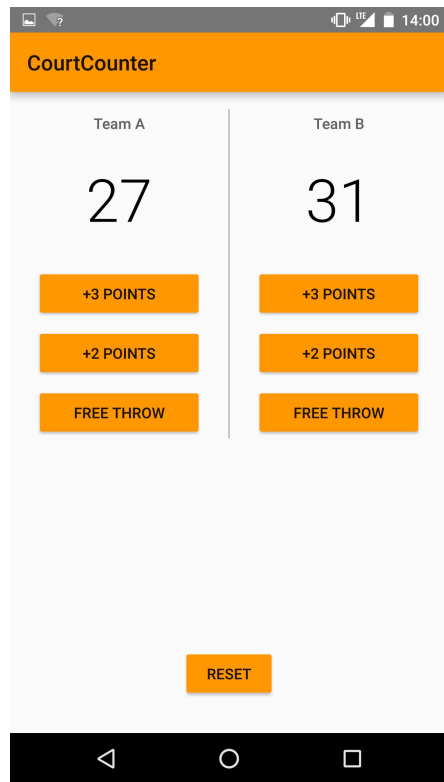


# Android Week Three

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UMN App Developers

# Outline

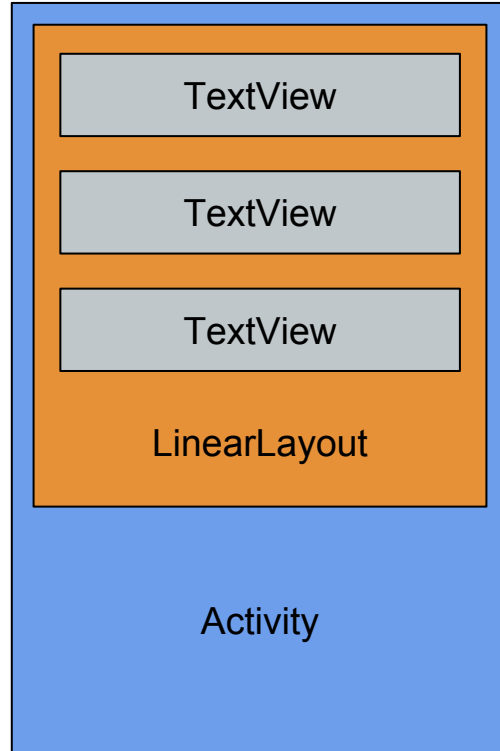
- Review
  - First Week
    - Android Structure
    - Activity, View, ViewGroup
    - XML Syntax
  - Second Week
    - ConstraintLayout
    - Binding Views
    - Setting Attributes Programmatically
    - OnClickListener
  - Sample App
    - Scoreboard App



