

## **PROGRAM 2**

**AIM :** Design a simple Calculator using GridLayout and Cascaded LinearLayout.

### **PROGRAM CODE :**

#### **JAVA**

```
package com.example.gridcalculator;

import android.os.Bundle;

import androidx.appcompat.app.AppCompatActivity;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button button0, button1, button2, button3, button4, button5,

        button6,

        button7, button8, button9, buttonAdd, buttonSub,

        buttonDivision,

        buttonMul, buttond, buttonC, buttonEqual,buttonperc;

    EditText cEditText;

    float mValueOne, mValueTwo;

    boolean cAddition, mSubtract, cMultiplication, cDivision,cperc;

    @Override

    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
```

```
setContentView(R.layout.activity_main);

button0 = (Button) findViewById(R.id.button15);

button1 = (Button) findViewById(R.id.button8);

button2 = (Button) findViewById(R.id.button14);

button3 = (Button) findViewById(R.id.button18);

button4 = (Button) findViewById(R.id.button7);

button5 = (Button) findViewById(R.id.button13);

button6 = (Button) findViewById(R.id.button16);

button7 = (Button) findViewById(R.id.button6);

button8 = (Button) findViewById(R.id.button10);

button9 = (Button) findViewById(R.id.button11);

buttond = (Button) findViewById(R.id.button19);

buttonAdd = (Button) findViewById(R.id.button20);

buttonSub = (Button) findViewById(R.id.button17);

buttonMul = (Button) findViewById(R.id.button12);

buttonDivision = (Button) findViewById(R.id.button5);

buttonC = (Button) findViewById(R.id.button2);

buttonperc = (Button) findViewById(R.id.button4);

buttonEqual = (Button) findViewById(R.id.button21);

cEditText = (EditText) findViewById(R.id.edt1);

button1.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {
```

```
        cEditText.setText(cEditText.getText() + "1");
    }

});

button2.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

    cEditText.setText(cEditText.getText() + "2");

}

});

button3.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

    cEditText.setText(cEditText.getText() + "3");

}

});

button4.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

    cEditText.setText(cEditText.getText() + "4");

}

});

button5.setOnClickListener(new View.OnClickListener() {

@Override
```

```
public void onClick(View v) {  
    cEditText.setText(cEditText.getText() + "5");  
}  
});  
  
button6.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        cEditText.setText(cEditText.getText() + "6");  
    }  
});  
  
button7.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        cEditText.setText(cEditText.getText() + "7");  
    }  
});  
  
button8.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        cEditText.setText(cEditText.getText() + "8");  
    }  
});  
  
button9.setOnClickListener(new View.OnClickListener() {
```

```

@Override

public void onClick(View v) {

    cEditText.setText(cEditText.getText() + "9");

}

});

button0.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

    cEditText.setText(cEditText.getText() + "0");

}

});

buttonAdd.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

    if (cEditText == null) {

        cEditText.setText("");

    } else {

        mValueOne = Float.parseFloat(cEditText.getText() +

        "");

        cAddition = true;

        cEditText.setText(null);

    }

}

}

```

```

});

buttonSub.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

mValueOne = Float.parseFloat(cEditText.getText() +

        "");

mSubtract = true;

cEditText.setText(null);

}

});

buttonMul.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

mValueOne = Float.parseFloat(cEditText.getText() +

        "");

cMultiplication = true;

cEditText.setText(null);

}

});

buttonDivision.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

mValueOne = Float.parseFloat(cEditText.getText() +

```

```

        "");

cDivision = true;

cEditText.setText(null);

}

});

buttonperc.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

mValueOne = Float.parseFloat(cEditText.getText() +

        "");

cperc = true;

cEditText.setText(null);

}

});

buttonEqual.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

mValueTwo = Float.parseFloat(cEditText.getText() +

        "");

if (cAddition == true) {

    cEditText.setText(mValueOne + mValueTwo + "");

    cAddition = false;

}

