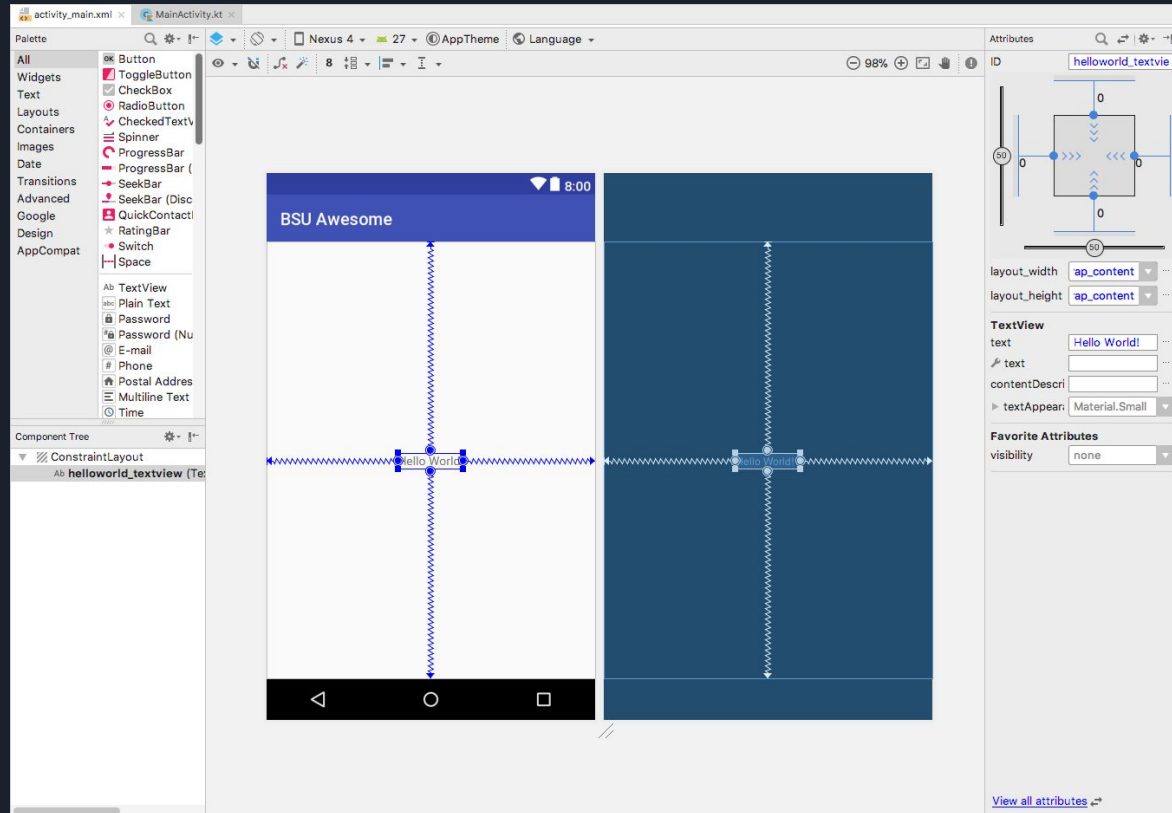# Android Dev Kotlin

CS 402: Mobile Development

Android Overview

An operating system and application framework. Based on Linux

Primarily Java 7 with some Java 8

Interface is XML based. You can edit with a visual editor or edit the XML directly.

Android Studio Visual UI Editor

Kotlin val vs. var

```
val value:Type = Type()
```

val values can only be instantiated once

```
var variable:Type = Type()

variable.something()
```

Kotlin Types

```
var someInt:Int = 5

someInt = 4

someInt = Int.MAX_VALUE
```

Android Components

Activities - User interface screens

Fragments - User interface component groups

Widgets - Display and user interactivity

Services - Background jobs

Broadcast Receivers - Messaging system

Android Activities

Subclass of `android.app.Activity` or some version of it

Applications can have 0, 1 or many activities

Defines and manages the user interface

Basically, one activity will define each screen

Android Layouts

Defines interface objects (widgets)

Defines the positioning of those objects on the screen

Underlying implementation is in XML with

`android: namespace`

Can have multiple layouts per screen, device, orientation, resolutions

Android Widgets

Buttons

TextField

TextView

MapView

WebView

…

Widgets and Layouts

```
<TextView
    android:id="@+id/hello_textview"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_centerHorizontal="true"
    android:layout_centerVertical="true"
    android:text="@string/hello_world" />
```

Android Widgets

```
<TextView
  android:layout_width="wrap_content"
  android:layout_height="wrap_content"
  android:text="Hello World!"
  android:id="@+id/helloworld_textview"
  app:layout_constraintBottom_toBottomOf="parent"
  app:layout_constraintLeft_toLeftOf="parent"
  app:layout_constraintRight_toRightOf="parent"
  app:layout_constraintTop_toTopOf="parent" />
```

Android Reference to Widgets

```kotlin
val helloworldTextView:TextView =
findViewById(R.id.helloworld_textview)

helloworldTextView.text = "This is the changed text"
```

Android Reference to Widgets
Kotlin Extensions

```
val helloworldTextView:TextView =
findViewById(R.id.helloworld_textview)

helloworld_textview.text = "This is the changed text"
```

Android Widgets

```
<Button
  android:id="@+id/submit_button"
  android:layout_width="wrap_content"
  android:layout_height="wrap_content"
  android:text="Button" />
```

Android Reference to Widgets

```kotlin
val submitButton:Button = findViewById(R.id.submit_button)

submitButton.setOnClickListener {

   Log.d("BSU", "Submit button pressed")

}
```

Homework 1
Due 1/23/2019 EoD

Create and submit an Android Kotlin application that:

1. Has two TextViews
2. Has two Buttons
3. Has two EditTexts
4. First button <u>concatenates</u> the two EditTexts and outputs result to the TextView
5. Second button <u>adds</u> the two EditTexts and outputs result to the TextView
6. Grading…

Homework Grading

0 - No submission

2 - Not working and very little code

4 - Not working or very little code

6 - Requirements missing

8 - All requirements fully satisfied

10 - All requirements fully satisfied and added design and/or functionality

Homework Grading

Example:

Student satisfies all requirements and adds design elements: 8.2

Missing some features but adds design elements: 6.2

All requirements and added some features and design: 9.9