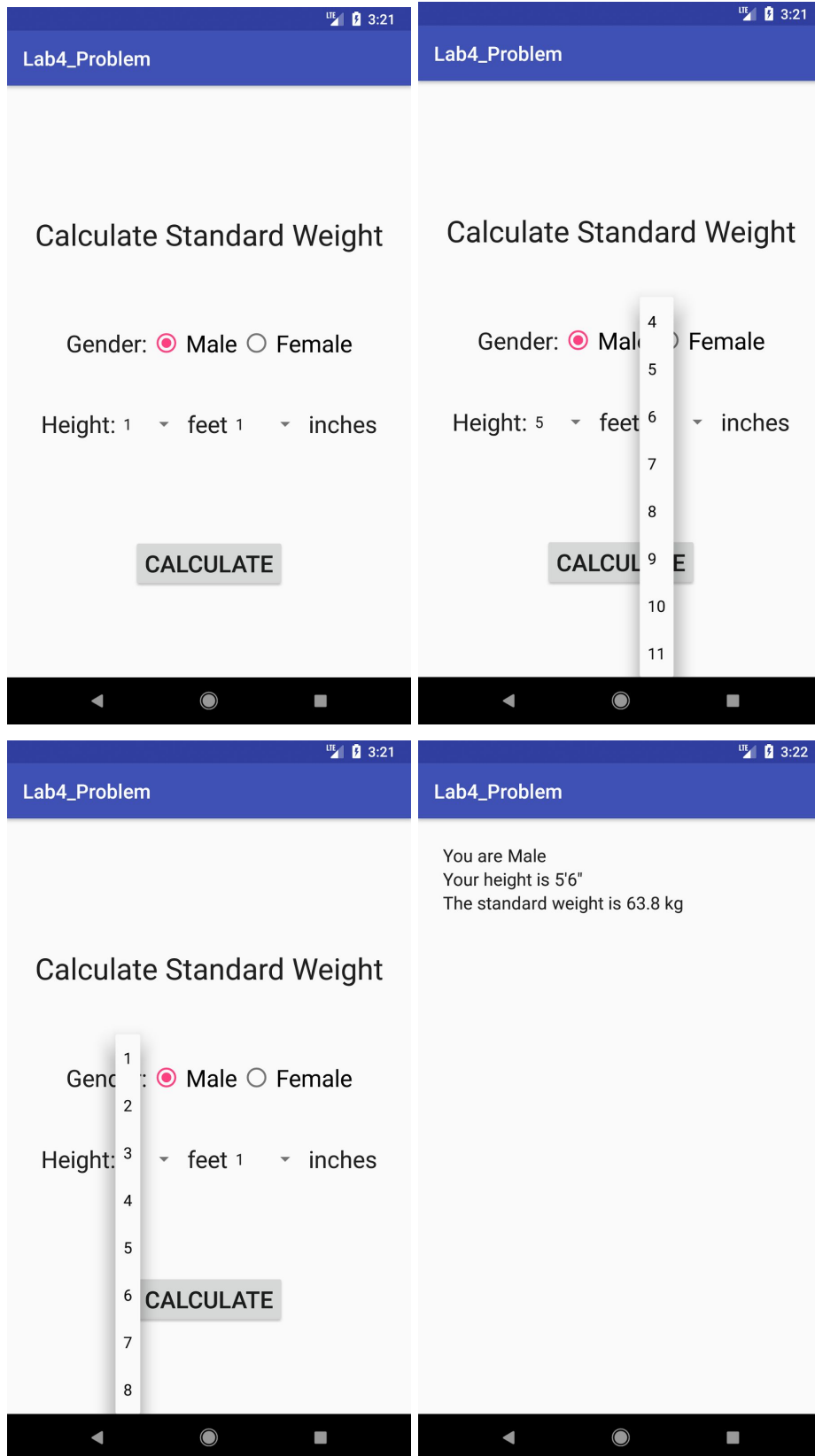Jake Mathews

Lab 4

Problem Statement

The problem is that someone may want to know what their standard weight is. The standard weight is dependent upon their height and their gender. If they are male, their standard weight is 50 kg + 2.3 kg * (Height(inches) - 60) and if they are female their standard weight is 45.5 kg + 2.3 kg * (Height(inches) - 60).

Analysis

I will create a mobile application to calculate the standard weight for the user. The first screen will have the user input their gender and their height in inches. Once they have done that and they click the button labeled "Calculate", it will take them to another screen with a summary of what they input, and their resulting standard weight.

Difficulties will be making sure the layout stays consistent across multiple devices.