```

```

if (mSubtract == true) {

    cEditText.setText(mValueOne - mValueTwo + "");

    mSubtract = false;

}

if (cMultiplication == true) {

    cEditText.setText(mValueOne * mValueTwo + "");

    cMultiplication = false;

}

if (cDivision == true) {

    cEditText.setText(mValueOne / mValueTwo + "");

    cDivision = false;

}

if (cperc == true) {

    cEditText.setText((mValueOne / mValueTwo)*100 +

        "");

    cperc = false;

}

}

});

buttonC.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View v) {

        cEditText.setText("");

```



```

    }

    });

    buttond.setOnClickListener(new View.OnClickListener() {

        @Override

        public void onClick(View v) {

            cEditText.setText(cEditText.getText() + ".");

        }

    });

}

}

```

## XML

```

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

<androidx.constraintlayout.widget.ConstraintLayout

    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:background="#F6CACA"

    tools:context=".MainActivity">

    <android.widget.GridLayout

        android:id="@+id/gridLayout"

```

```
        android:layout_width="398dp"

        android:layout_height="496dp"

    android:layout_marginStart="1dp"

    android:layout_marginTop="45dp"

        android:layout_marginEnd="1dp"

    app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toBottomOf="@+id/edt1">

        <Button

            android:id="@+id/button2"

            android:layout_width="100dp"

            android:layout_height="60dp"

            android:text="C"

            android:textSize="20sp"

            app:layout_column="0"

            app:layout_row="0" />

        <Button

            android:id="@+id/button3"

            android:layout_width="98dp"

            android:layout_height="60dp"

            android:text="("

            android:textSize="20sp"

            app:layout_column="1"
```

```
app:layout_row="0" />  
  
<Button  
  
    android:id="@+id/button4"  
  
    android:layout_width="wrap_content"  
  
    android:layout_height="60dp"  
  
    android:text="%"  
  
    android:textSize="20sp"  
  
    app:layout_column="2"  
  
    app:layout_row="0" />
```

```
<Button  
  
    android:id="@+id/button5"  
  
    android:layout_width="121dp"  
  
    android:layout_height="64dp"  
  
    android:layout_row="0"  
  
    android:layout_column="3"  
  
    android:text="/"   
  
    android:textSize="20sp"  
  
    app:layout_column="3"  
  
    app:layout_row="0" />
```

```
<Button  
  
    android:id="@+id/button6"  
  
    android:layout_width="91dp"  
  
    android:layout_height="59dp"
```

```
android:layout_row="1"
android:layout_column="0"
android:text="7"
android:textSize="20sp"
app:layout_column="0"
app:layout_row="1" />
<Button
android:id="@+id/button7"
android:layout_width="wrap_content"
android:layout_height="60dp"
android:layout_row="2"
android:layout_column="1"
android:text="4"
android:textSize="20sp"
app:layout_column="0"
app:layout_row="2" />
<Button
android:id="@+id/button8"
android:layout_width="wrap_content"
android:layout_height="61dp"
android:layout_row="1"
android:layout_column="2"
android:text="1"
```

```
        android:textSize="20sp"
        app:layout_column="0"
        app:layout_row="3" />
    <Button
        android:id="@+id/button9"
        android:layout_width="123dp"
        android:layout_height="65dp"
        android:text="+/-"
        android:textSize="20sp"
        app:layout_column="0"
        app:layout_row="4" />
    <Button
        android:id="@+id/button10"
        android:layout_width="wrap_content"
        android:layout_height="61dp"
        android:layout_row="4"
        android:layout_column="0"
        android:text="8"
        android:textSize="20sp"
        app:layout_column="1"
        app:layout_row="1" />
    <Button
        android:id="@+id/button11"
```

android:layout\_width="wrap\_content"

android:layout\_height="59dp"

android:layout\_row="4"

android:layout\_column="1"

android:text="9"

android:textSize="20sp"

app:layout\_column="2"

app:layout\_row="1" />

<Button

android:id="@+id/button12"

