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:layout_height="wrap_content"
                                                                android:orientation="horizontal"
android:id="@+id/six"
                                                                android:layout gravity="center">
android:text="6"
                                                                <Button
android:textAlignment="center"
                                                                android:layout_width="wrap_content"
android:onClick="six"
                                                                android:layout height="wrap content"
                                                               android:id="@+id/dot"
/>
                                                                android:text="."
<Button
                                                                android:textAlignment="center"
android:layout width="wrap content"
android:layout height="wrap content"
                                                                android:onClick="dot"
android:id="@+id/multiply"
                                                                />
android:text="*"
                                                                <Button
android:textAlignment="center"
                                                                android:layout width="wrap content"
android:onClick="multiply"
                                                                android:layout_height="wrap_content"
                                                                android:id="@+id/zero"
                                                                android:text="0"
</LinearLayout>
                                                                android:textAlignment="center"
<LinearLayout
android:layout_width="wrap_content"
                                                                android:onClick="zero"
android:layout height="wrap content"
                                                                />
android:orientation="horizontal"
                                                                <Button
android:layout_gravity="center">
                                                                android:layout width="wrap content"
<Button
                                                                android:layout height="wrap content"
android:layout_width="wrap_content"
                                                                android:id="@+id/equals"
                                                                android:text="="
android:layout_height="wrap_content"
android:id="@+id/one"
                                                                android:textAlignment="center"
android:text="1"
                                                                android:onClick="compute"
android:textAlignment="center"
                                                                />
android:onClick="one"
                                                                <Button
/>
                                                                android:layout_width="wrap_content"
<Button
                                                                android:layout_height="wrap_content"
android:layout width="wrap content"
                                                                android:id="@+id/minus"
                                                                android:text="- "
android:layout_height="wrap_content"
android:id="@+id/two"
                                                                android:textAlignment="center"
android:text="2"
                                                                android:onClick="sub"
android:textAlignment="center"
                                                                />
android:onClick="two"
                                                                </LinearLayout>
/>
                                                                <LinearLayout
<Button
                                                                android:layout_width="wrap_content"
android:layout width="wrap content"
                                                                android:layout height="wrap content"
android:layout height="wrap content"
                                                                android:orientation="horizontal"
android:id="@+id/three"
                                                                android:layout_gravity="center">
android:text="3"
                                                                <Button
android:textAlignment="center"
                                                                android:layout width="wrap content"
android:onClick="three"
                                                                android:layout_height="wrap_content"
/>
                                                                android:id="@+id/clear one digit at a time"
                                                                android:text="C"
<Button
android:layout_width="wrap_content"
                                                                android:textAlignment="center"
android:layout_height="wrap_content"
                                                                android:onClick="clear_one_digit_at_a_time"
android:id="@+id/add"
                                                                />
android:text="+"
android:textAlignment="center"
                                                               <Button
android:onClick="add"
                                                                android:layout width="wrap content"
                                                                android:layout_height="wrap_content"
</LinearLayout>
                                                               android:id="@+id/clear_one_field_completely"
                                                                android:text="CE"
<LinearLayout
android:layout_width="wrap_content"
                                                                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>
```

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

```
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);
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();
}
}
}
```