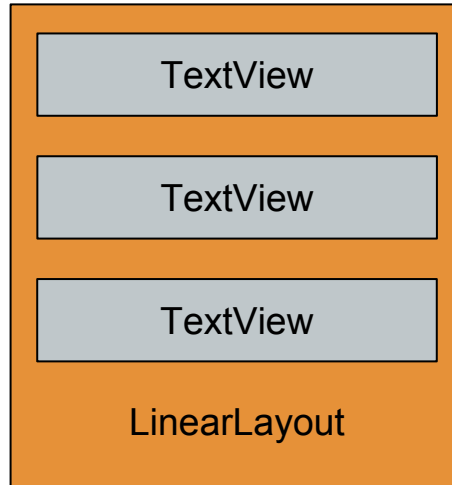
# Android App Structure



# Activity, View, ViewGroup



# Parent View, Child View



# XML Syntax (Layout)

Start Tag and Close Tag

<ViewType  
attributes>

Children Views

</ViewType>

Self Closing

<ViewType  
attributes />

# XML Syntax (Values)

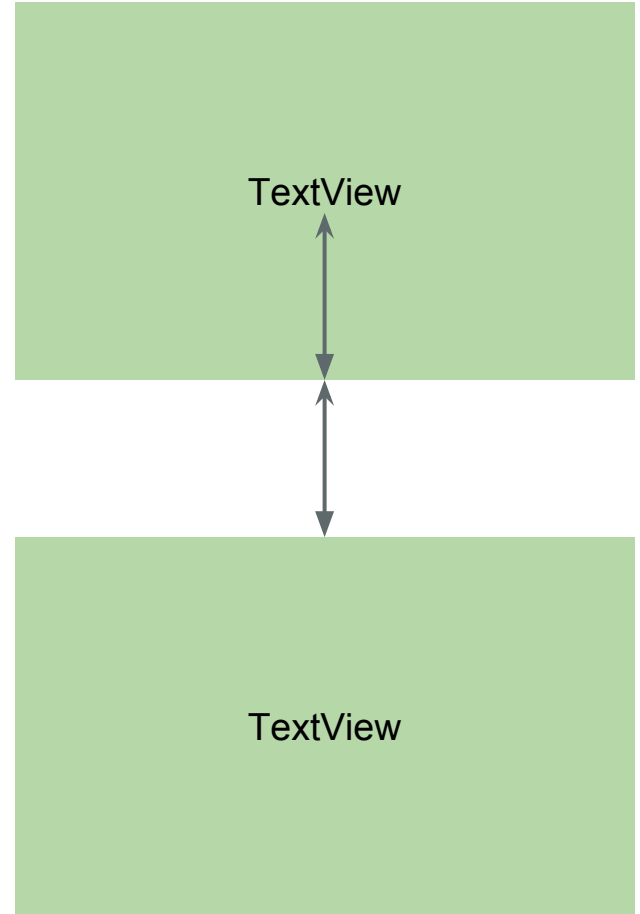
```
<resources>
```

```
  <valueType name="valueName"> value </valueType>
```

```
</resources>
```

# Common Attributes

- android:id
- android:layout\_width
- android:layout\_height
- android:layout\_margin
- android:padding
- android:background



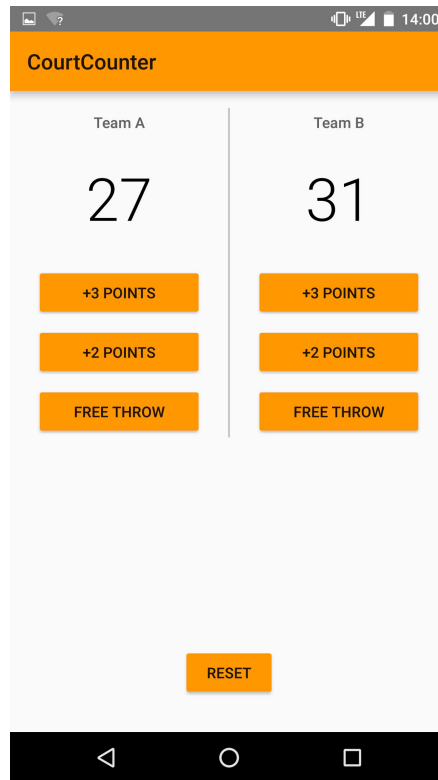


# dp, sp

- dp - Density Independent Pixel
  - width, height, margin, padding (size of view)
- sp - Scale Independent Pixel
  - text size
- Additional Resource:

<https://stackoverflow.com/questions/2025282/what-is-the-difference-between-px-dip-dp-and-sp>

# Let's start developing!



# ConstraintLayout

- Parent View (ConstraintLayout)
  - `xmlns:app="http://schemas.android.com/apk/res-auto"`
- Child View
  - `app:layout_constraintTop_toTopOf="parent"`
  - `app:layout_constraintBottom_toBottomOf="parent"`
  - `app:layout_constraintLeft_toLeftOf="parent"`
  - `app:layout_constraintRight_toRightOf="parent"`
    - parent, @id/(id of relative view)
  - `app:layout_constraintVertical_bias="0.5"`
  - `app:layout_constraintHorizontal_bias="0.5"`
    - 0.0 ~ 1.0

# ConstraintLayout

- match\_parent
  - `android:layout_width="0dp"`
    - `app:layout_constraintLeft_toLeftOf="parent"`
    - `app:layout_constraintRight_toRightOf="parent"`
  - `android:layout_height="0dp"`
    - `app:layout_constraintTop_toTopOf="parent"`
    - `app:layout_constraintBottom_toBottomOf="parent"`

# LinearLayout

- A viewgroup that displays its views in one direction.
- android:orientation="horizontal" (vertical)
- android:weight="1" (child attribute)

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

```
<!-- Views inside LinearLayout -->
```

```
</LinearLayout>
```

# RelativeLayout

- A viewgroup that displays views relative to one another.
- `android:layout_alignParentTop="true"` (child attribute)
- `android:layout_alignParentLeft="true"` (child attribute)
- `android:layout_below="@viewid"` (child attribute)
- `android:layout_toLeftOf="@viewid"` (child attribute)