android:layout\_width="113dp"

android:layout\_height="62dp"

android:layout\_row="2"

android:layout\_column="3"

android:text="\*"

android:textSize="20sp"

app:layout\_column="3"

app:layout\_row="1" />

<Button

android:id="@+id/button13"

android:layout\_width="wrap\_content"

android:layout\_height="61dp"

android:layout\_row="1"

```
android:layout_column="1"

android:text="5"

android:textSize="20sp"

app:layout_column="1"

app:layout_row="2" />

<Button

android:id="@+id/button14"

android:layout_width="wrap_content"

android:layout_height="64dp"

android:layout_row="2"

    android:layout_column="2"

    android:text="2"

    android:textSize="20sp"

    app:layout_column="1"

    app:layout_row="3" />

<Button

android:id="@+id/button15"

android:layout_width="wrap_content"

android:layout_height="60dp"

android:layout_row="3"

    android:layout_column="2"

    android:text="0"

    android:textSize="20sp"
```

```
app:layout_column="1"
app:layout_row="4" />

<Button

android:id="@+id/button16"

android:layout_width="wrap_content"

android:layout_height="60dp"

android:layout_row="2"

android:layout_column="0"

android:text="6"

android:textSize="20sp"

app:layout_column="2"

app:layout_row="2" />

<Button

android:id="@+id/button17"

android:layout_width="wrap_content"

android:layout_height="61dp"

android:layout_row="3"

android:layout_column="0"

android:text="-"

android:textSize="20sp"

app:layout_column="3"

app:layout_row="2" />

<Button
```



```
android:id="@+id/button18"  
android:layout_width="wrap_content"  
android:layout_height="59dp"  
android:text="3"  
android:textSize="20sp"  
app:layout_column="2"  
app:layout_row="3" />
```

```
<Button
```

```
android:id="@+id/button19"  
android:layout_width="wrap_content"  
android:layout_height="61dp"  
android:layout_row="4"  
android:layout_column="2"  
android:text="."  
android:textSize="24sp"  
app:layout_column="2"  
app:layout_row="4" />
```

```
<Button
```

```
android:id="@+id/button20"  
android:layout_width="121dp"  
android:layout_height="59dp"  
