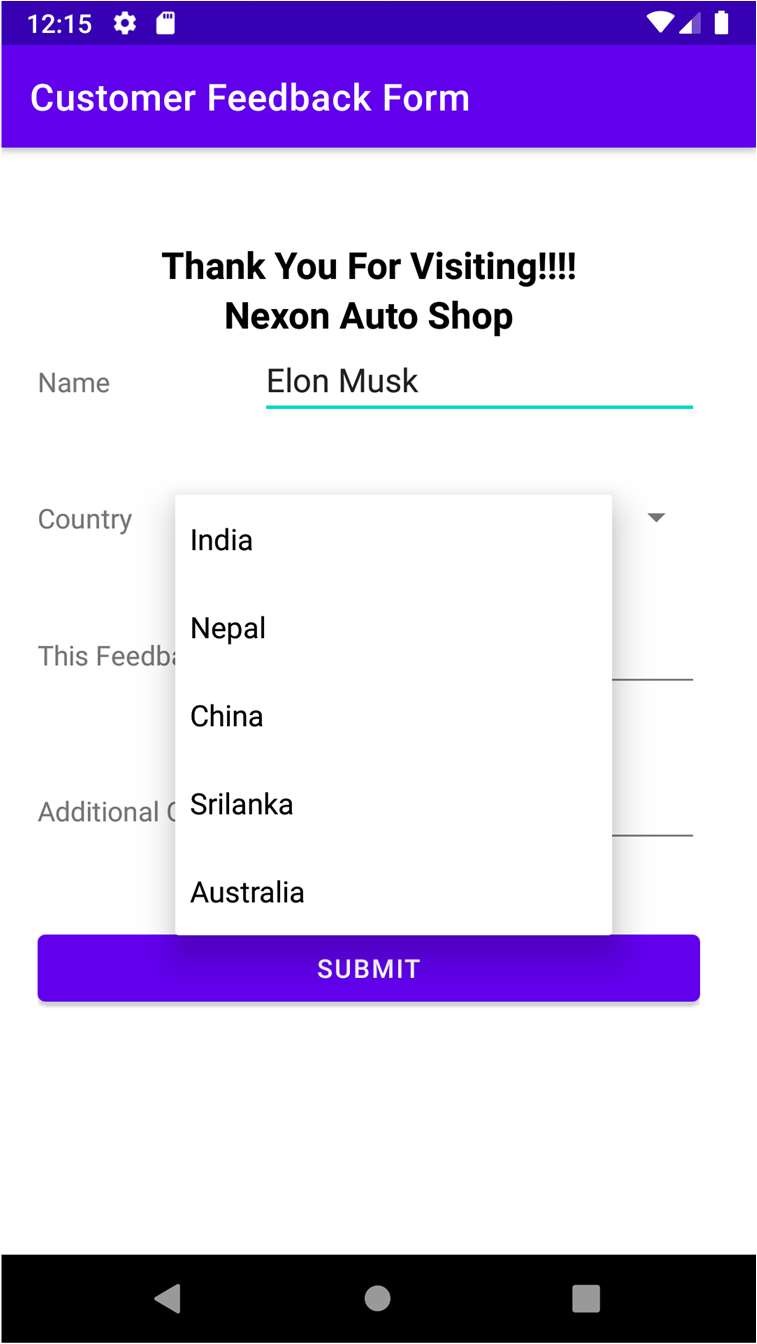
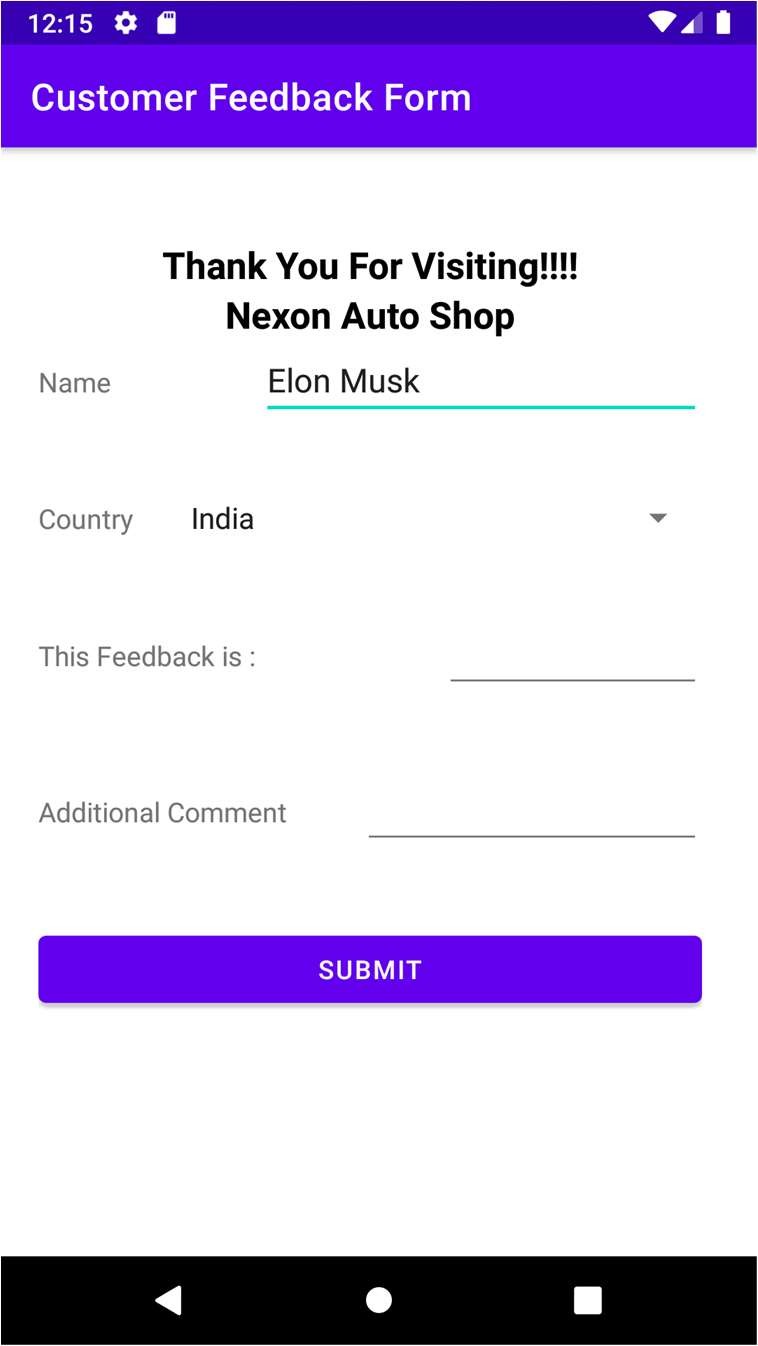
@Override

public void onNothingSelected(AdapterView<?> adapterView) {

}

}

**Output:**



**2.B] Aim:** Create a basic calculator app using android studio.

# Source Code:

**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">

<TextView android:id="@+id/textView" android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content" android:text="Calculator" android:textColor="@color/purple\_700" android:textSize="40sp" android:textStyle="bold" android:layout\_marginTop="30dp" android:layout\_centerHorizontal="true"/>

<EditText android:id="@+id/editTextTextPersonName" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="110dp" android:ems="10"

android:hint="Enter Number 1" android:inputType="textPersonName" />

<EditText android:id="@+id/editTextTextPersonName2" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="170dp" android:ems="10"

android:hint="Enter Number 2" android:inputType="textPersonName" />

<EditText android:id="@+id/editTextTextPersonName3" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_centerHorizontal="true" android:layout\_marginTop="230dp" android:ems="10"

android:hint="Result" android:inputType="textPersonName" />

<Button

android:id="@+id/btn\_add" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginStart="100dp" android:layout\_marginTop="300dp" android:text="Add (+)"/>

<Button

android:id="@+id/btn\_sub" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginStart="220dp" android:layout\_marginTop="300dp" android:text="Sub (-)" />

<Button

android:id="@+id/btn\_mul" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginStart="100dp" android:layout\_marginTop="370dp" android:text="Mul (\*)" />

<Button

android:id="@+id/btn\_div" android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:layout\_marginStart="220dp" android:layout\_marginTop="370dp" android:text="Div (/)" />

</RelativeLayout>

# MainActivity.java

package com.idol.calculatorapp;

import androidx.appcompat.app.AppCompatActivity; import android.os.Bundle;

import android.view.View; import android.widget.Button; import android.widget.EditText;

public class MainActivity extends AppCompatActivity { EditText text1, text2, text3;

Button btn1, btn2, btn3, btn4; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

//Inputs

text1= (EditText)findViewById(R.id.editTextTextPersonName); text2= (EditText)findViewById(R.id.editTextTextPersonName2); text3= (EditText)findViewById(R.id.editTextTextPersonName3);