# TextView

- android:text
- android:textColor
- android:textSize
- android:fontFamily

## Android TextView Example

Small Text in TextView

Medium Text in TextView

Large Text in TextView

Simple TextView

**TextView with bold text and text size 18sp**

# Button

- A user interface that a user can click on to perform an action.
- Button is styled with the default Android style.
- `android:onClick="methodName"`

```
<Button  
    android:layout_width="100dp"  
    android:layout_height="100dp"  
    android:onClick="onButtonClick" />
```



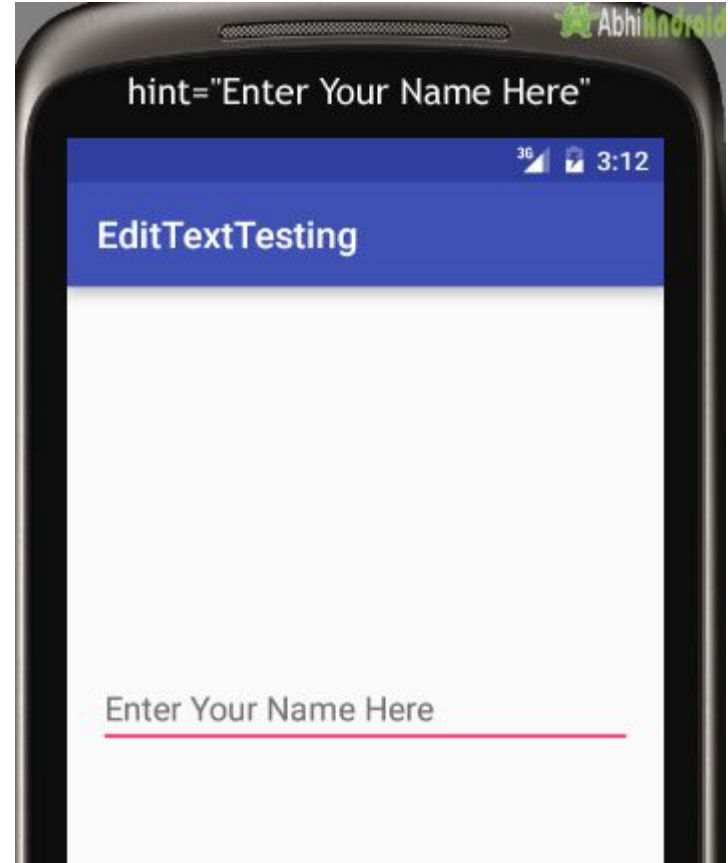
# ImageView

- Displays image resources.
- Views that contain images.
- `android:src="image resource"`
- `android:scaleType="centerCrop"`

```
<ImageView  
    android:id="@+id/about_us_logo"  
    android:layout_width="160dp"  
    android:layout_height="160dp"  
    android:src="@drawable/app_logo" />
```

# EditText

- View for modifying and entering text
- `android:hint="Enter your password"`
- `android:hintColor="@android:color/black"`
- `android:inputType="number"`



# Binding Views

1. Declare variables for views on top of class
  2. In onCreate method, bind the views
    - `TextView textView = (TextView) findViewById(R.id.id_of_textview);`
- 
- `ViewType viewName = (ViewType) findViewById(R.id.view_id);`

# Debugging and Logging

- **Log.v(tag, message);**
- Log.v - verbose: most basic log level
- Log.d - debug: development only
- Log.i - info: regular usage
- Log.w - warn: possible issues not yet error
- Log.e - error: issues that have caused errors
- Log.a - assert: show issues that never should happen
- Log.wtf - WTF

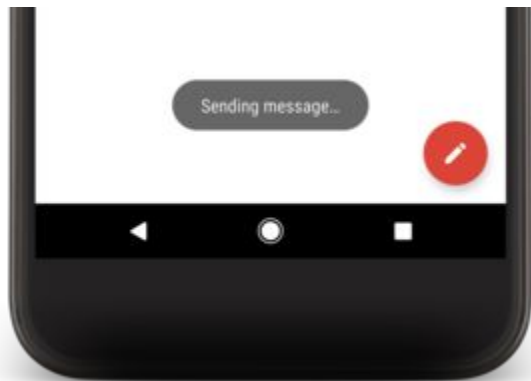
# onClick and OnClickListener

- Bind Button Views
- `setOnClickListener(new OnClickListener());`
- `android:onClick="methodName"`



# Toast

- Message shown in the bottom
- `Toast.makeText(context, message, duration).show();`



# Next Week

- ListView / RecyclerView
- Intents
- Multiple Activities

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Github: <https://github.com/ryubears/AndroidLearningSession>