**PROGRAM:**

**AndroidManifest.xml**  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 package="com.example.calculator">  
 <application android:theme="@style/Theme.Calculator">  
 <activity  
 android:name=".MainActivity"  
 android:exported="true">   
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
 <category android:name="android.intent.category.LAUNCHER" />  
 </intent-filter>  
 </activity>  
 </application>  
</manifest>

**Activity\_main.xml**

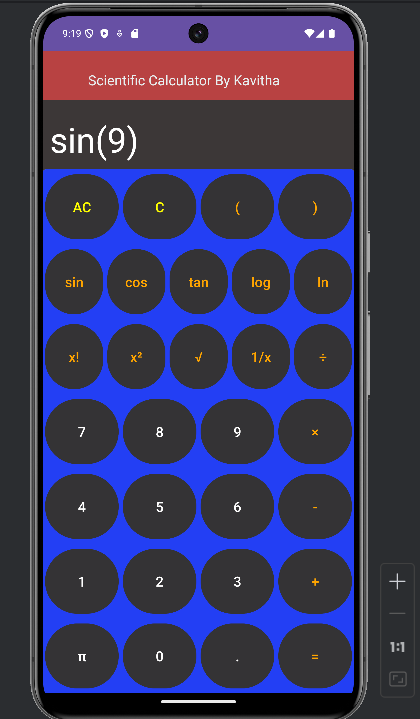
<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/black\_shade\_3"  
 tools:context=".MainActivity">  
 <TextView  
 android:id="@+id/idTVSecondary"  
 android:gravity="bottom"  
 android:maxLines="1"  
 android:paddingStart="65dp"  
 android:paddingBottom="45px"  
 android:text="Scientific Calculator By Kavitha"  
 android:textAlignment="viewEnd"  
 android:textColor="@color/button\_text"  
 android:textSize="20sp"  
 tools:ignore="RtlCompat" />  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="horizontal"  
 android:weightSum="4">  
 <Button  
 android:id="@+id/bac” android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp" android:text="AC"  
 android:textColor="@color/yellow”android:textSize="20sp"  
 tools:targetApi="lollipop" />  
 <Button  
 android:id="@+id/bbrac2"android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"android:layout\_margin="3dp"  
 android:layout\_weight="1"android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp" android:text=")"   
 <Button  
 android:id="@+id/bsin" android:layout\_weight="1"  
 android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp"android:text="sin"  
 android:textAllCaps="false”android:textColor="#ffa500"  
 android:textSize="20sp" />  
 <Button  
 android:id="@+id/bcos"android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp"android:text="cos" android:textAllCaps="false"  
 android:textColor="#ffa500" android:textSize="20sp" />  
 <Button  
 android:id="@+id/btan" android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp" android:text="tan”android:textAllCaps="false"  
 android:textColor="#ffa500"android:textSize="20sp" />  
 <Button  
 android:id="@+id/bln" android:layout\_width="match\_parent"   
 android:layout\_height="match\_parent”android:layout\_margin="3dp"  
 android:layout\_weight="1"android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp"android:text="ln"  
 android:textAllCaps="false"android:textColor="#ffa500"  
 android:textSize="20sp"/>  
 <Button  
 android:id="@+id/bsquare"android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp"android:text="x²"  
 android:textAllCaps="false"android:textColor="#ffa500"/>  
 <Button  
 android:id="@+id/bdiv”android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent" android:layout\_margin="3dp"  
 android:layout\_weight="1 android:backgroundTint="@color/black\_shade\_2"   
 android:padding="6dp"android:text="÷"  
 android:textColor="#ffa500"android:textSize="20sp" />  
 </LinearLayout>  
 <Button  
 android:id="@+id/b9"ndroid:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"android:layout\_margin="3dp"  
 android:layout\_weight="1"android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp" android:text="9"  
 android:textColor="#fff"android:textSize="20sp" />  
 <Button  
 android:id="@+id/b5" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_margin="3dp" android:layout\_weight="1"  
 android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp"android:text="5/>  
 android:layout\_height="match\_parent"  
 android:orientation="horizontal"  
 android:weightSum="4">  
 <Button  
 android:id="@+id/bpi" android:layout\_width="match\_parent"  
 android:backgroundTint="@color/black\_shade\_2"android:padding="6dp"  
 android:text="π"android:textColor="#fff" android:textSize="20sp" />  
 <Button  
 android:id="@+id/b0" android:layout\_width="match\_parent"  
 android:backgroundTint="@color/black\_shade\_2"

android:padding="6dp" android:text="0"  
 android:textColor="#fff"android:textSize="20sp" />  
 <Button android:id="@+id/bdot"  
 android:layout\_width="match\_parent”  
 android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp"android:text="."  
 <Button  
 android:id="@+id/bequal" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent" android:layout\_margin="3dp"  
 android:layout\_weight="1"android:backgroundTint="@color/black\_shade\_2"  
 android:padding="6dp" android:text="="  
 android:textColor="#ffa500" android:textSize="20sp" />  
 </LinearLayout>  
 </LinearLayout>  
 </androidx.cardview.widget.CardView>  
</RelativeLayout>