//Buttons

btn1 = (Button) findViewById(R.id.btn\_add); btn2 = (Button) findViewById(R.id.btn\_sub); btn3 = (Button) findViewById(R.id.btn\_mul); btn4 = (Button) findViewById(R.id.btn\_div);

btn1.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Integer a= Integer.parseInt(text1.getText().toString()); Integer b= Integer.parseInt(text2.getText().toString()); Integer c = a + b;

text3.setText("" + c);

}

});

btn2.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Integer a= Integer.parseInt(text1.getText().toString()); Integer b= Integer.parseInt(text2.getText().toString()); Integer c = a - b;

text3.setText("" + c);

}

});

btn3.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Integer a= Integer.parseInt(text1.getText().toString()); Integer b= Integer.parseInt(text2.getText().toString()); Integer c = a \* b;

text3.setText("" + c);

}

});

btn4.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Integer a= Integer.parseInt(text1.getText().toString()); Integer b= Integer.parseInt(text2.getText().toString()); Integer c = a / b;

text3.setText("" + c);

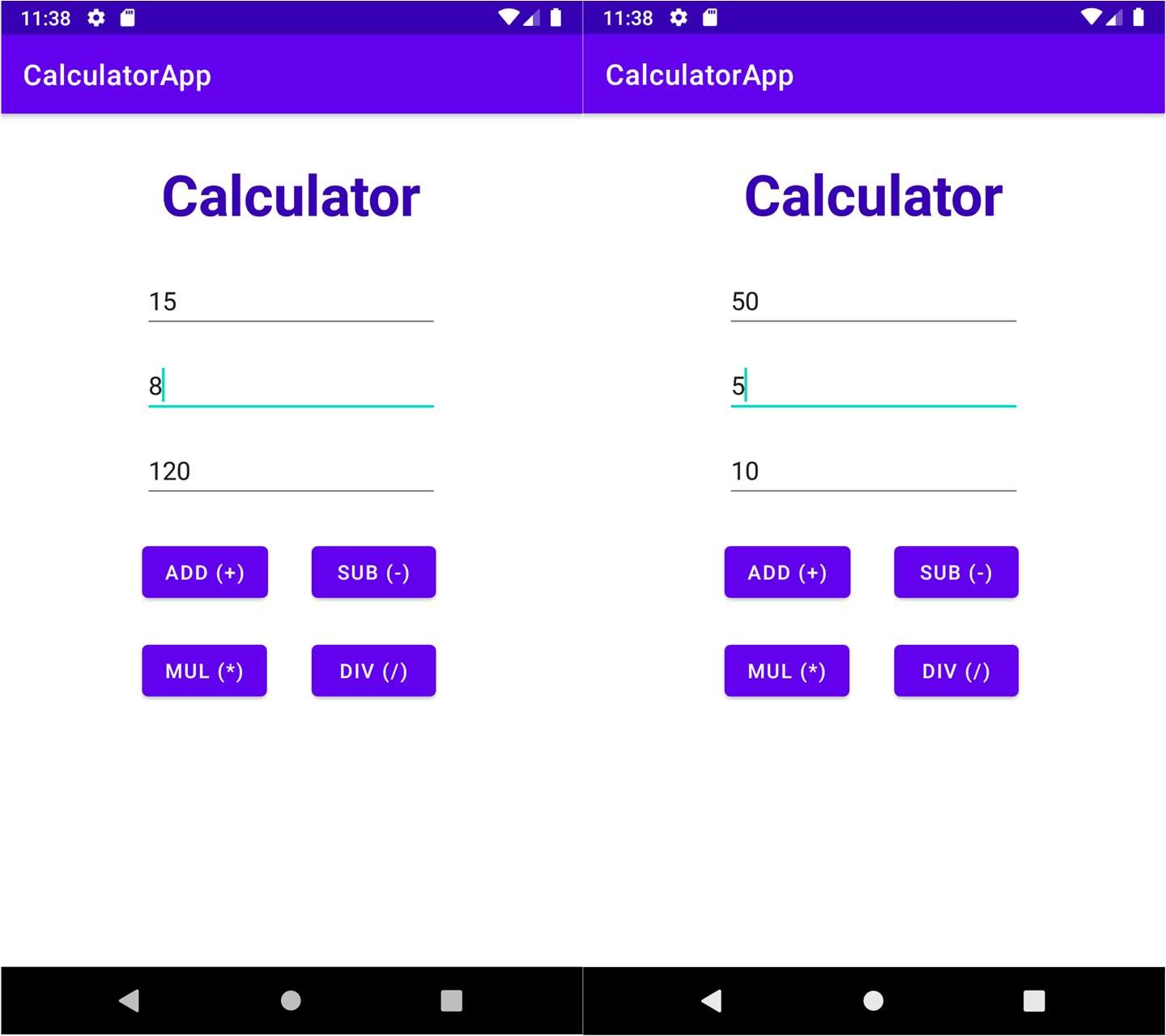
}

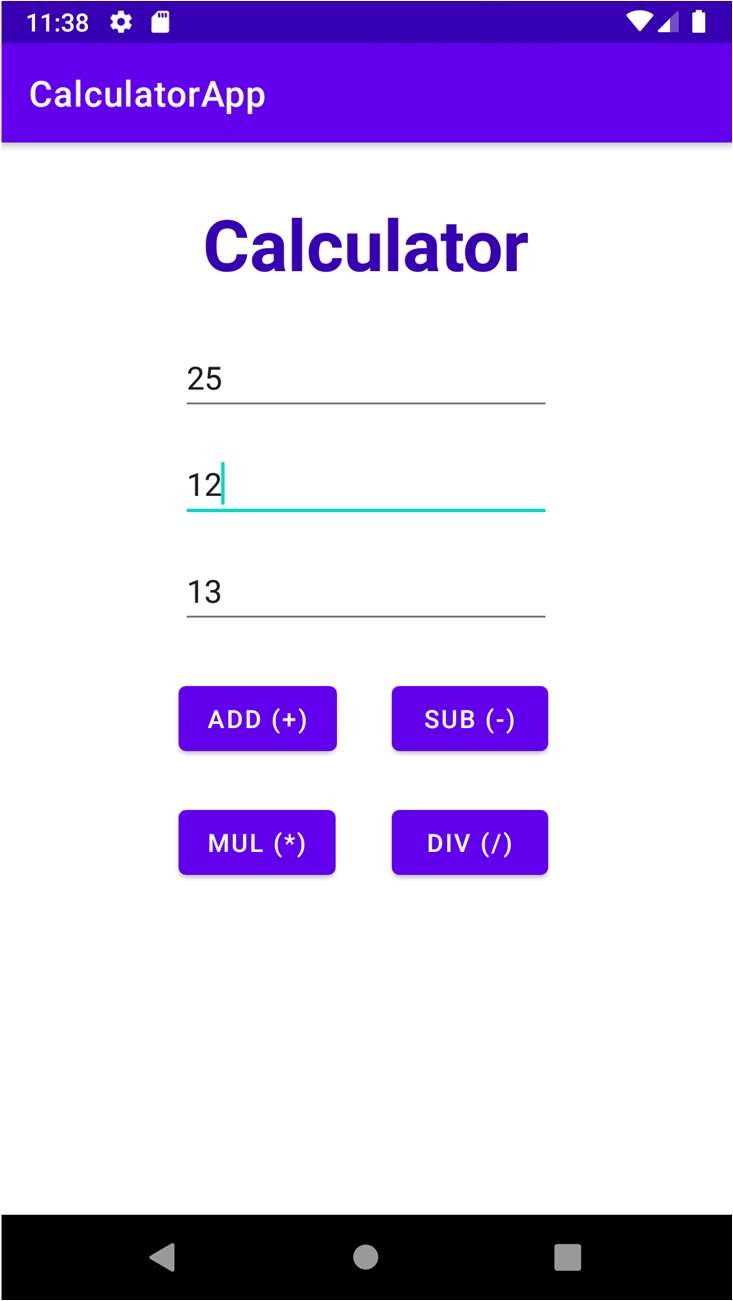
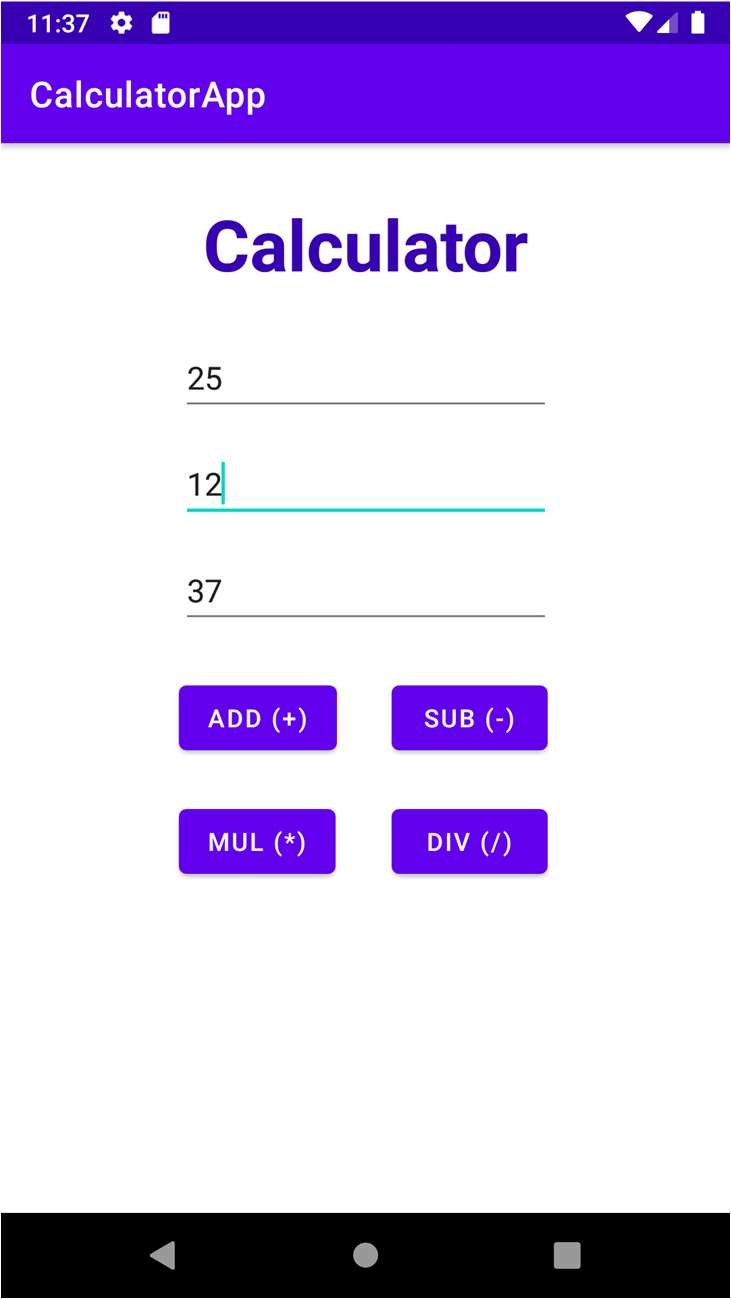
});

