



Problem 5

Exercise Objective: Create a simple Android calculator app that performs basic arithmetic operations: addition, subtraction, multiplication, and division.

Problem Statement 5: The app should have two input fields for entering numbers and buttons for each of the four arithmetic operations. Upon selecting an operation and pressing the "Calculate" button, the app should display the result.

Expected Output: The app displays the result of the arithmetic operation

This is XML code

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    android:layout_marginTop="16dp">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Calculator"
        android:textSize="32sp"
        android:textStyle="bold"
        android:gravity="center"
        android:layout_marginBottom="16dp"/>

    <TextView
        android:id="@+id/calculatorScreen"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textStyle="bold"
        android:textSize="24sp"
        android:textAlignment="center"
        android:text="0"
        android:layout_marginBottom="16dp"/>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <Button
            android:id="@+id/key1"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="1" />

        <Button
            android:id="@+id/key2"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_weight="1"
```

```
android:text="2" />
```

```
<Button
```

```
  android:id="@+id/key3"  
  android:layout_width="0dp"  
  android:layout_height="wrap_content"  
  android:layout_weight="1"  
  android:text="3" />
```

```
<Button
```

```
  android:id="@+id/addButton"  
  android:layout_width="0dp"  
  android:layout_height="wrap_content"  
  android:layout_weight="1"  
  android:text="+" />
```

```
</LinearLayout>
```

```
<LinearLayout
```

```
  android:layout_width="match_parent"  
  android:layout_height="wrap_content"  
  android:orientation="horizontal">
```

```
<Button
```

```
  android:id="@+id/key4"  
  android:layout_width="0dp"  
  android:layout_height="wrap_content"  
  android:layout_weight="1"  
  android:text="4" />
```

```
<Button
```

```
  android:id="@+id/key5"  
  android:layout_width="0dp"  
  android:layout_height="wrap_content"  
  android:layout_weight="1"  
  android:text="5" />
```

```
<Button
```

```
  android:id="@+id/key6"  
  android:layout_width="0dp"  
  android:layout_height="wrap_content"  
  android:layout_weight="1"  
  android:text="6" />
```

```
<Button
```

```
  android:id="@+id/subtractButton"  
  android:layout_width="0dp"  
  android:layout_height="wrap_content"  
  android:layout_weight="1"  
  android:text="-" />
```

```
</LinearLayout>
```

```
<LinearLayout
```

```
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:orientation="horizontal">
```

```
<Button
```

```
    android:id="@+id/key7"  
    android:layout_width="0dp"  
    android:layout_height="wrap_content"  
    android:layout_weight="1"  
    android:text="7" />
```

```
<Button
```

```
    android:id="@+id/key8"  
    android:layout_width="0dp"  
    android:layout_height="wrap_content"  
    android:layout_weight="1"  
    android:text="8" />
```

```
<Button
```

```
    android:id="@+id/key9"  
    android:layout_width="0dp"  
    android:layout_height="wrap_content"  
    android:layout_weight="1"  
    android:text="9" />
```

```
<Button
```

```
    android:id="@+id/multiplyButton"  
    android:layout_width="0dp"  
    android:layout_height="wrap_content"  
    android:layout_weight="1"  
    android:text="*" />
```

```
</LinearLayout>
```

```
<LinearLayout
```

```
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:orientation="horizontal">
```

```
<Button
```

```
    android:id="@+id/clearButton"  
    android:layout_width="0dp"  
    android:layout_height="wrap_content"  
    android:layout_weight="1"  
    android:text="Clear" />
```

```
<Button
    android:id="@+id/key0"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="0" />
```

```
<Button
    android:id="@+id/decimalButton"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="." />
```

```
<Button
    android:id="@+id/deleteButton"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="DEL" />
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">
```

```
<Button
    android:id="@+id/divideButton"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="/" />
```

```
<Button
    android:id="@+id/equalsButton"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="=" />
```

```
</LinearLayout>
```

```
</LinearLayout>
```

This is **JAVA** code

[Black N White \(blacksnwhite.com\)](http://blacksnwhite.com)

