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

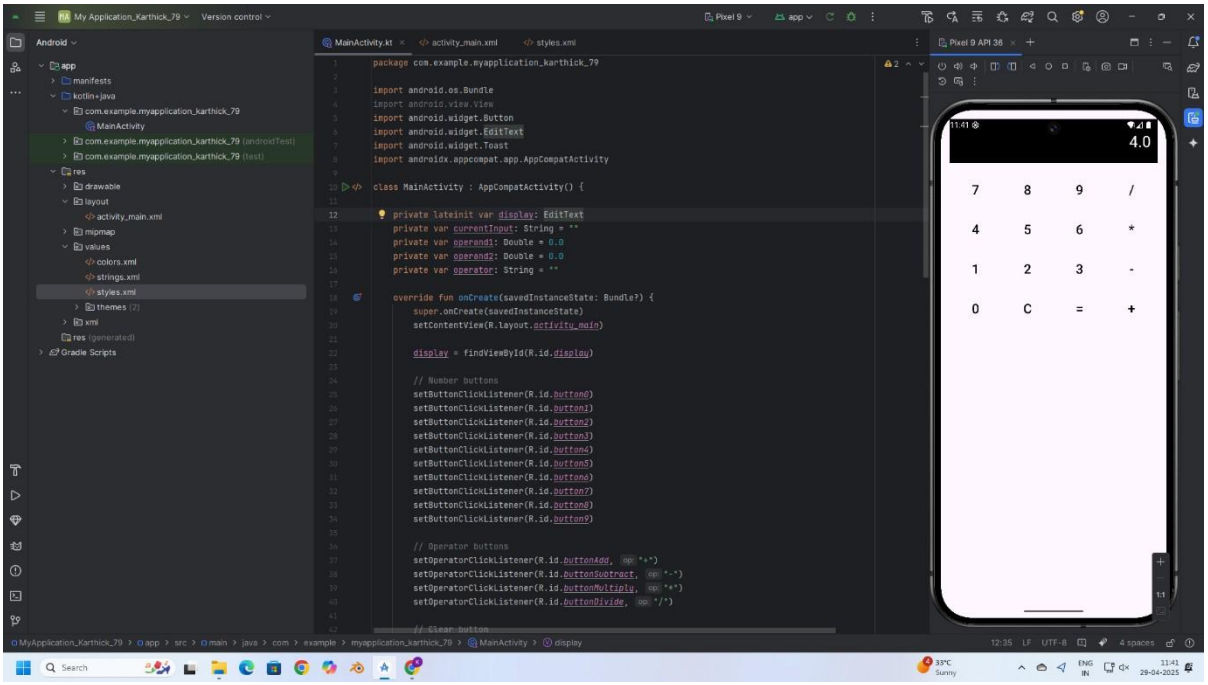
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/calculatorLayout"
android:layout_width="match_parent"
android:layout_height="match_parent"    android:orientation="vertical"
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>
```

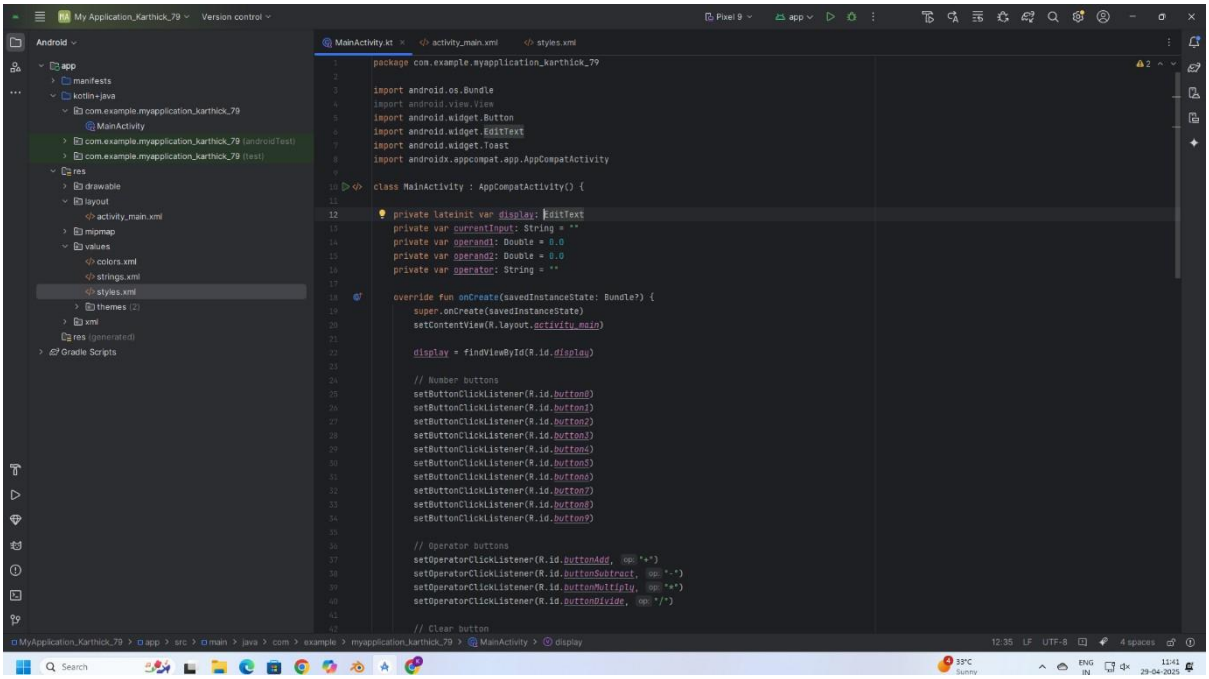
```
   <!-- Row 2: 4 5 6 * -->
   <LinearLayout
      android:layout_width="match_parent"
