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Github repository of my code : <https://github.com/DehNutCase/CSE-461/tree/master/lab3>

I believe all parts are completed successfully.

However, I don't know how many points they are worth (the lab 3 page doesn't say), so I assumed 20 points.

20 Points

### **Report:**

Part I, Basics:

Create Hello World in Android emulator.

Screenshot:



Code:

activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<!--most of code taken from
https://www.tutorialspoint.com/android/android_hello_world_example.htm-->
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:text="@string/hello_world"
        tools:context=".MainActivity" />

</RelativeLayout>
```

strings.xml

```
<resources>
    <!--most of code taken from
https://www.tutorialspoint.com/android/android_hello_world_example.htm-->
    <string name="app_name">Lab3HelloWorld</string>
    <string name="hello_world">"Hello, CSE 461-660"</string>
    <string name="menu_settings">Settings</string>
    <string name="title_activity_main">MainActivity</string>
</resources>
```

MainActivity.java

```
package com.example.lab3helloworld;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

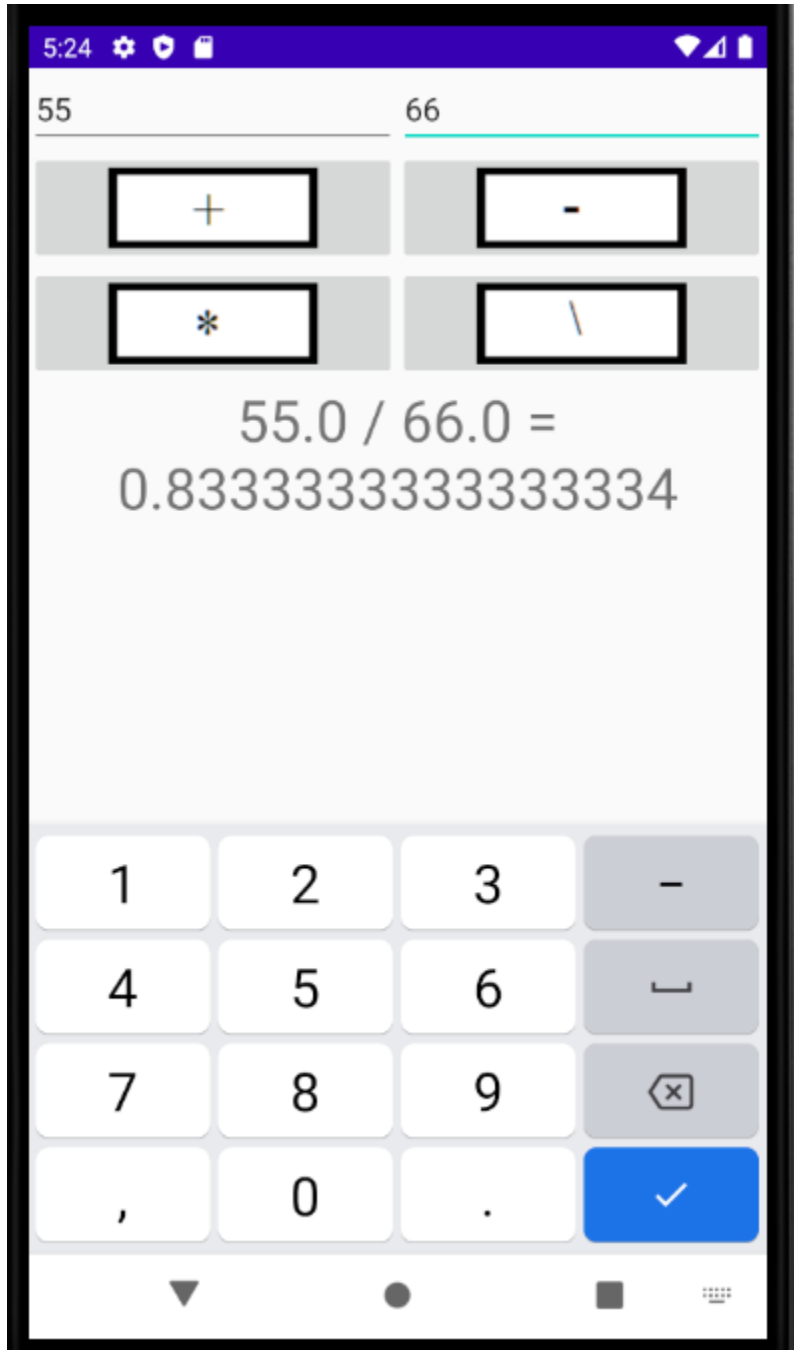
public class MainActivity extends AppCompatActivity {

