

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator app src [app] C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator\app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java

1:Project

Resource Manager

Gradle

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

Build Variants

2:Structure

Layout Captures

1:Favorites

2:Captures

Design Text

Palette

Common Ab TextView

Text Button

Buttons ImageView

Widgets RecyclerView

Layouts <> <fragment>

Containers ScrollView

Google Switch

Legacy

Pixel 28 Light Default (en-us) 32% Attributes

Ab txtResult TextView

onClick

overScrollMode

padding

padding

paddingLeft

paddingTop @dimen/margin5dp

paddingRight @dimen/margin5dp

paddingBottom @dimen/margin5dp

password

phoneNumber

privateimeOptions

requiresFadingEdge

rotation

rotationX

rotationY

saveEnabled

scaleX

scaleY

scrollHorizontally

scrollX

scrollY

scrollbarAlwaysDraw

scrollbarAlwaysDraw

scrollbarDefaultDela 300

scrollbarFadeDuratio 250

scrollbarSize 10dip

scrollbarStyle

scrollbarThumbHoriz @android:drawable/scrol

scrollbarThumbVerti @android:drawable/scrol

scrollbarTrackHorizo @null

scrollbarTrackVertica @null

scrollbars

Device File Explorer

Convert Patient Weight

Weight of Patient

Convert Pounds to Kilograms

Convert Kilograms to Pounds

Convert Weight

CONVERT WEIGHT

In Part 2 of Lesson 4, we customized the app's layout.

In this last part of Lesson 4, we add the Java code to define the app's functionality.

In addition, we use the emulator (that we had launched in Part 1 of this lesson) to test our completed app in 5 different situations (test cases).

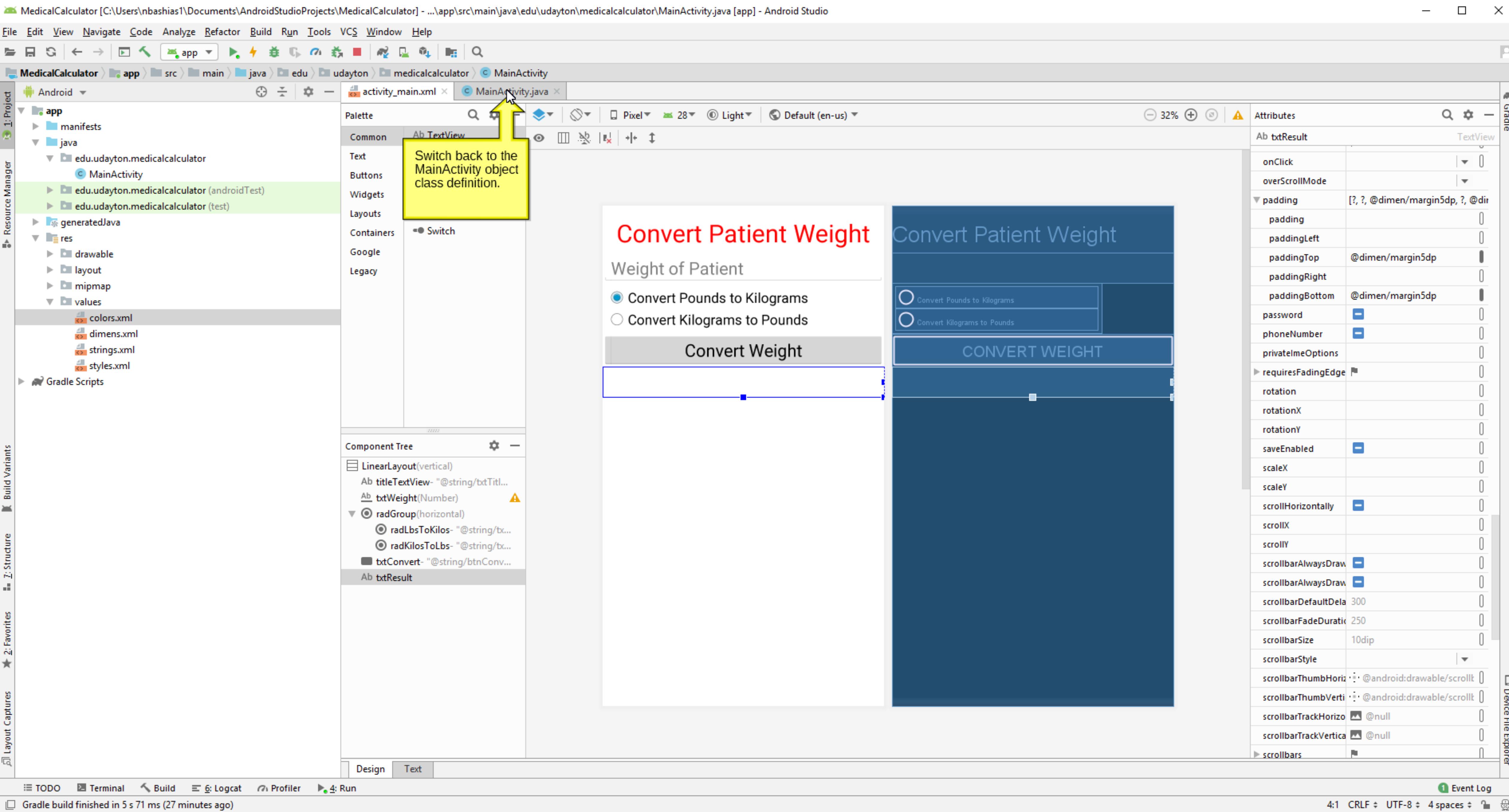
Component Tree

- LinearLayout(vertical)
 - Ab titleTextView- "@string/txtTitl..."
 - Ab txtWeight(Number)
 - radGroup(horizontal)
 - radLbsToKilos- "@string/tx..."
 - radKilosToLbs- "@string/tx..."
 - txtConvert- "@string/btnConv..."
 - Ab txtResult

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (27 minutes ago)

Event Log



MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

Android

1:Project

Resource Manager

1:Project

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Gradle Scripts

Build Variants

I: Structure

2: Favorites

Layout Captures

2: Favorites

activity_main.xml

MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     @Override
9     protected void onCreate(Bundle savedInstanceState) {
10         super.onCreate(savedInstanceState);
11         setContentView(R.layout.activity_main);
12     } // end onCreate method
13 } // end MainActivity class
```

We'll first add some line comments to tag the end of both the onCreate method as well as the MainActivity class definitions.

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (28 minutes ago)

13:28 CRLF ÷ UTF-8 ÷ 4 spaces

Event Log

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

Android

1:Project

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Gradle Scripts

Build Variants

I: Structure

2: Favorites

Layout Captures

2: Favorites

MainActivity

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     @Override
9     protected void onCreate(Bundle savedInstanceState) {
10         super.onCreate(savedInstanceState);
11         setContentView(R.layout.activity_main);
12     } // end onCreate method
13 } // end MainActivity class
```

We'll add named constant and data fields to the MainActivity class, adhering to object-oriented design guidelines and Java's naming conventions.