Jake Mathews

Screen Shots

Lab4_Problem

Calculate Standard Weight

Gender: ⦿ Male ◯ Female

Height: 1 ▾ feet 1 ▾ inches

CALCULATE

Lab4_Problem

Calculate Standard Weight

Gender: ⦿ Male ◯ Female

Height: 5 ▾ feet 6 ▾ inches

4
5
6
7
8
9
10
11

CALCULATE

Lab4_Problem

Calculate Standard Weight

Gender: ⦿ Male ◯ Female

Height: 3 ▾ feet 1 ▾ inches

1
2
3
4
5
6
7
8

CALCULATE

Lab4_Problem

You are Male
Your height is 5'6"
The standard weight is 63.8 kg

Source Code

<u>CalculatorActivity.java</u>

```java
package myfragment.mobileapp.wit.edu.lab4_problem;

import android.content.Intent;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Spinner;

import java.text.DecimalFormat;

public class CalculatorActivity extends AppCompatActivity {

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

        final Button calculateButton = findViewById(R.id.calculateButton);
        calculateButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                final Intent resultsIntent = calculate();
                startActivity(resultsIntent);
            }
        });
    }

    private Intent calculate() {
        final Intent intent = new Intent(getBaseContext(), ResultsActivity.class);

        // Gender
        final RadioGroup genderRadioGroup = (RadioGroup) findViewById(R.id.genderRadioGroup);
        final RadioButton checkedButton = (RadioButton)
findViewById(genderRadioGroup.getCheckedRadioButtonId());
        final String gender = checkedButton.getText().toString();
        intent.putExtra(getString(R.string.gender_key), gender);

        // Height
        final Spinner unit1Spinner = findViewById(R.id.unit1Spinner);
        final Spinner unit2Spinner = findViewById(R.id.unit2Spinner);
        final String heightUnit1 = unit1Spinner.getSelectedItem().toString();
        final String heightUnit2 = unit2Spinner.getSelectedItem().toString();
        final String height = heightUnit1 + "'" + heightUnit2 + "\"";
        intent.putExtra(getString(R.string.height_key), height);
```

```java
    // Standard weight
    final int heightInches = (Integer.parseInt(heightUnit1) * 12) + Integer.parseInt(heightUnit2);
    final double maleBaseWeight = 50;
    final double femaleBaseWeight = 45.5;
    double standardWeight = 2.3 * (heightInches - 60);
    if (gender.equals(getString(R.string.gender_male_radio_btn))) {
        standardWeight = maleBaseWeight + standardWeight;
    } else if (gender.equals(getString(R.string.gender_male_radio_btn))){
        standardWeight = femaleBaseWeight + standardWeight;
    } else {
        standardWeight = 0;
    }
    final String standardWeightString = new DecimalFormat("#.##").format(standardWeight) + " kg";
    intent.putExtra(getString(R.string.weight_key), standardWeightString);

    return intent;
  }
}
```

ResultsActivity.java

```java
package myfragment.mobileapp.wit.edu.lab4_problem;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

import org.w3c.dom.Text;

public class ResultsActivity extends AppCompatActivity {

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

    final String gender = getIntent().getStringExtra(getString(R.string.gender_key));
    final String height = getIntent().getStringExtra(getString(R.string.height_key));
    final String standardWeight = getIntent().getStringExtra(getString(R.string.weight_key));

    TextView genderTextView = (TextView) findViewById(R.id.genderValueTextView);
    TextView heightTextView = (TextView) findViewById(R.id.heightValueTextView);
    TextView weightTextView = (TextView) findViewById(R.id.weightValueTextView);

    genderTextView.setText(gender);
    heightTextView.setText(height);
    weightTextView.setText(standardWeight);
  }
}
```

Jake Mathews

Strings.xml

```xml
<resources>
  <string name="app_name">Lab4_Problem</string>

  <!-- CalculatorActivity -->
  <string name="calculator_page_title">Lab4_Problem</string>
  <string name="results_page_title">Lab4_Problem</string>
  <string name="calculator_message">Calculate Standard Weight</string>
  <string name="gender_radio_group">Gender:</string>
  <string name="gender_male_radio_btn">Male</string>
  <string name="gender_female_radio_btn">Female</string>
  <string name="height_selector_label">Height:</string>
  <string name="unit1_label">feet</string>
  <string name="unit2_label">inches</string>
  <string name="calculate_button_text">CALCULATE</string>
  <string-array name="unit1Values">
    <item>1</item>
    <item>2</item>
    <item>3</item>
    <item>4</item>
    <item>5</item>
    <item>6</item>
    <item>7</item>
    <item>8</item>
    <item>9</item>
  </string-array>
  <string-array name="unit2Values">
    <item>1</item>
    <item>2</item>
    <item>3</item>
    <item>4</item>
    <item>5</item>
    <item>6</item>
    <item>7</item>
    <item>8</item>
    <item>9</item>
    <item>10</item>
    <item>11</item>
  </string-array>

  <!-- ResultsActivity -->
  <string name="genderLabel">You are</string>
  <string name="heightLabel">Your height is</string>
  <string name="weightLabel">The standard weight is</string>

  <!-- Constants -->
  <string name="gender_key">Gender</string>
  <string name="height_key">Height</string>
  <string name="weight_key">StandardWeight</string>
</resources>
```

activity_calculator.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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="match_parent"
    tools:context="myfragment.mobileapp.wit.edu.lab4_problem.CalculatorActivity">