android:layout_height="wrap_content"        android:orientation="horizontal">
      <Button android:id="@+id/button4" style="@style/CalcButton" android:text="4" />
      <Button android:id="@+id/button5" style="@style/CalcButton" 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>
```

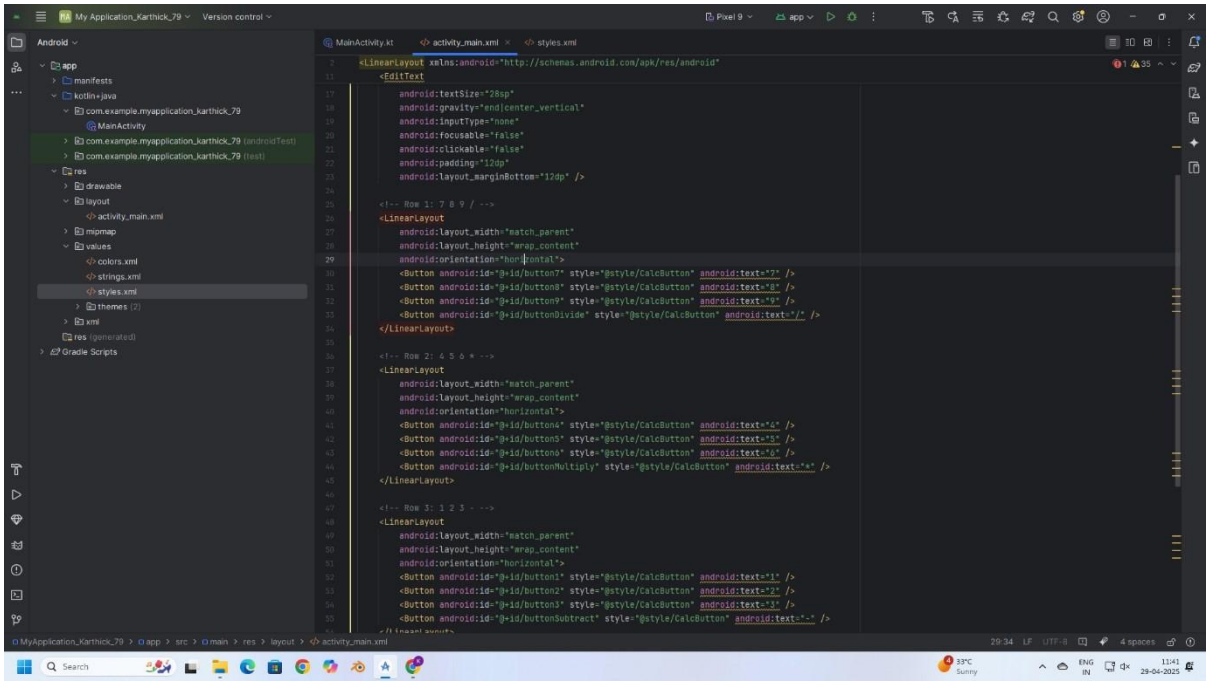
styles.xml

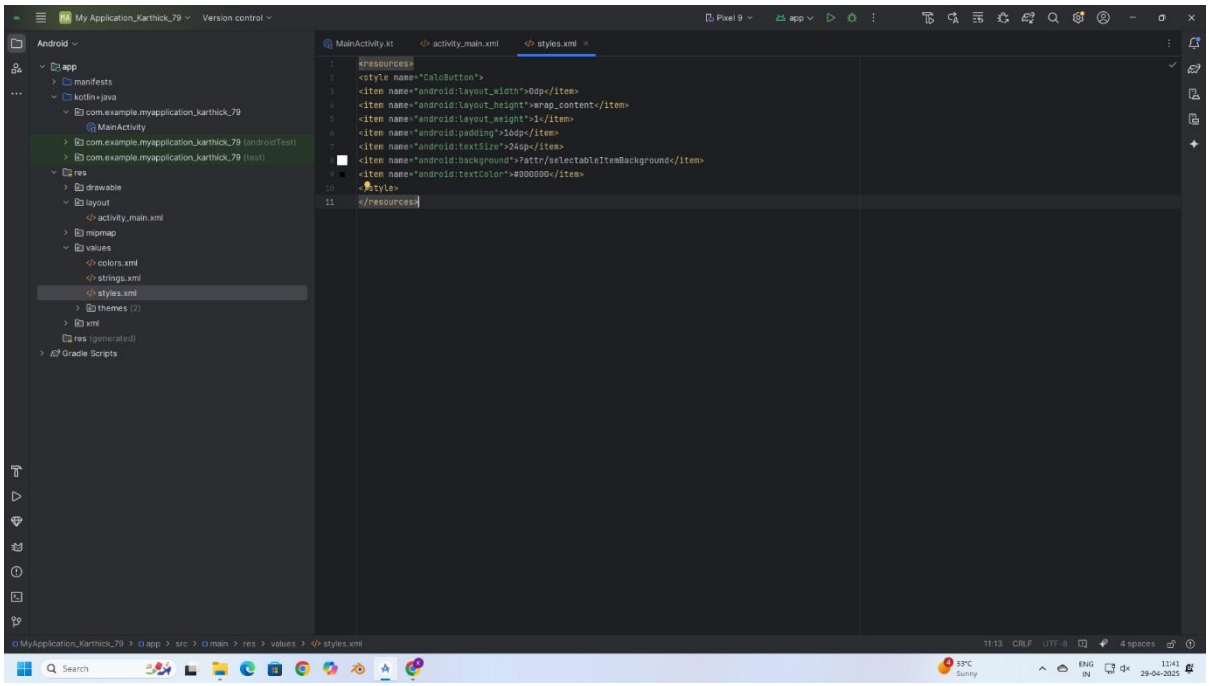
```
<resources>
<style name="CalcButton">
<item name="android:layout_width">0dp</item>