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (28 minutes ago) 6:45 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager

Android

1:Project

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Gradle Scripts

Resource Manager

activity_main.xml

MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
9
10    @Override
11    protected void onCreate(Bundle savedInstanceState) {
12        super.onCreate(savedInstanceState);
13        setContentView(R.layout.activity_main);
14    } // end onCreate method
15 } // end MainActivity class
```

The named constant for the conversion rate between pounds and kilograms

Layout Captures

2: Favorites

1: Structure

Build Variants

MainActivity

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (29 minutes ago)

8:81 CRLF UTF-8 4 spaces

Event Log

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator>MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager

Android

1:Project

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Gradle Scripts

Build Variants

I: Structure

2: Favorites

Layout Captures

2: Favorites

MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
9
10    private final int LB_LIMIT = 500;
11    private final int KILO_LIMIT = 250; [ ]
12
13    @Override
14    protected void onCreate(Bundle savedInstanceState) {
15        super.onCreate(savedInstanceState);
16        setContentView(R.layout.activity_main);
17    } // end onCreate method
18 } // end MainActivity class
```

Notice that we also add named constants for the weight limits in both pounds and kilograms, avoiding the incorrect coding style of using unnamed literal values ("magic numbers").

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (29 minutes ago) 11:40 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants 2: Favorites Layout Captures 3: Favorites 2: Favorites Device File Explorer

Android

1:Project

app

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Gradle Scripts

activity_main.xml

MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
9
10    private final int LB_LIMIT = 500;
11    private final int KILO_LIMIT = 250;
12
13    private double weightEntered, convertedWeight; ] We add data field declarations for the input and output weight values
14
15    @Override
16    protected void onCreate(Bundle savedInstanceState) {
17        super.onCreate(savedInstanceState);
18        setContentView(R.layout.activity_main);
19    } // end onCreate method
20} // end MainActivity class
```

MainActivity

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (30 minutes ago) 13:51 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2: Favorites Layout Captures 2: Favorites Device File Explorer

Android

1:Project

app

- manifests
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Gradle

MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
9
10    private final int LB_LIMIT = 500;
11    private final int KILO_LIMIT = 250;
12
13    private double weightEntered, convertedWeight;
14
15    @Override
16    protected void onCreate(Bundle savedInstanceState) {
17        super.onCreate(savedInstanceState);
18        setContentView(R.layout.activity_main); // end onCreate method
19    } // end MainActivity class
20
21 }
```

Following the predefined code for displaying the layout, we only add reference variables for the Convert Weight button and its event listener (and handler), since this button is the only one for which we are defining event handling.

As in Lesson 3, we add references for the other UI components (input text field, radio buttons, and output TextView) as data fields in the button's event listener, since they are used exclusively in the (onClick) event handler.

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (30 minutes ago) 18:48 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2: Favorites Layout Captures

Android

1:Project

app

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 - strings.xml
 - styles.xml

Gradle Scripts

activity_main.xml MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
9
10    private final int LB_LIMIT = 500;
11    private final int KILO_LIMIT = 250;
12
13    private double weightEntered, convertedWeight;
14
15    @Override
16    protected void onCreate(Bundle savedInstanceState) {
17        super.onCreate(savedInstanceState);
18        setContentView(R.layout.activity_main);
19
20    } // end onCreate meth
21 } // end MainActivity class
22
23
```

Type 'final Butt' here ...

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (30 minutes ago) 20:9 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager

Android

1:Project

app

- manifests
- java
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Gradle Scripts

Build Variants

2: Favorites

Layout Captures

3: Favorites

MainActivity.java

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5
6 public class MainActivity extends Activity {
7
8     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
9
10    private final int LB_LIMIT = 500;
11    private final int KILO_LIMIT = 250;
12
13    private double weightEntered, convertedWeight;
14
15    @Override
16    protected void onCreate(Bundle savedInstanceState) {
17        super.onCreate(savedInstanceState);
18        setContentView(R.layout.activity_main);
19
20        final Button
21    } // end
22 } // end
```

... and select the android.widget.Button class from this code completion menu

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (30 minutes ago) 20:19 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager 2:Gradle

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.widget.Button;
6
7 public class MainActivity extends Activity {
8
9     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
10
11    private final int LB_LIMIT = 500;
12    private final int KILO_LIMIT = 250;
13
14    private double weightEntered, convertedWeight;
15
16    @Override
17    protected void onCreate(Bundle savedInstanceState) {
18        super.onCreate(savedInstanceState);
19        setContentView(R.layout.activity_main);
20
21        final Button btnConvert = (Button)findViewById(R.id.btnConvert); I
22    } // end onCreate method
23 } // end MainActivity class
```

Notice that we again declare the Button reference as final. Although we will be calling its methods, we will not be re-assigning the convert variable to a different Button object.

Complete the declaration/initialization statement for the Button reference variable.

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (33 minutes ago) 21:73 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager

Android

1:Project

app

- manifests
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 - strings.xml
 - styles.xml

Gradle Scripts

Build Variants

I: Structure

2: Favorites

Layout Captures

2: Favorites

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.widget.Button;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button) findViewById(R.id.btnConvert);  
    } // end onCreate  
} // end MainActivity
```

As in prior lessons, we add a referenced onClick listener for the Convert Weight button
Type 'View.' here ...

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (33 minutes ago) 23:9 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures

Android

app manifests java edu.udayton.medicalcalculator MainActivity edu.udayton.medicalcalculator (androidTest) edu.udayton.medicalcalculator (test) generatedJava res drawable layout mipmap values colors.xml dimens.xml strings.xml styles.xml Gradle Scripts

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.widget.Button;
6
7 public class MainActivity extends Activity {
8
9     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
10
11    private final int LB_LIMIT = 500;
12    private final int KILO_LIMIT = 250;
13
14    private double weightEntered, convertedWeight;
15
16    @Override
17    protected void onCreate(Bundle savedInstanceState) {
18        super.onCreate(savedInstanceState);
19        setContentView(R.layout.activity_main);
20
21        final Button btnConvert = (Button)findViewById(R.id.btnConvert);
22
23        View.
24    }
25
26 }
```

... and select the android.view.View.OnClickListener interface from this code completion menu

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (33 minutes ago) 23:14 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager

Android

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Gradle Scripts

Build Variants

I: Structure

2: Favorites

Layout Captures

2: Favorites

MainActivity.java

```
package edu.udayton.medicalcalculator;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button)findViewById(R.id.btnConvert);

        View.OnClickListener btnConvertListener = new View.OnClickListener() {
            // end onCreate method
        } // end MainActivi
    } // end MainActivi
}
```

activity_main.xml

After adding this creation code for the onClick listener, click anywhere in the red-underlined text ...

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

'OnClickListener' is abstract; cannot be instantiated 24:65 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

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Android

1: Project

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Gradle Scripts

Build Variants

I: Structure

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Layout Captures

2: Favorites

Layout Captures

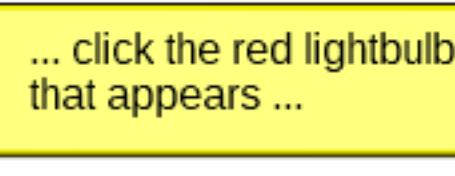
MainActivity.java

activity_main.xml

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.view.View;
6 import android.widget.Button;
7
8 public class MainActivity extends Activity {
9
10    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
11
12    private final int LB_LIMIT = 500;
13    private final int KILO_LIMIT = 250;
14
15    private double weightEntered, convertedWeight;
16
17    @Override
18    protected void onCreate(Bundle savedInstanceState) {
19        super.onCreate(savedInstanceState);
20        setContentView(R.layout.activity_main);
21
22        final Button btnConvert = (Button) findViewById(R.id.btnConvert);
23
24        View.OnClickListener btnConvertListener = new View.OnClickListener() {
25            // end onCreate method
26        } // end MainActivity class
27    }
}
```

'OnClickListener' is abstract; cannot be instantiated

... click the red lightbulb that appears ...