}

}

# Output:





**Practical No. 3**

# Aim: Data Base Connectivity

**3.A] Aim:** Creating android program to demonstrate the use of Internal Storage.

# Source Code:

**activity\_data.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=".DataActivity">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="vertical">

</LinearLayout>

<TextView android:id="@+id/txtLabel"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_alignParentTop="true" android:textSize="30dp" android:layout\_centerHorizontal="true" android:layout\_marginTop="49dp" android:text="Internal Storage" android:gravity="center"/>

<EditText android:id="@+id/txtMessage" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginTop="150dp" android:ems="10" android:textSize="30dp" android:inputType="textPersonName" android:hint="Enter Message" android:text="" />

<TextView android:id="@+id/txtResult" android:layout\_width="match\_parent"

android:layout\_height="wrap\_content" android:layout\_marginTop="250dp" android:hint="Result" android:textSize="30dp" android:ems="10"

android:text="" />

<LinearLayout

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal">

<Button

android:id="@+id/btnSave" android:layout\_width="150dp" android:layout\_height="wrap\_content" android:layout\_marginTop="350dp" android:layout\_marginLeft="50dp" android:textSize="30dp" android:text="SAVE" />

<Button

android:id="@+id/btnLoad" android:layout\_width="150dp" android:layout\_height="wrap\_content" android:layout\_marginTop="350dp" android:layout\_marginLeft="10dp" android:textSize="30dp" android:text="LOAD" />

</LinearLayout>

</RelativeLayout>

# DataActivity.java

package com.idol.internalstorage;

import androidx.appcompat.app.AppCompatActivity; import android.view.View;

import android.widget.\*; import android.os.Bundle; import java.io.FileInputStream;

import java.io.FileOutputStream;

public class DataActivity extends AppCompatActivity { Button save, load;

TextView res; EditText msg;

private String file = "mydata"; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_data);

save= (Button) findViewById(R.id.btnSave); load= (Button) findViewById(R.id.btnLoad);

msg = (EditText) findViewById(R.id.txtMessage); res = (TextView) findViewById(R.id.txtResult);

save.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) { String data = msg.getText().toString(); try {

FileOutputStream fOut = openFileOutput(file,MODE\_APPEND);

fOut.write(data.getBytes()); fOut.close();

Toast.makeText(getBaseContext(),"file saved",Toast.LENGTH\_SHORT).show();

}

catch (Exception e) {

// TODO Auto-generated catch block e.printStackTrace();

}

}

});

load.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) { try {

FileInputStream fin = openFileInput(file); int c = 0;

String t="";

while( (c= fin.read()) != -1) t += Character.toString((char) c); res.setText(t);

Toast.makeText(getBaseContext(),"file read",Toast.LENGTH\_SHORT).show();

}

});

