UWS UNIVERSITY OF THE WEST of SCOTLAND

13954 - COMP 11062: Mobile Networks And Smartphone Applications

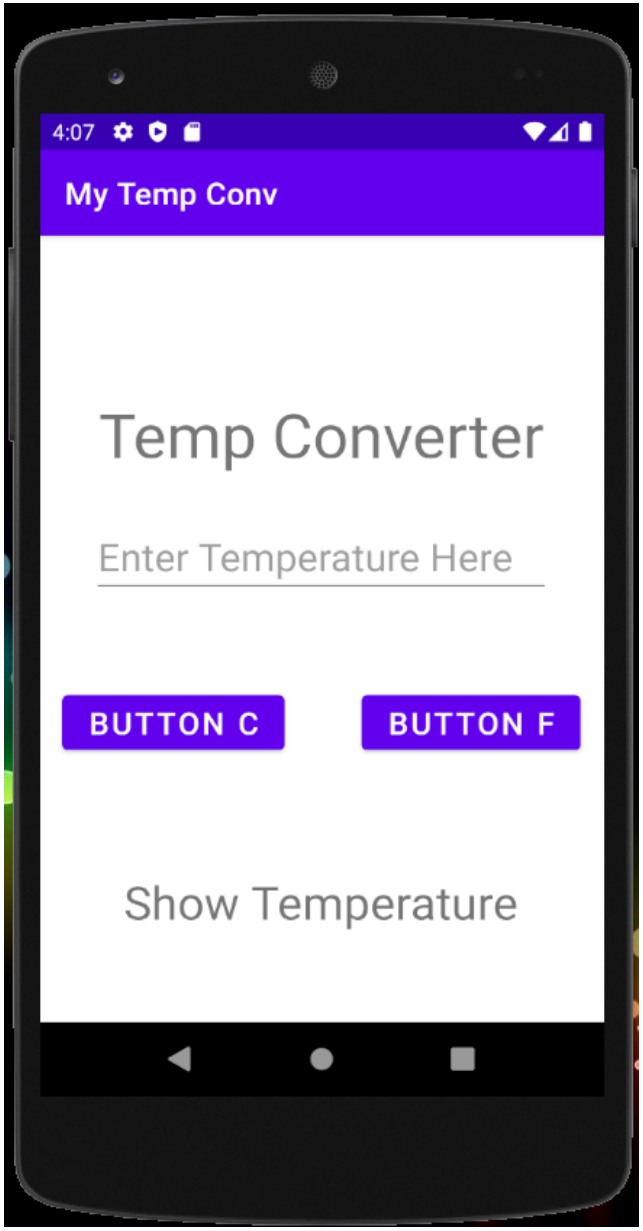
Interactions between Activities, Inputs and Methods

Section Agenda

- Review on Activities, methods and inputs
- Design and develop App for Temperture Conversion
  - Draw wireframe
  - Design & Technical constraints
- Design UI in IDE
- Edit properties of inputs
- Build up Java file

Wireframe

- UI layout
  - Widgets requirements
  - Color and Design etc
- Technical requirements
  - No value enter error
  - Data type
  - Output format


4:07
My Temp Conv
Temp Converter
Enter Temperature Here
BUTTON C
BUTTON F
Show Temperature

UI Properties

Make sure to use Relative Layout(Convert current layout if needed, from Component tree section)

```
<TextView
    android:text="Temp Converter"
    android:textSize="40sp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentTop="true"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="49dp"
    android:id="@+id/textViewID" />
```

```
<EditText
    android:layout_width="wrap_content"
    android:textSize="25sp"
    android:layout_height="wrap_content"
    android:inputType="textPersonName"
    android:text=""
    android:hint="Enter Temperature Here"
    android:ems="10"
    android:layout_below="@+id/textViewID"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="50dp"
    android:id="@+id/editTextID" />
```

```
<TextView
    android:text="Show Temperature"
    android:textSize="30sp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentBottom="true"
    android:layout_centerHorizontal="true"
    android:layout_marginBottom="48dp"
    android:id="@+id/textView3" />
```

```
<Button
    android:text="Button F"
    android:textSize="25sp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/buttonID2"
    android:layout_marginTop="50dp"
    android:layout_below="@+id/editTextID"
    android:layout_alignParentRight="true"
    android:layout_alignParentEnd="true" />
```

```
<Button
    android:text="Button C"
    android:textSize="25sp"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/buttonID1"
    android:layout_marginTop="50dp"
    android:layout_alignBaseline="@+id/buttonID2"
    android:layout_alignBottom="@+id/buttonID2"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true" />
```

