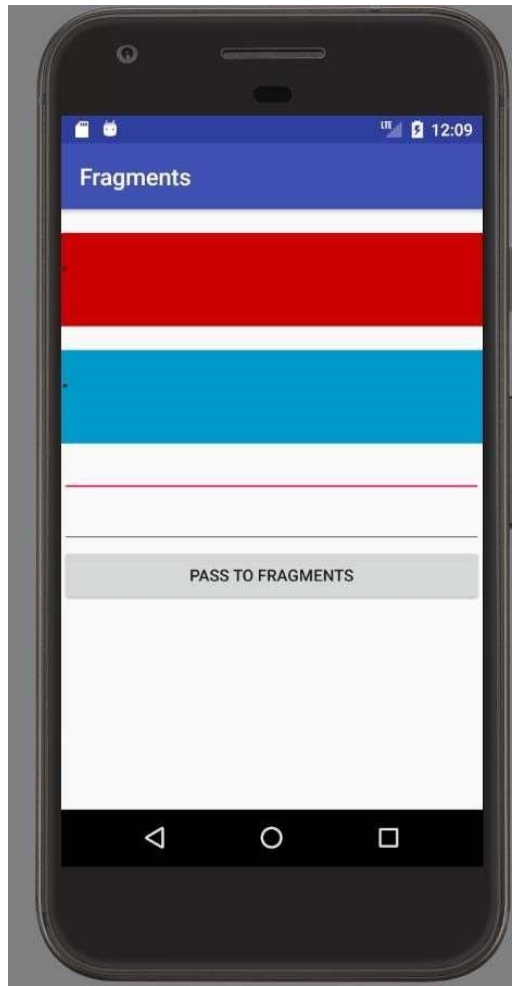


CSE2MAD Lab Week 6 – Fragments

Aim: To create an activity that contains two fragments that independently perform an operation and update their UI based on information coming from the parent container.



Ensure your Build.gradle (module) has

```
implementation 'androidx.appcompat:appcompat:1.2.0'  
implementation 'androidx.legacy:legacy-support-v4:1.0.0'
```

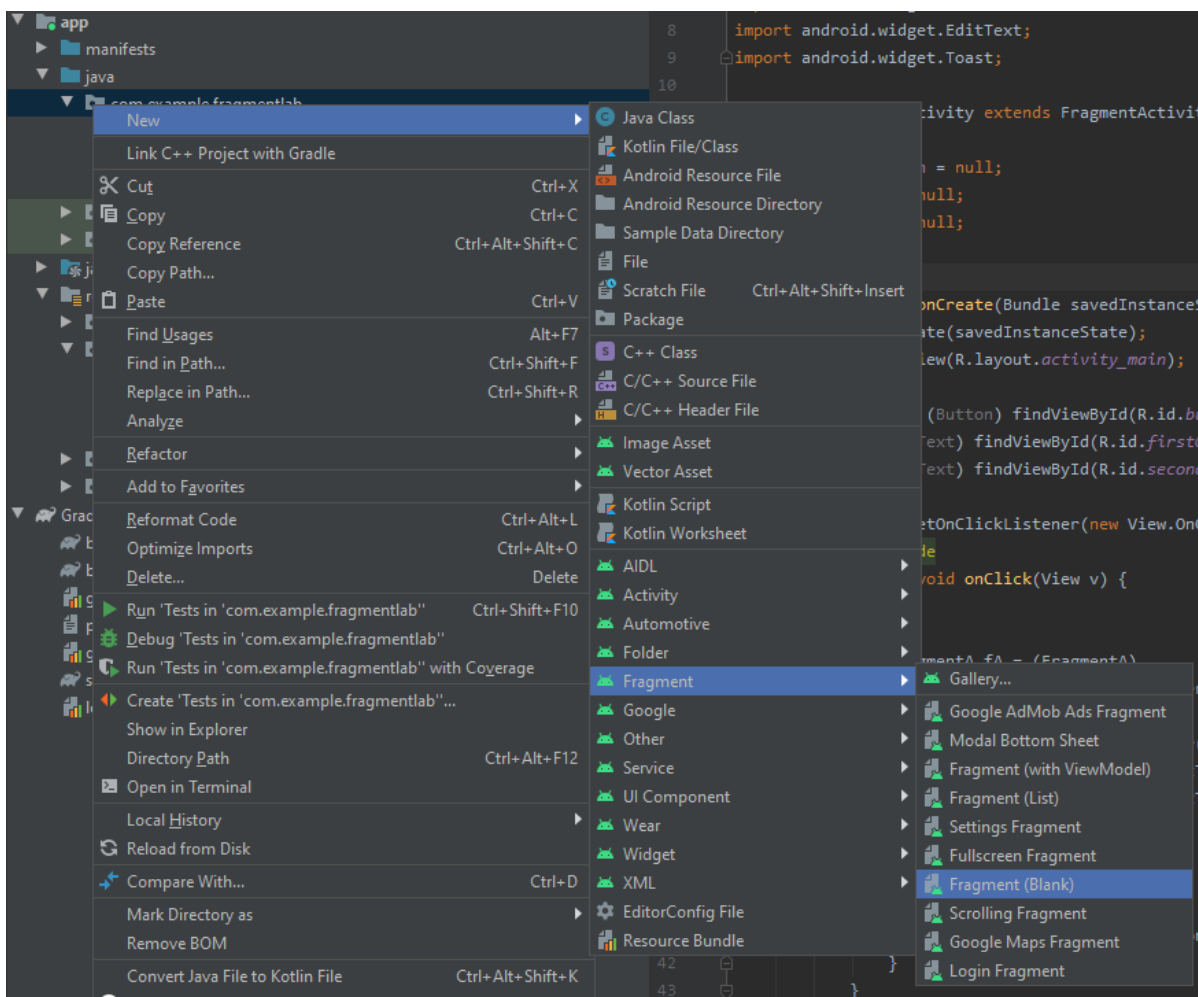
1) Create the parent activity

Ensure you import `androidx.fragment.app.FragmentActivity`; and extend `FragmentActivity` as your `MainActivity`

As above we need two fragments, two EditText's and a button. Before you go too deep with the UI, let's create the fragments.