}

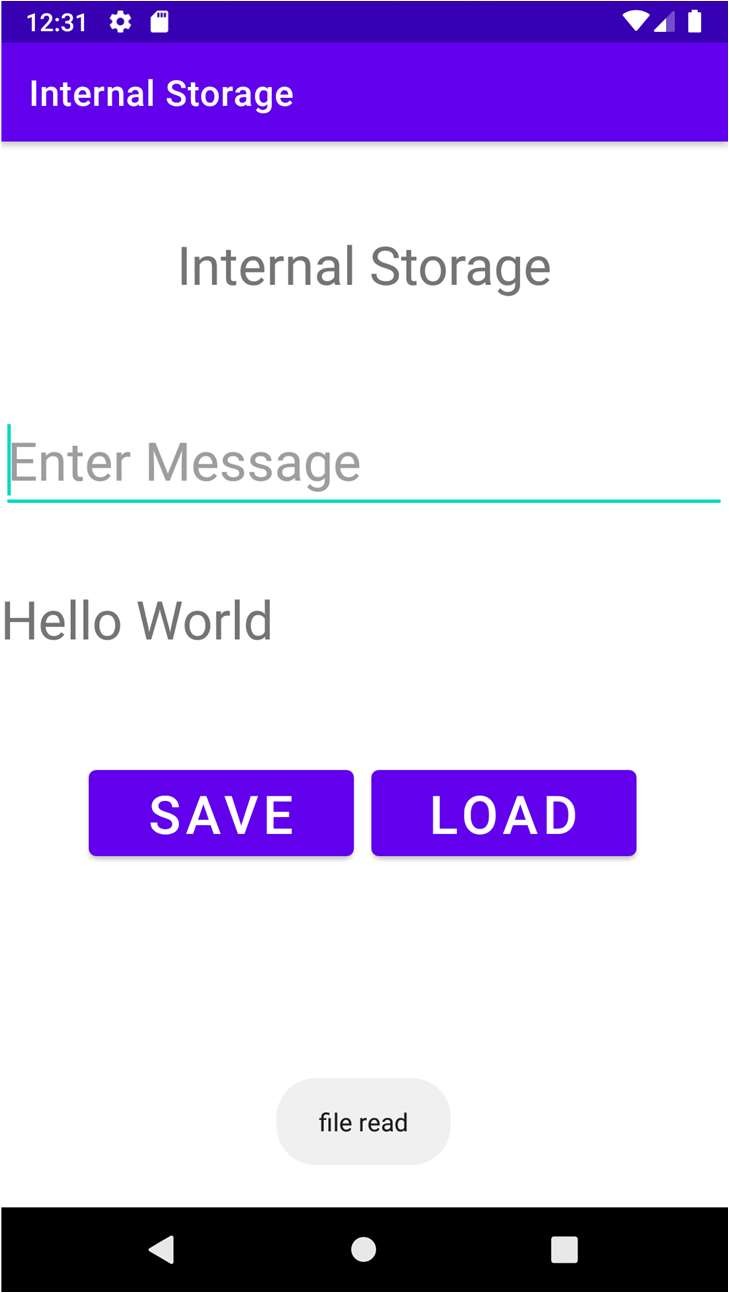
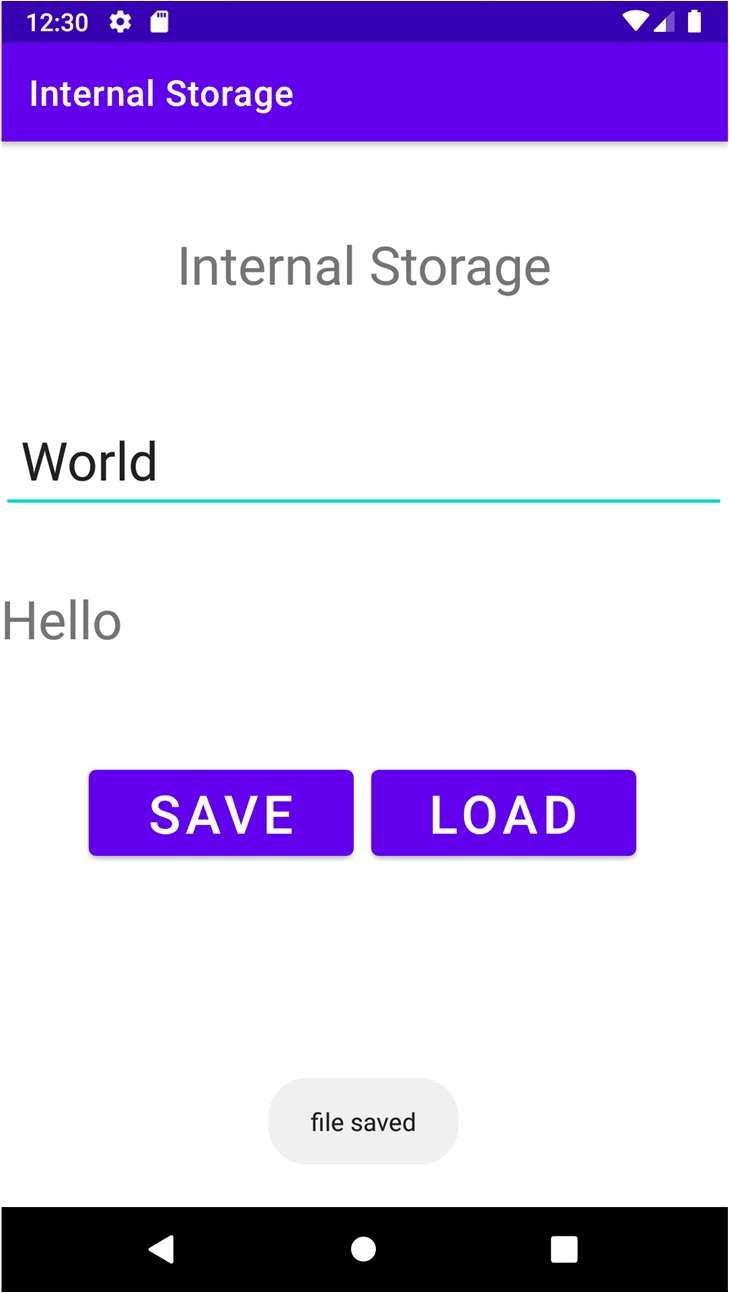
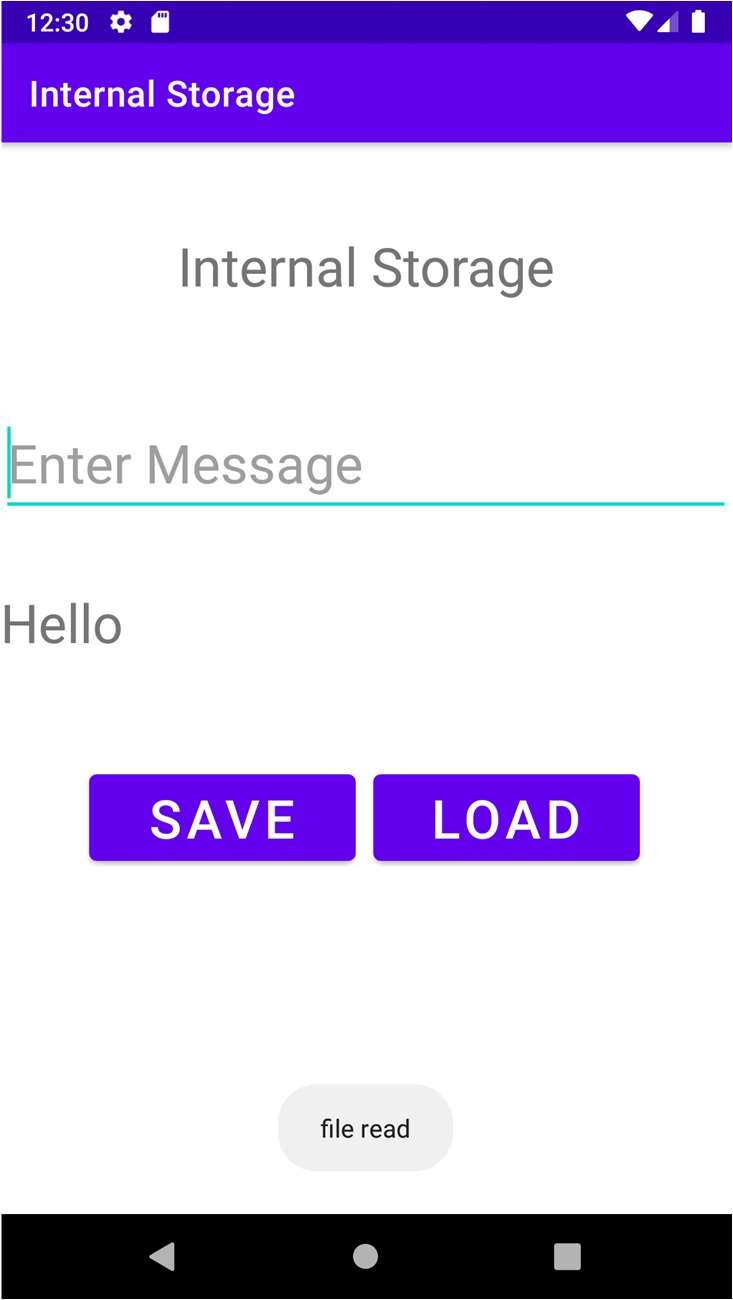
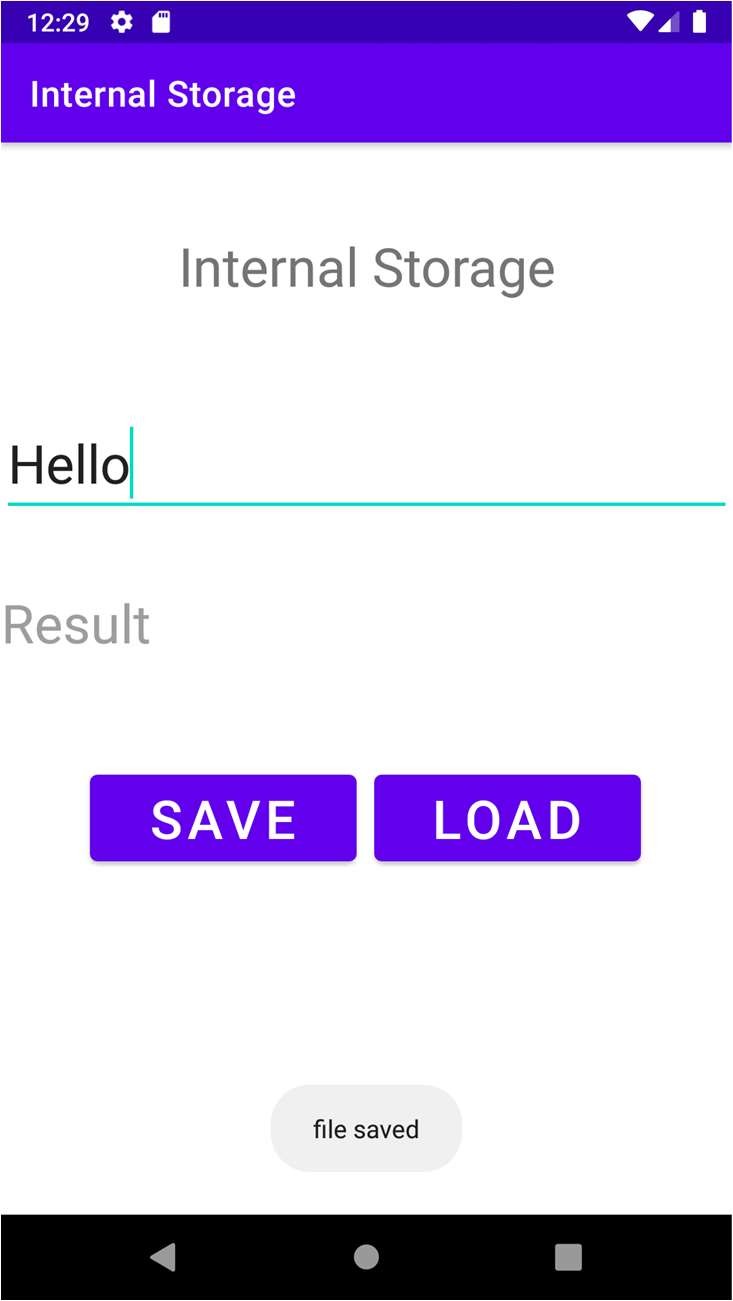
}

}

catch(Exception e){

}

# Output:



**3.B] Aim:** Creating android program to demonstrate the use of Shared preferences.

# Source Code:

**activity\_shared.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=".SharedActivity">

<LinearLayout android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:orientation="vertical" android:layout\_marginLeft="30sp" android:layout\_marginRight="30sp">

<TextView android:id="@+id/textView" android:layout\_width="match\_parent"

android:layout\_height="wrap\_content" android:text="Shared Preferences" android:layout\_marginTop="10px" android:textSize="35sp" android:textStyle="bold" android:gravity="center" android:textColor="@color/black"/>