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

Part II, Simple Calculator:

Create Simple Calculator and replace buttons of operators with images.

Screenshot:



Code:

Activity\_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/linearLayout1"
        android:layout_marginLeft="12pt"
        android:layout_marginRight="12pt"
        android:layout_marginTop="4pt">
        <EditText
            android:layout_weight="1"
            android:layout_height="wrap_content"
            android:layout_marginRight="6pt"
            android:id="@+id/t1"
            android:layout_width="match_parent"
            android:inputType="numberDecimal">
        </EditText>
        <EditText
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:layout_marginLeft="6pt"
            android:id="@+id/t2"
            android:layout_width="match_parent"
            android:inputType="numberDecimal">
        </EditText>
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/linearLayout2"
        android:layout_marginTop="4pt"
        android:layout_marginLeft="6pt"
        android:layout_marginRight="6pt">
        <ImageButton
            android:layout_height="wrap_content"
            android:layout_width="match_parent"
            android:layout_weight="1"
            android:src="@drawable/plus_button"
            android:id="@+id/plus">
        </ImageButton>
        <ImageButton
            android:layout_height="wrap_content"
            android:layout_width="match_parent"
            android:layout_weight="1"
            android:src="@drawable/minux_button"
            android:id="@+id/minus">
        </ImageButton>
    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
```

```

        android:layout_height="wrap_content"
        android:id="@+id/linearLayout3"
        android:layout_marginTop="4pt"
        android:layout_marginLeft="6pt"
        android:layout_marginRight="6pt">

        <ImageButton
            android:layout_height="wrap_content"
            android:layout_width="match_parent"
            android:layout_weight="1"
            android:src="@drawable/multiply_button"
            android:id="@+id/multiply">
        </ImageButton>
        <ImageButton
            android:layout_height="wrap_content"
            android:layout_width="match_parent"
            android:layout_weight="1"
            android:src="@drawable/divide_button"
            android:id="@+id/divide">
        </ImageButton>
    </LinearLayout>

    <TextView
        android:id="@+id/displayResult"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:gravity="center_horizontal"
        android:textSize="32dp">
    </TextView>
</LinearLayout>

```

## MainActivity.java

```

package com.example.lab3simplecalculator;

import androidx.appcompat.app.AppCompatActivity;
//import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.app.Activity;
import android.content.DialogInterface;
import android.content.DialogInterface.OnClickListener;
import android.text.TextUtils;
import android.view.Menu;
import android.view.View;
import android.widget.Button;
import android.widget.ImageButton;
import android.widget.EditText;
import android.widget.TextView;

```

```

public class MainActivity extends Activity implements View.OnClickListener{
    EditText t1;
    EditText t2;

    ImageButton plus;
    ImageButton minus;
    ImageButton multiply;
    ImageButton divide;

    TextView displayResult;

    String oper = "";

    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // find the EditText elements (defined in res/layout/activity_main.xml)
        t1 = (EditText) findViewById(R.id.t1);
        t2 = (EditText) findViewById(R.id.t2);

        plus = (ImageButton) findViewById(R.id.plus);
        minus = (ImageButton) findViewById(R.id.minus);
        multiply = (ImageButton) findViewById(R.id.multiply);
        divide = (ImageButton) findViewById(R.id.divide);

        displayResult = (TextView) findViewById(R.id.displayResult);

        // set Listeners
        plus.setOnClickListener( this );
        minus.setOnClickListener( this );
        multiply.setOnClickListener( this );
        divide.setOnClickListener( this );
    }