- 2) Let's create the fragments. Their job is to handle a set of parameters and display the result of a calculation. You will go to the res/layout folder of your project and create the UI. Here is my XML.

Right click on your java package and create two new fragments, I called mine FragmentA and FragmentB



These fragments will have a basic UI according to these XML's. You may replace the existing XML with these for each fragment in the res/layout folder.

fragment_a.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="200dp" android:layout_height="200dp"
    android:orientation="vertical">
    <TextView
        android:id="@+id/resultText"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_gravity="center_horizontal|center_vertical"
        android:layout_marginTop="20dip"
        android:background="@android:color/holo_red_dark"
        android:text="."
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:textSize="30sp" />
</LinearLayout>
```

fragment_b.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="200dp" android:layout_height="200dp"
    android:orientation="vertical">
    <TextView
        android:id="@+id/resultText"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_gravity="center_horizontal|center_vertical"
        android:layout_marginTop="20dip"
        android:background="@android:color/holo_blue_dark"
        android:text="."
        android:textAppearance="?android:attr/textAppearanceLarge"
        android:textSize="30sp" />
</LinearLayout>
```

3) You need code to implement the functionality of the fragment.

There will be 2 java files in your code folder.

For FragmentA.java

Modify as per below

```
@Override
public View onCreateView(LayoutInflater inflater, ViewGroup container,
                        Bundle savedInstanceState) {

    View view = inflater.inflate(R.layout.fragment_a, container, false);
    tv = view.findViewById(R.id.resultText);
    // Inflate the layout for this fragment
    return view;
}

public void doCalcDisplay(int a, int b) {
    // perform the multiplication operation and update the textview in this
    fragment
    tv.setText("" + (a*b));
}
```

For FragmentB.java

Modify as per below

```
public View onCreateView(LayoutInflater inflater, ViewGroup container,
                        Bundle savedInstanceState) {
    View view = inflater.inflate(R.layout.fragment_b,
                                container, false);
    tv = view.findViewById(R.id.resultText);
    // Inflate the layout for this fragment
    return view;
}

public void doCalcDisplay(int a, int b) {
    // perform the addition operation and update the textview in this fragment
    tv.setText("" + (a+b));
}
```

As you can see we have to extend Fragment and override 'onCreateView', this is a pre-req for making fragments. If you look carefully it's like a mini Activity. The doCalcDisplay() method performs a calc and updates the textView.

Note: We inflate the fragment using its resource ID, remember your filenames of the XML.

4) Revisit the layout for your main activity.

Your XML for the main activity will be similar to.

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/container" android:layout_width="fill_parent"
    android:layout_height="fill_parent"
    android:orientation="vertical"
    tools:context="com.example.fragmentlab.MainActivity">
    <fragment
        android:id="@+id/fragmentA"
        android:name="com.example.fragmentlab.FragmentA"
        android:layout_width="match_parent"
        android:layout_height="100dp"
        tools:layout_editor_absoluteX="102dp"
        tools:layout_editor_absoluteY="177dp" />
    <fragment
        android:id="@+id/fragmentB"
        android:name="com.example.fragmentlab.FragmentB"
        android:layout_width="match_parent"
        android:layout_height="100dp"
        tools:layout_editor_absoluteX="102dp"
        tools:layout_editor_absoluteY="305dp" />
    <EditText
        android:id="@+id/firstOperandET"
        android:layout_width="match_parent" android:layout_height="44dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:text=""
        tools:layout_editor_absoluteX="16dp"
        tools:layout_editor_absoluteY="16dp" />
    <EditText
        android:id="@+id/secondOperandET"
        android:layout_width="match_parent" android:layout_height="44dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:text=""
        tools:layout_editor_absoluteX="130dp"
        tools:layout_editor_absoluteY="16dp" />
    <Button
        android:id="@+id/button"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" android:text="Pass
to Fragments" tools:layout_editor_absoluteX="240dp"
        tools:layout_editor_absoluteY="16dp" />
</LinearLayout>
```

5) This is the final stage, in the MainActivity java file we need to send input to the fragments.

```
package com.example.fragmentlab;

import androidx.fragment.app.FragmentActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends FragmentActivity {

    Button resButton = null;
    EditText opA = null;
    EditText opB = null;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        resButton = (Button) findViewById(R.id.button);
        opA = (EditText) findViewById(R.id.firstOperandET);
        opB = (EditText) findViewById(R.id.secondOperandET);

        resButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                FragmentA fA = (FragmentA)
                    getSupportFragmentManager().findFragmentById(R.id.fragmentA);
                FragmentB fB = (FragmentB)
                    getSupportFragmentManager().findFragmentById(R.id.fragmentB);
                int a = Integer.parseInt(opA.getText().toString());
                int b = Integer.parseInt(opB.getText().toString());
                if(a !=0 && b!=0) {
                    fA.doCalcDisplay(a, b);
                    fB.doCalcDisplay(a, b);
                } else {
                    Toast.makeText(getApplicationContext(), "Please enter non-zero
integers", Toast.LENGTH_SHORT);
                }
            }
        });
    }
}
```

Note_ We obtain the fragments in a similar way to the UI widgets, instead of using `findViewById()` we use `findFragmentById()`.

You may wish to do some range and format checking on the input data obtained from the `EditText`'s.

END OF PART A