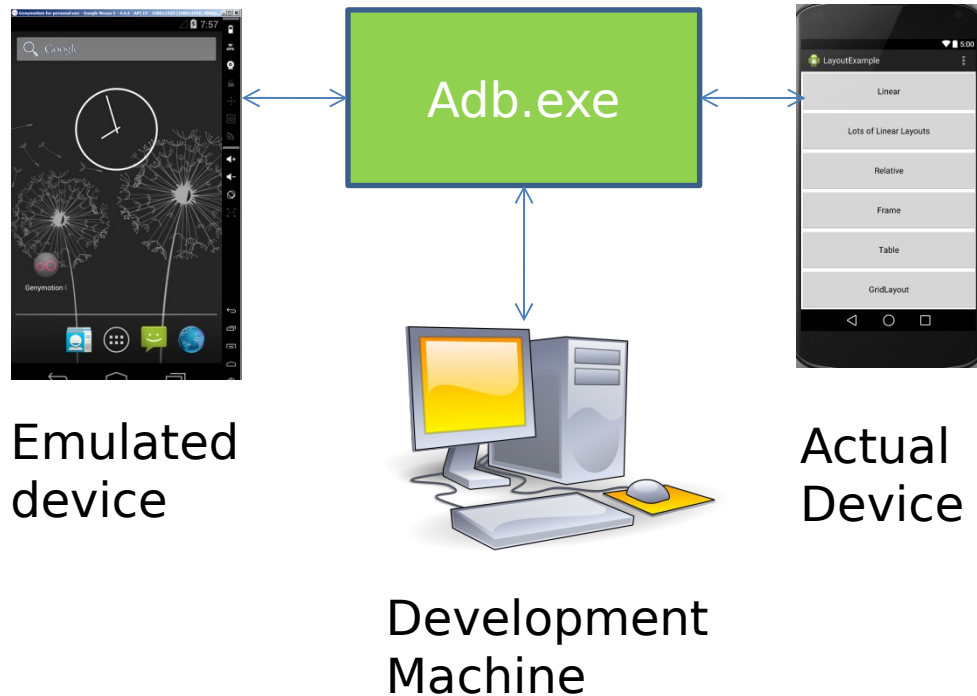# CPSC 475/575 - Mobile Computing

Topics

- Communications between Android Studio and Device and Emulator
- Compilation
- Sizing
- Layouts

Communications - Adb.exe

- How does Android Studio communicate with emulator or device?

Emulated device

Adb.exe

Actual Device

Development Machine

Compilation – generate apk or aab

What is an apk file?
Compiled app to deploy to device

What is an aab file?
Signed bundle to deploy to app stores

Where is it?
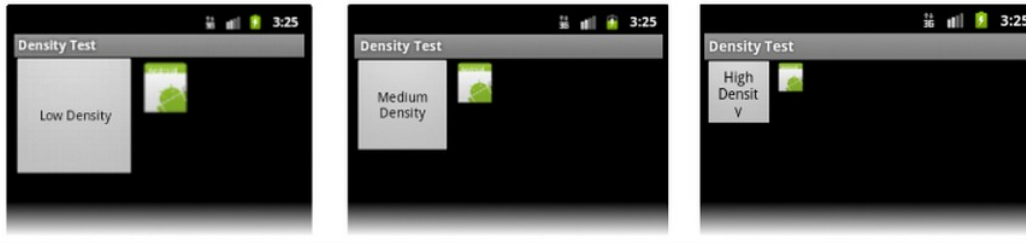Depends, can be a release or a debug build.
Build aab, get location notification
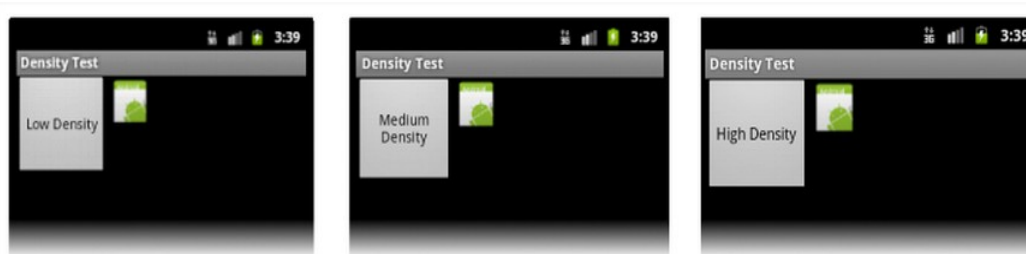Build apk, search for *.apk in project

