**Calculator Project**

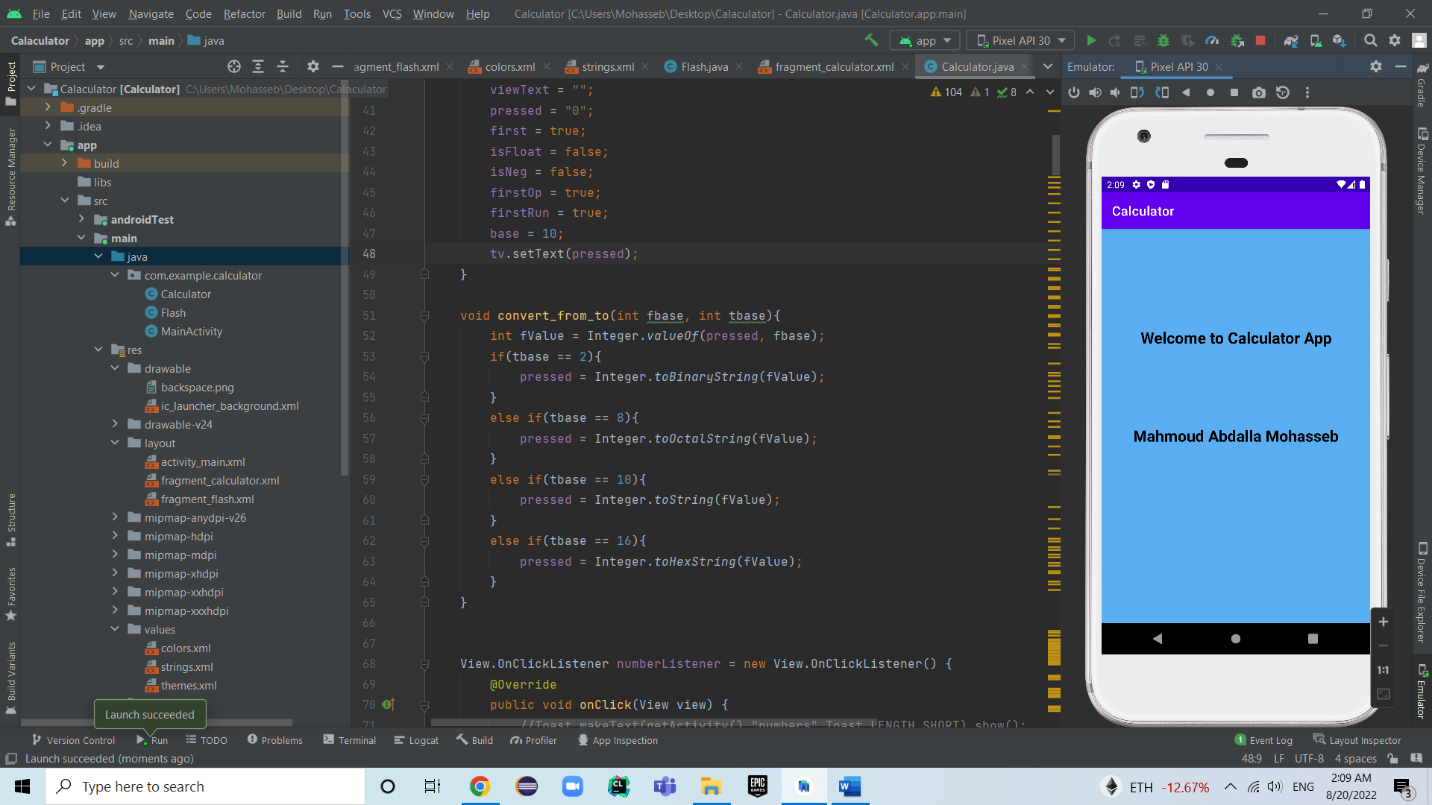
**Mahmoud Abdalla Mohasseb**

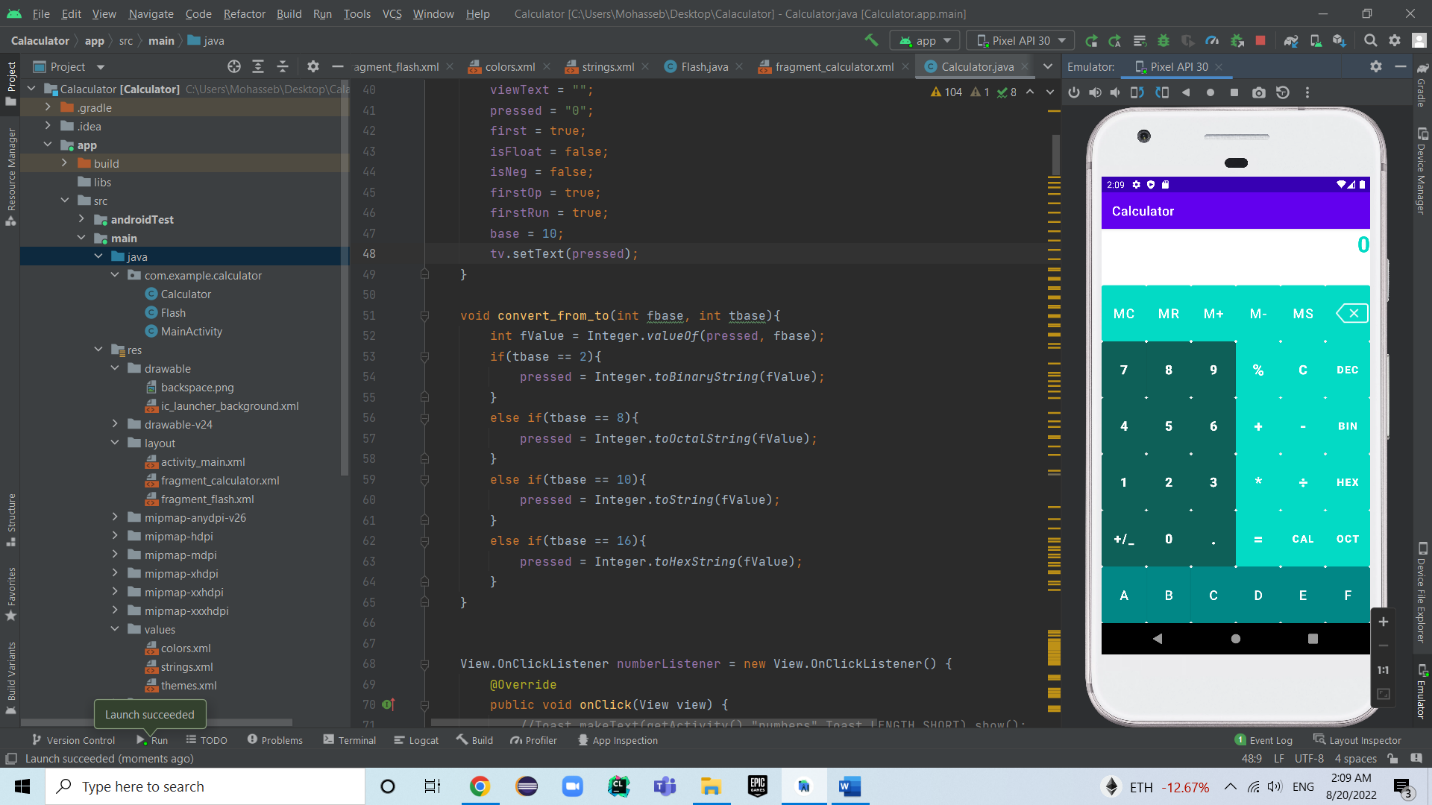
**20P2787**

**Drive link for project:**

https://drive.google.com/drive/folders/1j4dX\_FM7Ez9nnSZuQvP\_UsIrm52mjX9U?usp=sharing