<EditText android:id="@+id/edit\_name"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginTop="20dp" android:layout\_marginBottom="20dp" android:ems="10"

android:hint="Enter your Name" android:inputType="textPersonName" />

<EditText android:id="@+id/edit\_age"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:ems="10" android:inputType="textPersonName" android:hint="Enter your Age" android:layout\_marginTop="20dp" android:layout\_marginBottom="20dp"/>

<EditText android:id="@+id/edit\_email" android:layout\_width="match\_parent"

android:layout\_height="wrap\_content" android:ems="10" android:inputType="textEmailAddress" android:hint="Enter Your Email" android:layout\_marginTop="20dp" android:layout\_marginBottom="20dp"/>

<Button

android:id="@+id/btn\_save"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:text="Save" android:layout\_marginTop="20dp" android:layout\_marginBottom="20dp"/>

</LinearLayout>

</RelativeLayout>

# SharedActivity.java

package com.idol.internalstorage;

import androidx.appcompat.app.AppCompatActivity; import android.content.Context;

import android.content.SharedPreferences; import android.os.Bundle;

import android.view.View; import android.widget.\*; import java.io.\*;

public class SharedActivity extends AppCompatActivity { private EditText name, age,email;

Button saveButton;

public static final String MyPREFERENCES = "MyPrefsData" ; public static final String Name = "nameKey";

public static final String Age = "ageKey"; public static final String Email = "emailKey"; SharedPreferences sharedpreferences; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_shared);

name =(EditText) findViewById(R.id.edit\_name); age = (EditText)findViewById(R.id.edit\_age); email=(EditText) findViewById(R.id.edit\_email); saveButton=(Button) findViewById(R.id.btn\_save);

sharedpreferences = getSharedPreferences(MyPREFERENCES, Context.MODE\_PRIVATE);

saveButton.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) {

String n = name.getText().toString(); String a = age.getText().toString(); String e = email.getText().toString();

SharedPreferences.Editor editor = sharedpreferences.edit();

editor.putString(Name, n); editor.putString(Age, a); editor.putString(Email, e); editor.commit();

Toast.makeText(SharedActivity.this,"Data Saved Successfully",Toast.LENGTH\_LONG).show();

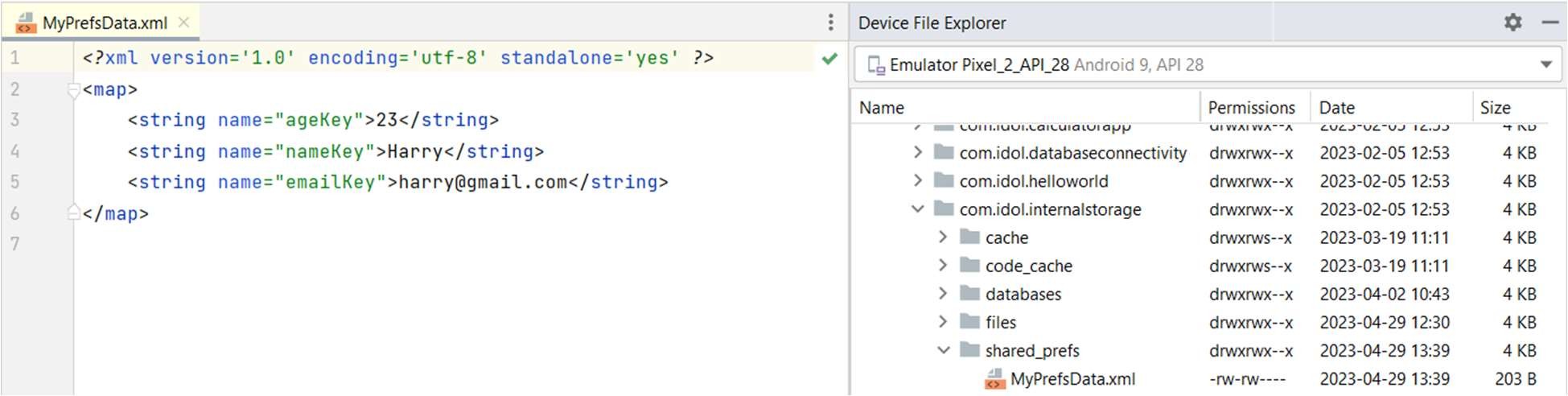
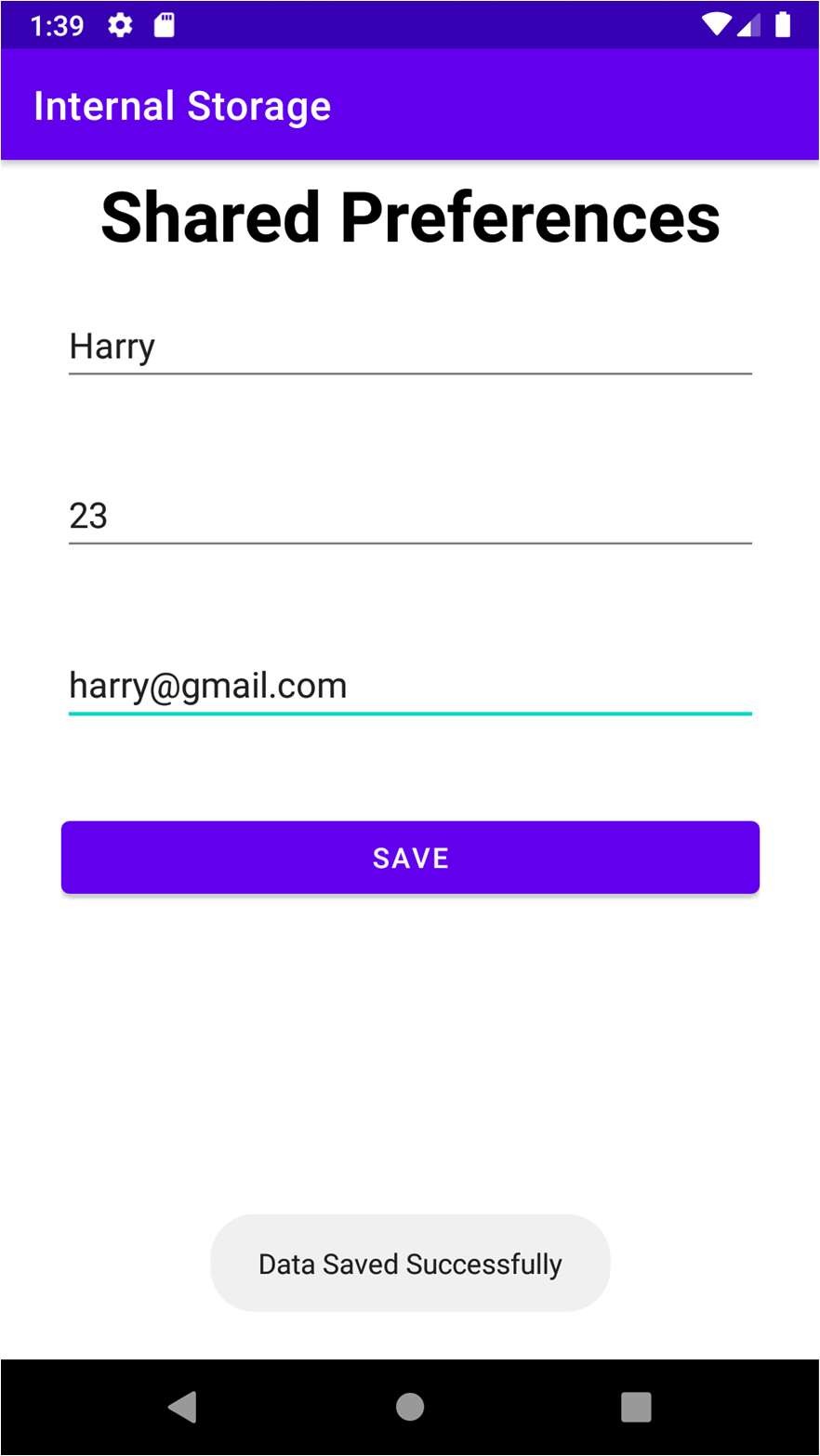
}

});

}

}

# Output:



**Practical No. 4**

# Aim: Introduction to Graphics, Animation and Multimedia

**4.A] Aim:** Write a Program to draw basic graphics construction like line, circle, arc, ellipse and rectangle.

# Source Code:

#include<graphics.h> #include<conio.h> void main()

{

int gd=DETECT, gm, i, x, y; initgraph(&gd, &gm, "C:\\TurboC3\\BGI"); x=getmaxx()/3;

y=getmaxx()/3; setbkcolor(WHITE); setcolor(BLUE); for(i=1;i<=8;i++)

{

setfillstyle(i,i); delay(20); circle(x, y, i\*20);

