

Lahore Garrison University

Calculator Application

using Java (Android Studio)

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Mobile Application Development

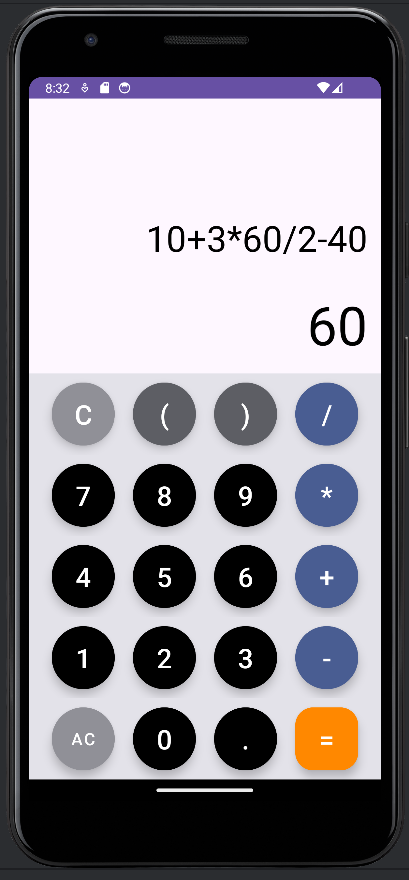
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**(CalculatorApplication\_Design)**

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**(CalculatorApplication/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:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
**<!-- solution textview-->** <TextView  
 android:id="@+id/solution\_textView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:textSize="40sp"  
 android:textAlignment="textEnd"  
 android:layout\_above="@id/result\_textView"  
 android:layout\_margin="15dp"  
 android:textColor="@color/black"/>  
 **<!-- Result textview-->** <TextView  
 android:id="@+id/result\_textView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="0"  
 android:textSize="60sp"  
 android:textAlignment="textEnd"  
 android:layout\_above="@id/buttons\_layout"  
 android:layout\_margin="15dp"  
 android:textColor="@color/black"/>  
 **<!-- Buttons layout-->**  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:layout\_alignParentBottom="true"  
 android:layout\_gravity="center"  
 android:background="@color/material\_dynamic\_neutral90"  
 android:id="@+id/buttons\_layout">  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center"  
 android:orientation="horizontal">  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_c"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="C"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_neutral60"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_OpenBracket"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="("  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_neutral40" />  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_CloseBracket"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text=")"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_neutral40"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_divide"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="/"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_primary40"/>  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center"  
 android:orientation="horizontal">  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_7"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="7"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_neutral0"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_8"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="8"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_9"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="9"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_multiply"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="\*"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_primary40"/>  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center"  
 android:orientation="horizontal">  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_4"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="4"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_5"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="5"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_6"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="6"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_add"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="+"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_primary40" />  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center"  
 android:orientation="horizontal">  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_1"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="1"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_2"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="2"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_3"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="3"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black" />  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_subtract"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="-"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_primary40"/>  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center"  
 android:orientation="horizontal">  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_AC"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="AC"  
 android:textSize="19sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/material\_dynamic\_neutral60"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_0"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="0"  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_point"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="40dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="."  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@color/black"/>  
 <com.google.android.material.button.MaterialButton  
 android:id="@+id/button\_equal"  
 android:layout\_width="70dp"  
 android:layout\_height="70dp"  
 app:cornerRadius="20dp"  
 style="@style/Widget.MaterialComponents.ExtendedFloatingActionButton"  
 android:text="="  
 android:textSize="30sp"  
 android:textColor="@color/white"  
 android:layout\_margin="10dp"  
 android:backgroundTint="@android:color/holo\_orange\_dark"/>  
 </LinearLayout>  
 </LinearLayout>  
</RelativeLayout>