**Layout Screen:**

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**Main Activity:**

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout 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:orientation="vertical"  
 tools:context=".MainActivity">  
  
 <FrameLayout  
 android:id="@+id/fragment\_container"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:weightSum="7">  
  
 </FrameLayout>  
</LinearLayout>

**Calculator Fragment:**

<?xml version="1.0" encoding="utf-8"?>  
<FrameLayout 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/fragment\_calculator"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
  
 android:orientation="vertical"  
 tools:context=".Calculator">  
  
 <!-- TODO: Update blank fragment layout -->  
  
 <LinearLayout  
 android:id="@+id/calc"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <TextView  
 android:id="@+id/TV\_numbers"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:paddingBottom="0dp"  
 android:text="@string/num0"  
 android:textAlignment="textEnd"  
 android:textColor="@color/teal\_200"  
 android:textSize="34sp"  
 android:textStyle="bold"  
 tools:ignore="TextContrastCheck" />  
  
 <LinearLayout  
 android:id="@+id/row1"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:id="@+id/btn\_memRemove"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/memRemove"  
 android:textSize="20sp"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_memRecall"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/memRecall"  
 android:textSize="20sp"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_memPlus"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/memPlus"  
 android:textSize="20sp"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_memSubtract"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/memSubtract"  
 android:textSize="20sp"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_memStore"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/memStore"  
 android:textSize="20sp"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_backSpace"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:contentDescription="@string/backSpace"  
 android:cropToPadding="false"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:src="@drawable/backspace"  
 android:visibility="visible"  
 app:icon="@drawable/backspace"  
 app:tint="@color/white"  
 tools:ignore="ImageContrastCheck" />  
  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/row2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:id="@+id/btn\_num7"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num7"  
 android:textAlignment="center"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num8"  
 style="?android:attr/buttonBarButtonStyle"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num8"  
 android:textAlignment="center"  
 android:textColor="@color/white"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num9"  
 style="?android:attr/buttonBarButtonStyle"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num9"  
 android:textAlignment="center"  
 android:textColor="@color/white"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_mod"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/mod"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_removeAll"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/removeAll"  
 android:textSize="20sp"  
 android:textStyle="bold"  
 tools:ignore="DuplicateSpeakableTextCheck,TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_decimal"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/decimal"  
 android:textSize="16sp"  
 android:textStyle="bold"  
 tools:ignore="TextContrastCheck" />  
  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/row3"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:id="@+id/btn\_num4"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num4"  
 android:textAlignment="center"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num5"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num5"  
 android:textAlignment="center"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num6"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num6"  
 android:textAlignment="center"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_sum"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/sum"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_subtract"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/subtract"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 tools:ignore="TextContrastCheck" />  
  
 <Button  
 android:id="@+id/btn\_binary"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/binary"  
 android:textSize="16sp"  
 android:textStyle="bold"  
 tools:ignore="TextContrastCheck" />  
  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/row4"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:id="@+id/btn\_num1"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num1"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num2"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num2"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num3"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num3"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_multiply"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/multiply"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_divide"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/divide"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_hexa"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/hexa"  
 android:textSize="16sp"  
 android:textStyle="bold" />  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/row5"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:id="@+id/btn\_plusNeg"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/plusNega"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_num0"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/num0"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_float"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/gre"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/floatPoint"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_equal"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/equal"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_calc"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/calc"  
 android:textSize="16sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/btn\_octal"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_200"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/octal"  
 android:textSize="16sp"  
 android:textStyle="bold" />  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/hexa\_nums"  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal"  
 tools:visibility="gone">  
  
 <Button  
 android:id="@+id/btn\_A"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_700"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/A"  
 android:textSize="20sp" />  
  
 <Button  
 android:id="@+id/btn\_B"  
 style="?android:attr/buttonBarButtonStyle"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_700"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/B"  
 android:textColor="@color/white"  
 android:textSize="20sp" />  
  