android:layout_row="3"  
android:layout_column="3"
```

```
        android:text="+"
        android:textSize="20sp"
        app:layout_column="3"
        app:layout_row="3" />
    <Button
        android:id="@+id/button21"
        android:layout_width="111dp"
        android:layout_height="62dp"
        android:layout_row="4"
        android:layout_column="3"
        android:text=""
        android:textSize="20sp"
        app:layout_column="3"
        app:layout_row="4" />
</android.widget.GridLayout>
<EditText
    android:id="@+id/edt1"
    android:layout_width="423dp"
    android:layout_height="93dp"
    android:layout_marginTop="140dp"
    android:layout_marginBottom="95dp"
    android:background="#A3D4DA"
    android:backgroundTint="#CCEBEF"
```

```
        android:textSize="34sp"

        app:layout_constraintBottom_toTopOf="@+id/gridLayout"

        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintHorizontal_bias="0.0"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"

        app:layout_constraintVertical_bias="1.0"

        tools:ignore="MissingConstraints" />
<EditText

        android:id="@+id/editTextTextPersonName2"

        android:layout_width="406dp"

        android:layout_height="61dp"

        android:layout_marginStart="1dp"

        android:layout_marginTop="15dp"

        android:layout_marginBottom="42dp"

        android:background="#F6C7D7"

        android:ems="10"

        android:foregroundGravity="center"

        android:gravity="center"

        android:inputType="textPersonName"

        android:text="Calculator"

        android:textColor="#673AB7"

        android:textSize="50sp"
```

```
        android:textStyle="bold"

        app:layout_constraintBottom_toTopOf="@+id/edt1"

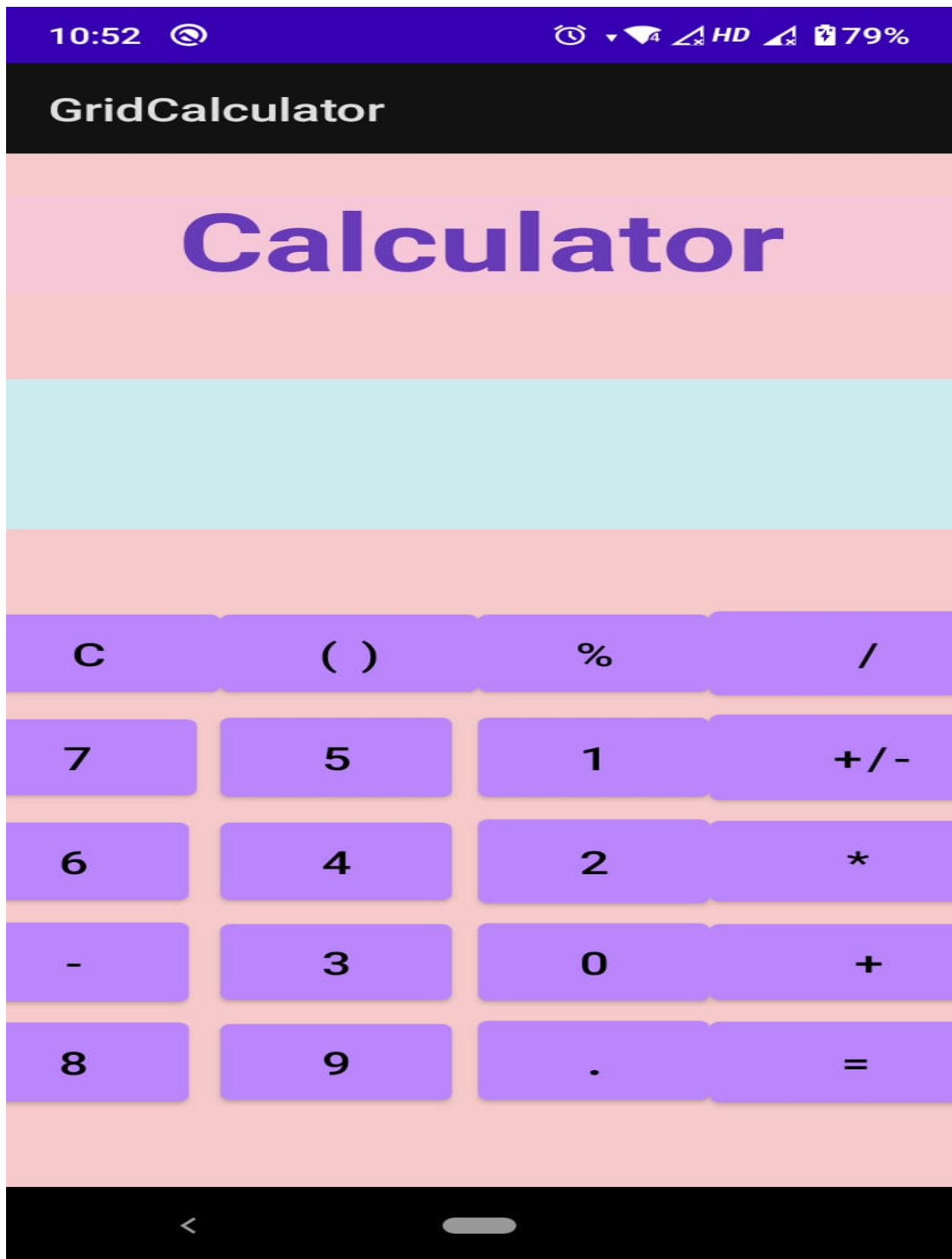
        app:layout_constraintEnd_toEndOf="parent"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent"

        android:layout_marginLeft="1dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

OUTPUT :



**RESULT :** Program has been succesfully executed and output is obtained.