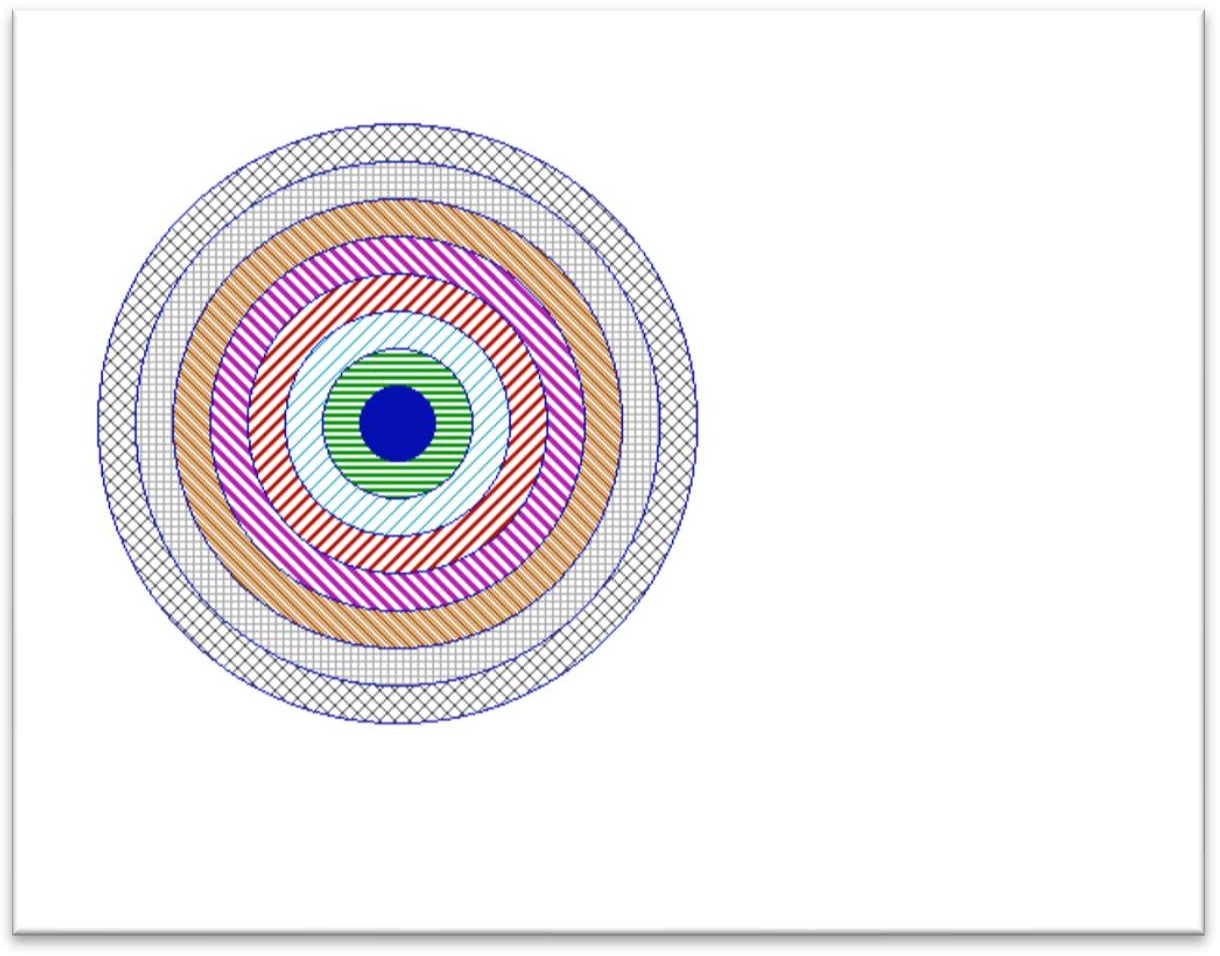
floodfill(x-2+i\*20,y,BLUE);

}

getch(); closegraph();

}

**Output:**



**4.B] Aim:** Write a Program to draw animation using increasing circles filled with different colors and patterns.

# Source Code:

#include <stdio.h> #include <conio.h> #include <graphics.h> #include <dos.h>

int main()

{

int gd = DETECT, gm; int i, x, y, flag = 0;

initgraph(&gd, &gm, "C:\\TurboC3\\BGI");

/\* set background color to white \*/ setbkcolor(WHITE);

/\* get mid positions in x and y-axis \*/ x = getmaxx() / 2;

y = 30;

while (!kbhit())

{

if (y >= getmaxy() - 30 || y <= 30) flag = !flag;

/\* draws the red board \*/ setcolor(RED); setfillstyle(SOLID\_FILL, RED); circle(x, y, 30);

floodfill(x, y, RED);

/\* delay for 50 milli seconds \*/ delay(50);

/\* clears screen \*/ cleardevice();

if (flag)

y = y + 5; else

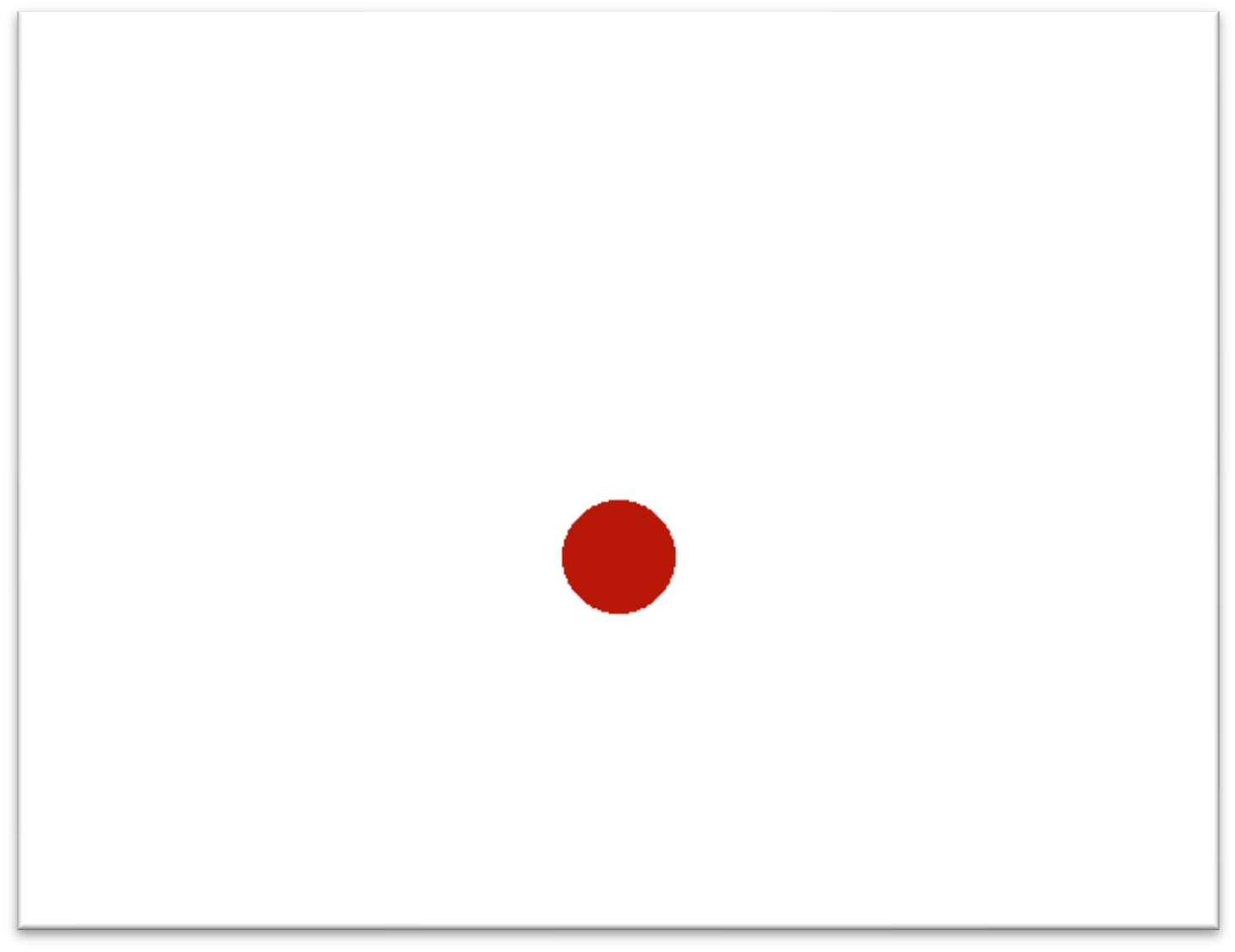
y = y - 5;

}

getch(); closegraph(); return 0;

}

**Output:**



# Practical No. 5

**Aim: Location Based Services**

**5.A] Aim:** Write a program to find your location in the Map.

# Source Code: 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:orientation="vertical" android:layout\_width="match\_parent" android:layout\_height="match\_parent" tools:context=".MainActivity">

<TextView android:layout\_marginTop="20dp" android:layout\_width="fill\_parent" android:layout\_height="wrap\_content"

android:text="Get Current Location and City Name" android:textAlignment="center" android:textStyle="bold" android:layout\_centerHorizontal="true" android:textSize="20sp" />

