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| **EXP NO:** **9** | **Basic Calculator App Using Android UI Controls** |

**AIM:**

Develop an Android application using controls like Button, TextView, EditText for designing a calculator having basic functionality like Addition, Subtraction, multiplication, and Division.

**CODE:**

**MainActivity.kt** package com.example.myapplication\_karthick\_79

import android.os.Bundle import android.view.View import android.widget.Button import android.widget.EditText import android.widget.Toast import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {

private lateinit var display: EditText private var currentInput: String = "" private var operand1: Double = 0.0 private var operand2: Double = 0.0

private var operator: String = ""

override fun onCreate(savedInstanceState: Bundle?) { super.onCreate(savedInstanceState)

setContentView(R.layout.*activity\_main*)

display = findViewById(R.id.*display*)

// Number buttons setButtonClickListener(R.id.*button0*) setButtonClickListener(R.id.*button1*) setButtonClickListener(R.id.*button2*) setButtonClickListener(R.id.*button3*) setButtonClickListener(R.id.*button4*) setButtonClickListener(R.id.*button5*) setButtonClickListener(R.id.*button6*) setButtonClickListener(R.id.*button7*) setButtonClickListener(R.id.*button8*) setButtonClickListener(R.id.*button9*)

// Operator buttons

setOperatorClickListener(R.id.*buttonAdd*, "+") setOperatorClickListener(R.id.*buttonSubtract*, "-") setOperatorClickListener(R.id.*buttonMultiply*, "\*") setOperatorClickListener(R.id.*buttonDivide*, "/")

// Clear button

findViewById<Button>(R.id.*buttonClear*).setOnClickListener { currentInput = "" operand1 = 0.0 operand2 = 0.0 operator = ""

display.setText("")

}

// Equal button

findViewById<Button>(R.id.*buttonEqual*).setOnClickListener { if (operator.*isEmpty*()) return@setOnClickListener

try {

operand2 = currentInput.*toDouble*()

val result = when (operator) { "+" -> operand1 + operand2

"-" -> operand1 - operand2

"\*" -> operand1 \* operand2

"/" -> {

if (operand2 == 0.0) {

Toast.makeText(this@MainActivity, "Cannot divide by zero",

Toast.*LENGTH\_SHORT*).show()

return@setOnClickListener

}

operand1 / operand2

} else -> 0.0

}

display.setText(result.toString()) operand1 = result // Update operand1 for subsequent calculations operator = "" currentInput = result.toString()

} catch (e: Exception) {

Toast.makeText(this@MainActivity, "Error: Invalid Input",

Toast.*LENGTH\_SHORT*).show()

}

}

}

// Set up number button listeners private fun setButtonClickListener(buttonId: Int) { val button: Button = findViewById(buttonId) button.setOnClickListener { currentInput += button.*text*.toString()

display.setText(currentInput)

}

}

// Set up operator button listeners

private fun setOperatorClickListener(buttonId: Int, op: String) { val button: Button = findViewById(buttonId) button.setOnClickListener { if (currentInput.*isNotEmpty*()) { operand1 = currentInput.*toDouble*()

currentInput = ""

operator = op

}

}

}

// Optional: Add functionality to handle decimal point (if needed) private fun isDecimalPointValid(): Boolean {

return !currentInput.*contains*(".")

}

}

**activity\_main.xml**

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

<LinearLayout xmlns:android="[http://schemas.android.com/apk/res/android"](http://schemas.android.com/apk/res/android) xmlns:tools="[http://schemas.android.com/tools"](http://schemas.android.com/tools) android:id="@+id/calculatorLayout" android:layout\_width="match\_parent" android:layout\_height="match\_parent" android:orientation="vertical" android:padding="16dp"

tools:context=".MainActivity">

<EditText

android:id="@+id/display" android:layout\_width="match\_parent" android:layout\_height="80dp" android:background="#000000" android:textColor="#FFFFFF" android:textSize="28sp" android:gravity="end|center\_vertical" android:inputType="none" android:focusable="false" android:clickable="false" android:padding="12dp" android:layout\_marginBottom="12dp" />