**MainActivity.java**

package com.example.calculator;  
import android.os.Bundle;  
import android.widget.Button;  
import android.widget.TextView;  
import android.widget.Toast;  
import androidx.appcompat.app.AppCompatActivity;  
public class MainActivity extends AppCompatActivity {  
 private TextView tvsec; private TextView tvMain;private Button bac;  
 private Button bc;private Button bbrac1; private Button bbrac2;private Button bsin;  
 private Button b6; private Button b5;private Button b4; private Button b3;  
 private Button b2; private Button b1;private Button bpi;private Button bmul;  
 private Button bminus;private Button bplus;private Button bequal;  
 private Button bdot;private Button bdiv;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState); setContentView(R.layout.activity\_main);  
 tvsec = findViewById(R.id.idTVSecondary);tvMain = findViewById(R.id.idTVprimary);  
 bac = findViewById(R.id.bac); bc = findViewById(R.id.bc);  
 bsquare = findViewById(R.id.bsquare);bsqrt = findViewById(R.id.bsqrt);  
 binv = findViewById(R.id.binv); b0 = findViewById(R.id.b0);  
 b9 = findViewById(R.id.b9);b8 = findViewById(R.id.b8);  
 b7 = findViewById(R.id.b7); b6 = findViewById(R.id.b6);  
 b5 = findViewById(R.id.b5);b4 = findViewById(R.id.b4);b3 = findViewById(R.id.b3);  
 b2 = findViewById(R.id.b2); b1 = findViewById(R.id.b1);bpi = findViewById(R.id.bpi);  
 bmul = findViewById(R.id.bmul);bminus = findViewById(R.id.bminus);  
 bplus = findViewById(R.id.bplus);bequal = findViewById(R.id.bequal);  
 bdot = findViewById(R.id.bdot);bdiv = findViewById(R.id.bdiv);  
 b1.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "1"));  
 b2.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "2"));  
 b3.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "3"));  
 b4.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "4"));  
 b5.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "5"));  
 b6.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "6"));  
 b7.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "7"));  
 b8.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "8"));  
 b9.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "9"));  
 b0.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "0"));  
 bdot.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "."));  
 bplus.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "+"));  
 bpi.setOnClickListener(v -> {  
 tvMain.setText(tvMain.getText().toString() + "3.142");  
 tvsec.setText(bpi.getText().toString());  
 });  
 bsin.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "sin"));  
 bcos.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "cos"));  
 btan.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "tan"));  
 binv.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "^" + "(-1)"));  
 bln.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "ln"));  
 blog.setOnClickListener(v -> tvMain.setText(tvMain.getText().toString() + "log"));  
 bminus.setOnClickListener(v -> {  
 String str = tvMain.getText().toString();  
 if (!str.endsWith("-")) {  
 tvMain.setText(tvMain.getText().toString() + "-"); } });  
 if (tvMain.getText().toString().isEmpty()) {  
 Toast.makeText(MainActivity.this, "Please enter a valid number..", Toast.LENGTH\_SHORT).show();  
 } else {  
 int value = Integer.parseInt(tvMain.getText().toString());  
 int fact = factorial(value);  
 tvMain.setText(String.valueOf(fact));  
 tvsec.setText(value + "!");}});}  
 private int factorial(int n) {  
 if (n == 1 || n == 0) return 1;  
 return n \* factorial(n - 1); }  
 private double evaluate(String str) {  
 return new Object() {  
 private int pos = -1;  
 private int ch;  
 private void nextChar() {  
 ch = (++pos < str.length()) ? str.charAt(pos) : -1; }  
 private boolean eat(int charToEat) {  
 while (ch == ' ') nextChar();  
 } else if ((ch >= '0' && ch <= '9') || ch == '.') {  
 while ((ch >= '0' && ch <= '9') || ch == '.') nextChar();  
 x = Double.parseDouble(str.substring(startPos, pos);}  
 String func = str.substring(startPos, pos);  
 x = parseFactor();  
 if (func.equals("sqrt")) x = Math.sqrt(x);  
 else if (func.equals("sin")) x = Math.sin(Math.toRadians(x));  
 else if (func.equals("cos")) x = Math.cos(Math.toRadians(x));  
 else if (func.equals("tan")) x = Math.tan(Math.toRadians(x));  
 else if (func.equals("log")) x = Math.log10(x);  
 else if (func.equals("ln")) x = Math.log(x);  
 else throw new RuntimeException("Unknown function: " + func);  
 } else {  
 throw new RuntimeException("Unexpected: " + (char) ch); }  
 if (eat('^')) x = Math.pow(x, parseFactor());  
 return x; }}.parse(); }}

**OUTPUT:**

****