Device File Explorer

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

Android

1:Project

Resource Manager

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Gradle Scripts

Build Variants

I:Structure

2:Favorites

Layout Captures

2:LayoutCaptures

MainActivity.java

```
package edu.udayton.medicalcalculator;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button)findViewById(R.id.btnConvert);

        View.OnClickListener btnConvertListener = new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                convertedWeight = weightEntered * CONVERSION_RATE;
                ...
            }
        };
        btnConvert.setOnClickListener(btnConvertListener);
    }
}
```

activity_main.xml

18: View.OnClickListener btnConvertListener = new View.OnClickListener()

25: Implement methods

... and select 'Implement methods' from this menu

Add import for 'android.view.View.OnClickListener'

Split into declaration and assignment

Annotate interface 'OnClickListener' as @Deprecated

Remember: if the red lightbulb fails to appear, you can use the Alt-Enter keyboard combination to display this menu

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run

Event Log

'OnClickListener' is abstract; cannot be instantiated

24:63 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

Android

Project

Resource Manager

Gradle

1: Project

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml
- Gradle Scripts

2: Resource Manager

Build Variants

I: Structure

3: Favorites

Layout Captures

4: Layout Captures

MainActivity.java

```
package edu.udayton.medicalcalculator;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 0.45359237;

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button) findViewById(R.id.btn_convert);
        View.OnClickListener btnConvertListener = new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                convertedWeight = weightEntered * CONVERSION_RATE;
                if (convertedWeight > KILO_LIMIT) {
                    convertedWeight /= 1000;
                    btnConvert.setText("Kg");
                } else if (convertedWeight < LB_LIMIT) {
                    convertedWeight *= 1000;
                    btnConvert.setText("Lbs");
                } else {
                    btnConvert.setText("Kg");
                }
                tvResult.setText(String.valueOf(convertedWeight));
            }
        };
        btnConvert.setOnClickListener(btnConvertListener);
    }

    private TextView tvResult;
}
```

activity_main.xml

Select Methods to Implement

- android.view.View.OnClickListener
 - onClick(v:View):void

Click OK to add the onClick event handler

Copy JavaDoc

Insert @Override

OK Cancel

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run

Event Log

'OnClickListener' is abstract; cannot be instantiated

24:53 CRLF ï UTF-8 ï 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager 2:Gradle

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.view.View;
6 import android.widget.Button;
7
8 public class MainActivity extends Activity {
9
10    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
11
12    private final int LB_LIMIT = 500;
13    private final int KILO_LIMIT = 250;
14
15    private double weightEntered, convertedWeight;
16
17    @Override
18    protected void onCreate(Bundle savedInstanceState) {
19        super.onCreate(savedInstanceState);
20        setContentView(R.layout.activity_main);
21
22        final Button btnConvert = (Button)findViewById(R.id.btnConvert);
23
24        View.OnClickListener btnConvertListener = new View.OnClickListener() {
25            @Override
26            public void onClick(View v) {
27
28            }
29        };
29    } // end onCreate method
30 } // end MainActivity class
```

Before we forget, let's add the semi-colon to the end of the listener's declaration/initialization statement

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (34 minutes ago) 29:11 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2: Favorites Layout Captures

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener() {  
            @Override  
            public void onClick(View v) {  
                } // end onClick handler  
            };  
        } // end onCreate method  
    } // end MainActivity class
```

activity_main.xml

Let's also tag the end of the onClick handler with a line comment

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (34 minutes ago) 28:38 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager 2:Gradle

Android

1:Project

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

Build Variants

I:Structure

2:Favorites

Layout Captures

2:Captures

MainActivity.java

activity_main.xml

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.view.View;
6 import android.widget.Button;
7
8 public class MainActivity extends Activity {
9
10    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
11
12    private final int LB_LIMIT = 500;
13    private final int KILO_LIMIT = 250;
14
15    private double weightEntered, convertedWeight;
16
17    @Override
18    protected void onCreate(Bundle savedInstanceState) {
19        super.onCreate(savedInstanceState);
20        setContentView(R.layout.activity_main);
21
22        final Button btnConvert = (Button)findViewById(R.id.btnConvert);
23
24        View.OnClickListener btnConvertListener = new View.OnClickListener()
25        {
26            @Override
27            public void onClick(View v)
28            {
29                // code to handle button click
30            }
31        };
32    }
33
34 }
```

As we noted earlier, we add final references to the other UI components (txtWeight, radLbsToKilos, radKilosToLbs, and txtResult) as data fields of the Convert Weight button's onClick listener (i.e., the scope in which these variables are used).

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (34 minutes ago) 26:13 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

Android

1: Project

Resource Manager

Gradle

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

Build Variants

I: Structure

2: Favorites

Layout Captures

MainActivity.java

```
package edu.udayton.medicalcalculator;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button)findViewById(R.id.btnConvert);

        View.OnClickListener btnConvertListener = new View.OnClickListener()
        {
            final EditText txtWeight;
            final EditText (android.widget)
            final EditTextPreference (android.preference)
            final ExtractEditText (android.inputmethodservice)
            final AppCompatEditText (android.support.v7.widget)
        };
    } // end onCreate method
} // end MainActivity class
```

We'll start with the txtWeight data field.
Use code completion for the EditText type.

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (34 minutes ago) 26:27 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures

Android app manifests java edu.udayton.medicalcalculator MainActivity edu.udayton.medicalcalculator (androidTest) edu.udayton.medicalcalculator (test) generatedJava res drawable layout mipmap values colors.xml dimens.xml strings.xml styles.xml Gradle Scripts

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.view.View;
6 import android.widget.Button;
7 import android.widget.EditText;
8
9 public class MainActivity extends Activity {
10
11     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
12
13     private final int LB_LIMIT = 500;
14     private final int KILO_LIMIT = 250;
15
16     private double weightEntered, convertedWeight;
17
18     @Override
19     protected void onCreate(Bundle savedInstanceState) {
20         super.onCreate(savedInstanceState);
21         setContentView(R.layout.activity_main);
22
23         final Button btnConvert = (Button)findViewById(R.id.btnConvert);
24
25         View.OnClickListener btnConvertListener = new View.OnClickListener()
26         {
27             final EditText txtWeight = (EditText)findViewById(R.id.txtWeight); [
28                 @Override
29                 public void onClick(View v) {
30
31                     } // end onClick handler
32                 };
33             } // end onCreate method
34         } // end MainActivity class
35 }
```

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (35 minutes ago) 27:79 CRLF UTF-8 4 spaces