Sizing

Sizing Note
Use dp not px

Using px – buttons get smaller as density goes up

Using dp - scales as density changes

Layouts

Layouts

- Location


```
▼  📁 res
   ▶  📁 drawable
   ▼  📁 layout
         📄 activity_main.xml
```
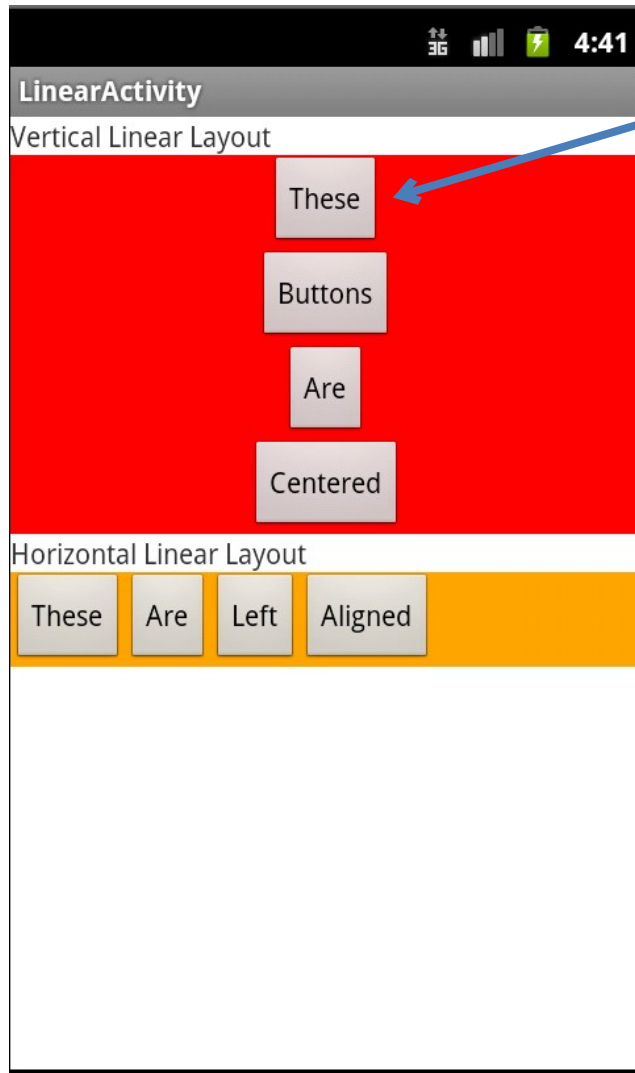
- 2 today
  – Linear (3_layoutExample project)
  – Framelayout   "

- See the online doc on Constraint Layout

LinearLayout
(see 3_layoutExample project)

LinearLayout

```
<Button android:text="These"
    android:layout_gravity="center"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
/>
```

```
<LinearLayout
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:orientation="vertical"
    android:background="#ffff180a">
```

```
<LinearLayout
    android:orientation ="horizontal"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="left"
    android:background="#ffff980c">
```

LinearLayout
gravity layout_gravity

gravity – align text
inside widget

```
<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:gravity="left"
    android:text="Left" />
```
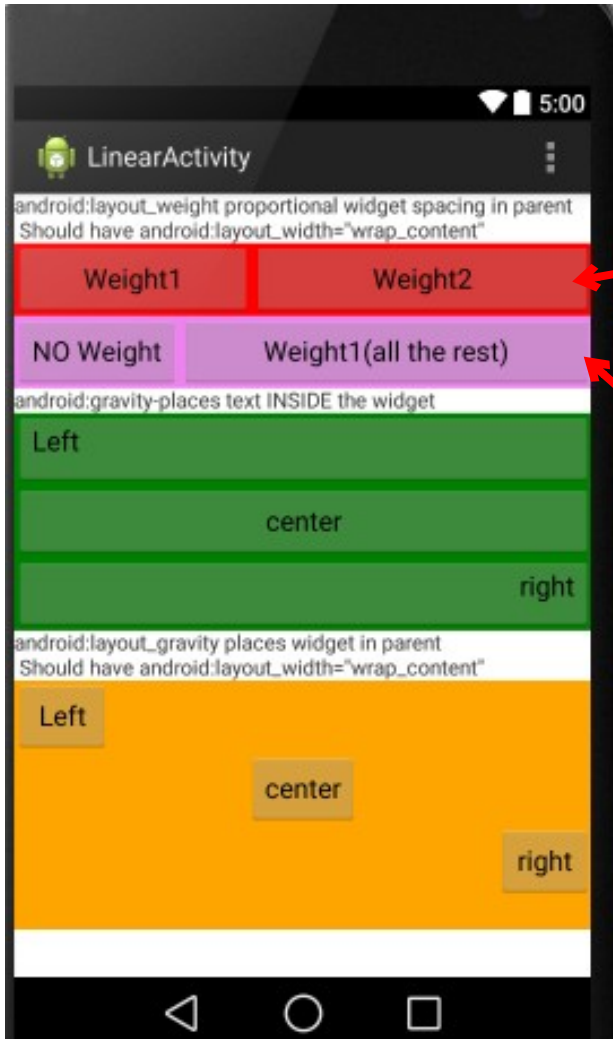
layout-gravity – align
widget in parent

```
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="right"
    android:text="right" />
```

LinearLayout
android:layout_weight (There is no android:weight!)