<!-- Row 1: 7 8 9 / --> <LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal">

<Button android:id="@+id/button7" style="@style/CalcButton" android:text="7" />

<Button android:id="@+id/button8" style="@style/CalcButton" android:text="8" />

<Button android:id="@+id/button9" style="@style/CalcButton" android:text="9" />

<Button android:id="@+id/buttonDivide" style="@style/CalcButton" android:text="/" /> </LinearLayout>

<!-- Row 2: 4 5 6 \* -->

<LinearLayout

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal">

<Button android:id="@+id/button4" style="@style/CalcButton" android:text="4" />

<Button android:id="@+id/button5" style="@style/CalcButton" android:text="5" />

<Button android:id="@+id/button6" style="@style/CalcButton" android:text="6" />

<Button android:id="@+id/buttonMultiply" style="@style/CalcButton" android:text="\*" />

</LinearLayout>

<!-- Row 3: 1 2 3 - --> <LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal">

<Button android:id="@+id/button1" style="@style/CalcButton" android:text="1" />

<Button android:id="@+id/button2" style="@style/CalcButton" android:text="2" />

<Button android:id="@+id/button3" style="@style/CalcButton" android:text="3" />

<Button android:id="@+id/buttonSubtract" style="@style/CalcButton" android:text="-" /> </LinearLayout>

<!-- Row 4: 0 C = + --> <LinearLayout android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:orientation="horizontal">

<Button android:id="@+id/button0" style="@style/CalcButton" android:text="0" />

<Button android:id="@+id/buttonClear" style="@style/CalcButton" android:text="C" />

<Button android:id="@+id/buttonEqual" style="@style/CalcButton" android:text="=" />

<Button android:id="@+id/buttonAdd" style="@style/CalcButton" android:text="+" /> </LinearLayout>