Then complete the declaration of the txtWeight reference variable

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures 2:Device File Explorer

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton (android.widget)  
            final Radio (android.provider.MediaStore.Audio)  
            final RadioGroup (android.widget)  
            final RadialGradient (android.graphics)  
            final RadioAccessSpecifier (android.telephony)  
            final ResourceCursorAdapter (android.widget)  
            final ResourceCursorAdapter (android.support.v4.widget)  
            final ResourceCursorTreeAdapter (android.widget)  
            final AppCompatRadioButton (android.support.v7.widget)  
            final XMLReaderAdapter (org.xml.sax.helpers)  
            final GradientDrawable (android.graphics.drawable)  
        };  
    } // end OnClickListener  
} // end MainActivity
```

The RadioButton references can be declared next
Use code completion for the RadioButton type

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (35 minutes ago) 28:22 CRLF ÷ UTF-8 ÷ 4 spaces ÷

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.RadioButton;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
            @Override  
            public void onClick(View v) {  
                } // end onClick handler  
        };  
        } // end onCreate method  
    } // end MainActivity class
```

activity_main.xml

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (36 minutes ago) 29:53 CRLF UTF-8 4 spaces

Then complete the declaration of the radLbsToKilos reference variable

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.RadioButton;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);  
            @Override  
            public void onClick(View v) {  
                } // end onClick handler  
            };  
        } // end onCreate method  
    } // end MainActivity class
```

activity_main.xml

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (36 minutes ago) 30:93 CRLF ÷ UTF-8 ÷ 4 spaces ÷

Add the declaration of the radKilosToLbs reference variable

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures Device File Explorer

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.RadioButton;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);  
            final TextView  
            (C) TextView (android.widget)  
            (E) TextureView (android.view)  
            (C) TextViewCompat (android.support.v4.widget)  
            (C) AutoCompleteTextView (android.widget)  
            (C) CheckedTextView (android.widget)  
            (C) MultiAutoCompleteTextView (android.widget)  
            (C) AppCompatAutoCompleteTextView (android.support.v7.widget)  
            (C) AppCompatCheckedTextView (android.support.v7.widget)  
            (C) AppCompatMultiAutoCompleteTextView (android.support.v7.widget)  
            (C) AppCompatTextView (android.support.v7.widget)  
            (I) AutoSizeableTextView (android.support.v4.widget)  
        };  
        // end  
    } // end Main
```

activity_main.xml

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (37 minutes ago) 31:27 CRLF ÷ UTF-8 ÷ 4 spaces ÷

Finally, we can add the declaration/initialization for the output TextView
Use code completion for the TextView type

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures 2:Layout Captures

Android

1:Project

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
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 - dimens.xml
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 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;  
import android.app.Activity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.RadioButton;  
import android.widget.TextView;  
  
public class MainActivity extends Activity {  
  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button) findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText) findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton) findViewById(R.id.radLbsToKilos);  
            final RadioButton radKilosToLbs = (RadioButton) findViewById(R.id.radKilosToLbs);  
            final TextView txtResult = (TextView) findViewById(R.id.txtResult);  
            @Override  
            public void onClick(View v) {  
                } // end onClick handler  
        };  
        } // end onCreate method  
    } // end MainActivity class
```

Add the declaration of the txtResult reference variable

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (37 minutes ago) 32:79 CRLF + UTF-8 + 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures 2:Layout Explorer Device File Explorer

Android

1:Project

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
package edu.udayton.medicalcalculator;

import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button)findViewById(R.id.btnConvert);
        final View.OnClickListener btnConvertListener = new View.OnClickListener() {
            EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
            RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
            RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
            TextView txtResult = (TextView)findViewById(R.id.txtResult);

            final DecimalFormat
                DecimalFormat (java.text)
                DecimalFormat (android.icu.text)
                DecimalFormatSymbols (java.text)
                DecimalFormatSymbols (android.icu.text)
                CompactDecimalFormat (android.icu.text)
        }; // end MainActivity class
    } // end MainActivity class
}
```

Add a final reference to a DecimalFormat object for outputting the (double) converted weight value.

Use code completion for the DecimalFormat type

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (37 minutes ago) 34:32 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures 2:Layout Explorer Device File Explorer

```
1 package edu.udayton.medicalcalculator;
2
3 import android.app.Activity;
4 import android.os.Bundle;
5 import android.view.View;
6 import android.widget.Button;
7 import android.widget.EditText;
8 import android.widget.RadioButton;
9 import android.widget.TextView;
10
11 import java.text.DecimalFormat;
12
13 public class MainActivity extends Activity {
14
15     private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram
16
17     private final int LB_LIMIT = 500;
18     private final int KILO_LIMIT = 250;
19
20     private double weightEntered, convertedWeight;
21
22     @Override
23     protected void onCreate(Bundle savedInstanceState) {
24         super.onCreate(savedInstanceState);
25         setContentView(R.layout.activity_main);
26
27         final Button btnConvert = (Button)findViewById(R.id.btnConvert);
28
29         View.OnClickListener btnConvertListener = new View.OnClickListener()
30         {
31             final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
32             final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
33             final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
34             final TextView txtResult = (TextView)findViewById(R.id.txtResult);
35
36             final DecimalFormat formatter = new DecimalFormat("#.#");
37
38             @Override
39             public void onClick(View v) {
40
41                 } // end onClick handler
42             };
43         } // end onCreate method
44     } // end MainActivity class
```

Add the declaration of the DecimalFormat variable named 'formatter'

MainActivity > onCreate() > new OnClickListener

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (38 minutes ago) 36:70 CRLF + UTF-8 + 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project

Resource Manager

Gradle Scripts

Build Variants

I:Structure

2:Favorites

Layout Captures

1:MainActivity.java

2:activity_main.xml

3:Android

4:app

5:manifests

6:java

7:edu.udayton.medicalcalculator

8:MainActivity

9:edu.udayton.medicalcalculator (androidTest)

10:edu.udayton.medicalcalculator (test)

11:generatedJava

12:res

13:drawable

14:layout

15:mipmap

16:values

17:colors.xml

18:dimens.xml

19:strings.xml

20:styles.xml

1:MainActivity.java

```
import android.app.Activity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;

import java.text.DecimalFormat;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button)findViewById(R.id.btnConvert);

        View.OnClickListener btnConvertListener = new View.OnClickListener()
        {
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
            final TextView txtResult = (TextView)findViewById(R.id.txtResult);

            final DecimalFormat formatter = new DecimalFormat("#.#");

            @Override
            public void onClick(View v) {
                // get user input (weight) as a String
                String InputString = txtWeight.getText().toString(); []
            } // end onClick handler
        };
    } // end onCreate method
} // end MainActivity class
```

1:activity_main.xml

1:Main

2:RelativeLayout

3:EditText

4:RadioGroup

5:RadioButton

6:Text

7:Text

8:Text

9:Text

10:Text

11:Text

12:Text

13:Text

14:Text

15:Text

16:Text

17:Text

18:Text

19:Text

20:Text

21:Text

22:Text

23:Text

24:Text

25:Text

26:Text

27:Text

28:Text

29:Text

30:Text

31:Text

32:Text

33:Text

34:Text

35:Text

36:Text

37:Text

38:Text

39:Text

40:Text

41:Text

42:Text

43:Text

44:Text

45:Text

46:Text

MainActivity > onCreate() > new OnClickListener > onClick()

As in Lesson 3, we get the user input as a String from the txtWeight text field, so we can use exception handling for the no-input case.