Proportions widget spacing


```
<Button android:text="Weight1"
        android:layout_weight="1"
        android:gravity="center"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

<Button android:text="Weight2"
        android:layout_weight="2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

<Button android:text="NO Weight"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

<Button android:text="Weight1(all the rest)"
        android:layout_weight="1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>
```
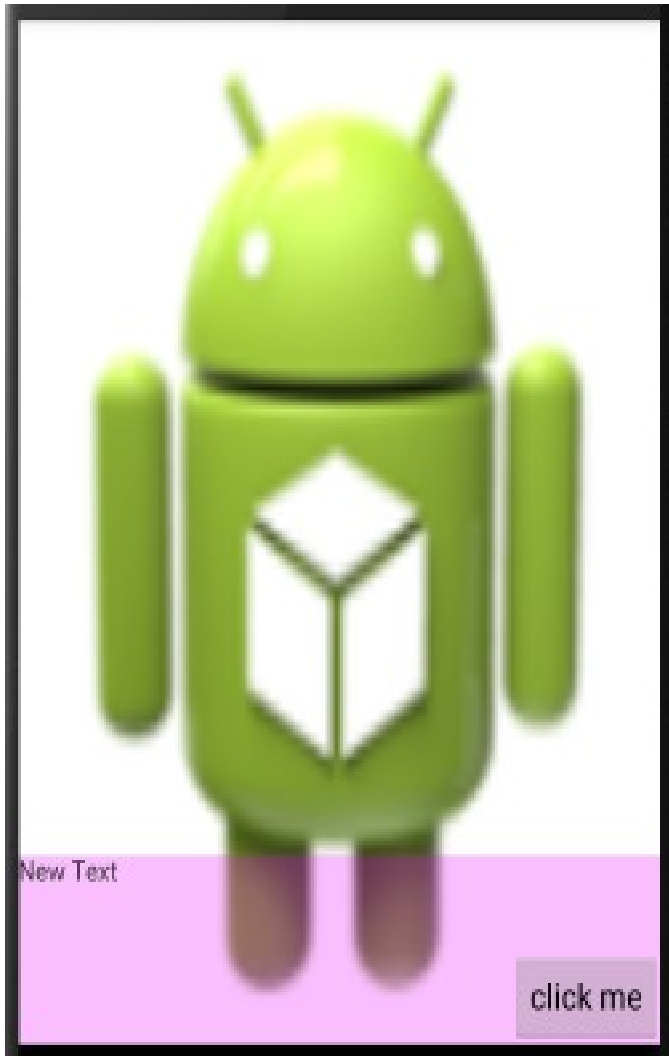
Note android:layout_width="wrap_content"
Necessary for proper function