    <TextView
        android:id="@+id/titleTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="300dp"
        android:text="@string/calculator_message"
        android:textAppearance="@android:style/TextAppearance.Material.Headline"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <RadioGroup
        android:id="@+id/genderRadioGroup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="250dp"
        android:checkedButton="@+id/maleRadioButton"
        android:orientation="horizontal"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/titleTextView">

        <TextView
            android:id="@+id/genderRadioGroupLabel"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:paddingLeft="10px"
            android:paddingRight="10px"
            android:text="@string/gender_radio_group"
            android:textAppearance="@android:style/TextAppearance.Material"
            android:textSize="24sp"
            tools:layout_editor_absoluteX="76dp"
            tools:layout_editor_absoluteY="292dp" />

        <RadioButton
```

```xml
        android:id="@+id/maleRadioButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:paddingLeft="10px"
        android:paddingRight="10px"
        android:text="@string/gender_male_radio_btn"
        android:textAppearance="@android:style/TextAppearance.Material"
        android:textSize="24sp"
        tools:layout_editor_absoluteX="128dp"
        tools:layout_editor_absoluteY="298dp" />

    <RadioButton
        android:id="@+id/femaleRadioButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:paddingLeft="10px"
        android:paddingRight="10px"
        android:text="@string/gender_female_radio_btn"
        android:textAppearance="@android:style/TextAppearance.Material"
        android:textSize="24sp"
        tools:layout_editor_absoluteX="128dp"
        tools:layout_editor_absoluteY="298dp" />
</RadioGroup>

<LinearLayout
    android:id="@+id/linearLayout"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:orientation="horizontal"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/genderRadioGroup">

    <TextView
        android:id="@+id/heightSelectorLabel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="@string/height_selector_label"
        android:textAppearance="@android:style/TextAppearance.Material"
        android:textSize="24sp" />

    <Spinner
        android:id="@+id/unit1Spinner"
        style="@android:style/Widget.Material.Spinner"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
```

```xml
        android:layout_weight="1"
        android:dropDownWidth="match_parent"
        android:entries="@array/unit1Values" />

    <TextView
        android:id="@+id/unit1Label"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="@string/unit1_label"
        android:textAppearance="@android:style/TextAppearance.Material"
        android:textSize="24sp" />

    <Spinner
        android:id="@+id/unit2Spinner"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:dropDownWidth="match_parent"
        android:entries="@array/unit2Values" />

    <TextView
        android:id="@+id/unit2Label"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="@string/unit2_label"
        android:textAppearance="@android:style/TextAppearance.Material"
        android:textSize="24sp" />
</LinearLayout>

<Button
    android:id="@+id/calculateButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="100dp"
    android:text="@string/calculate_button_text"
    android:textSize="24sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout" />

<android.support.constraint.Guideline
    android:id="@+id/guideline"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:orientation="horizontal"
    app:layout_constraintGuide_begin="20dp" />

</android.support.constraint.ConstraintLayout>
```

activity_results.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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="match_parent"
    tools:context="myfragment.mobileapp.wit.edu.lab4_problem.ResultsActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginStart="25dp"
        android:layout_marginTop="25dp"
        android:orientation="vertical"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <LinearLayout
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="horizontal">

            <TextView
                android:id="@+id/genderTextView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:paddingRight="5sp"
                android:text="@string/genderLabel"
                android:textAppearance="@android:style/TextAppearance.Material"
                android:textSize="18sp" />

            <TextView
                android:id="@+id/genderValueTextView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:textAppearance="@android:style/TextAppearance.Material"
                android:textSize="18sp" />
        </LinearLayout>

        <LinearLayout
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="horizontal">

            <TextView
                android:id="@+id/heightTextView"
                android:layout_width="wrap_content"
```

```xml
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:paddingRight="5sp"
                android:text="@string/heightLabel"
                android:textAppearance="@android:style/TextAppearance.Material"
                android:textSize="18sp" />

            <TextView
                android:id="@+id/heightValueTextView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:textAppearance="@android:style/TextAppearance.Material"
                android:textSize="18sp" />
        </LinearLayout>

        <LinearLayout
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:orientation="horizontal">

            <TextView
                android:id="@+id/weightTextView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:paddingRight="5sp"
                android:text="@string/weightLabel"
                android:textAppearance="@android:style/TextAppearance.Material"
                android:textSize="18sp" />

            <TextView
                android:id="@+id/weightValueTextView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_weight="1"
                android:textAppearance="@android:style/TextAppearance.Material"
                android:textSize="18sp" />
        </LinearLayout>

    </LinearLayout>
</android.support.constraint.ConstraintLayout>
```