 <Button  
 android:id="@+id/btn\_C"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_700"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/C"  
 android:textSize="20sp" />  
  
 <Button  
 android:id="@+id/btn\_D"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_700"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/D"  
 android:textSize="20sp" />  
  
 <Button  
 android:id="@+id/btn\_E"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_700"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/E"  
 android:textSize="20sp" />  
  
 <Button  
 android:id="@+id/btn\_F"  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:backgroundTint="@color/teal\_700"  
 android:insetTop="0dp"  
 android:insetBottom="0dp"  
 android:text="@string/F"  
 android:textSize="20sp" />  
 </LinearLayout>  
  
 </LinearLayout>  
  
</FrameLayout>

**Flash Fragment(contains name and welcome message)**

<?xml version="1.0" encoding="utf-8"?>  
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:id="@+id/fragment\_container"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="#59AEF1"  
 tools:context=".Flash">  
  
 <TextView  
 android:id="@+id/TV\_welcome"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="150dp"  
 android:text="@string/welcome"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
  
 <TextView  
 android:id="@+id/TV\_name"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="300dp"  
 android:text="@string/name"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 android:textSize="24sp"  
 android:textStyle="bold" />  
</FrameLayout>

**Strings**

<resources>  
 <string name="app\_name">Calculator</string>  
 <!-- *TODO: Remove or change this placeholder text* -->  
 <string name="hello\_blank\_fragment">Hello blank fragment</string>  
 <string name="welcome">Welcome to Calculator App</string>  
 <string name="name">Mahmoud Abdalla Mohasseb</string>  
 <string name="num0">0</string>  
 <string name="num1">1</string>  
 <string name="num2">2</string>  
 <string name="num3">3</string>  
 <string name="num4">4</string>  
 <string name="num5">5</string>  
 <string name="num6">6</string>  
 <string name="num7">7</string>  
 <string name="num8">8</string>  
 <string name="num9">9</string>  
 <string name="A">A</string>  
 <string name="B">B</string>  
 <string name="C">C</string>  
 <string name="D">D</string>  
 <string name="E">E</string>  
 <string name="F">F</string>  
 <string name="divide">÷</string>  
 <string name="multiply">\*</string>  
 <string name="sum">+</string>  
 <string name="subtract">-</string>  
 <string name="equal">=</string>  
 <string name="calc">cal</string>  
 <string name="conv">con</string>  
 <string name="mod">%</string>  
 <string name="memRemove">MC</string>  
 <string name="memRecall">MR</string>  
 <string name="memPlus">M+</string>  
 <string name="memSubtract">M-</string>  
 <string name="memStore">MS</string>  
 <string name="removeAll">C</string>  
 <string name="backSpace">Backspace</string>  
 <string name="decimal">Dec</string>  
 <string name="binary">Bin</string>  
 <string name="octal">Oct</string>  
 <string name="hexa">Hex</string>  
 <string name="plusNega">+/\_</string>  
 <string name="floatPoint">.</string>  
</resources>

**Colors:**

<?xml version="1.0" encoding="utf-8"?>  
<resources>  
 <color name="purple\_200">#FFBB86FC</color>  
 <color name="purple\_500">#FF6200EE</color>  
 <color name="purple\_700">#FF3700B3</color>  
 <color name="teal\_200">#FF03DAC5</color>  
 <color name="teal\_700">#FF018786</color>  
 <color name="black">#FF000000</color>  
 <color name="white">#FFFFFFFF</color>  
 <color name="gre">#0E6058</color>  
</resources>

**Java code of main activity:**

package com.example.calculator;  
  
import android.os.Bundle;  
import android.os.Handler;  
  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.fragment.app.FragmentManager;  
import androidx.fragment.app.FragmentTransaction;  
  
public class MainActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 FragmentManager fm = getSupportFragmentManager();  
 FragmentTransaction ft = fm.beginTransaction();  
 Flash flashFragment = new Flash();  
 ft.add(R.id.*fragment\_container*, flashFragment);  
 ft.commit();  
  
