EX:NO:02 SIMPLE CALCULATOR ROLL.NO:210701290

DATE:16/02/2024

AIM:-

Develop a simple calculator to perform arithmetic and mathematical functions using Math class.

PROCEDURE:-

Step 1: Design the layout in activity_main.xml file

Step 2: Open styles.xml file and add a new style for toast message.

Step 3: Define function in MainActivity.kt to perform arithmetic and mathematical functions.

Step 4: Add an OnClickListener to the buttons and perform the corresponding operation.

PROGRAM CODE:-

AndroidManifest.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.calculator">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
```

```
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/inputEditText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="16dp"
        android:hint="Enter expression"
```

```
        android:inputType="text"
        android:singleLine="true" />
    <Button
        android:id="@+id/calculateButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/inputEditText"
        android:layout_centerHorizontal="true"
        android:text="Calculate" />
    <TextView
        android:id="@+id/resultTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/calculateButton"
        android:layout_marginTop="16dp"
        android:text="Result: "
        android:textSize="20sp" />
</RelativeLayout>
```

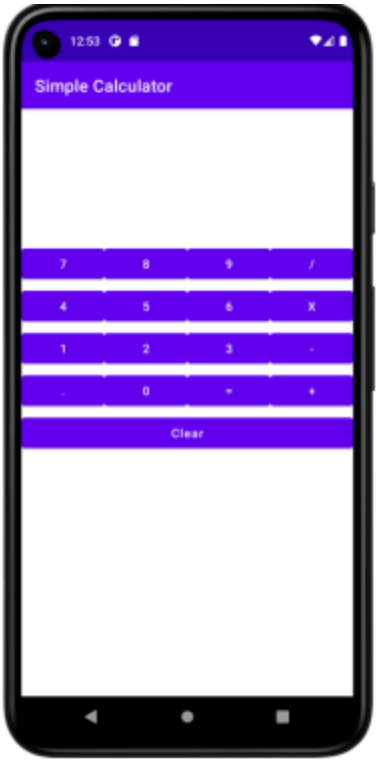
MainActivity.kt:

```
package com.example.calculator
import androidx.appcompat.app.AppCompatActivity
import android.os.Bundle
import android.widget.Button
```

```
import android.widget.EditText
import android.widget.TextView
import kotlin.math.*
class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
        val inputEditText: EditText = findViewById(R.id.inputEditText)
        val calculateButton: Button = findViewById(R.id.calculateButton)
        val resultTextView: TextView = findViewById(R.id.resultTextView)
        calculateButton.setOnClickListener {
            val expression = inputEditText.text.toString()
            if (expression.isNotEmpty()) {
                try {
                    val result = evaluateExpression(expression)
                    resultTextView.text = "Result: $result"
                } catch (e: Exception) {
                    resultTextView.text = "Error: ${e.message}"
                }
            } else {
                resultTextView.text = "Please enter an expression"
            }
        }
```

```
    }
    private fun evaluateExpression(expression: String): Double {
        return when {
            expression.contains(Regex("[a-zA-Z]")) -> throw
IllegalArgumentException("Invalid characters")
            else -> evaluateMath(expression)
        }
    }
    private fun evaluateMath(expression: String): Double {
        return try {
            val result =
ScriptEngineManager().getEngineByName("rhino").eval(expression)
            result as Double
        } catch (e: Exception) {
            throw IllegalArgumentException("Invalid expression")
        }
    }
}
```

OUTPUT:-



RESULT:-

Thus to develop a scientific calculator to perform arithmetic and mathematical functions using Math class is implemented and executed successfully.