

CPSC 475/575 - Mobile Computing

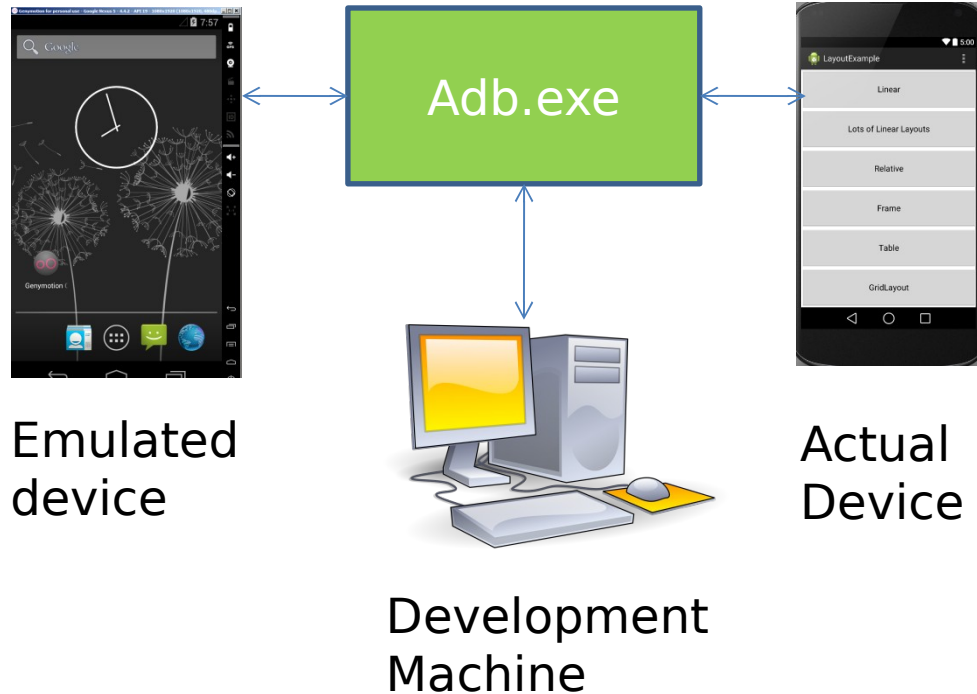
Topics

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

Communications

Adb.exe

- How does Android Studio communicate with emulator or device?



Windows Task Manager

File Options View Help

Applications Processes Services Performance Networking Users

Image Name	User Name	C...	Memor
studio64.exe	Perkins	21	8
taskmgr.exe	Perkins	01	
wordpad.exe	Perkins	00	
java.exe	Perkins	00	5
ADBUS32.EXE *32	Perkins	00	
adb.exe *32	Perkins	00	
tsnouter.exe *32	Perkins	00	
conhost.exe	Perkins	00	
POWERPNT.EXE *32	Perkins	00	
InputPersonalization.exe	Perkins	00	
chrome.exe *32	Perkins	00	1
chrome.exe *32	Perkins	00	
WINWORD.EXE *32	Perkins	00	
PrivacyIconClient.exe	Perkins	00	
splwow64.exe	Perkins	00	

Compilation – generate apk

What is an apk file?

What your application compiles to

Where is it?

Depends, can be a release signed apk
or a debug build

Search for *.apk in project

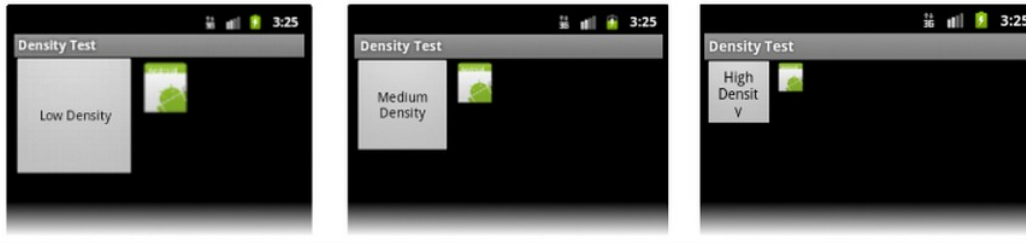
More Info:

