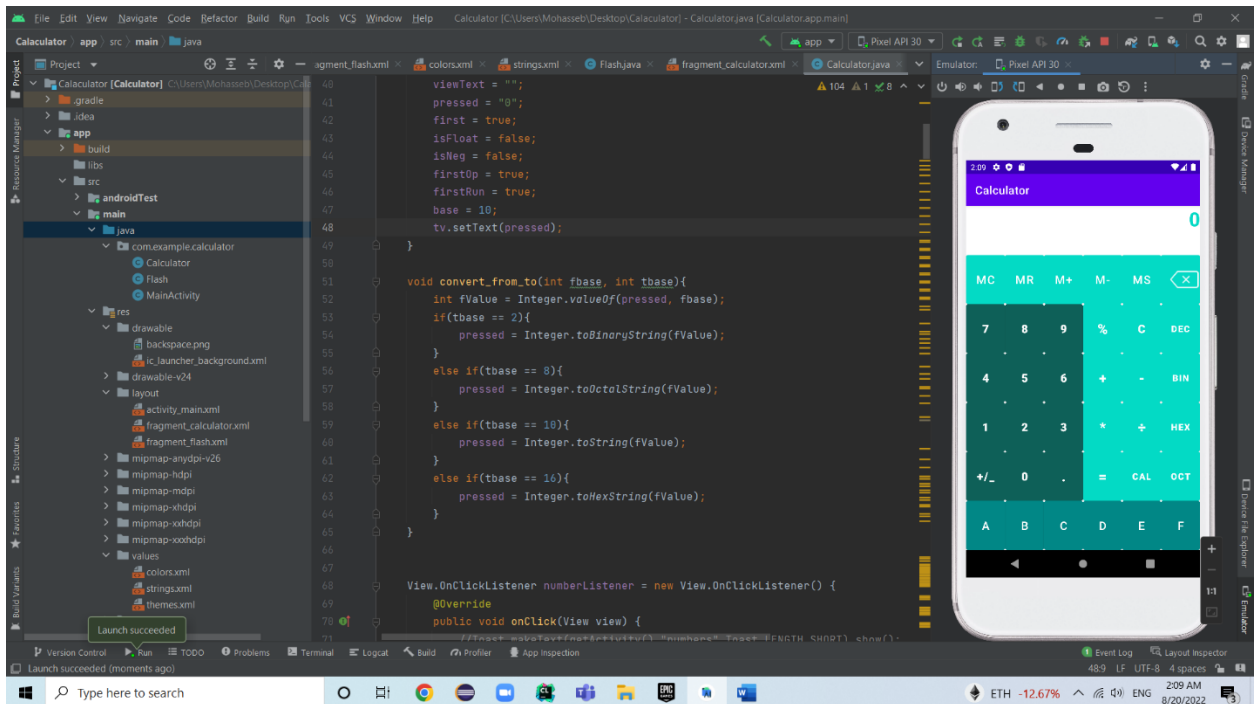
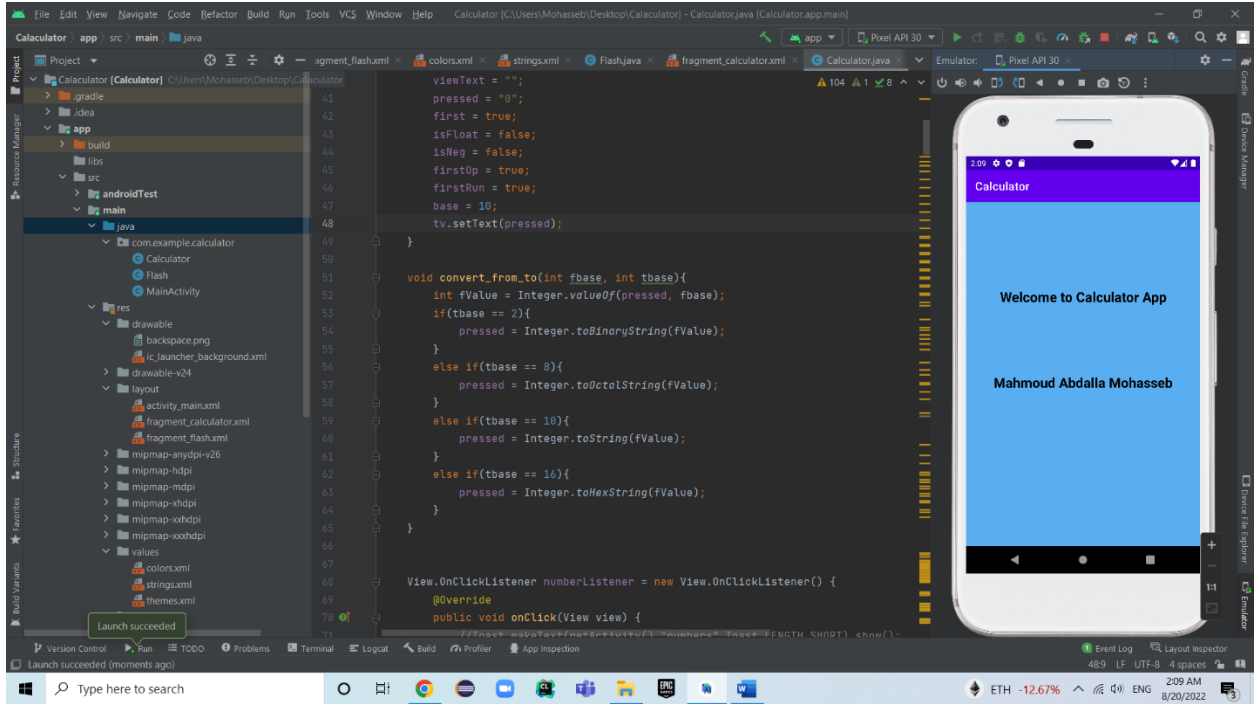


**Calculator Project**  
**Mahmoud Abdalla Mohasseb**  
**20P2787**

**Drive link for project:**

[https://drive.google.com/drive/folders/1j4dX\\_FM7Ez9nnSZuQvP\\_Uslrm52mjX9U?usp=sharing](https://drive.google.com/drive/folders/1j4dX_FM7Ez9nnSZuQvP_Uslrm52mjX9U?usp=sharing)

## Layout Screen:



## 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 == "=") initialize_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:
        initialize_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) initialize_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) {
                        initialize_from_first();
                        tv.setText("\n" + "Can not divide by 0");
                        return;
                    }
                    break;
                case "%":
                    viewText += " % ";
                    result %= operandOne;
                    if(operandOne == 0) {
                        initialize_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 = "=";
        //inititalize_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);
    inititalize_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:

0000000000000000

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 +