<item name="android:layout_height">wrap_content</item>
<item name="android:layout_weight">1</item>
<item name="android:padding">16dp</item>
<item name="android:textSize">24sp</item>
<item name="android:background">?attr/selectableItemBackground</item>
<item name="android:textColor">#000000</item>
</style>
</resources>
```

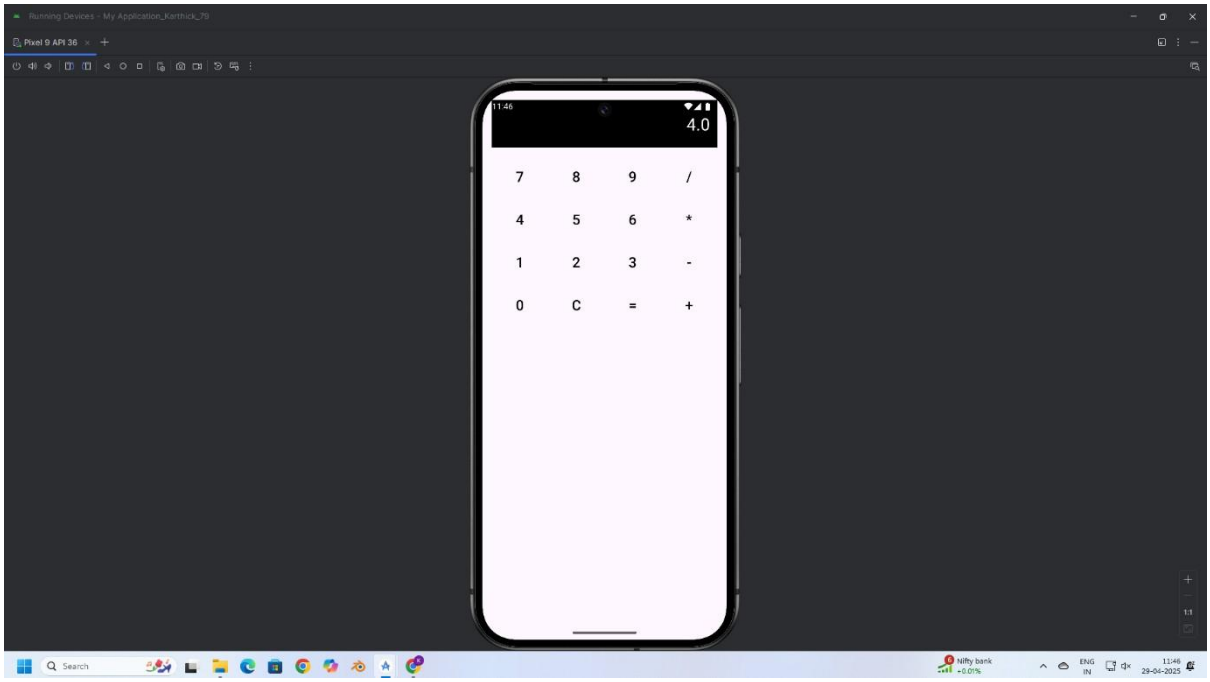
OUTPUT:











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.