**Exp No.7**

**Rishab Mandal**

**Batch: C23**

**Code:**

activity\_main.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"  
 tools:context=".MainActivity">

<TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_centerHorizontal="true"  
 android:text="C23\nRishab Mandal\nRoll no: 2103110"  
 android:textColor="@android:color/black"  
 android:textSize="20sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent" />

<TextView  
 android:id="@+id/textViewResult"  
 android:layout\_width="0dp"  
 android:layout\_height="wrap\_content"  
 android:text="0"  
 android:textSize="60sp"  
 android:textAlignment="textEnd"  
 android:layout\_marginBottom="32dp"  
 android:padding="10dp"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintBottom\_toTopOf="@+id/row5" />  
  
 <!-- Row 5 -->  
 <LinearLayout  
 android:id="@+id/row5"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 app:layout\_constraintTop\_toBottomOf="@id/textViewResult">  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonOpenBracket"  
 style="@style/CalculatorButtonStyle"  
 android:text="(" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonCloseBracket"  
 style="@style/CalculatorButtonStyle"  
 android:text=")" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonPercentage"  
 style="@style/CalculatorButtonStyle"  
 android:text="%" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonBackspace"  
 style="@style/CalculatorButtonStyle"  
 android:text="⌫" />  
  
 <!-- Add more buttons as needed -->  
 </LinearLayout>  
  
 <!-- Row 4 -->  
 <LinearLayout  
 android:id="@+id/row4"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 app:layout\_constraintTop\_toBottomOf="@id/row5">  
  
 <!-- Add more buttons as needed -->  
 </LinearLayout>  
  
 <!-- Row 3 -->  
 <LinearLayout  
 android:id="@+id/row3"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 app:layout\_constraintTop\_toBottomOf="@id/row4">  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button7"  
 style="@style/CalculatorButtonStyle"  
 android:text="7" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button8"  
 style="@style/CalculatorButtonStyle"  
 android:text="8" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button9"  
 style="@style/CalculatorButtonStyle"  
 android:text="9" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonAdd"  
 style="@style/CalculatorButtonStyle"  
 android:text="+" />  
  
 <!-- Add more buttons as needed -->  
 </LinearLayout>  
  
 <!-- Operator Row -->  
  
 <LinearLayout  
 android:id="@+id/row2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 app:layout\_constraintTop\_toBottomOf="@+id/row3">  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button4"  
 style="@style/CalculatorButtonStyle"  
 android:text="4" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button5"  
 style="@style/CalculatorButtonStyle"  
 android:text="5" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button6"  
 style="@style/CalculatorButtonStyle"  
 android:text="6" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonSubtract"  
 style="@style/CalculatorButtonStyle"  
 android:text="-" />  
  
 <!-- Add more buttons as needed -->  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/row1"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 app:layout\_constraintTop\_toBottomOf="@+id/row2">  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button1"  
 style="@style/CalculatorButtonStyle"  
 android:text="1" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button2"  
 style="@style/CalculatorButtonStyle"  
 android:text="2" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button3"  
 style="@style/CalculatorButtonStyle"  
 android:text="3" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonMultiply"  
 style="@style/CalculatorButtonStyle"  
 android:text="\*" />  
  
 <!-- Add more buttons as needed -->  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/operatorRow"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 app:layout\_constraintTop\_toBottomOf="@id/row1">  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonAC"  
 style="@style/CalculatorButtonStyle"  
 android:text="AC" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/button0"  
 style="@style/CalculatorButtonStyle"  
 android:text="0" />  
  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonDivide"  
 style="@style/CalculatorButtonStyle"  
 android:text="/" />  
  
 <!-- Equals Button -->  
 <androidx.appcompat.widget.AppCompatButton  
 android:id="@+id/buttonEquals"  
 android:background="@drawable/yellow\_button\_bg"  
 android:layout\_width="75dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="8dp"  
 android:textSize="20sp"  
 android:textAllCaps="false"  
 android:padding="16dp"  
 android:text="="  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@id/operatorRow" />  
  
 <!-- Add more operator buttons as needed -->  
 </LinearLayout>  
  
  
  