<TextView android:layout\_width="wrap\_content" android:layout\_height="wrap\_content" android:id="@+id/textView" android:layout\_centerInParent="true" android:textSize="16sp" android:textStyle="bold"/>

</RelativeLayout>

**MainActivity.java**

package com.idol.locationservice;

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

import androidx.core.app.ActivityCompat; import androidx.core.content.ContextCompat; import android.Manifest;

import android.content.Intent;

import android.content.pm.PackageManager; import android.location.Geocoder;

import android.location.Location; import android.os.Bundle;

import android.os.Handler;

import android.os.ResultReceiver; import android.util.Log;

import android.widget.TextView; import android.widget.Toast;

import com.google.android.gms.location.FusedLocationProviderClient; import com.google.android.gms.location.LocationCallback;

import com.google.android.gms.location.LocationRequest; import com.google.android.gms.location.LocationResult; import com.google.android.gms.location.LocationServices; public class MainActivity extends AppCompatActivity {

private FusedLocationProviderClient fusedLocationClient;

private static final int LOCATION\_PERMISSION\_REQUEST\_CODE = 2; private LocationAddressResultReceiver addressResultReceiver;

private TextView currentAddTv; private Location currentLocation;

private LocationCallback locationCallback; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);

addressResultReceiver = new LocationAddressResultReceiver(new Handler());

currentAddTv = findViewById(R.id.textView); fusedLocationClient =

LocationServices.getFusedLocationProviderClient(this); locationCallback = new LocationCallback() {

@Override

public void onLocationResult(LocationResult locationResult) { currentLocation = locationResult.getLocations().get(0); getAddress();

}

};

startLocationUpdates();

}

@SuppressWarnings("MissingPermission") private void startLocationUpdates() {

if (ContextCompat.checkSelfPermission(this, Manifest.permission.ACCESS\_FINE\_LOCATION) != PackageManager.PERMISSION\_GRANTED) {

ActivityCompat.requestPermissions(this, new String[]{Manifest.permission.ACCESS\_FINE\_LOCATION},

LOCATION\_PERMISSION\_REQUEST\_CODE);

}

else {

LocationRequest locationRequest = new LocationRequest(); locationRequest.setInterval(2000); locationRequest.setFastestInterval(1000);

locationRequest.setPriority(LocationRequest.PRIORITY\_HIGH\_ACCURACY); fusedLocationClient.requestLocationUpdates(locationRequest,

locationCallback, null);

}

}

@SuppressWarnings("MissingPermission") private void getAddress() {

if (!Geocoder.isPresent()) {

Toast.makeText(MainActivity.this, "Can't find current address, ", Toast.LENGTH\_SHORT).show();

return;

}

Intent intent = new Intent(this, GetAddressIntentService.class); intent.putExtra("add\_receiver", addressResultReceiver); intent.putExtra("add\_location", currentLocation); startService(intent);

}

@Override

public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions, @NonNull

int[] grantResults) {

if (requestCode == LOCATION\_PERMISSION\_REQUEST\_CODE) { if (grantResults.length > 0 && grantResults[0] ==

PackageManager.PERMISSION\_GRANTED) { startLocationUpdates();

}

else {

Toast.makeText(this, "Location permission not granted, "

+ "restart the app if you want the feature", Toast.LENGTH\_SHORT).show();

}

}

}

private class LocationAddressResultReceiver extends ResultReceiver { LocationAddressResultReceiver(Handler handler) {

super(handler);

}

@Override

protected void onReceiveResult(int resultCode, Bundle resultData) { if (resultCode == 0) {

Log.d("Address", "Location null retrying"); getAddress();

}

if (resultCode == 1) {

Toast.makeText(MainActivity.this, "Address not found, ", Toast.LENGTH\_SHORT).show();

}

String currentAdd = resultData.getString("address\_result"); showResults(currentAdd);

}

}

private void showResults(String currentAdd) {

currentAddTv.setText(currentAdd);

}

@Override

protected void onResume() { super.onResume(); startLocationUpdates();

}

@Override

protected void onPause() { super.onPause();

fusedLocationClient.removeLocationUpdates(locationCallback);

}

}

# GetAddressIntentService.java

package com.idol.locationservice; import android.app.IntentService; import android.content.Intent; import android.location.Address; import android.location.Geocoder; import android.location.Location; import android.os.Bundle;

import android.os.ResultReceiver; import android.util.Log;

import java.util.List; import java.util.Locale; import java.util.Objects;

import androidx.annotation.Nullable;

public class GetAddressIntentService extends IntentService {

private static final String IDENTIFIER = "GetAddressIntentService"; private ResultReceiver addressResultReceiver;

public GetAddressIntentService() { super(IDENTIFIER);

}

@Override

protected void onHandleIntent(@Nullable Intent intent) { String msg;

addressResultReceiver = Objects.requireNonNull(intent).getParcelableExtra("add\_receiver");

if (addressResultReceiver == null) {

Log.e("GetAddressIntentService", "No receiver, not processing the request further"); return;

}

Location location = intent.getParcelableExtra("add\_location"); if (location == null) {

msg = "No location, can't go further without location"; sendResultsToReceiver(0, msg);

return;

}

Geocoder geocoder = new Geocoder(this, Locale.getDefault()); List<Address> addresses = null;

try {

addresses = geocoder.getFromLocation(location.getLatitude(), location.getLongitude(), 1);

}

catch (Exception ioException) {

Log.e("", "Error in getting address for the location");

}

if (addresses == null || addresses.size() == 0) { msg = "No address found for the location"; sendResultsToReceiver(1, msg);

}

else {

Address address = addresses.get(0);

String addressDetails = address.getFeatureName() + "\n" + address.getThoroughfare() + "\n" +

"Locality: " + address.getLocality() + "\n" + "County: " + address.getSubAdminArea() + "\n" +

"State: " + address.getAdminArea() + "\n" + "Country: " + address.getCountryName() + "\n" +

"Postal Code: " + address.getPostalCode() + "\n"; sendResultsToReceiver(2, addressDetails);

}

}

private void sendResultsToReceiver(int resultCode, String message) { Bundle bundle = new Bundle();

bundle.putString("address\_result", message); addressResultReceiver.send(resultCode, bundle);

}

}

# 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>" >

<uses-permission android:name="android.permission.ACCESS\_FINE\_LOCATION" />

<uses-permission android:name="android.permission.INTERNET" />

<uses-permission android:name="android.permission.ACCESS\_COARSE\_LOCATION"

/>

<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.LocationService" 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>

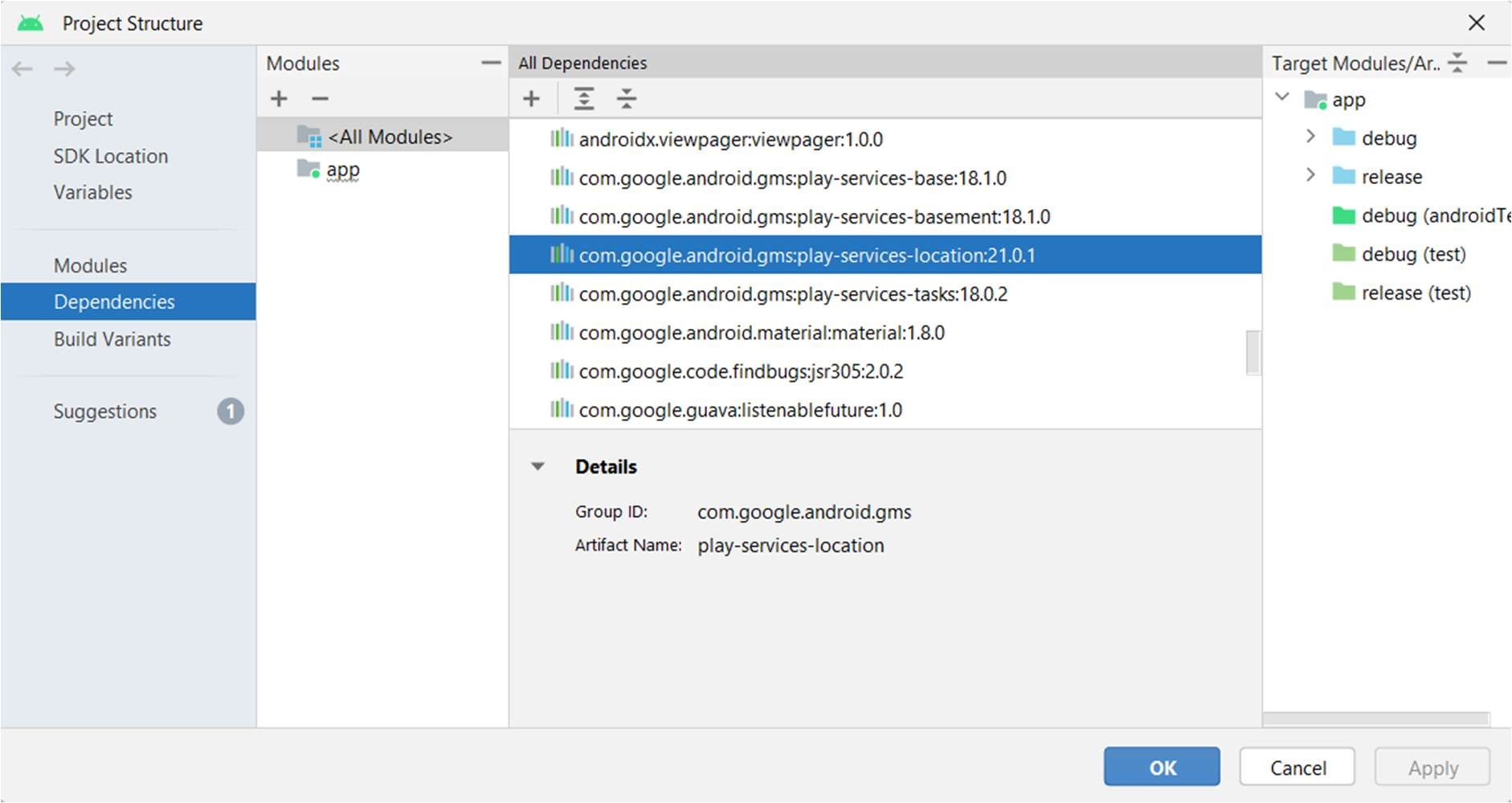
<service android:name=".GetAddressIntentService" />

