2 Develop an Android application using controls like Button, Text View, Edit Text for designing a calculator having basic functionality like Addition, Subtraction, Multiplication, and Division.

XML Code: Activity_Main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/andr
oid"
 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"
 tools:context=".MainActivity">
 <TextView
 android:layout_width="match_parent"
 android:layout_height="wrap_content"
 android:text="SIMPLE CALCULATOR"
 android:textSize="30sp"

android:textColor="@color/design_default_color_primary
_dark"
 android:textAlignment="center"
 />
 <EditText
 android:layout_width="match_parent"
 android:layout_height="wrap_content"
 android:hint="Enter First Number"
 android:id="@+id/num1"
 android:textSize="20sp"
 android:textAlignment="center"
 />
<EditText
 android:layout_width="match_parent"
 android:layout_height="wrap_content"
 android:hint="Enter Second Number"
 android:id="@+id/num2"
 android:textSize="20sp"
 android:textAlignment="center"
 />
 <TextView
 android:layout_width="match_parent"
 android:layout_height="wrap_content"
 android:hint="Result"
 android:id="@+id/result"
 android:textSize="20sp"
 android:textAlignment="center"
 />
<LinearLayout
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:layout_gravity="center"
 android:orientation="horizontal">
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/seven"
 android:text="7"
 android:textAlignment="center"
 android:onClick="seven"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/eight"
 android:text="8"
 android:textAlignment="center"
 android:onClick="eight"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/nine"
 android:text="9"
 android:textAlignment="center"
 android:onClick="nine"
 />
<Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/divide"
 android:text="/"
 android:textAlignment="center"
 android:onClick="divide"
 />
</LinearLayout>
 <LinearLayout
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:orientation="horizontal"
 android:layout_gravity="center">
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/four"
 android:text="4"
 android:textAlignment="center"
 android:onClick="four"
 />

 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/five"
 android:text="5"
 android:textAlignment="center"
 android:onClick="five"
 />
 <Button
```

```
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/six"
 android:text="6"
 android:textAlignment="center"
 android:onClick="six"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/multiply"
 android:text="*"
 android:textAlignment="center"
 android:onClick="multiply"
 />
</LinearLayout>
<LinearLayout
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:orientation="horizontal"
 android:layout_gravity="center">
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/one"
 android:text="1"
 android:textAlignment="center"
 android:onClick="one"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/two"
 android:text="2"
 android:textAlignment="center"
 android:onClick="two"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/three"
 android:text="3"
 android:textAlignment="center"
 android:onClick="three"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/add"
 android:text="+"
 android:textAlignment="center"
 android:onClick="add"
 />
 </LinearLayout>
 <LinearLayout
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:orientation="horizontal"
 android:layout_gravity="center">
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
android:id="@+id/dot"
 android:text="."
 android:textAlignment="center"
 android:onClick="dot"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/zero"
 android:text="0"
 android:textAlignment="center"
 android:onClick="zero"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/equals"
 android:text="="
 android:textAlignment="center"
 android:onClick="compute"
 />
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/minus"
 android:text="- "
 android:textAlignment="center"
 android:onClick="sub"
 />
 </LinearLayout>
 <LinearLayout
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:orientation="horizontal"
 android:layout_gravity="center">
 <Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/clear_one_digit_at_a_time"
 android:text="C"
 android:textAlignment="center"
 android:onClick="clear_one_digit_at_a_time"
 />

<Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
android:id="@+id/clear_one_field_completely"
 android:text="CE"
 android:textAlignment="center"
```

```
 android:onClick="clear_one_field_completely"
 />

<Button
 android:layout_width="wrap_content"
 android:layout_height="wrap_content"
 android:id="@+id/All_Clear"
 android:text="AC"
 android:textAlignment="center"
 android:onClick="All_Clear"
 />
 </LinearLayout>
</LinearLayout>
```

Java Coding Part: ActivityMain.java