Build up Java file

- Initialise the variables
  - Based on inputs we have in UI
  - Import any missing packages
  - Check: for any possible spelling error
- Link UI with Java
  - Map the widgets on UI plane using correct IDs
  - Check: ensure of any wrong data manipulation
- Create events
  - Methods
  - Class

```
import android.os.Bundle;
import
com.google.android.material.floatingactionbutton.Floatin
gActionButton;
import com.google.android.material.snackbar.Snackbar;
import androidx.appcompat.widget.Toolbar;
import android.view.View;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;//For
Android Studio 3.5 Version

import java.text.DecimalFormat; //For Older APIs
```

```
/*
     Formulas (from wikipedia)
http://en.wikipedia.org/wiki/Fahrenheit

     [x°C] = ([x°F] - 32) * 5/9 --> From Fahrenheit
to celsius
     [y°F] = ([y°C] * 9/5) + 32 --> From Celsius to
Fahrenheit

 */
```

```
 public class MainActivity extends
ActionBarActivity {



    private EditText tempEditText;

    private Button celButton;

    private Button fButton;

    private TextView showTempTextView;


    // create a decimal format object to round our
values to 1 decimal places

DecimalFormat round = new DecimalFormat("0.0");
```

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

tempEditText = (EditText) findViewById(R.id.editTextID);

celButton = (Button) findViewById(R.id.buttonID1);

fButton   = (Button) findViewById(R.id.buttonID2);

showTempTextView = (TextView) findViewById(R.id.textView3);

//change: correct id
```

```
//Set up our buttons (event listeners)

celButton.setOnClickListener(new View.OnClickListener(){

@Override
 public void onClick(View v) {

    //call convertToCelsius()
    String editTextVal =
tempEditText.getText().toString();

    if (editTextVal.isEmpty()){

        // display a short message to the screen if
things go wrong
        Toast.makeText(getApplicationContext(), "Enter a
Value", Toast.LENGTH_LONG).show();

    }else {
        // we are good
```

```
        double intEditText =
Double.parseDouble(editTextVal);

        // put the returned value into a variable so we
can use it (make things organized)
        double convertedVal =
convertToCelsius(intEditText);

        //use the String.valueOf() method to convert our
double value into it's corresponding string format so we
can out put it

        String stringResult =
String.valueOf(round.format(convertedVal));

        showTempTextView.setText(stringResult +  " C ");
                }

            }
        });
```

```
fButton.setOnClickListener(new View.OnClickListener(){

    @Override
    public void onClick(View v) {

        //call convertToFahrenheit()
    String editTextVal =
tempEditText.getText().toString();

        if (editTextVal.isEmpty()){

            Toast.makeText(getApplicationContext(),
"Enter a value", Toast.LENGTH_LONG).show();

        }else {
            // all is good
            double doubleEditText =
Double.parseDouble(editTextVal);
```

```
            double convertedVal =
convertToFahrenheit(doubleEditText);

            String stringResult =
String.valueOf(round.format(convertedVal));

            showTempTextView.setText(stringResult +  "
F");

                    }
                }
        });

    }
```

```
public double convertToCelsius(double farVal){

    // c--> From Fahrenheit to celsius
    double resultCel;

    resultCel = (farVal - 32) * 5/9;


    return resultCel;
}
```

```
public double convertToFahrenheit(double celVal){

    // [y°F] = ([y°C] * 9/5) + 32  --> From Celsius to
Fahrenheit
    double resultFahr;

    resultFahr = (celVal * 9/5) + 32;

    return resultFahr;
}


}
```

Exercise

By default, you can also give words as input for the temperature value. Make the App accept only numbers as input.

Hint: Change an attribute for the EditText widget! (xml file)

OR

Use a try/catch block to test the code responsible for parsing the value from the EditText into a double. If the code fails, display a Toast that only numeric values are accepted. (java file)

Discussions!

- Can we use Int data type instead Double?
- Any other example for use of such App for multiple activities