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

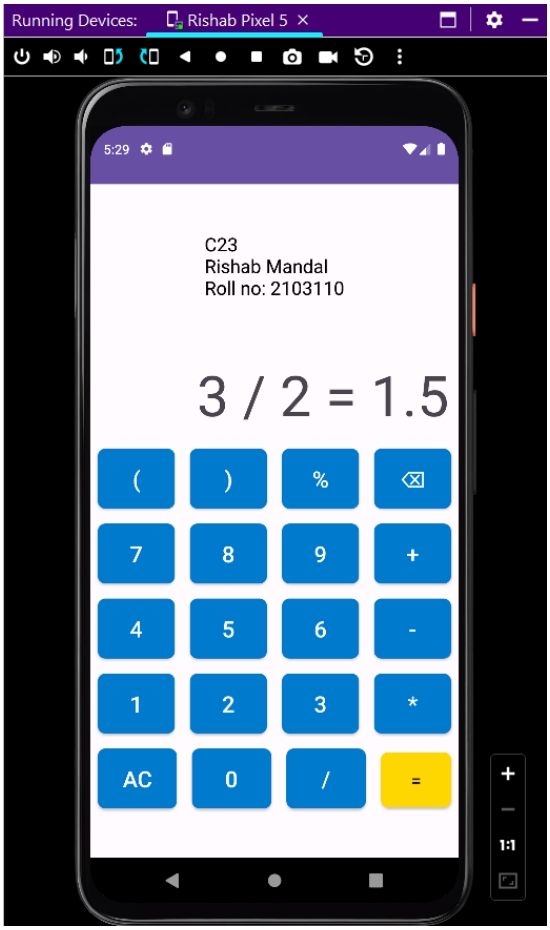
```
package com.example.basiccalculator;

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);
```

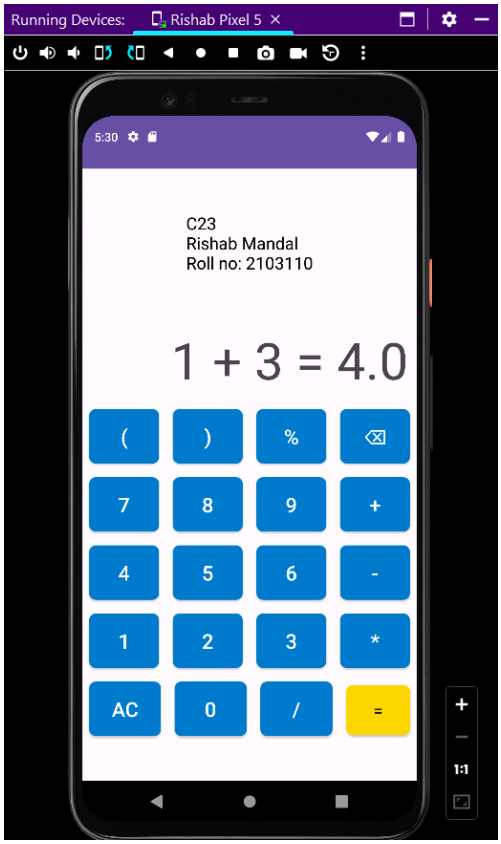
```
        button4 = findViewById(R.id.button4);
        button5 = findViewById(R.id.button5);
        button6 = findViewById(R.id.button6);
        button7 = findViewById(R.id.button7);
        button8 = findViewById(R.id.button8);
        button9 = findViewById(R.id.button9);
        buttonAC = findViewById(R.id.buttonAC);
        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 ==
```