  
 Handler handler = new Handler();  
 handler.postDelayed(new Runnable() {  
 @Override  
 public void run() {  
 FragmentTransaction ft2 = fm.beginTransaction();  
 Calculator calcFragment = new Calculator();  
 ft2.replace(R.id.*fragment\_container*, calcFragment);  
 ft2.commit();  
 }  
 }, 2000);  
  
 }  
}

**Java code of calculator fragment:**

package com.example.calculator;  
  
// azbot divide by zero  
// azbot length ally zahr fe text  
  
import android.os.Bundle;  
  
import androidx.annotation.NonNull;  
import androidx.annotation.Nullable;  
import androidx.fragment.app.Fragment;  
  
import android.service.quickaccesswallet.SelectWalletCardRequest;  
import android.support.v4.os.IResultReceiver;  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import android.widget.Button;  
import android.widget.ImageButton;  
import android.widget.TextView;  
import android.widget.Toast;  
  
import java.util.Stack;  
  
public class Calculator extends Fragment {  
 Button[] btns = new Button[36];  
 TextView tv;  
 Stack<Double> memory;  
  
 double operandOne = 0, result = 0;  
 String operation = "";  
 String viewText = "", pressed = "0";  
 boolean first = true, isFloat = false, isNeg = false, firstOp = true;  
 boolean firstRun = true, calc = true;  
 int base = 10;  
  
 void initalize\_from\_first(){  
 result = 0;  
 operandOne = 0;  
 operation = "";  
 viewText = "";  
 pressed = "0";  
 first = true;  
 isFloat = false;  
 isNeg = false;  
 firstOp = true;  
 firstRun = true;  
 base = 10;  
 tv.setText(pressed);  
 }  
  
 void convert\_from\_to(int fbase, int tbase){  
 int fValue = Integer.*valueOf*(pressed, fbase);  
 if(tbase == 2){  
 pressed = Integer.*toBinaryString*(fValue);  
 }  
 else if(tbase == 8){  
 pressed = Integer.*toOctalString*(fValue);  
 }  
 else if(tbase == 10){  
 pressed = Integer.*toString*(fValue);  
 }  
 else if(tbase == 16){  
 pressed = Integer.*toHexString*(fValue);  
 }  
 }  
  
  
 View.OnClickListener numberListener = new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 //Toast.makeText(getActivity(),"numbers",Toast.LENGTH\_SHORT).show();  
 if(operation == "=") initalize\_from\_first();  
 firstOp = true;  
  
 switch (view.getId()) {  
 case R.id.*btn\_num0*:  
 if (!first) pressed += "0";  
 break;  
 case R.id.*btn\_num1*:  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "1";  
 first = false;  
 break;  
 case R.id.*btn\_num2*:  
 if (base != 2) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "2";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num3*:  
 if (base != 2) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "3";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num4*:  
 if (base != 4) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "4";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num5*:  
 if (base != 2) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "5";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num6*:  
 if (base != 2) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "6";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num7*:  
 if (base != 2) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "7";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num8*:  
 if (base == 10 || base == 16) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "8";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_num9*:  
 if (base == 10 || base == 16) {  
 if(first) pressed = (isNeg) ? "-":"";  
 pressed += "9";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_A*:  
 if (base == 16 && calc == false) {  
 if(first) pressed = "";  
 pressed += "A";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_B*:  
 if (base == 16 && calc == false) {  
 if(first) pressed = "";  
 pressed += "B";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_C*:  
 if (base == 16 && calc == false) {  
 if(first) pressed = "";  
 pressed += "C";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_D*:  
 if (base == 16 && calc == false) {  
 if(first) pressed = "";  
 pressed += "D";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_E*:  
 if (base == 16 && calc == false) {  
 if(first) pressed = "";  
 pressed += "E";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_F*:  
 if (base == 16 && calc == false) {  
 if(first) pressed = "";  
 pressed += "F";  
 first = false;  
 }  
 break;  
 case R.id.*btn\_float*:  
 if (!isFloat && base == 10 && calc == true) {  
 pressed += ".";  
 isFloat = true;  
 first = false;  
 }  
 break;  
 case R.id.*btn\_plusNeg*:  
 if (first && base == 10 && calc == true) {  
 if (isNeg) pressed = "0";  
 else pressed = "-0";  
 isNeg = !isNeg;  
 }  
 break;  
 case R.id.*btn\_removeAll*:  
 initalize\_from\_first();  
 break;  
 case R.id.*btn\_backSpace*:  
 int size = pressed.length();  
 if(size > 0 && pressed.charAt(0) != '0'){  
 pressed = pressed.substring(0, size - 1);  
 size = pressed.length();  
 }  
 if (size == 0){  
 pressed = "0";  
 first = true;  
 }  
 }  
  
