Program 1. Create a Simple Calculator for demonstrating the basic arithmetic operations (+ , - , * , /)

XML File

```
<?xml version="1.0" encoding="utf-8"?>
 <LinearLayout
 xmlns:android="http://schemas.android.com/apk/res/android"
android:orientation="vertical"
 android:layout_width="fill_parent"
 android:layout_height="fill_parent"
 android:weightSum="1">
 <LinearLayout
 android:layout_width="match_parent"
 android:layout_height="wrap_content"
 android:id="@+id/linearLayout1"
 android:layout_marginLeft="10pt"
 android:layout_marginRight="10pt"
 android:layout_marginTop="3pt">
 <EditText
 android:layout_weight="1"
 android:layout_height="wrap_content"
 android:layout_marginRight="5pt"
 android:id="@+id/etNum1"
 android:layout_width="match_parent"
 android:inputType="numberDecimal">
 </EditText>
 <EditText
 android:layout_height="wrap_content"
 android:layout_weight="1"
 android:layout_marginLeft="5pt"
 android:id="@+id/etNum2"
 android:layout_width="match_parent"
 android:inputType="numberDecimal">
 </EditText>
 </LinearLayout>
 <LinearLayout
 android:layout_width="match_parent"
 android:layout_height="wrap_content"
 android:id="@+id/linearLayout2"
 android:layout_marginTop="3pt"
 android:layout_marginLeft="5pt"
 android:layout_marginRight="5pt">
 <Button
 android:layout_height="wrap_content"
 android:layout_width="match_parent"
 android:layout_weight="1"
 android:text="+"
 android:textSize="8pt"
 android:id="@+id/btnAdd">
 </Button>
 <Button
 android:layout_height="wrap_content"
 android:layout_width="match_parent"
android:layout_weight="1"  android:text="-"
 android:textSize="8pt"
```

```
 android:id="@+id/btnSub">  </Button>
 <Button
 android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_weight="1"  android:text="*"
 android:textSize="8pt"
 android:id="@+id/btnMult">  </Button>
 <Button
 android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_weight="1"  android:text="/"
 android:textSize="8pt"
 android:id="@+id/btnDiv">  </Button>
 </LinearLayout>
 <TextView
 android:layout_height="wrap_content"
android:layout_width="match_parent"
android:layout_marginLeft="5pt"
android:layout_marginRight="5pt"
android:textSize="12pt"
 android:layout_marginTop="3pt"
android:id="@+id/tvResult"
 android:gravity="center_horizontal"
android:layout_weight="0.07">  </TextView>
 </LinearLayout>


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

JAVA File

```
package com.example.calculator;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener{

 EditText etNum1;
 EditText etNum2;

 Button btnAdd;
 Button btnSub;
 Button btnMult;
 Button btnDiv;

 TextView tvResult;

 String oper = "";

 /** Called when the activity is first created. */
@Override
 public void onCreate(Bundle savedInstanceState) {
```

```
super.onCreate(savedInstanceState);
 setContentView(R.layout.activity_main);

 // find the elements
 etNum1 = (EditText) findViewById(R.id.etNum1);  etNum2
= (EditText) findViewById(R.id.etNum2);

 btnAdd = (Button) findViewById(R.id.btnAdd);  btnSub =
(Button) findViewById(R.id.btnSub);  btnMult = (Button)
findViewById(R.id.btnMult);  btnDiv = (Button)
findViewById(R.id.btnDiv);

 tvResult = (TextView) findViewById(R.id.tvResult);

 // set a listener
 btnAdd.setOnClickListener(this);
 btnSub.setOnClickListener(this);
 btnMult.setOnClickListener(this);
 btnDiv.setOnClickListener(this);

 }

 @Override
 public void onClick(View v) {
 // TODO Auto-generated method stub
 float num1 = 0;
 float num2 = 0;
 float result = 0;

 // check if the fields are empty
 if (TextUtils.isEmpty(etNum1.getText().toString()) ||
TextUtils.isEmpty(etNum2.getText().toString())) {  return;
 }