1: TODO 2: Terminal 3: Build 4: Logcat 5: Profiler 6: Run

1: Event Log

1: Gradle build finished in 5 s 71 ms (39 minutes ago) 41:59 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...\\app\\src\\main\\java\\edu\\udayton\\medicalcalculator\\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures Device File Explorer

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;

import java.text.DecimalFormat;

public class MainActivity extends Activity {

    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram

    private final int LB_LIMIT = 500;
    private final int KILO_LIMIT = 250;

    private double weightEntered, convertedWeight;

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

        final Button btnConvert = (Button)findViewById(R.id.btnConvert);

        View.OnClickListener btnConvertListener = new View.OnClickListener()
        {
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
            final TextView txtResult = (TextView)findViewById(R.id.txtResult);

            final DecimalFormat formatter = new DecimalFormat("#.#");

            @Override
            public void onClick(View v) {
                // get user input (weight) as a String
                String InputString = txtWeight.getText().toString();

                // set up the output String defaulted to an error message
                String OutputString = "Invalid Data Entered"; [ ] // end onClick handler
            } // end onClick handler
        };
    } // end onCreate method
} // end MainActivity class
```

MainActivity > onCreate() > new OnClickListener > onClick()

44 String OutputString = "Invalid Data Entered"; [] // end onClick handler

Since we should output a message to the user no matter what happens when they tap the Convert Weight button, we'll declare a String variable for output, and initialize it to an error message.

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (40 minutes ago) 44:62 CRLF ï UTF-8 ï 4 spaces ï

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...\\app\\src\\main\\java\\edu\\udayton\\medicalcalculator\\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project

Resource Manager

Gradle Scripts

Build Variants

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Layout Captures

2:Captures

Device File Explorer

Android

app

- manifests
- java
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 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
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 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

MainActivity.java

activity_main.xml

```
public class MainActivity extends Activity {  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);  
            final TextView txtResult = (TextView)findViewById(R.id.txtResult);  
  
            final DecimalFormat formatter = new DecimalFormat("#.#");  
  
            @Override  
            public void onClick(View v) {  
                // get user input (weight) as a String  
                String InputString = txtWeight.getText().toString();  
  
                // set up the output String defaulted to an error message  
                String OutputString = "Invalid Data Entered";  
  
                // convert only with valid data  
                try  
                {  
                    } catch (Exception e)  
                    {  
                        } // end try...catch  
                } // end onClick handler  
            };  
        } // end onCreate method  
    } // end MainActivity class
```

We add a try...catch block for the conversion code.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (41 minutes ago)

52:1 CRLF ï UTF-8 ï 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure Favorites Layout Captures 2:Favorites Device File Explorer

Android

app

- manifests
- java
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 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

activity_main.xml

```
public class MainActivity extends Activity {  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);  
            final TextView txtResult = (TextView)findViewById(R.id.txtResult);  
  
            final DecimalFormat formatter = new DecimalFormat("#.#");  
  
            @Override  
            public void onClick(View v) {  
                // get user input (weight) as a String  
                String InputString = txtWeight.getText().toString();  
  
                // set up the output String defaulted to an error message  
                String OutputString = "Invalid Data Entered";  
  
                // convert only with valid data  
                try  
                {  
                    ... and select the android.widget.Toast object class from the code completion menu  
                    Toast (android.widget)  
                    Toast  
                } // end try...catch  
            } // end onClick handler  
        };  
        btnConvert.setOnClickListener(btnConvertListener);  
    } // end onCreate method  
} // end MainActivity class
```

In the catch block, type 'Toa' ...

The Toast class is discussed on page 157 in Android Boot Camp.

... and select the android.widget.Toast object class from the code completion menu

In the case that no data (invalid data in general) is input, we use a Toast object to display the exception object e as a String.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (41 minutes ago) 52:26 CRLF ÷ UTF-8 ÷ 4 spaces ÷

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures Device File Explorer

```
public class MainActivity extends Activity {  
    private final double CONVERSION_RATE = 2.2; // number of pounds per kilogram  
    private final int LB_LIMIT = 500;  
    private final int KILO_LIMIT = 250;  
  
    private double weightEntered, convertedWeight;  
  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
  
        final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
        View.OnClickListener btnConvertListener = new View.OnClickListener()  
        {  
            final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
            final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
            final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);  
            final TextView txtResult = (TextView)findViewById(R.id.txtResult);  
  
            final DecimalFormat formatter = new DecimalFormat("#.#");  
  
            @Override  
            public void onClick(View v) {  
                // get user input (weight) as a String  
                String InputString = txtWeight.getText().toString();  
  
                // set up the output String defaulted to an error message  
                String OutputString = "Invalid Data Entered";  
  
                // convert only with valid data  
                try  
                {  
                    // catch (Exception e)  
                    {  
                        Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);  
                    } // end try...catch  
                } // end onClick handler  
            };  
        };  
    } // end onCreate method  
} // end MainActivity class
```

Add the rest of this declaration/initialization statement to the make the Toast object.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (42 minutes ago) 53:104 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures 2:Device File Explorer

Android

1:Project

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
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 - strings.xml
 - styles.xml

Gradle Scripts

1:Project

Resource Manager

Build Variants

I:Structure

2:Favorites

Layout Captures

2:Device File Explorer

```
private final int LB_LIMIT = 500;
private final int KILO_LIMIT = 250;

private double weightEntered, convertedWeight;

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

    final Button btnConvert = (Button)findViewById(R.id.btnConvert);

    View.OnClickListener btnConvertListener = new View.OnClickListener()
    {
        final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
        final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
        final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
        final TextView txtResult = (TextView)findViewById(R.id.txtResult);

        final DecimalFormat formatter = new DecimalFormat("#.#");

        @Override
        public void onClick(View v) {
            // get user input (weight) as a String
            String InputString = txtWeight.getText().toString();

            // set up the output String defaulted to an error message
            String OutputString = "Invalid Data Entered";

            // convert only with valid data
            try
            {
                } catch (Exception e)
            {
                Toast myToast = Toast.makeText(MainActivity.this, e.getMessage(), LENGTH_LONG);
                myToast.show();
            } // end try...catch
        } // end onClick handler
    };
} // end onCreate method
} // end MainActivity class
```

On the following line, add this call to the Toast's show method to display it.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (42 minutes ago) 54:36 CRLF ÷ UTF-8 ÷ 4 spaces ÷

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures Device File Explorer

```
private final int KILOS_TO_LBS = 2.2;
```

```
private double weightEntered, convertedWeight;
```

```
@Override
```

```
protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);
```

```
    final Button btnConvert = (Button)findViewById(R.id.btnConvert);
```

```
    View.OnClickListener btnConvertListener = new View.OnClickListener()
```

```
{
```

```
        final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
```

```
        final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
```

```
        final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
```

```
        final TextView txtResult = (TextView)findViewById(R.id.txtResult);
```