</LinearLayout>

**styles.xml** <resources>

<style name="CalcButton">

<item name="android:layout\_width">0dp</item>

<item name="android:layout\_height">wrap\_content</item>

<item name="android:layout\_weight">1</item>

<item name="android:padding">16dp</item>

<item name="android:textSize">24sp</item>

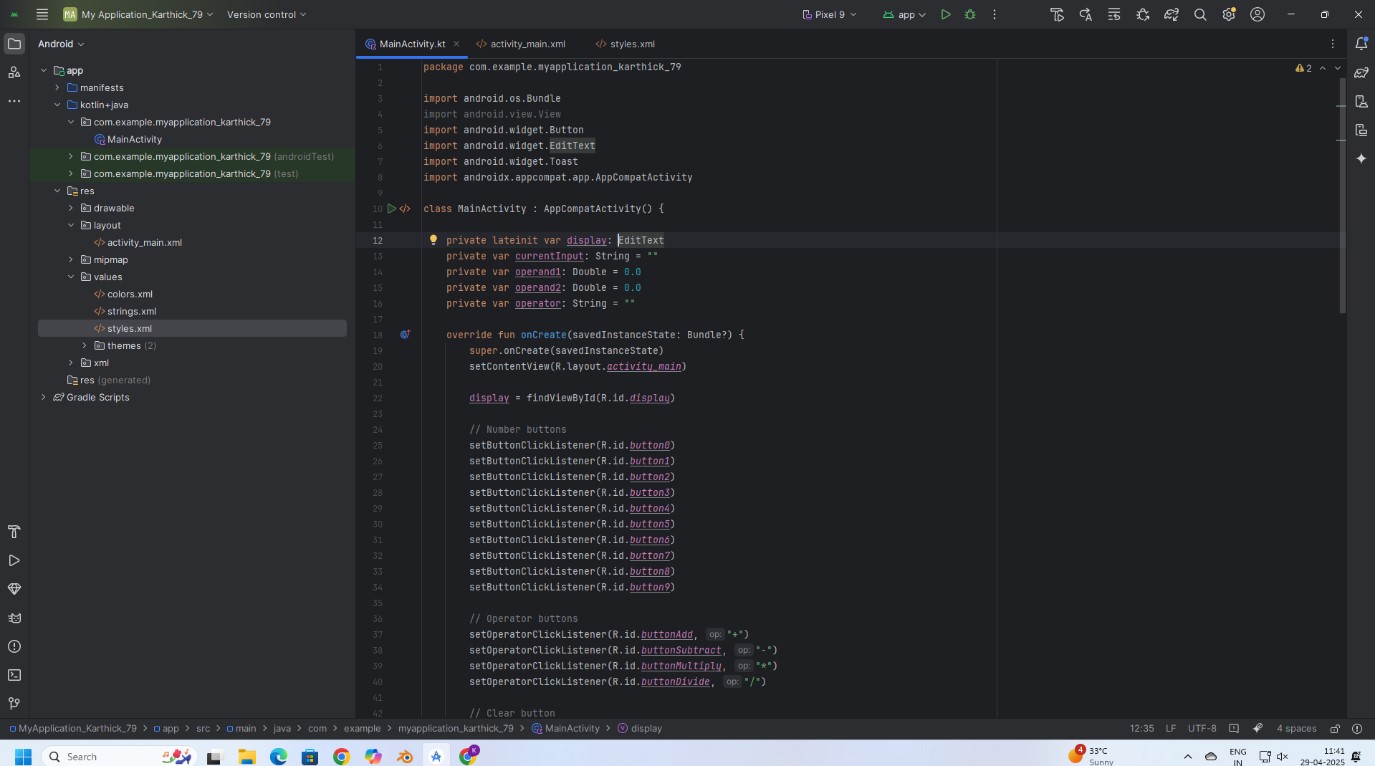
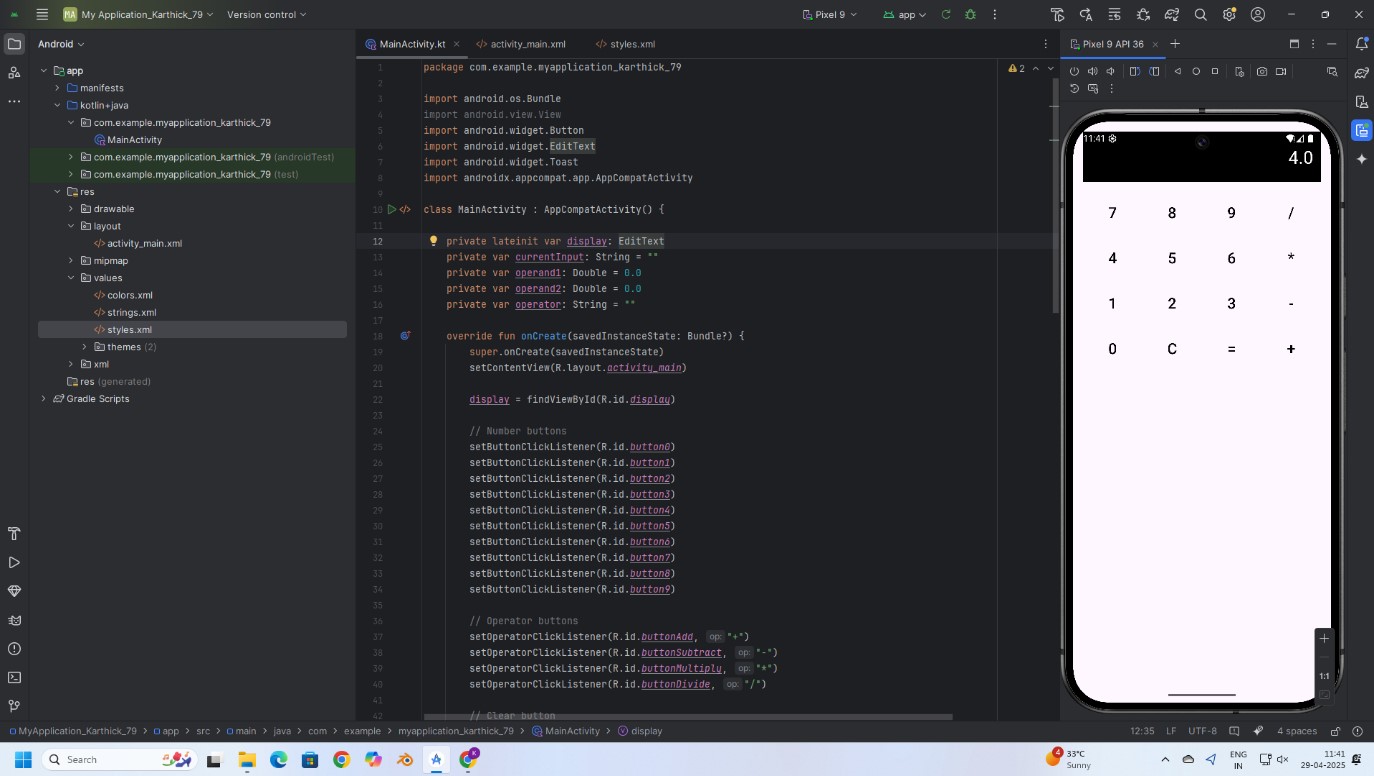
<item name="android:background">?attr/selectableItemBackground</item>