```
package com.example.calculatorapp;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener {

    TextView calculatorScreen;
    String currentNumber, stringNumber;
    Double result;
    String currentOperator;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        calculatorScreen = findViewById(R.id.calculatorScreen);

        currentNumber = "";
        result = 0.0;
        currentOperator = "";

        // click listeners
        findViewById(R.id.key0).setOnClickListener(this);
        findViewById(R.id.key1).setOnClickListener(this);
        findViewById(R.id.key2).setOnClickListener(this);
        findViewById(R.id.key3).setOnClickListener(this);
        findViewById(R.id.key4).setOnClickListener(this);
        findViewById(R.id.key5).setOnClickListener(this);
        findViewById(R.id.key6).setOnClickListener(this);
        findViewById(R.id.key7).setOnClickListener(this);
        findViewById(R.id.key8).setOnClickListener(this);
        findViewById(R.id.key9).setOnClickListener(this);
        findViewById(R.id.decimalButton).setOnClickListener(this);

        // click listener for operators
        findViewById(R.id.addButton).setOnClickListener(this);
```

```
findViewById(R.id.subtractButton).setOnClickListener(this);
findViewById(R.id.multiplyButton).setOnClickListener(this);
findViewById(R.id.divideButton).setOnClickListener(this);

// click listener for equals button
findViewById(R.id.equalsButton).setOnClickListener(this);

// click listener for clear button
findViewById(R.id.clearButton).setOnClickListener(this);
// Set click listener for delete button
findViewById(R.id.deleteButton).setOnClickListener(this);
}
```

@Override

```
public void onClick(View view) {
    int id = view.getId();

    if (id == R.id.key0 || id == R.id.key1 || id == R.id.key2 ||
        id == R.id.key3 || id == R.id.key4 || id == R.id.key5 ||
        id == R.id.key6 || id == R.id.key7 || id == R.id.key8 ||
        id == R.id.key9 || id == R.id.decimalButton) {
        appendNumber(((Button) view).getText().toString());
    } else if (id == R.id.addButton || id == R.id.subtractButton ||
        id == R.id.multiplyButton || id == R.id.divideButton) {
        setOperator(((Button) view).getText().toString());
    } else if (id == R.id.equalsButton) {
        calculate();
    } else if (id == R.id.clearButton) {
        clear();
    } else if (id == R.id.deleteButton) {
        delete();
    }
}
```

```
private void appendNumber(String number) {
    currentNumber += number;
    calculatorScreen.append(number);
}
```

```
private void setOperator(String operator) {
    if (!currentNumber.isEmpty()) {
        calculatorScreen.append(operator);
        currentOperator = operator;
    }
}
```

```
stringNumber = currentNumber;
currentNumber = "";
}
}

private void calculate() {
    if (!currentNumber.isEmpty() && !stringNumber.isEmpty()) {
        Double number1 = Double.parseDouble(stringNumber);
        Double number2 = Double.parseDouble(currentNumber);

        switch (currentOperator) {
            case "+":
                result = number1 + number2;
                break;
            case "-":
                result = number1 - number2;
                break;
            case "*":
                result = number1 * number2;
                break;
            case "/":
                if (number2 != 0) {
                    result = number1 / number2;
                } else {
                    // Handle division by zero error
                    result = Double.NaN;
                }
                break;
        }

        if (result == Math.floor(result)) {
            calculatorScreen.setText(String.valueOf((int) Math.floor(result)));
        } else {
            calculatorScreen.setText(String.valueOf(result));
        }
    }
}

private void clear() {
    calculatorScreen.setText("0");
    currentNumber = "";
}
```



```
stringNumber = "";  
result = 0.0;  
currentOperator = "";  
}  
  
private void delete() {  
    if (!currentNumber.isEmpty()) {  
        currentNumber = currentNumber.substring(0, currentNumber.length() -  
1);  
        calculatorScreen.setText(currentNumber);  
    }  
}  
}
```