```
        final DecimalFormat formatter = new DecimalFormat("#.#");
```

```
        @Override
```

```
        public void onClick(View v) {
```

```
            // get user input (weight) as a String
```

```
            String InputString = txtWeight.getText().toString();
```

```
            // set up the output String defaulted to an error message
```

```
            String OutputString = "Invalid Data Entered";
```

```
            // convert only with valid data
```

```
            try
```

```
{
```

```
                // convert weight to double
```

```
                weightEntered = Double.parseDouble(InputString);
```

```
            }
```

```
            catch (Exception e)
```

```
{
```

```
                Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
```

```
                myToast.show();
```

```
            } // end try...catch
```

```
        } // end onClick handler
```

```
    } // end onCreate method
```

```
} // end MainActivity class
```

Similar to Lesson 3, we add a statement to convert the Input String to a double value.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (44 minutes ago) 51:59 CRLF ÷ UTF-8 ÷ 4 spaces ÷

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...\\app\\src\\main\\java\\edu\\udayton\\medicalcalculator\\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures Device File Explorer

```
private void weightEntered() {  
    // convert weight to double  
    weightEntered = Double.parseDouble(txtWeight.getText().toString());  
  
    // check which conversion radio button has been selected  
    if (radLbsToKilos.isChecked())  
        weightEntered = weightEntered * 0.45359237;  
    else if (radKilosToLbs.isChecked())  
        weightEntered = weightEntered / 0.45359237;  
    else  
        txtResult.setText("Invalid Data Entered");  
}  
  
@Override  
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);  
  
    final Button btnConvert = (Button)findViewById(R.id.btnConvert);  
  
    View.OnClickListener btnConvertListener = new View.OnClickListener()  
    {  
        final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);  
        final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);  
        final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);  
        final TextView txtResult = (TextView)findViewById(R.id.txtResult);  
  
        final DecimalFormat formatter = new DecimalFormat("#.#");  
  
        @Override  
        public void onClick(View v) {  
            // get user input (weight) as a String  
            String InputString = txtWeight.getText().toString();  
  
            // set up the output String defaulted to an error message  
            String OutputString = "Invalid Data Entered";  
  
            // convert only with valid data  
            try  
            {  
                // convert weight to double  
                weightEntered = Double.parseDouble(InputString);  
  
                // check which conversion radio button has been selected  
                if (radLbsToKilos.isChecked())  
                    weightEntered = weightEntered * 0.45359237;  
                else if (radKilosToLbs.isChecked())  
                    weightEntered = weightEntered / 0.45359237;  
                else  
                    txtResult.setText("Invalid Data Entered");  
            } catch (Exception e)  
            {  
                Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_SHORT);  
                myToast.show();  
            } // end try...catch  
        } // end onClick handler  
    };  
    // end onCreate method  
} // end MainActivity class
```

MainActivity > onCreate() > new OnClickListener > onClick()

As in the code shown on page 158 of Android Boot Camp, add the if...else statement based on the radio button states to determine which conversion has been selected.

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project

Resource Manager

Gradle Scripts

Build Variants

I:Structure

I:Favorites

Layout Captures

2:Favorites

Device File Explorer

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

MainActivity.java

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

    final Button btnConvert = (Button)findViewById(R.id.btnConvert);

    View.OnClickListener btnConvertListener = new View.OnClickListener()
    {
        final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
        final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
        final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
        final TextView txtResult = (TextView)findViewById(R.id.txtResult);

        final DecimalFormat formatter = new DecimalFormat("#.#");

        @Override
        public void onClick(View v) {
            // get user input (weight) as a String
            String InputString = txtWeight.getText().toString();

            // set up the output String defaulted to an error message
            String OutputString = "Invalid Data Entered";

            // convert only with valid data
            try
            {
                // convert weight to double
                weightEntered = Double.parseDouble(InputString);

                // check which conversion radio button has been selected
                if (radLbsToKilos.isChecked()) // pounds to kilograms
                {
                    // only convert if weightEntered is not greater than the LB_LIMIT
                }
            }
            catch (Exception e)
            {
                Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
                myToast.show();
            } // end try...catch
        } // end onClick handler
    };
} // end onCreate method
} // end MainActivity class
```

activity_main.xml

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (45 minutes ago)

56:91 CRLF ÷ UTF-8 ÷ 4 spaces ÷

Similar to the textbook code shown on pages 158, 161 and 162, we add the code to convert (and reset the Output String) only if the given weight is at most the LB_LIMIT.

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...\\app\\src\\main\\java\\edu\\udayton\\medicalcalculator\\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project

Resource Manager

Gradle Scripts

Build Variants

I:Structure

I:Favorites

Layout Captures

2: Favorites

Android

app

- manifests
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 - layout
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 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle

MainActivity.java

```
final EditText txtWeight = (EditText)findViewById(R.id.txtWeight);
final RadioButton radLbsToKilos = (RadioButton)findViewById(R.id.radLbsToKilos);
final RadioButton radKilosToLbs = (RadioButton)findViewById(R.id.radKilosToLbs);
final TextView txtResult = (TextView)findViewById(R.id.txtResult);

final DecimalFormat formatter = new DecimalFormat("#.#");

@Override
public void onClick(View v) {
    // get user input (weight) as a String
    String InputString = txtWeight.getText().toString();

    // set up the output String defaulted to an error message
    String OutputString = "Invalid Data Entered";

    // convert only with valid data
    try {
        // convert weight to double
        weightEntered = Double.parseDouble(InputString);

        // check which conversion radio button has been selected
        if (radLbsToKilos.isChecked()) // pounds to kilograms
        {
            // only convert if weightEntered is not greater than the LB_LIMIT
            if (weightEntered <= LB_LIMIT)
            {
                convertedWeight = weightEntered / CONVERSION_RATE;

                OutputString = formatter.format(convertedWeight) + " kilograms";
            } // end inner if
        } // end pounds to kilograms
    } // end try...catch
    catch (Exception e)
    {
        Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
        myToast.show();
    } // end try...catch
} // end onClick handler
};

} // end onCreate method
} // end MainActivity class
```

activity_main.xml

Notice that our inner if statement does not need an else statement, since the Output String has been assigned and will be displayed.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (46 minutes ago)

64:9 CRLF ÷ UTF-8 ÷ 4 spaces ÷

Event Log

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project

Resource Manager

Gradle Scripts

Build Variants

I:Structure

I:Favorites

Layout Captures

2:Captures

Android

app

- manifests
- java
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 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle

MainActivity.java

```
final DecimalFormat formatter = new DecimalFormat("#.#");

@Override
public void onClick(View v) {
    // get user input (weight) as a String
    String InputString = txtWeight.getText().toString();

    // set up the output String defaulted to an error message
    String OutputString = "Invalid Data Entered";

    // convert only with valid data
    try {
        // convert weight to double
        weightEntered = Double.parseDouble(InputString);

        // check which conversion radio button has been selected
        if (radLbsToKilos.isChecked()) // pounds to kilograms
        {
            // only convert if weightEntered is not greater than the LB_LIMIT
            if (weightEntered <= LB_LIMIT)
            {
                convertedWeight = weightEntered / CONVERSION_RATE;

                OutputString = formatter.format(convertedWeight) + " kilograms";
            } // end inner if
        } // end pounds to kilograms
        else // kilograms to pounds
        {
            // add code for kilograms to pounds
        }
    } catch (Exception e)
    {
        Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
        myToast.show();
    } // end try...catch
} // end onClick handler

}; // end onCreate method
} // end MainActivity class
}
```

We add similar code for converting kilograms to pounds.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (47 minutes ago)