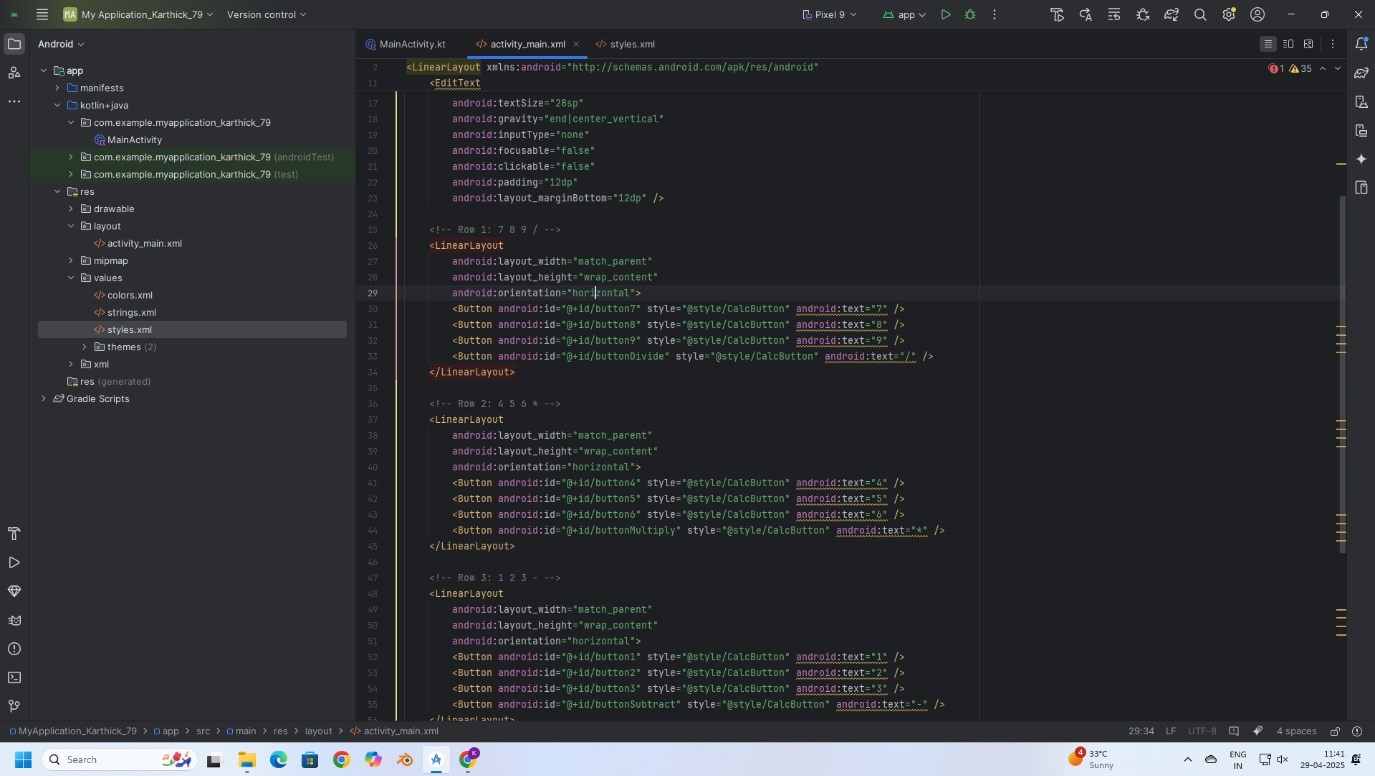
<item name="android:textColor">#000000</item>