<https://developer.android.com/sdk/installing/studio-build.html>

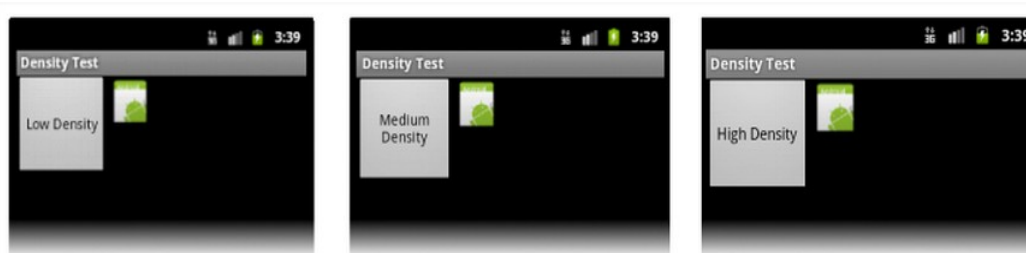
Sizing

Sizing Note

Use dp not px



Using **px** – buttons get smaller as density goes up



Using **dp** – scales as density changes

Layouts

Layouts

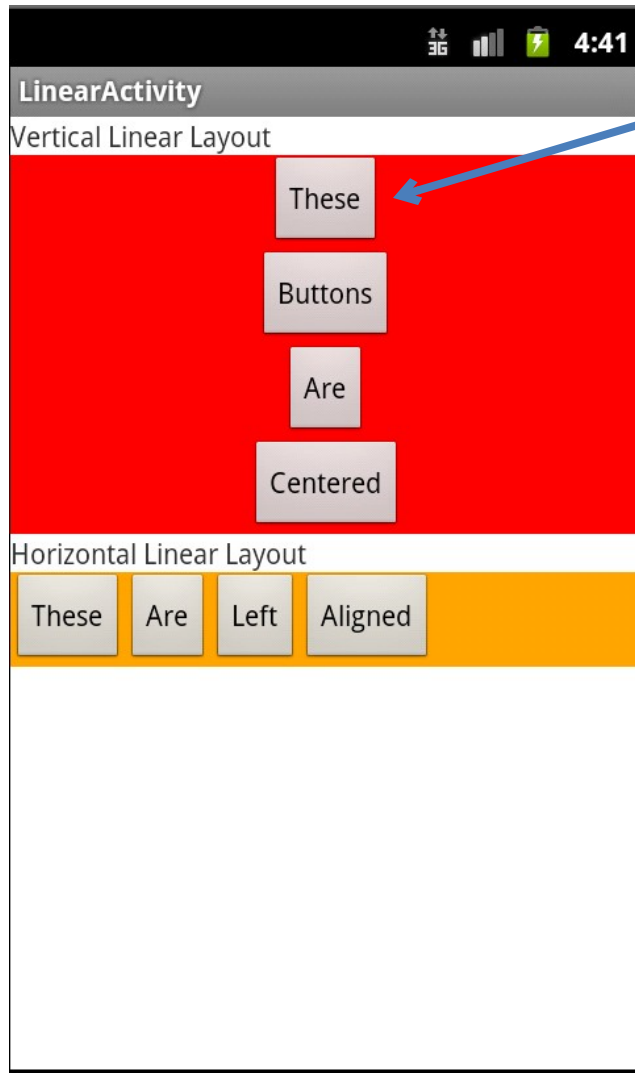
- Location



- 2 today
 - Linear (3_layoutExample project)
 - Framelayout “
- See the online doc on Constraint Layout