67:25 CRLF ÷ UTF-8 ÷ 4 spaces ÷

Event Log

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project

Resource Manager

Gradle Scripts

Build Variants

I:Structure

I:Favorites

Layout Captures

2:Captures

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle

MainActivity.java

```
String InputString = txtWeight.getText().toString();

// set up the output String defaulted to an error message
String OutputString = "Invalid Data Entered";

// convert only with valid data
try
{
    // convert weight to double
    weightEntered = Double.parseDouble(InputString);

    // check which conversion radio button has been selected
    if (radLbsToKilos.isChecked()) // pounds to kilograms
    {
        // only convert if weightEntered is not greater than the LB_LIMIT
        if (weightEntered <= LB_LIMIT)
        {
            convertedWeight = weightEntered / CONVERSION_RATE;

            OutputString = formatter.format(convertedWeight) + " kilograms";
        } // end inner if
    } // end pounds to kilograms
    else // kilograms to pounds
    {
        // only convert if weightEntered is not greater than the KILO_LIMIT
        if (weightEntered <= KILO_LIMIT)
        {
            convertedWeight = weightEntered * CONVERSION_RATE;

            OutputString = formatter.format(convertedWeight) + " pounds";
        } // end inner if
    } // end kilograms to pounds
}
catch (Exception e)
{
    Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
    myToast.show();
} // end try...catch
}; // end onClick handler
} // end onCreate method
} // end MainActivity class
```

activity_main.xml

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run

Gradle build finished in 5 s 71 ms (49 minutes ago)

74:9 CRLF ÷ UTF-8 ÷ 4 spaces ÷

Again, our inner if statement does not need an else statement, since the Output String has been assigned and will be displayed.

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure 2:Favorites Layout Captures Device File Explorer

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

MainActivity.java

```
45 // set up the output String defaulted to an error message
46 OutputString = "Invalid Data Entered";
47
48 // convert only with valid data
49 try
{
    // convert weight to double
    weightEntered = Double.parseDouble(InputString);

    // check which conversion radio button has been selected
    if (radLbsToKilos.isChecked()) // pounds to kilograms
    {
        // only convert if weightEntered is not greater than the LB_LIMIT
        if (weightEntered <= LB_LIMIT)
        {
            convertedWeight = weightEntered / CONVERSION_RATE;

            OutputString = formatter.format(convertedWeight) + " kilograms";
        } // end inner if
    } // end pounds to kilograms
    else // kilograms to pounds
    {
        // only convert if weightEntered is not greater than the KILO_LIMIT
        if (weightEntered <= KILO_LIMIT)
        {
            convertedWeight = weightEntered * CONVERSION_RATE;

            OutputString = formatter.format(convertedWeight) + " pounds";
        } // end inner if
    } // end kilograms to pounds
}
catch (Exception e)
{
    Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
    myToast.show();
} // end try...catch

// display Output to txtResult TextView
txtResult.setText(OutputString);
} // end onClick handler
}; // end onCreate method
} // end MainActivity class

```

activity_main.xml

As previously noted, we add a single statement to display the Output String in the txtResult TextView.

MainActivity > onCreate() > new OnClickListener > onClick()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (49 minutes ago) 83:49 CRLF UTF-8 4 spaces

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator > app > src > main > java > edu > udayton > medicalcalculator > MainActivity

1:Project Resource Manager Build Variants I:Structure Favorites Layout Captures 2:Favorites Device File Explorer

```
48     // convert only with valid data
49
50     try
51     {
52         // convert weight to double
53         weightEntered = Double.parseDouble(InputString);
54
55         // check which conversion radio button has been selected
56         if (radLbsToKilos.isChecked()) // pounds to kilograms
57         {
58             // only convert if weightEntered is not greater than the LB_LIMIT
59             if (weightEntered <= LB_LIMIT)
60             {
61                 convertedWeight = weightEntered / CONVERSION_RATE;
62
63                 OutputString = formatter.format(convertedWeight) + " kilograms";
64             } // end inner if
65         } // end pounds to kilograms
66         else // kilograms to pounds
67         {
68             // only convert if weightEntered is not greater than the KILO_LIMIT
69             if (weightEntered <= KILO_LIMIT)
70             {
71                 convertedWeight = weightEntered * CONVERSION_RATE;
72
73                 OutputString = formatter.format(convertedWeight) + " pounds";
74             } // end inner if
75         } // end kilograms to pounds
76     }
77     catch (Exception e)
78     {
79         Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
80         myToast.show();
81     } // end try...catch
82
83     // display Output to txtResult TextView
84     txtResult.setText(OutputString);
85 }
86
87     // set btnConvert button listener
88     btnConvert.setOnClickListener(btnConvertListener);
89 } // end onCreate method
90 } // end MainActivity class
```

Finally, as in prior lessons, we set the `btnConvertListener` as the `btnConvert's onClick` listener.

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator Make Project (Ctrl+F9) udayton medicalcalculator MainActivity

Re-build the project.

1:Project

Android

app

- manifests
- java
 - edu.udayton.medicalcalculator
 - MainActivity
 - edu.udayton.medicalcalculator (androidTest)
 - edu.udayton.medicalcalculator (test)
- generatedJava
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - dimens.xml
 - strings.xml
 - styles.xml

Gradle Scripts

Resource Manager

Build Variants

Structure

Favorites

Layout Captures

2: Favorites

MainActivity.java

```
48     // convert only with valid data
49
50     try
51     {
52         // convert weight to double
53         weightEntered = Double.parseDouble(InputString);
54
55         // check which conversion radio button has been selected
56         if (radLbsToKilos.isChecked()) // pounds to kilograms
57         {
58             // only convert if weightEntered is not greater than the LB_LIMIT
59             if (weightEntered <= LB_LIMIT)
60             {
61                 convertedWeight = weightEntered / CONVERSION_RATE;
62
63                 OutputString = formatter.format(convertedWeight) + " kilograms";
64             } // end inner if
65         } // end pounds to kilograms
66         else // kilograms to pounds
67         {
68             // only convert if weightEntered is not greater than the KILO_LIMIT
69             if (weightEntered <= KILO_LIMIT)
70             {
71                 convertedWeight = weightEntered * CONVERSION_RATE;
72
73                 OutputString = formatter.format(convertedWeight) + " pounds";
74             } // end inner if
75         } // end kilograms to pounds
76     }
77     catch (Exception e)
78     {
79         Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
80         myToast.show();
81     } // end try...catch
82
83     // display Output to txtResult TextView
84     txtResult.setText(OutputString);
85 }
86
87     // set btnConvert button listener
88     btnConvert.setOnClickListener(btnConvertListener);
89 }
90 } // end onCreate method
91 } // end MainActivity class
```

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run Event Log

Gradle build finished in 5 s 71 ms (50 minutes ago) 88:59 CRLF ÷ UTF-8 ÷ 4 spaces ÷

MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator>MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator app Run 'app' (Shift+F10) edu

Since our emulator's already running (from Part 1), we can just run the app.

