Problem:-Create a simple application to implement simple calculator in android.

Xml Code:-

<?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"  
 tools:context=".MainActivity">  
  
 <EditText  
 android:id="@+id/result"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="8dp"  
 android:ems="10"  
 android:focusable="false"  
 android:focusableInTouchMode="true"  
 android:inputType="numberSigned|numberDecimal"  
 android:textAlignment="center"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <Button  
 android:id="@+id/button0"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="8dp"  
 android:minWidth="48dp"  
 android:text="0"  
 app:layout\_constraintStart\_toStartOf="@+id/button10"  
 app:layout\_constraintTop\_toBottomOf="@+id/button10" />  
  
 <Button  
 android:id="@+id/button10"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="8dp"  
 android:minWidth="48dp"  
 android:text="1"  
 app:layout\_constraintStart\_toStartOf="@+id/button4"  
 app:layout\_constraintTop\_toBottomOf="@+id/button4" />  
  
 <Button  
 android:id="@+id/button2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="2"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button10"  
 app:layout\_constraintStart\_toEndOf="@+id/button10" />  
  
 <Button  
 android:id="@+id/button3"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="3"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button2"  
 app:layout\_constraintStart\_toEndOf="@+id/button2" />  
  
 <Button  
 android:id="@+id/button4"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="8dp"  
 android:minWidth="48dp"  
 android:text="4"  
 app:layout\_constraintStart\_toStartOf="@+id/button7"  
 app:layout\_constraintTop\_toBottomOf="@+id/button7" />  
  
 <Button  
 android:id="@+id/button5"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="5"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button4"  
 app:layout\_constraintStart\_toEndOf="@+id/button4" />  
  
 <Button  
 android:id="@+id/button6"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="6"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button5"  
 app:layout\_constraintStart\_toEndOf="@+id/button5" />  
  
 <Button  
 android:id="@+id/button7"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="96dp"  
 android:layout\_marginTop="36dp"  
 android:minWidth="48dp"  
 android:text="7"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/newNumber" />  
  
 <Button  
 android:id="@+id/button8"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="8"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button7"  
 app:layout\_constraintStart\_toEndOf="@+id/button7" />  
  
 <Button  
 android:id="@+id/button9"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:text="9"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button8"  
 app:layout\_constraintStart\_toEndOf="@+id/button8"  
 android:minWidth="48dp" />  
  
 <Button  
 android:id="@+id/buttonDivide"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="/"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button9"  
 app:layout\_constraintStart\_toEndOf="@+id/button9" />  
  
 <Button  
 android:id="@+id/buttonMultiply"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="\*"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button6"  
 app:layout\_constraintStart\_toEndOf="@+id/button6" />  
  
 <Button  
 android:id="@+id/buttonMinus"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="-"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button3"  
 app:layout\_constraintStart\_toEndOf="@+id/button3" />  
  
 <Button  
 android:id="@+id/buttondot"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="."  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/button0"  
 app:layout\_constraintStart\_toEndOf="@+id/button0" />  
  
 <Button  
 android:id="@+id/buttonEquals"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="="  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/buttondot"  
 app:layout\_constraintStart\_toEndOf="@+id/buttondot" />  
  
 <Button  
 android:id="@+id/buttonPlus"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:minWidth="48dp"  
 android:text="+"  
 app:layout\_constraintBaseline\_toBaselineOf="@+id/buttonEquals"  
 app:layout\_constraintStart\_toEndOf="@+id/buttonEquals" />  
  
 <TextView  
 android:id="@+id/operation"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:layout\_marginTop="8dp"  
 android:layout\_marginEnd="8dp"  
 android:textSize="18sp"  
 android:textStyle="bold"  
 app:layout\_constraintEnd\_toStartOf="@+id/newNumber"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="@+id/newNumber" />  
  
 <EditText  
 android:id="@+id/newNumber"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="8dp"  
 android:layout\_marginTop="24dp"  
 android:layout\_marginEnd="8dp"  
 android:ems="10"  
 android:inputType="numberSigned|numberDecimal"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/result" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

Java Code:-

package com.example.calculator;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
  
public class MainActivity extends AppCompatActivity {  
 private EditText result;  
 private EditText newNumber;  
 private TextView displayOperation;  
  
 private Double operand1 = null;  
 private String pendingOperation = "=";  
  
 private static final String *STATE\_PENDING\_OPERATION* = "PendingOperation";  
 private static final String *STATE\_OPERAND1* = "Operand1";  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 result = (EditText) findViewById(R.id.*result*);  
 newNumber = (EditText) findViewById(R.id.*newNumber*);  
 displayOperation = (TextView) findViewById(R.id.*operation*);  
  