</androidx.constraintlayout.widget.ConstraintLayout>

styles.xml

<?xml version="1.0" encoding="utf-8"?>  
<!-- res/values/styles.xml -->  
<resources>  
 <style name="CalculatorButtonStyle" parent="Widget.AppCompat.Button">  
 <item name="android:layout\_width">0dp</item>  
 <item name="android:layout\_weight">1</item>  
 <item name="android:layout\_height">wrap\_content</item>  
 <item name="android:layout\_margin">8dp</item>  
 <item name="android:textSize">24sp</item>  
 <item name="android:textColor">@android:color/white</item>  
 <item name="android:background">@drawable/button\_bg</item>  
 <item name="android:textAllCaps">false</item>  
 <item name="android:padding">16dp</item>  
 </style>  
</resources>

button\_bg

<!-- button\_bg.xml -->  
<shape xmlns:android="http://schemas.android.com/apk/res/android"  
 android:shape="rectangle">  
 <solid android:color="#007ACC"/> <!-- Button background color -->  
 <corners android:radius="8dp"/> <!-- Rounded corners -->  
</shape>

yellow\_button\_bg

<?xml version="1.0" encoding="utf-8"?>  
<!-- res/drawable/yellow\_button\_bg.xml -->  
<shape xmlns:android="http://schemas.android.com/apk/res/android"  
 android:shape="rectangle">  
 <solid android:color="#FFD700" /> <!-- Yellow color -->  
 <corners android:radius="8dp" /> <!-- Rounded corners -->  
</shape>

MainActivity.java

package com.example.basiccalculator**;**import androidx.appcompat.app.AppCompatActivity**;**import android.os.Bundle**;**import android.view.View**;**import android.widget.Button**;**import android.widget.TextView**;**public class MainActivity extends AppCompatActivity implements View.OnClickListener {  
  
 private TextView textViewResult**;** private Button buttonAC**,** button0**,** button1**,** button2**,** button3**,** button4**,** button5**,** button6**,** button7**,** button8**,** button9**,** buttonAdd**,** buttonEquals**,** buttonSubtract**,** buttonMultiply**,** buttonDivide**;** private Button buttonBackspace**,** buttonOpenBracket**,** buttonCloseBracket**,** buttonPercentage**;** private float num1 = **0,** num2 = **0;** private float result = **0;** private boolean isAdditionClicked = false**;** private boolean isSubtractionClicked = false**;** private boolean isMultiplicationClicked = false**;** private boolean isDivisionClicked = false**;** @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState)**;** setContentView(R.layout.*activity\_main*)**;** textViewResult = findViewById(R.id.*textViewResult*)**;** button0 = findViewById(R.id.*button0*)**;** button1 = findViewById(R.id.*button1*)**;** button2 = findViewById(R.id.*button2*)**;** button3 = findViewById(R.id.*button3*)**;** button4 = findViewById(R.id.*button4*)**;** button5 = findViewById(R.id.*button5*)**;** button6 = findViewById(R.id.*button6*)**;** button7 = findViewById(R.id.*button7*)**;** button8 = findViewById(R.id.*button8*)**;** button9 = findViewById(R.id.*button9*)**;** buttonAC = findViewById(R.id.*buttonAC*)**;** buttonAdd = findViewById(R.id.*buttonAdd*)**;** buttonEquals = findViewById(R.id.*buttonEquals*)**;** buttonSubtract = findViewById(R.id.*buttonSubtract*)**;** buttonMultiply = findViewById(R.id.*buttonMultiply*)**;** buttonDivide = findViewById(R.id.*buttonDivide*)**;** buttonBackspace = findViewById(R.id.*buttonBackspace*)**;** buttonOpenBracket = findViewById(R.id.*buttonOpenBracket*)**;** buttonCloseBracket = findViewById(R.id.*buttonCloseBracket*)**;** buttonPercentage = findViewById(R.id.*buttonPercentage*)**;** button0.setOnClickListener(this)**;** button1.setOnClickListener(this)**;** button2.setOnClickListener(this)**;** button3.setOnClickListener(this)**;** button4.setOnClickListener(this)**;** button5.setOnClickListener(this)**;** button6.setOnClickListener(this)**;** button7.setOnClickListener(this)**;** button8.setOnClickListener(this)**;** button9.setOnClickListener(this)**;** buttonAC.setOnClickListener(this)**;** buttonAdd.setOnClickListener(this)**;** buttonEquals.setOnClickListener(this)**;** buttonSubtract.setOnClickListener(this)**;** buttonMultiply.setOnClickListener(this)**;** buttonDivide.setOnClickListener(this)**;** buttonBackspace.setOnClickListener(this)**;** buttonOpenBracket.setOnClickListener(this)**;** buttonCloseBracket.setOnClickListener(this)**;** buttonPercentage.setOnClickListener(this)**;** }  
  