LinearLayout

(see 3_layoutExample project)



```
<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

LinearLayout

gravity layout_gravity

gravity – align text
inside widget



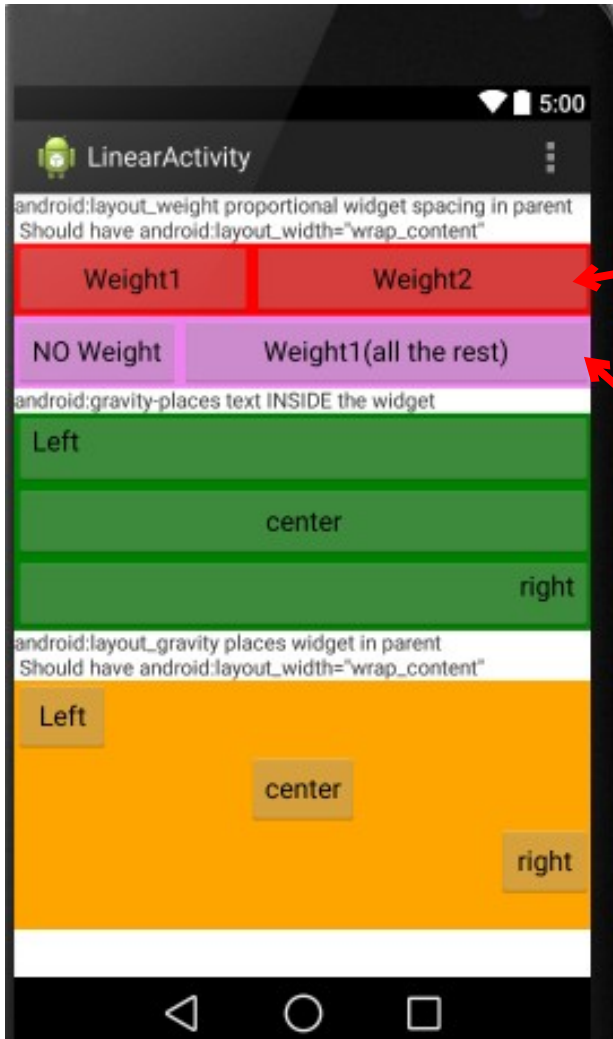
```
<Button  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:gravity="left"  
    android:text="Left" />
```

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"/>

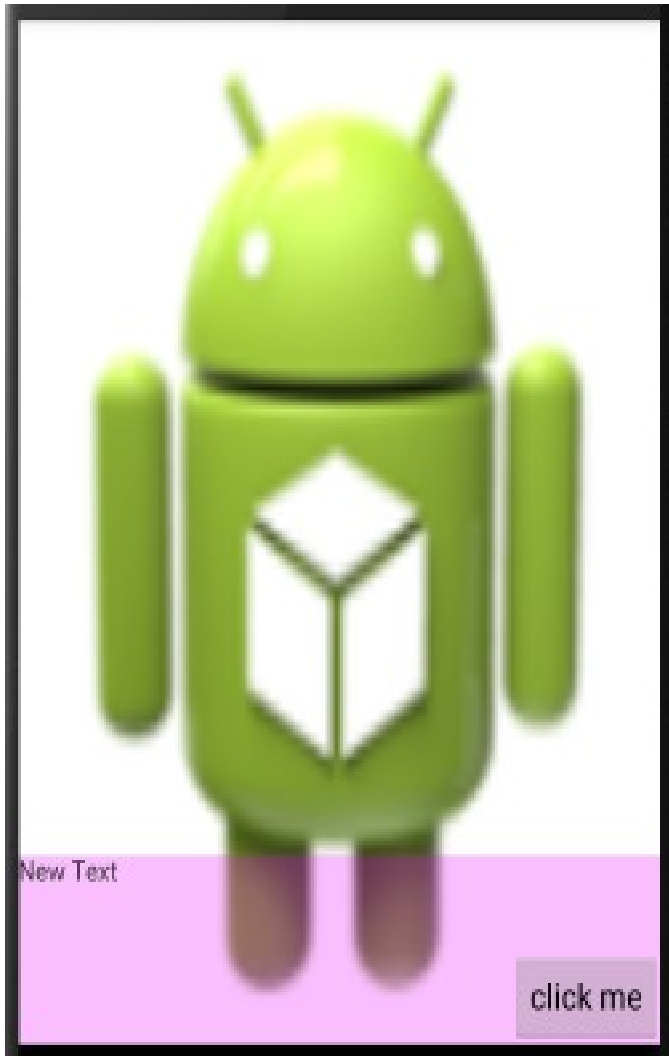
<Button android:text="NO Weight"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"/>

<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

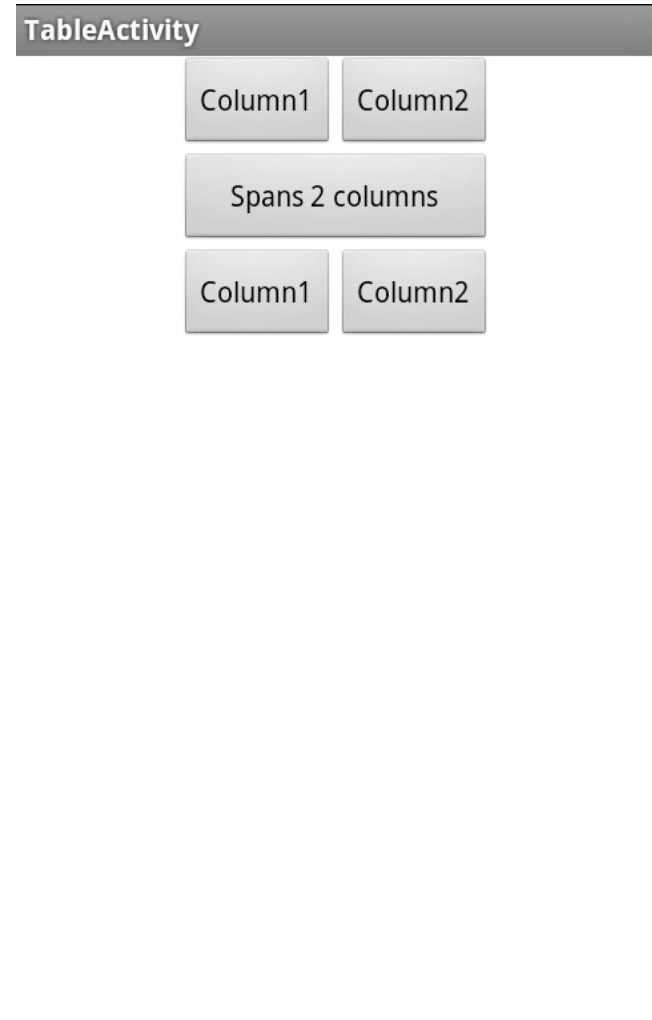
FrameLayout