 Button button0 = (Button) findViewById(R.id.*button0*);  
 Button button1 = (Button) findViewById(R.id.*button10*);  
 Button button2 = (Button) findViewById(R.id.*button2*);  
 Button button3 = (Button) findViewById(R.id.*button3*);  
 Button button4 = (Button) findViewById(R.id.*button4*);  
 Button button5 = (Button) findViewById(R.id.*button5*);  
 Button button6 = (Button) findViewById(R.id.*button6*);  
 Button button7 = (Button) findViewById(R.id.*button7*);  
 Button button8 = (Button) findViewById(R.id.*button8*);  
 Button button9 = (Button) findViewById(R.id.*button9*);  
 Button buttonDot = (Button) findViewById(R.id.*buttondot*);  
  
 Button buttonEquals = (Button) findViewById(R.id.*buttonEquals*);  
 Button buttonDivide = (Button) findViewById(R.id.*buttonDivide*);  
 Button buttonMultiply = (Button) findViewById(R.id.*buttonMultiply*);  
 Button buttonMinus = (Button) findViewById(R.id.*buttonMinus*);  
 Button buttonPlus = (Button) findViewById(R.id.*buttonPlus*);  
 View.OnClickListener listener = new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 Button b = (Button) view;  
 newNumber.append(b.getText().toString());  
 }  
 };  
 button0.setOnClickListener(listener);  
 button1.setOnClickListener(listener);  
 button2.setOnClickListener(listener);  
 button3.setOnClickListener(listener);  
 button4.setOnClickListener(listener);  
 button5.setOnClickListener(listener);  
 button6.setOnClickListener(listener);  
 button7.setOnClickListener(listener);  
 button8.setOnClickListener(listener);  
 button9.setOnClickListener(listener);  
 buttonDot.setOnClickListener(listener);  
  
 View.OnClickListener opListener = new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 Button b = (Button) view;  
 String op = b.getText().toString();  
 String value = newNumber.getText().toString();  
 try {  
 Double doubleValue = Double.*valueOf*(value);  
 performOperation(doubleValue, op);  
 } catch (NumberFormatException e) {  
 newNumber.setText("");  
 }  
 pendingOperation = op;  
 displayOperation.setText(pendingOperation);  
 }  
 };  
  
 buttonEquals.setOnClickListener(opListener);  
 buttonDivide.setOnClickListener(opListener);  
 buttonMultiply.setOnClickListener(opListener);  
 buttonMinus.setOnClickListener(opListener);  
 buttonPlus.setOnClickListener(opListener);  
  
 }  
  
 @Override  
 protected void onSaveInstanceState(Bundle outState) {  
 outState.putString(*STATE\_PENDING\_OPERATION*, pendingOperation);  
 if (operand1 != null) {  
 outState.putDouble(*STATE\_OPERAND1*, operand1);  
 }  
 super.onSaveInstanceState(outState);  
 }  
  
 @Override  
 protected void onRestoreInstanceState(Bundle savedInstanceState) {  
 super.onRestoreInstanceState(savedInstanceState);  
 pendingOperation = savedInstanceState.getString(*STATE\_PENDING\_OPERATION*);  
 operand1 = savedInstanceState.getDouble(*STATE\_OPERAND1*);  
 displayOperation.setText(pendingOperation);  
 }  
  
 private void performOperation(Double value, String operation) {  
 if (null == operand1) {  
 operand1 = value;  
 } else {  
 if (pendingOperation.equals("=")) {  
 pendingOperation = operation;  
 }  
 switch (pendingOperation) {  
 case "=":  
 operand1 = value;  
 break;  
 case "/":  
 if (value == 0) {  
 operand1 = 0.0;  
 } else {  
 operand1 /= value;  
 }  
 break;  
 case "\*":  
 operand1 \*= value;  
 break;  
 case "-":  
 operand1 -= value;  
 break;  
 case "+":  
 operand1 += value;  
 break;  
 }  
 }  
  
 result.setText(operand1.toString());  
 newNumber.setText("");  
 }  
  
}

O/p:-

Graphical user interface

Description automatically generated

A picture containing text, monitor, screenshot

Description automatically generatedA screenshot of a cell phone

Description automatically generated

A screenshot of a cell phone

Description automatically generated