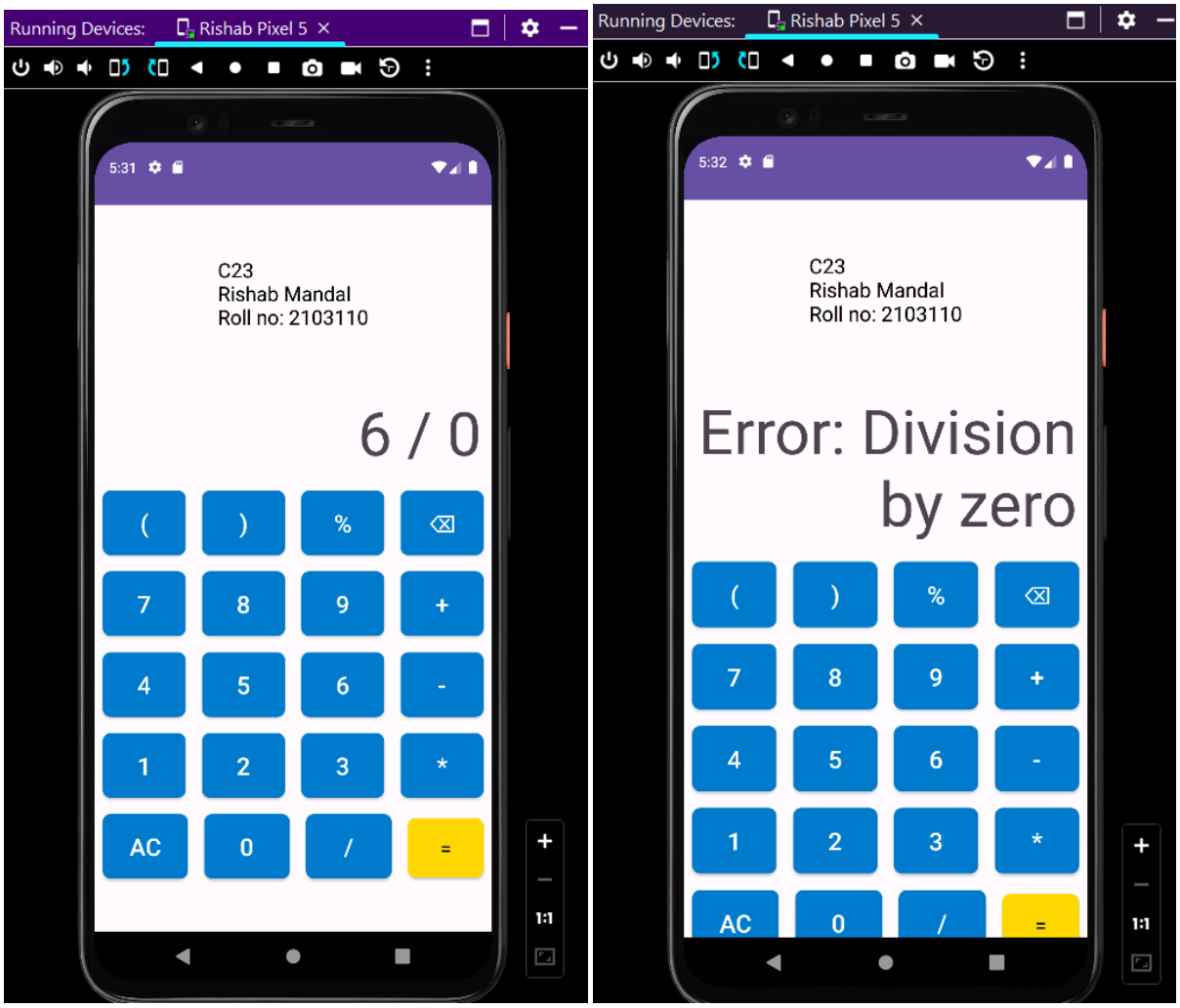
```
R.id.buttonDivide) {
            // If an operator button is clicked, set corresponding flag and
display the operator
            isAdditionClicked = buttonId == R.id.buttonAdd;
            isSubtractionClicked = buttonId == R.id.buttonSubtract;
            isMultiplicationClicked = buttonId == R.id.buttonMultiply;
            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:




Running Devices:
Rishab Pixel 5
5:30
C23
Rishab Mandal
Roll no: 2103110
1 + 3 = 4.0
(
)
%
7
8
9
+
4
5
6
-
1
2
3
*
AC
0
/
=
1:1


Running Devices:
Rishab Pixel 5
5:31
C23
Rishab Mandal
Roll no: 2103110
6 / 0
( ) % ⌫
7 8 9 +
4 5 6 -
1 2 3 *
AC 0 / =
1:1
Running Devices:
Rishab Pixel 5
5:32
C23
Rishab Mandal
Roll no: 2103110
Error: Division by zero
( ) % ⌫
7 8 9 +
4 5 6 -
1 2 3 *
AC 0 / =
1:1