    // @Override
    public void onClick( View view ) {
        double num1 = 0;
        double num2 = 0;
        double result = 0;

        // check if the fields are empty
        if (TextUtils.isEmpty(t1.getText().toString())
            || TextUtils.isEmpty(t2.getText().toString())) {
            return;
        }

        // read EditText and fill variables with numbers
        num1 = Float.parseFloat(t1.getText().toString());
        num2 = Float.parseFloat(t2.getText().toString());

        // perform operations
        // save operator in oper for later use

```

```

switch ( view.getId() ) {
    case R.id.plus:
        oper = "+";
        result = num1 + num2;
        break;
    case R.id.minus:
        oper = "-";
        result = num1 - num2;
        break;
    case R.id.multiply:
        oper = "*";
        result = num1 * num2;
        break;
    case R.id.divide:
        oper = "/";
        result = num1 / num2;
        break;
    default:
        break;
}

// form the output line
displayResult.setText(num1 + " " + oper + " " + num2 + " = " + result);
}

```

### Part III, Android Fragments:

Simple application with 2 fragments, Fragment A and Fragment B. When the user clicks on a button, it presents Fragment A with a yellow background. When the user clicks on the other button, present Fragment B with a blue background.

(Colors aren't the same as in the example.)

Screenshot:



Code:

Activity\_main.xml

```
<?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:id="@+id/container"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <Button
        android:id="@+id/button_a"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/fragment_a"
        android:onClick="fragA"
        app:layout_constraintTop_toTopOf="parent"/>

    <Button
        android:id="@+id/button_b"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="0dp"
```



```

        android:layout_marginEnd="0dp"
        android:text="@string/fragment_b"
        app:layout_constraintTop_toBottomOf="@id/button_a"/>

    <FrameLayout
        android:layout_width="match_parent"
        android:layout_height="fill_parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toBottomOf="@id/button_b"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:textSize="40sp"
        android:id="@+id/fragment_location"/>

</LinearLayout>

```

#### Fragment\_a.xml

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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="fill_parent"
    android:background="#FFFF00"
    tools:context=".ui.AFragment">

    <TextView
        android:id="@+id/text_a"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:textSize="40sp"
        android:text="@string/i_am_fragment_a"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

#### Fragment\_b.xml

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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="fill_parent"
android:background="#00FFFF"
tools:context=".ui.BFragment" >

<TextView
    android:id="@+id/text_a"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:textSize="40sp"
    android:text="@string/i_am_fragment_b"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

## MainActivity.java

```

package com.example.androidfragments;

import android.app.Fragment;
import android.os.Bundle;
import com.example.androidfragments.ui.AFragment;
import com.example.androidfragments.ui.BFragment;
import androidx.fragment.app.FragmentActivity;
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;
import android.view.View;
import android.widget.Button;

public class MainActivity extends FragmentActivity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        FragmentTransaction ft = getSupportFragmentManager().beginTransaction();
        ft.replace(R.id.fragment_location, new AFragment());
        ft.commit();

        Button button = (Button) findViewById(R.id.button_b);
        button.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                FragmentTransaction ft =
                    getSupportFragmentManager().beginTransaction();
                ft.replace(R.id.fragment_location, new BFragment());
                ft.commit();
            }
        });
    }
}

```

```

    }

    public void fragA (View view) {
        FragmentTransaction ft = getSupportFragmentManager().beginTransaction();
        ft.replace(R.id.fragment_location, new AFragment());
        ft.commit();
    }
}

```

### AFragment.java

```

package com.example.androidfragments.ui;

import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import com.example.androidfragments.R;
import androidx.fragment.app.Fragment;

public class AFragment extends Fragment {
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                           Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_a, container, false);
    }
}

```

### BFragment.java

```

package com.example.androidfragments.ui;

import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import com.example.androidfragments.R;
import androidx.fragment.app.Fragment;

public class BFragment extends Fragment {
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                           Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_b, container, false);
    }
}

```

```
}  
}
```