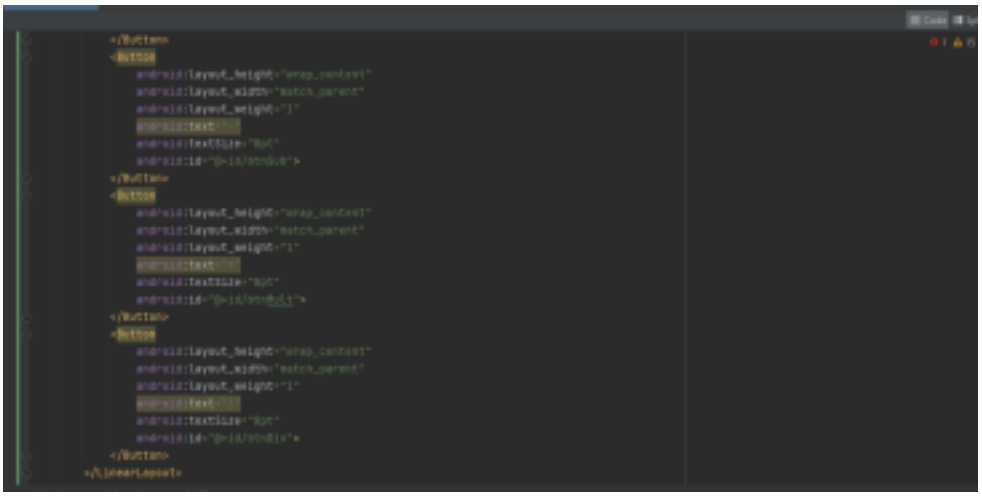
 // read EditText and fill variables with numbers  num1 =
Float.parseFloat(etNum1.getText().toString());  num2 =
Float.parseFloat(etNum2.getText().toString());

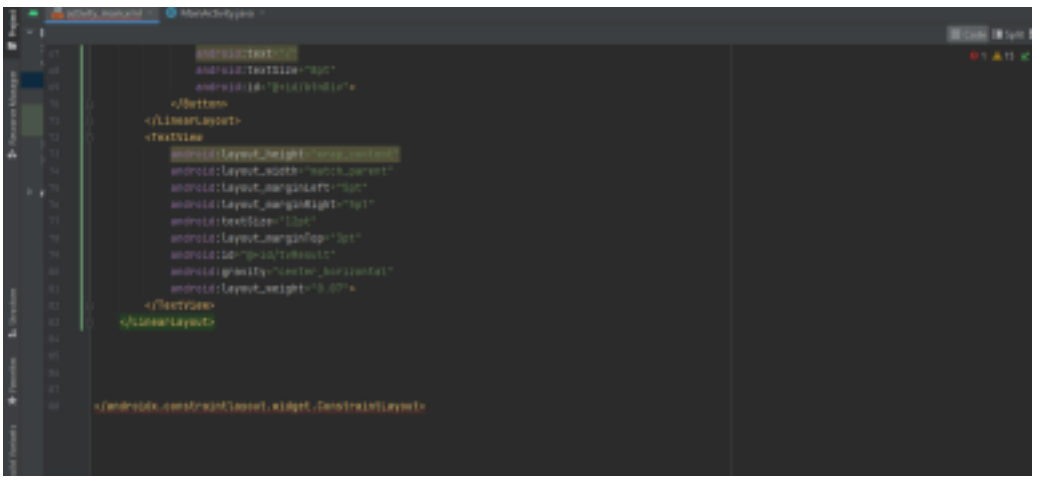
 // defines the button that has been clicked and performs the
corresponding operation
 // write operation into oper, we will use it later for output  switch
(v.getId()) {
 case R.id.btnAdd:
 oper = "+";
 result = num1 + num2;
 break;
 case R.id.btnSub:
 oper = "-";
 result = num1 - num2;
 break;
 case R.id.btnMult:
 oper = "*";
 result = num1 * num2;
 break;
 case R.id.btnDiv:
 oper = "/";
 result = num1 / num2;
 break;
 default:
 break;
 }