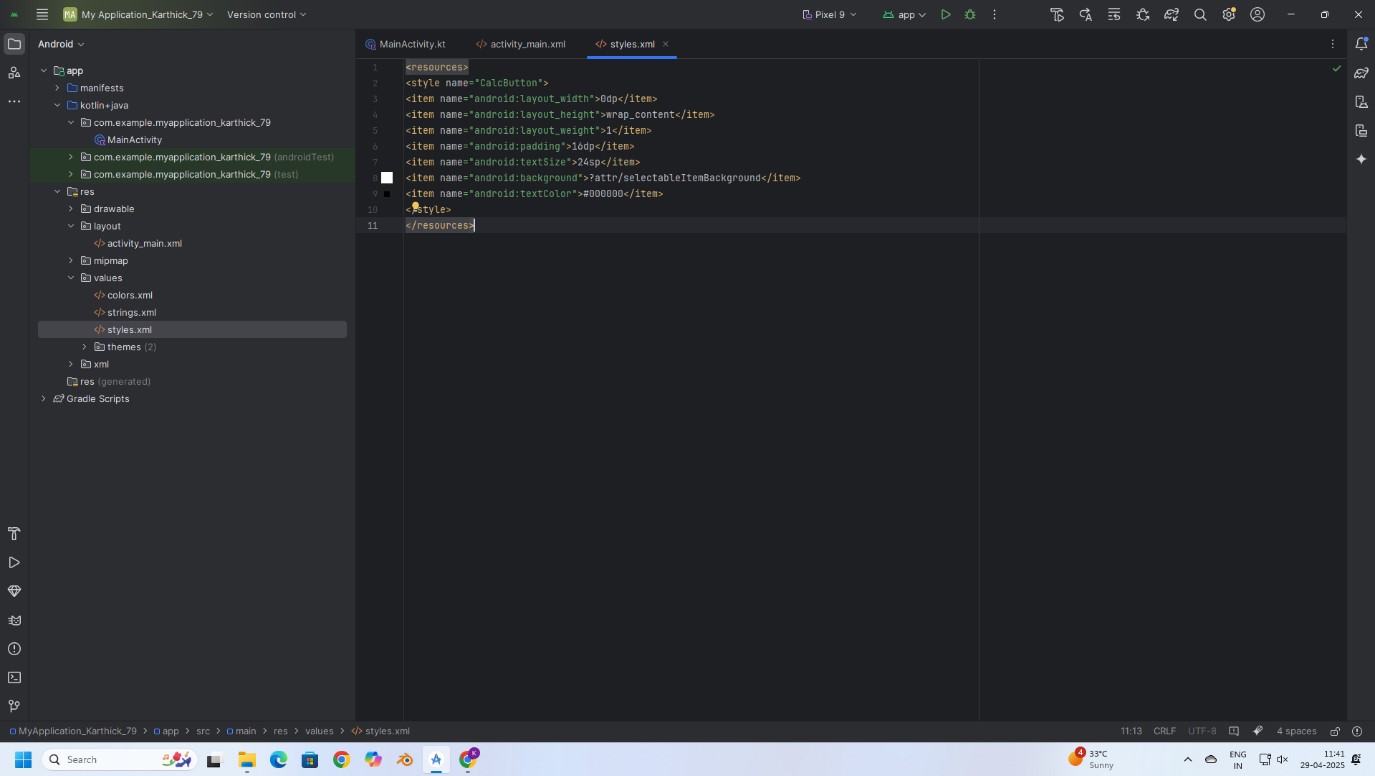
</style>

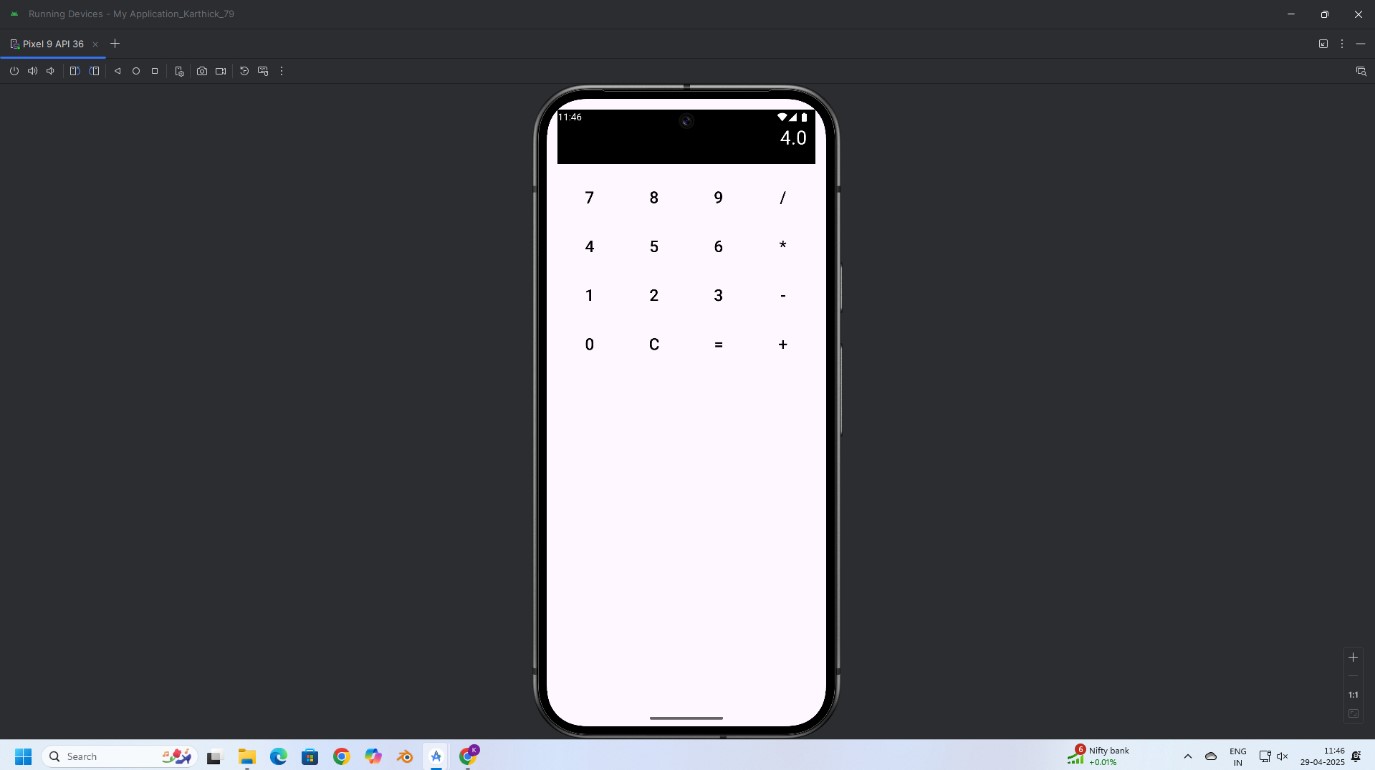
</resources>

**OUTPUT:**









**RESULT:**

Thus, a basic calculator application was successfully developed using Android controls like Button, TextView, and EditText to perform addition, subtraction, multiplication, and division operations.