 @Override  
 public void onClick(View v) {  
 int buttonId = v.getId()**;** if (buttonId == R.id.*button1* || buttonId == R.id.*button2* || buttonId == R.id.*button3* ||  
 buttonId == R.id.*button4* || buttonId == R.id.*button5* || buttonId == R.id.*button6* ||  
 buttonId == R.id.*button7* || buttonId == R.id.*button8* || buttonId == R.id.*button9* ||  
 buttonId == R.id.*button0*) {  
 int digit = Integer.*parseInt*(((Button) v).getText().toString())**;** if (!isAdditionClicked && !isSubtractionClicked && !isMultiplicationClicked && !isDivisionClicked) {  
 num1 = num1 \* **10** + digit**;** textViewResult.append(String.*valueOf*(digit))**;** } else {  
 num2 = num2 \* **10** + digit**;** textViewResult.append(String.*valueOf*(digit))**;** }  
 } else if (buttonId == R.id.*buttonAdd* || buttonId == R.id.*buttonSubtract* || buttonId == R.id.*buttonMultiply* || buttonId == R.id.*buttonDivide*) {  
 // If an operator button is clicked, set corresponding flag and display the operator  
 isAdditionClicked = buttonId == R.id.*buttonAdd***;** isSubtractionClicked = buttonId == R.id.*buttonSubtract***;** isMultiplicationClicked = buttonId == R.id.*buttonMultiply***;** isDivisionClicked = buttonId == R.id.*buttonDivide***;** char operator = ' '**;** if (isAdditionClicked) {  
 operator = '+'**;** } else if (isSubtractionClicked) {  
 operator = '-'**;** } else if (isMultiplicationClicked) {  
 operator = '\*'**;** } else if (isDivisionClicked) {  
 operator = '/'**;** }  
 textViewResult.append(" " + operator + " ")**;** // Append the operator to the TextView with spaces  
 } else if (buttonId == R.id.*buttonEquals*) {  
 // Perform the calculation based on the operator clicked  
 if (isAdditionClicked) {  
 result = num1 + num2**;** } else if (isSubtractionClicked) {  
 result = num1 - num2**;** } else if (isMultiplicationClicked) {  
 result = num1 \* num2**;** } else if (isDivisionClicked) {  
 if (num2 != **0**) {  
 result = num1 / num2**;** } else {  
 textViewResult.setText("Error: Division by zero")**;** return**;** // Exit onClick() early if division by zero  
 }  
 }  
 // Display the result  
 textViewResult.append(" = " + String.*valueOf*(result))**;** // Append the result to the TextView  
 num1 = result**;** num2 = **0;** } else if (buttonId == R.id.*buttonAC*) {  
 // Clear all variables and text view  
 num1 = **0;** num2 = **0;** result = **0;** isAdditionClicked = false**;** isSubtractionClicked = false**;** isMultiplicationClicked = false**;** isDivisionClicked = false**;** textViewResult.setText("")**;** } else if (buttonId == R.id.*buttonBackspace*) {  
 // Remove the last character from the text view  
 String currentText = textViewResult.getText().toString()**;** if (!currentText.isEmpty()) {  
 textViewResult.setText(currentText.substring(**0,** currentText.length() - **1**))**;** }  
 } else if (buttonId == R.id.*buttonOpenBracket*) {  
 // Append an open bracket '(' to the text view  
 textViewResult.append("(")**;** } else if (buttonId == R.id.*buttonCloseBracket*) {  
 // Append a close bracket ')' to the text view  
 textViewResult.append(")")**;** } else if (buttonId == R.id.*buttonPercentage*) {  
 // Append a percentage sign '%' to the text view  
 textViewResult.append("%")**;** } else {  
 // If any other button is clicked, display syntax error  
 textViewResult.setText("Syntax Error")**;** }  
 }  
  
}

**Output:**





 