FrameLayout

- Placed on screen
- On Top of each other
- In order declared


```
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/FL"
    android:layout_width="match_parent" android:layout_height="match_parent"
    android:background="@drawable/ic_launcher">

    <TextView
        android:layout_width="match_parent"
        android:layout_height="96dp"
        android:text="New Text"
        android:id="@+id/textView"
        android:layout_gravity="center_horizontal|bottom"
        android:background="#44ee0bff" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="click me"
        android:onClick="doButton"
        android:id="@+id/button"
        android:layout_gravity="right|bottom" />
</FrameLayout>
```
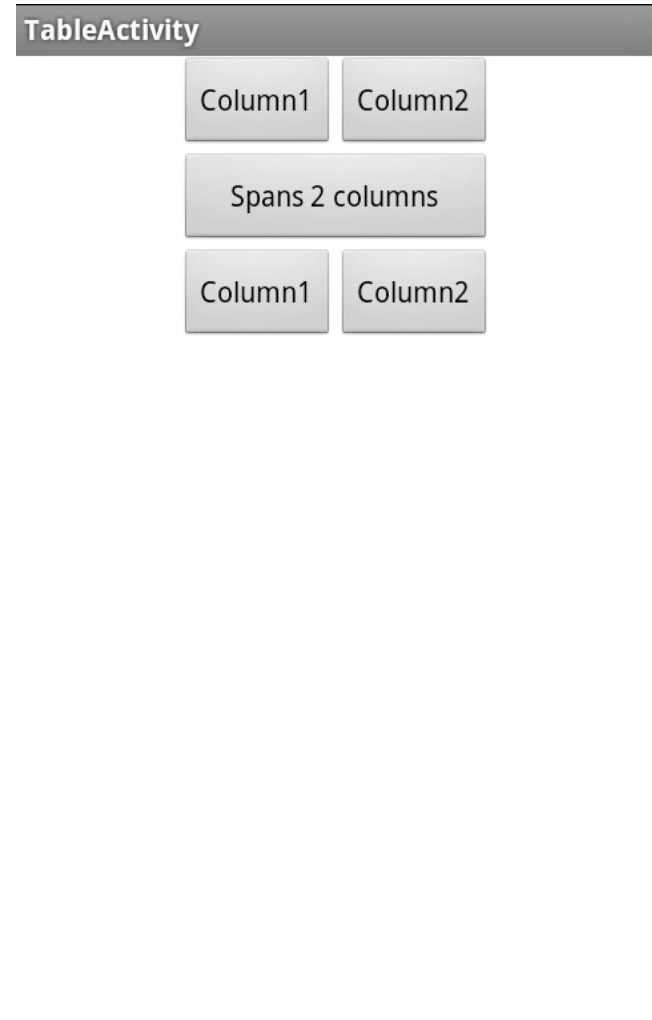
Use dp not px

FrameLayout


```java
public class FrameLayoutActivity extends Activity {

    private boolean isGreen = false;
    private int Id;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_framelayout);
        Resources resources = this.getApplicationContext().getResources();
        Id = resources.getIdentifier("ic_launcher", "drawable", getPackageName());
    }


    public void doButton(View view) {
        FrameLayout ml = (FrameLayout)findViewById(R.id.FL);


        if (isGreen)
            ml.setBackgroundResource(Id);
        else
            ml.setBackgroundColor(0xFF00FF00);


        isGreen = !isGreen;
    }
}
```
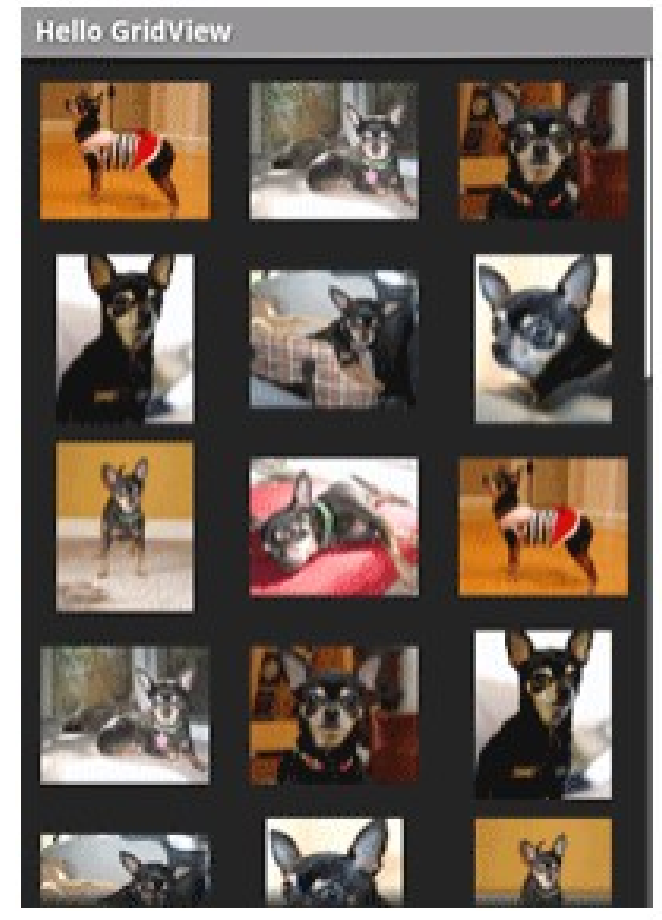
TableLayout

- rows and columns
- rows normally TableRows
- TableRows contain other elements such as buttons, text, etc.

TableActivity

Column1	Column2
Spans 2 columns	
Column1	Column2

Other Layouts - GridView

- Two Dimensional Scrollable Grid
- Items inserted into layout via a ListAdapter

Other Layouts - TabLayout

- Uses a TabHost and TabWidget
- Swap between views in same activity or switch between different activities

Other Views - Layouts

- Gallery
  - horizontal scrolling display of images from a list
- SurfaceView
  - provide access to a "drawing" surface. Intended to draw pixels, not display other views / widgets