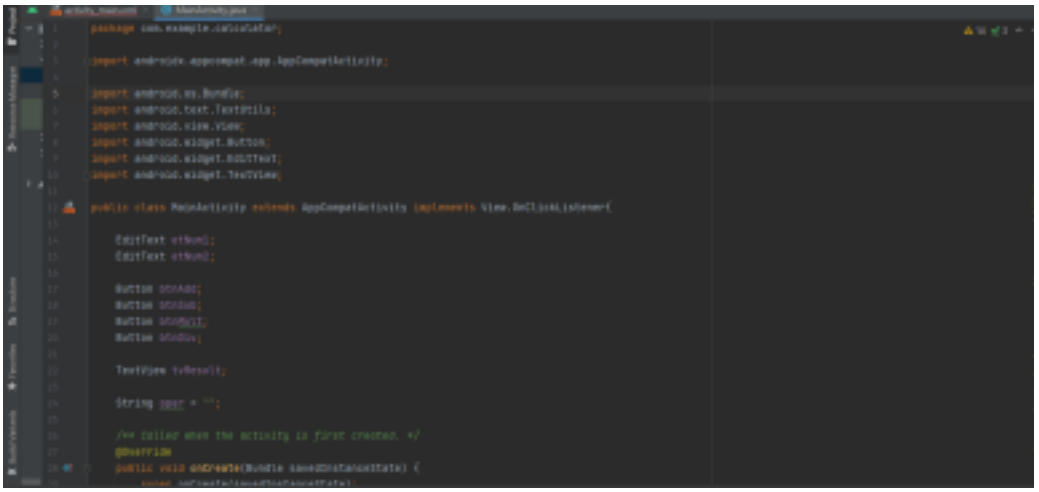
 // form the output line
 tvResult.setText(num1 + " " + oper + " " + num2 + " = " + result);  }
```

}

SCREENSHOTS







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import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity implements View.OnClickListener{

    EditText etNum1;
    EditText etNum2;

    Button btnAdd;
    Button btnSub;
    Button btnMult;
    Button btnDiv;

    TextView tvResult;

    String oper = "";

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
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    TextView tvResult;

    String oper = "";

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

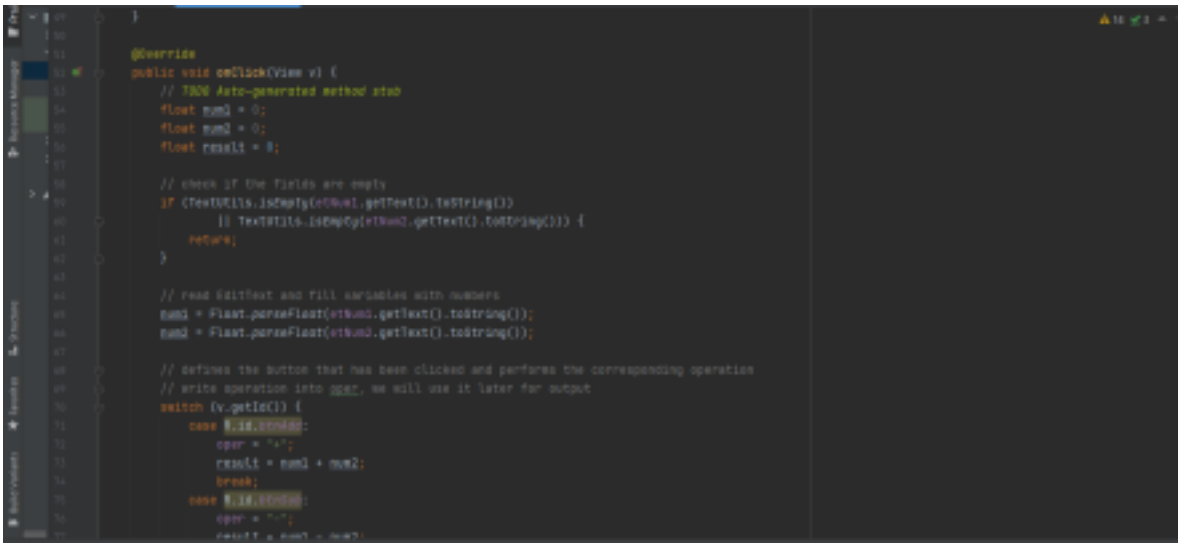
        // find the elements
        etNum1 = (EditText) findViewById(R.id.etNum1);
        etNum2 = (EditText) findViewById(R.id.etNum2);

        btnAdd = (Button) findViewById(R.id.btnAdd);
        btnSub = (Button) findViewById(R.id.btnSub);
        btnMult = (Button) findViewById(R.id.btnMult);
        btnDiv = (Button) findViewById(R.id.btnDiv);

        tvResult = (TextView) findViewById(R.id.tvResult);

        // set a listener
        btnAdd.setOnClickListener(this);
        btnSub.setOnClickListener(this);
        btnMult.setOnClickListener(this);
        btnDiv.setOnClickListener(this);

    }
```



```
    }

    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub
        float num1 = 0;
        float num2 = 0;
        float result = 0;

        // check if the fields are empty
        if (TextUtils.isEmpty(etNum1.getText().toString())
                || TextUtils.isEmpty(etNum2.getText().toString())) {
            return;
        }

        // read EditText and fill variables with numbers
        num1 = Float.parseFloat(etNum1.getText().toString());
        num2 = Float.parseFloat(etNum2.getText().toString());

        // defines the button that has been clicked and performs the corresponding operation
        // write operation into oper, we will use it later for output
        switch (v.getId()) {
            case R.id.btnAdd:
                oper = "+";
                result = num1 + num2;
                break;
            case R.id.btnSub:
                oper = "-";
                result = num1 - num2;
```

```
        switch (v.getId()) {
            case R.id.btnAdd:
                oper = "+";
                result = num1 + num2;
                break;
            case R.id.btnSub:
                oper = "-";
                result = num1 - num2;
                break;
            case R.id.btnMul:
                oper = "*";
                result = num1 * num2;
                break;
            case R.id.btnDiv:
                oper = "/";
                result = num1 / num2;
                break;
            default:
                break;
        }

        // form the output line
        tvResult.setText(num1 + " " + oper + " " + num2 + " = " + result);
    }
}
```