 /\*if(pressed.length() <= 9)\*/tv.setText(viewText + operation + "\n" + pressed);  
 }  
 };  
  
 View.OnClickListener baseListener = new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if(calc == false) {  
 switch (view.getId()) {  
 case R.id.*btn\_decimal*:  
 convert\_from\_to(base, 10);  
 base = 10;  
 break;  
 case R.id.*btn\_hexa*:  
 convert\_from\_to(base, 16);  
 base = 16;  
 break;  
 case R.id.*btn\_binary*:  
 convert\_from\_to(base, 2);  
 base = 2;  
 break;  
 case R.id.*btn\_octal*:  
 convert\_from\_to(base, 8);  
 base = 8;  
 break;  
 }  
 tv.setText("\n" + pressed);  
 }  
 else{  
 Toast.*makeText*(getActivity(),"Can not change base in cal mode",Toast.*LENGTH\_SHORT*).show();  
 }  
 }  
 };  
  
 View.OnClickListener memoryListener = new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if(calc == false) {  
 Toast.*makeText*(getActivity(),"can not use in con mode",Toast.*LENGTH\_SHORT*).show();  
 return;  
 }  
 double lastValue;  
 switch (view.getId()){  
 case R.id.*btn\_memRemove*:  
 memory.clear();  
 memory.push(0.0);  
 break;  
 case R.id.*btn\_memRecall*:  
 pressed = memory.peek().toString();  
 double value = Double.*parseDouble*(pressed);  
 if(value > 0) first = false;  
 if(value != Math.*ceil*(value)) isFloat = true;  
 if(value < 0) isNeg = true;  
 firstOp = true;  
 tv.setText(viewText + operation + "\n" + pressed);  
 break;  
 case R.id.*btn\_memPlus*:  
 lastValue = memory.peek();  
 memory.pop();  
 lastValue += Double.*parseDouble*(pressed);  
 memory.push(lastValue);  
 break;  
 case R.id.*btn\_memSubtract*:  
 lastValue = memory.peek();  
 memory.pop();  
 lastValue -= Double.*parseDouble*(pressed);  
 memory.push(lastValue);  
 break;  
 case R.id.*btn\_memStore*:  
 lastValue = Double.*parseDouble*(pressed);  
 memory.push(lastValue);  
 break;  
 }  
 }  
 };  
  