**(CalculatorApplication/MainActivity.java)**

package com.example.calculatorapplication;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.TextView;  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
import com.google.android.material.button.MaterialButton;  
import org.mozilla.javascript.Context; **// imported rom build.gradle to calculate result**  
import org.mozilla.javascript.Scriptable**; // imported rom build.gradle to calculate result**

public class MainActivity extends AppCompatActivity implements View.OnClickListener{  
 **// variable creation** TextView Result\_Textview,Solution\_Textview;  
 MaterialButton ButtonAC,ButtonPoint,ButtonC,ButtonOpenBracket,ButtonCloseBracket;  
 MaterialButton ButtonDivide, ButtonMultiply, ButtonAdd, ButtonSubtract, ButtonEqual;  
 MaterialButton Button0,Button1,Button2,Button3,Button4,Button5,Button6,Button7, Button8, Button9;  
 **// to assign id to textview and buttons from xml** @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 Result\_Textview= findViewById(R.id.*result\_textView*);  
 Solution\_Textview= findViewById(R.id.*solution\_textView*);  
 **// getting button id by calling function** getId(ButtonC,R.id.*button\_c*);  
 getId(ButtonAC,R.id.*button\_AC*);  
 getId(ButtonPoint,R.id.*button\_point*);  
 getId(ButtonOpenBracket,R.id.*button\_OpenBracket*);  
 getId(ButtonCloseBracket,R.id.*button\_CloseBracket*);  
 getId(ButtonDivide,R.id.*button\_divide*);  
 getId(ButtonMultiply,R.id.*button\_multiply*);  
 getId(ButtonAdd,R.id.*button\_add*);  
 getId(ButtonSubtract,R.id.*button\_subtract*);  
 getId(ButtonEqual,R.id.*button\_equal*);  
 getId(Button0,R.id.*button\_0*);  
 getId(Button1,R.id.*button\_1*);  
 getId(Button2,R.id.*button\_2*);  
 getId(Button3,R.id.*button\_3*);  
 getId(Button4,R.id.*button\_4*);  
 getId(Button5,R.id.*button\_5*);  
 getId(Button6,R.id.*button\_6*);  
 getId(Button7,R.id.*button\_7*);  
 getId(Button8,R.id.*button\_8*);  
 getId(Button9,R.id.*button\_9*);  
 }  
 **// function to get buttons id** void getId(MaterialButton btn,int id)  
 {  
 btn=findViewById(id);  
 btn.setOnClickListener(this); }  
 @Override  
 public void onClick(View view){  
 MaterialButton button= (MaterialButton) view;  
 String ButtonText= button.getText().toString();  
 String dataToCalculate= Solution\_Textview.getText().toString();  
 **// AC,=, and C features** if(ButtonText.equals("AC")){  
 Solution\_Textview.setText("");  
 Result\_Textview.setText("0");  
 return; }  
 if(ButtonText.equals("=")){  
 Solution\_Textview.setText(Result\_Textview.getText());  
 return; }  
 if(ButtonText.equals("C")){  
 dataToCalculate=dataToCalculate.substring(0,dataToCalculate.length()-1);  
 }else{  
 dataToCalculate= dataToCalculate+ButtonText; }  
 **// Showing result in Soultion textview** Solution\_Textview.setText(dataToCalculate);  
 String finalResult = CalculatedResult(dataToCalculate);  
 if(!finalResult.equals("ERROR")){  
 Result\_Textview.setText(finalResult);  
 } }  
  **// calculated results by library added in build.gradle**  
 String CalculatedResult(String data){  
 try {  
 Context context=Context.*enter*();  
 context.setOptimizationLevel(-1);  
 Scriptable scriptable = context.initStandardObjects();  
 String finalResult= context.evaluateString(scriptable,data,  
 "javascript", 1,null).toString();  
  **// removing unrequired .0 from calculated results**  
 if(finalResult.endsWith(".0")){  
 finalResult= finalResult.replace(".0",""); }  
 return finalResult;  
 }catch (Exception e){  
 return "ERROR"; } } }

**(CalculatorApplication/AndroidManifest.xml)**

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools">  
  
 <application  
 android:allowBackup="true"  
 android:dataExtractionRules="@xml/data\_extraction\_rules"  
 android:fullBackupContent="@xml/backup\_rules"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.CalculatorApplication"  
 tools:targetApi="31">  
 <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>