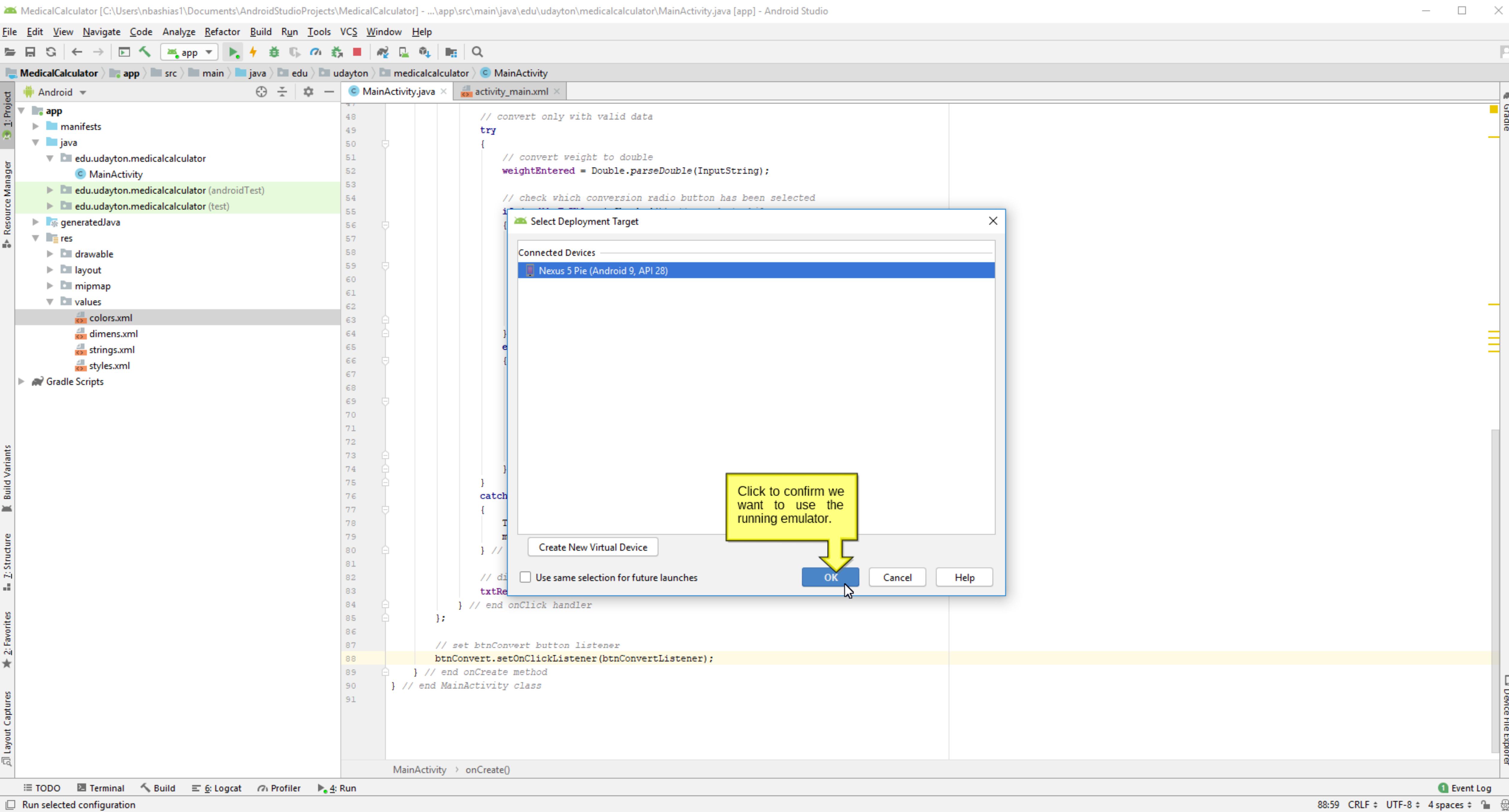
```
48     // convert only with valid data
49
50     try
51     {
52         // convert weight to double
53         weightEntered = Double.parseDouble(InputString);
54
55         // check which conversion radio button has been selected
56         if (radLbsToKilos.isChecked()) // pounds to kilograms
57         {
58             // only convert if weightEntered is not greater than the LB_LIMIT
59             if (weightEntered <= LB_LIMIT)
60             {
61                 convertedWeight = weightEntered / CONVERSION_RATE;
62
63                 OutputString = formatter.format(convertedWeight) + " kilograms";
64             } // end inner if
65         } // end pounds to kilograms
66         else // kilograms to pounds
67         {
68             // only convert if weightEntered is not greater than the KILO_LIMIT
69             if (weightEntered <= KILO_LIMIT)
70             {
71                 convertedWeight = weightEntered * CONVERSION_RATE;
72
73                 OutputString = formatter.format(convertedWeight) + " pounds";
74             } // end inner if
75         } // end kilograms to pounds
76     }
77     catch (Exception e)
78     {
79         Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);
80         myToast.show();
81     } // end try...catch
82
83     // display Output to txtResult TextView
84     txtResult.setText(OutputString);
85 }
86
87     // set btnConvert button listener
88     btnConvert.setOnClickListener(btnConvertListener);
89 } // end onCreate method
90 } // end MainActivity class
91 }
```

MainActivity > onCreate()

TODO Terminal Build Logcat Profiler Run

Run selected configuration

88:59 CRLF UTF-8 4 spaces



MedicalCalculator [C:\Users\nbashias1\Documents\AndroidStudioProjects\MedicalCalculator] - ...app\src\main\java\edu\udayton\medicalcalculator\MainActivity.java [app] - Android Studio

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

MedicalCalculator app medicalcalc Main Activity

convert only with valid data

```
// convert weight to double  
weightEntered = Double.parseDouble(InputString);  
  
// check which conversion radio button has been selected  
if (radLbsToKilos.isChecked()) // pounds to kilograms  
{  
    // only convert if weightEntered is not greater than the LB_LIMIT  
    if (weightEntered <= LB_LIMIT)  
    {  
        convertedWeight = weightEntered / CONVERSION_RATE;  
  
        OutputString = formatter.format(convertedWeight) + " kilograms";  
        if  
    } // end pounds to kilograms  
else // kilograms to pounds  
{  
    // only convert if weightEntered is not greater than the KILO_LIMIT  
    if (weightEntered <= KILO_LIMIT)  
    {  
        convertedWeight = weightEntered * CONVERSION_RATE;  
  
        OutputString = formatter.format(convertedWeight) + " pounds";  
    } // end inner if  
} // end kilograms to pounds  
  
catch (Exception e)  
{  
    Toast myToast = Toast.makeText(MainActivity.this, e.toString(), Toast.LENGTH_LONG);  
    myToast.show();  
} // end try...catch  
  
// display Output to txtResult TextView  
txtResult.setText(OutputString);  
} // end onClick handler  
  
// set btnConvert button listener  
btnConvert.setOnClickListener(btnConvertListener);  
end onCreate method  
MainActivity class
```

Test Case 1: Valid input data in pounds

Medical Calculator

Convert Patient Weight

Weight of Patient

Convert Pounds to Kilograms

Convert Kilograms to Pounds

Convert Weight

3:20

Resource Manager

Gradle Script

Build Variants

Layout Captures

Favorites

Device File Explorer

TODO Terminal Build Logcat Profiler Run

MainActivity > onCreate()

Gradle build finished in 4 s 521 ms (moments ago)

88:59 CRLF UTF-8 4 spaces