  
 View.OnClickListener opsListener = new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 if(operation == "=" && calc) initalize\_from\_first();  
 if(firstOp && calc){  
 operandOne = Double.*parseDouble*(pressed);  
 if(firstRun) {  
 result = operandOne;  
 firstRun = false;  
 viewText += pressed;  
 }  
 else {  
 switch (operation) {  
 case "+":  
 viewText += " + ";  
 result += operandOne;  
 break;  
 case "-":  
 viewText += " - ";  
 result -= operandOne;  
 break;  
 case "\*":  
 viewText += " \* ";  
 result \*= operandOne;  
 break;  
 case "÷":  
 viewText += " ÷ ";  
 result /= operandOne;  
 if(operandOne == 0) {  
 initalize\_from\_first();  
 tv.setText("\n" + "Can not divide by 0");  
 return;  
 }  
 break;  
 case "%":  
 viewText += " % ";  
 result %= operandOne;  
 if(operandOne == 0) {  
 initalize\_from\_first();  
 tv.setText("\n" + "undefined value");  
 return;  
 }  
 break;  
 }  
 viewText += pressed;  
 }  
 tv.setText(viewText + "\n");  
 first = true;  
 isNeg = isFloat = false;  
 pressed = "0";  
 firstOp = false;  
 }  
  
 switch (view.getId()){  
 case R.id.*btn\_sum*:  
 if(calc) {  
 tv.setText(viewText + " +" + "\n" + result);  
 operation = "+";  
 }  
 break;  
 case R.id.*btn\_subtract*:  
 if(calc) {  
 tv.setText(viewText + " - " + "\n" + result);  
 operation = "-";  
 }  
 break;  
 case R.id.*btn\_multiply*:  
 if(calc) {  
 tv.setText(viewText + " \* " + "\n" + result);  
 operation = "\*";  
 }  
 break;  
 case R.id.*btn\_divide*:  
 if(calc) {  
 tv.setText(viewText + " ÷ " + "\n" + result);  
 operation = "÷";  
 }  
 break;  
 case R.id.*btn\_equal*:  
 if(calc) {  
 tv.setText(viewText + " = " + "\n" + result);  
 pressed = Double.*toString*(result);  
 operation = "=";  
 //initalize\_from\_first();  
 }  
 break;  
 case R.id.*btn\_mod*:  
 if(calc) {  
 tv.setText(viewText + " % " + "\n" + result);  
 operation = "%";  
 }  
 break;  
 case R.id.*btn\_calc*:  
 calc = !calc;  
 if(calc) btns[30].setText(R.string.*calc*);  
 else btns[30].setText(R.string.*conv*);  
 initalize\_from\_first();  
 break;  
 }  
 }  
 };  
  
  
  
  
  
  
  
 public Calculator() {  
 // Required empty public constructor  
 }  
  
 @Override  
 public View onCreateView(LayoutInflater inflater, ViewGroup container,  
 Bundle savedInstanceState) {  
 // Inflate the layout for this fragment  
 return inflater.inflate(R.layout.*fragment\_calculator*, container, false);  
 }  
  
  
 @Override  
 public void onViewCreated(@NonNull View view, @Nullable Bundle savedInstanceState) {  
 super.onViewCreated(view, savedInstanceState);  
 memory = new Stack<Double>();  
 memory.push((Double)0.0);  
  
 tv = (TextView)view.findViewById(R.id.*TV\_numbers*);  
  
 /\* numbers buttons \*/  
 btns[0] = (Button)view.findViewById(R.id.*btn\_num0*);  
 btns[1] = (Button)view.findViewById(R.id.*btn\_num1*);  
 btns[2] = (Button)view.findViewById(R.id.*btn\_num2*);  
 btns[3] = (Button)view.findViewById(R.id.*btn\_num3*);  
 btns[4] = (Button)view.findViewById(R.id.*btn\_num4*);  
 btns[5] = (Button)view.findViewById(R.id.*btn\_num5*);  
 btns[6] = (Button)view.findViewById(R.id.*btn\_num6*);  
 btns[7] = (Button)view.findViewById(R.id.*btn\_num7*);  
 btns[8] = (Button)view.findViewById(R.id.*btn\_num8*);  
 btns[9] = (Button)view.findViewById(R.id.*btn\_num9*);  
 btns[10] = (Button)view.findViewById(R.id.*btn\_A*);  
 btns[11] = (Button)view.findViewById(R.id.*btn\_B*);  
 btns[12] = (Button)view.findViewById(R.id.*btn\_C*);  
 btns[13] = (Button)view.findViewById(R.id.*btn\_D*);  
 btns[14] = (Button)view.findViewById(R.id.*btn\_E*);  
 btns[15] = (Button)view.findViewById(R.id.*btn\_F*);  
 btns[16] = (Button)view.findViewById(R.id.*btn\_float*);  
 btns[17] = (Button)view.findViewById(R.id.*btn\_plusNeg*);  
 btns[18] = (Button)view.findViewById(R.id.*btn\_removeAll*);  
 btns[19] = (Button)view.findViewById(R.id.*btn\_backSpace*);  
  
