

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

```
<?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/LinearLayout2"
        android:layout_marginLeft="1dp"
        android:layout_marginRight="1dp"
        android:layout_marginTop="1dp">
        <EditText
            android:layout_width="1"
            android:layout_height="wrap_content"
            android:layout_marginRight="1dp"
            android:id="@+id/text1"
            android:layout_width="match_parent"
            android:inputType="numberDecimal">
        </EditText>
    </LinearLayout>
    android:layout_height="wrap_content">
    </LinearLayout>
</LinearLayout>
```

```
</Button>
<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="0"
    android:id="@+id/button4">
</Button>
<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="0"
    android:id="@+id/button5">
</Button>
<Button
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:layout_weight="1"
    android:text="0"
    android:id="@+id/button6">
</Button>
</LinearLayout>
```

```
</EditText>
<EditText
    android:layout_height="wrap_content"
    android:layout_width="1"
    android:layout_marginRight="1dp"
    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="1dp"
    android:layout_marginLeft="1dp"
    android:layout_marginRight="1dp">
    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="0"
        android:id="@+id/button4">
    </Button>
    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="0"
        android:id="@+id/button5">
    </Button>
    <Button
        android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:layout_weight="1"
        android:text="0"
        android:id="@+id/button6">
    </Button>
</LinearLayout>
</LinearLayout>
```

```
<?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/LinearLayout2"
        android:layout_marginLeft="1dp"
        android:layout_marginRight="1dp"
        android:layout_marginTop="1dp">
        <EditText
            android:layout_width="1"
            android:layout_height="wrap_content"
            android:layout_marginRight="1dp"
            android:id="@+id/text1"
            android:layout_width="match_parent"
            android:inputType="numberDecimal">
        </EditText>
    </LinearLayout>
    android:layout_height="wrap_content">
    </LinearLayout>
</LinearLayout>
</LinearLayout>
```

```

1 package com.example.calculator;
2
3 import androidx.appcompat.app.AppCompatActivity;
4
5 import android.os.Bundle;
6 import android.text.TextUtils;
7 import android.view.View;
8 import android.widget.Button;
9 import android.widget.EditText;
10 import android.widget.TextView;
11
12 public class MainActivity extends AppCompatActivity implements View.OnClickListener {
13
14     EditText etNum1;
15     EditText etNum2;
16
17     Button btnAdd;
18     Button btnSub;
19     Button btnMult;
20     Button btnDiv;
21
22     TextView tvResult;
23
24     String oper = "+";
25
26     // Called when the activity is first created. //
27     @Override
28     public void onCreate(Bundle savedInstanceState) {
29         super.onCreate(savedInstanceState);
30         setContentView(R.layout.activity_main);
31
32         // find the elements
33         etNum1 = (EditText) findViewById(R.id.etNum1);
34         etNum2 = (EditText) findViewById(R.id.etNum2);
35
36         btnAdd = (Button) findViewById(R.id.btnAdd);
37         btnSub = (Button) findViewById(R.id.btnSub);
38         btnMult = (Button) findViewById(R.id.btnMult);
39         btnDiv = (Button) findViewById(R.id.btnDiv);
40
41         tvResult = (TextView) findViewById(R.id.tvResult);
42
43         // set a listener
44         btnAdd.setOnClickListener(this);
45         btnSub.setOnClickListener(this);
46         btnMult.setOnClickListener(this);
47         btnDiv.setOnClickListener(this);
48
49     }
50 }

```

```

51
52 String oper = "+";
53
54 // Called when the activity is first created. //
55 @Override
56 public void onCreate(Bundle savedInstanceState) {
57     super.onCreate(savedInstanceState);
58     setContentView(R.layout.activity_main);
59
60     // find the elements
61     etNum1 = (EditText) findViewById(R.id.etNum1);
62     etNum2 = (EditText) findViewById(R.id.etNum2);
63
64     btnAdd = (Button) findViewById(R.id.btnAdd);
65     btnSub = (Button) findViewById(R.id.btnSub);
66     btnMult = (Button) findViewById(R.id.btnMult);
67     btnDiv = (Button) findViewById(R.id.btnDiv);
68
69     tvResult = (TextView) findViewById(R.id.tvResult);
70
71     // set a listener
72     btnAdd.setOnClickListener(this);
73     btnSub.setOnClickListener(this);
74     btnMult.setOnClickListener(this);
75     btnDiv.setOnClickListener(this);
76
77 }
78
79 }

```

```

80
81 @Override
82 public void onClick(View v) {
83     // TODO Auto-generated method stub
84     float num1 = 0;
85     float num2 = 0;
86     float result = 0;
87
88     // check if the fields are empty
89     if (TextUtils.isEmpty(etNum1.getText().toString())
90         || TextUtils.isEmpty(etNum2.getText().toString())) {
91         return;
92     }
93
94     // read EditText and fill variables with numbers
95     num1 = Float.parseFloat(etNum1.getText().toString());
96     num2 = Float.parseFloat(etNum2.getText().toString());
97
98     // defines the button that has been clicked and performs the corresponding operation
99     // write operation into oper, we will use it later for output
100     switch (v.getId()) {
101         case R.id.btnAdd:
102             oper = "+";
103             result = num1 + num2;
104             break;
105         case R.id.btnSub:
106             oper = "-";
107             result = num1 - num2;
108
109     }
110 }

```

```
switch (v.getAction()) {
    case R.id.plus:
        open = "+";
        result = num1 + num2;
        break;
    case R.id.minus:
        open = "-";
        result = num1 - num2;
        break;
    case R.id.multiply:
        open = "*";
        result = num1 * num2;
        break;
    case R.id.divide:
        open = "/";
        result = num1 / num2;
        break;
    default:
        break;
}

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