```
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;  
    }  
}
```

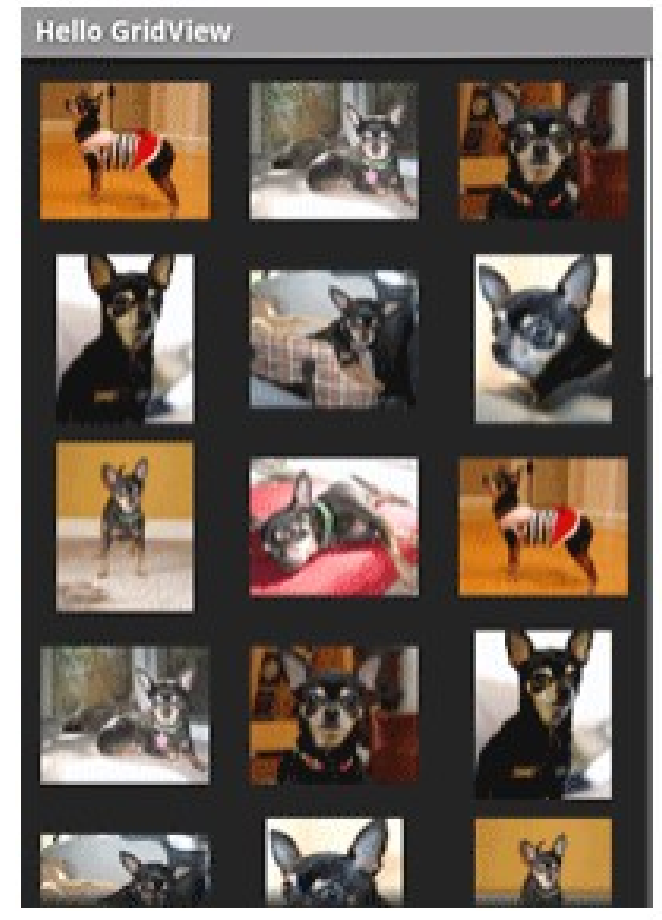
TableLayout

- rows and columns
- rows normally `TableRow`
- `TableRow`s contain other elements such as buttons, text, etc.



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