  
 for(int i = 0; i <= 19; i++){  
 btns[i].setOnClickListener(numberListener);  
 }  
  
 /\* base buttons \*/  
 btns[20] = (Button)view.findViewById(R.id.*btn\_decimal*);  
 btns[21] = (Button)view.findViewById(R.id.*btn\_binary*);  
 btns[22] = (Button)view.findViewById(R.id.*btn\_hexa*);  
 btns[23] = (Button)view.findViewById(R.id.*btn\_octal*);  
  
 for(int i = 20; i <= 23; i++){  
 btns[i].setOnClickListener(baseListener);  
 }  
  
 /\* operations buttons \*/  
 btns[24] = (Button)view.findViewById(R.id.*btn\_sum*);  
 btns[25] = (Button)view.findViewById(R.id.*btn\_subtract*);  
 btns[26] = (Button)view.findViewById(R.id.*btn\_multiply*);  
 btns[27] = (Button)view.findViewById(R.id.*btn\_divide*);  
 btns[28] = (Button)view.findViewById(R.id.*btn\_mod*);  
 btns[29] = (Button)view.findViewById(R.id.*btn\_equal*);  
 btns[30] = (Button)view.findViewById(R.id.*btn\_calc*);  
  
 for(int i = 24; i <= 30; i++){  
 btns[i].setOnClickListener(opsListener);  
 }  
  
 /\* memory buttons \*/  
 btns[31] = (Button)view.findViewById(R.id.*btn\_memPlus*);  
 btns[32] = (Button)view.findViewById(R.id.*btn\_memSubtract*);  
 btns[33] = (Button)view.findViewById(R.id.*btn\_memRecall*);  
 btns[34] = (Button)view.findViewById(R.id.*btn\_memRemove*);  
 btns[35] = (Button)view.findViewById(R.id.*btn\_memStore*);  
  
 for(int i = 31; i <= 35; i++){  
 btns[i].setOnClickListener(memoryListener);  
 }  
 }  
}

**Java code of flash fragment**

package com.example.calculator;  
  
import android.os.Bundle;  
  
import androidx.fragment.app.Fragment;  
  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
  
  
public class Flash extends Fragment {  
  
 public Flash() {  
 // Required empty public constructor  
 }  
  
 @Override  
 public View onCreateView(LayoutInflater inflater, ViewGroup container,  
 Bundle savedInstanceState) {  
 // Inflate the layout for this fragment  
 return inflater.inflate(R.layout.*fragment\_flash*, container, false);  
 }  
}

**Test case scenarios:**

000000000000000 o/p: 0

0…………… o/p: 0.

053 + - \* + 9 o/p: 53 + 9

5 / 0 o/p: can not divide by zero

5 / 0 + 3 o/p: 0 + 3

5 % 0 o/p: undefined value

5 % 0 + 3 o/p: 0 + 3

5 cal o/p: 0

6 con o/p: 0

When pressing binary in con mode: +/- , decimal point, numbers from 2 to 9 and A to F do not work

When pressing octal in con mode: +/- , decimal point, numbers from 8 to 9 and A to F do not work

When pressing hexa in con mode: +/- and decimal point do not work

+ o/p: 0 +