```
package com.example.labpgm2;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
EditText number1,number2;
TextView res;
char op;
 @Override
 protected void onCreate(Bundle savedInstanceState) {
 super.onCreate(savedInstanceState);
 setContentView(R.layout.activity_main);
 number1=findViewById(R.id.num1);
 number2=findViewById(R.id.num2);
 res=findViewById(R.id.result);
 }
 public void one(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("1");
 }
 else if(number2.hasFocus())
 {
 number2.append("1");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void two(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("2");
 }
else if(number2.hasFocus())
 {
 number2.append("2");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void three(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("3");
 }
 else if(number2.hasFocus())
 {
 number2.append("3");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void four(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("4");
 }
 else if(number2.hasFocus())
 {
 number2.append("4");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void five(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("5");
 }
 else if(number2.hasFocus())
{
 number2.append("5");
 }
 else {
```

```
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void six(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("6");
 }
 else if(number2.hasFocus())
 {
 number2.append("6");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void seven(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("7");
 }
 else if(number2.hasFocus())
 {
 number2.append("7");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void eight(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("8");
 }
 else if(number2.hasFocus())
 {
 number2.append("8");
}
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void nine(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("9");
 }
 else if(number2.hasFocus())
 {
 number2.append("9");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void zero(View v)
 {
 if(number1.hasFocus())
 {
 number1.append("0");
 }
 else if(number2.hasFocus())
 {
 number2.append("0");
 }
 else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void dot(View v)
 {
 if(number1.hasFocus())
 {
 number1.append(".");
 }
 else if(number2.hasFocus())
 {
 number2.append(".");
 }
else {
 Toast.makeText(this, "Please get the focus of First/Second
Number field",
Toast.LENGTH_LONG).show();
 }
 }
 public void add(View v)
 {
 op='+';
 }
 public void sub(View v)
 {
 op='-';
 }
 public void multiply(View v)
 {
 op='*';
```

```
 }
 public void divide(View v)
 {
 op='/';
 }
 public void compute(View v)
 {
 float n1,n2,r;
 switch(op)
 {
 case '+':
n1=Float.parseFloat(number1.getText().toString());
 n2=Float.parseFloat(number2.getText().toString());
 r=n1+n2;
 res.setText(""+n1+"+"+n2+"="+r);
 break;
 case '-':
n1=Float.parseFloat(number1.getText().toString());
 n2=Float.parseFloat(number2.getText().toString());
 r=n1-n2;
 res.setText(""+n1+"- "+n2+"="+r);
 break;
 case '*':
n1=Float.parseFloat(number1.getText().toString());
 n2=Float.parseFloat(number2.getText().toString());
 r=n1*n2;
 res.setText(""+n1+"*"+n2+"="+r);
 break;
 case '/':
n1=Float.parseFloat(number1.getText().toString());
 n2=Float.parseFloat(number2.getText().toString());
 r=n1/n2;
 res.setText(""+n1+"/"+n2+"="+r);
break;
 }
 }
 public void All_Clear(View v)
 {
 number1.setText("");
 number2.setText("");
 res.setText("");
 }
 public void clear_one_field_completely(View v)
 {
 if(number1.hasFocus())
 {
 number1.setText("");
 res.setText("");
 }
 else if(number2.hasFocus())
 {
 number2.setText("");
 res.setText("");
 }
 else
 {
 Toast.makeText(this, "Please click on Number1/Number2
Field",
Toast.LENGTH_LONG).show();
 }
 }
 public void clear_one_digit_at_a_time(View v)
 {
 if(number1.hasFocus())
 {
 String n;
 n=number1.getText().toString();
 // n=n.substring(0,n.length()-1); /// deletes digits from
right to left
 n=n.substring(1,n.length()); // deletes digits from left to
right
 number1.setText(n);
 }
 else if(number2.hasFocus())
 {
 String n;
 n=number2.getText().toString();
 // n=n.substring(0,n.length()-1); /// deletes digits from
right to left
 n=n.substring(1,n.length()); // deletes digits from left to
right
 number2.setText(n);
 }
else
 {
 Toast.makeText(this, "Please click on Number1/Number2
Field",
Toast.LENGTH_LONG).show();
 }
 }
 }
```