</application>

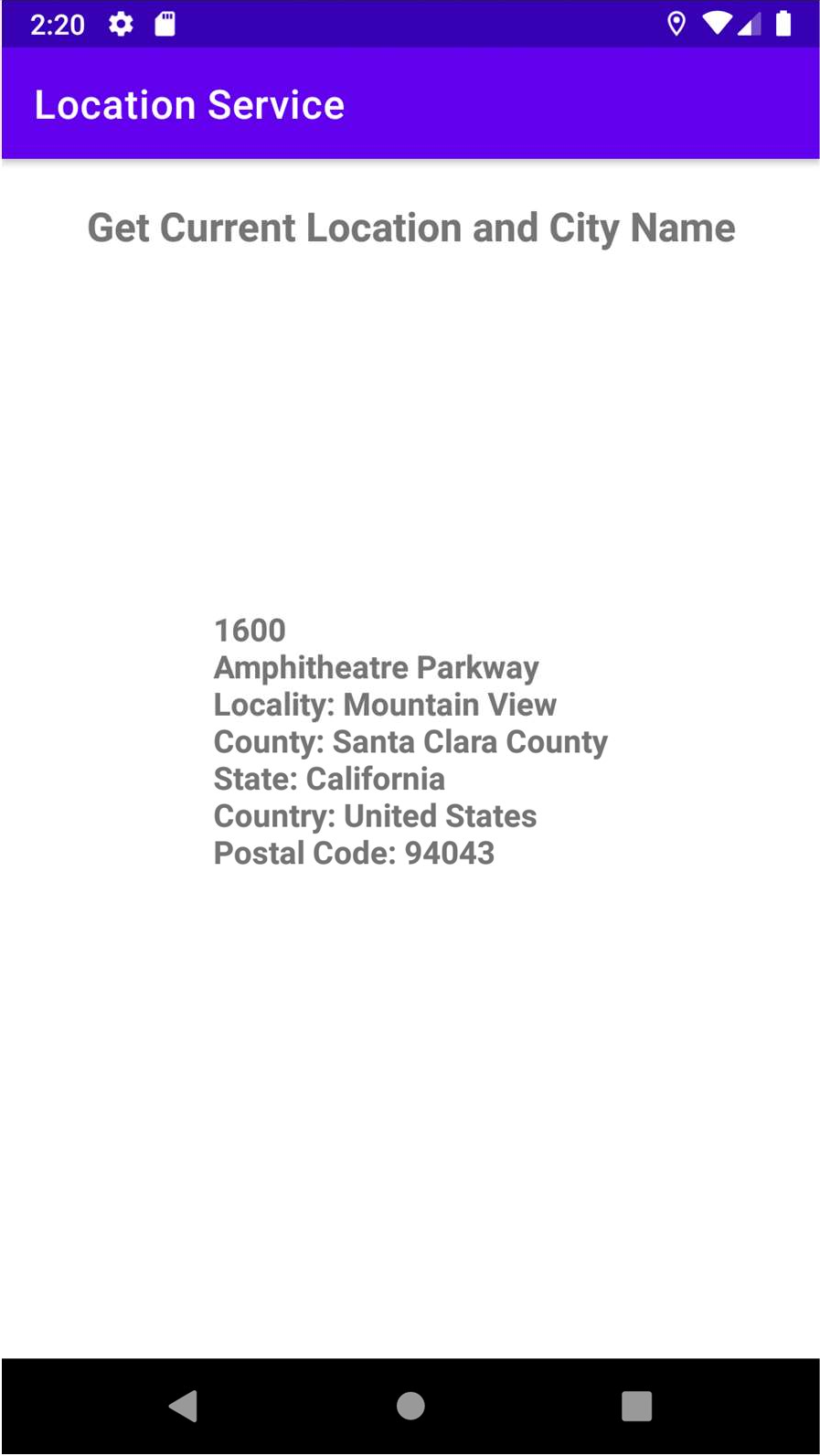
</manifest>

**Add the following dependency in Gradle Location Based Services**

implementation 'com.google.android.gms:play-services-location:17.0.0'



# Output:



**Practical No. 6**

**Aim:** Socket Programming in C/C++.

# Source Code: Server.c

// Server side C/C++ program to demonstrate Socket

// programming #include <netinet/in.h> #include <stdio.h> #include <stdlib.h> #include <string.h> #include <sys/socket.h> #include <unistd.h> #define PORT 8080

int main(int argc, char const \*argv[])

{

int server\_fd, new\_socket, valread; struct sockaddr\_in address;

int opt = 1;

int addrlen = sizeof(address); char buffer[1024] = {0};

char \*hello = "Hello from server";

// Creating socket file descriptor

if ((server\_fd = socket(AF\_INET, SOCK\_STREAM, 0)) == 0)

{

perror("socket failed"); exit(EXIT\_FAILURE);

}

// Forcefully attaching socket to the port 8080 if (setsockopt(server\_fd, SOL\_SOCKET,

SO\_REUSEADDR | SO\_REUSEPORT, &opt,

sizeof(opt)))

{

perror("setsockopt"); exit(EXIT\_FAILURE);

}

address.sin\_family = AF\_INET; address.sin\_addr.s\_addr = INADDR\_ANY; address.sin\_port = htons(PORT);

// Forcefully attaching socket to the port 8080 if (bind(server\_fd, (struct sockaddr \*)&address,

sizeof(address)) < 0)

{

perror("bind failed"); exit(EXIT\_FAILURE);

}

if (listen(server\_fd, 3) < 0)

{

perror("listen"); exit(EXIT\_FAILURE);

}

if ((new\_socket = accept(server\_fd, (struct sockaddr \*)&address, (socklen\_t \*)&addrlen)) < 0)

{

perror("accept"); exit(EXIT\_FAILURE);

}

valread = read(new\_socket, buffer, 1024); printf("%s\n", buffer);

send(new\_socket, hello, strlen(hello), 0); printf("Hello message sent\n");

// closing the connected socket close(new\_socket);

// closing the listening socket shutdown(server\_fd, SHUT\_RDWR); return 0;

}

# Client.c

// Client side C/C++ program to demonstrate Socket

// programming #include <arpa/inet.h> #include <stdio.h> #include <string.h> #include <sys/socket.h> #include <unistd.h> #define PORT 8080

int main(int argc, char const \*argv[])

{

int sock = 0, valread, client\_fd; struct sockaddr\_in serv\_addr; char \*hello = "Hello from client"; char buffer[1024] = {0};

if ((sock = socket(AF\_INET, SOCK\_STREAM, 0)) < 0)

{

printf("\n Socket creation error \n"); return -1;

}

serv\_addr.sin\_family = AF\_INET; serv\_addr.sin\_port = htons(PORT);

// Convert IPv4 and IPv6 addresses from text to binary

// form

if (inet\_pton(AF\_INET, "127.0.0.1", &serv\_addr.sin\_addr) <= 0)

{

printf(

"\nInvalid address/ Address not supported \n"); return -1;

}

if ((client\_fd = connect(sock, (struct sockaddr \*)&serv\_addr, sizeof(serv\_addr))) < 0)

{

printf("\nConnection Failed \n"); return -1;

}

send(sock, hello, strlen(hello), 0); printf("Hello message sent\n"); valread = read(sock, buffer, 1024); printf("%s\n", buffer);

// closing the connected socket close(client\_fd);

return 0;

}

**Output:**

Hello from client Hello message sent

Hello message sent Hello from server