

CPSC 475/575 - Mobile Computing

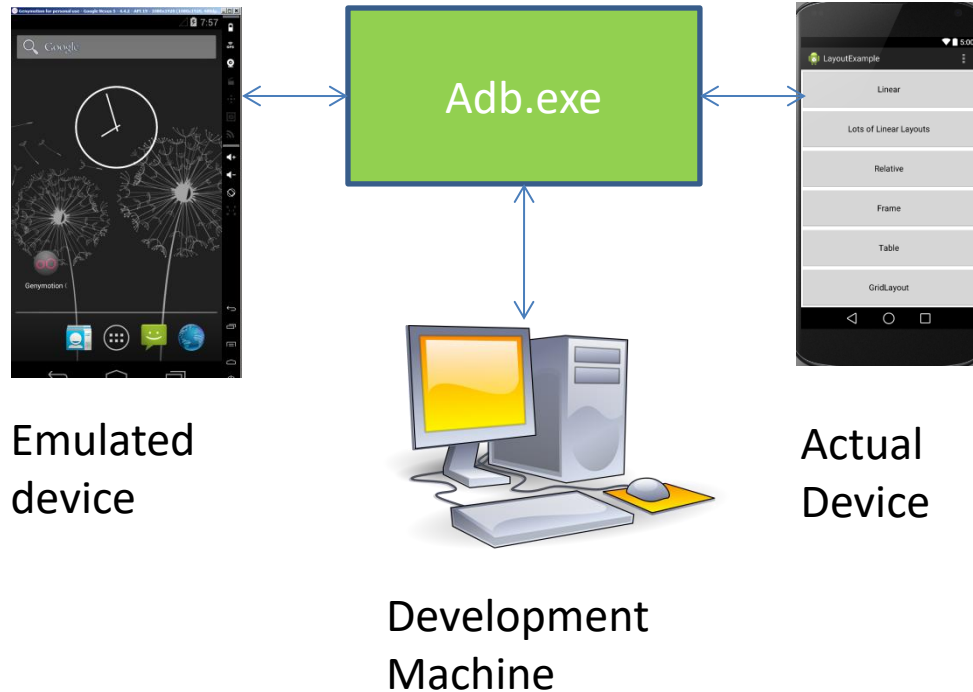
Topics

- Communications between Android Studio and Device and Emulator
- Compilation and Installation
- A word about Interfaces
- Animations
- Layouts

Communications

Adb.exe

- How does Android Studio communicate with emulator or device?



Windows Task Manager screenshot showing running processes. The 'Processes' tab is selected. The table lists various processes, with 'studio64.exe' and 'adb.exe *32' highlighted by red boxes.

Image Name	User Name	C...	Memor
studio64.exe	Perkins	21	8
taskmgr.exe	Perkins	01	
wordpad.exe	Perkins	00	
java.exe	Perkins	00	5
ACORD32.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>

Install apk

- Dalvik verses ART
 - ART is the future (from 5.0 on)
 - Dalvik is dead
- See ART vs Dalvik for more info

<https://software.intel.com/en-us/blogs/2014/06/18/art-vs-dalvik-introducing-the-new-android-x86-runtime>

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

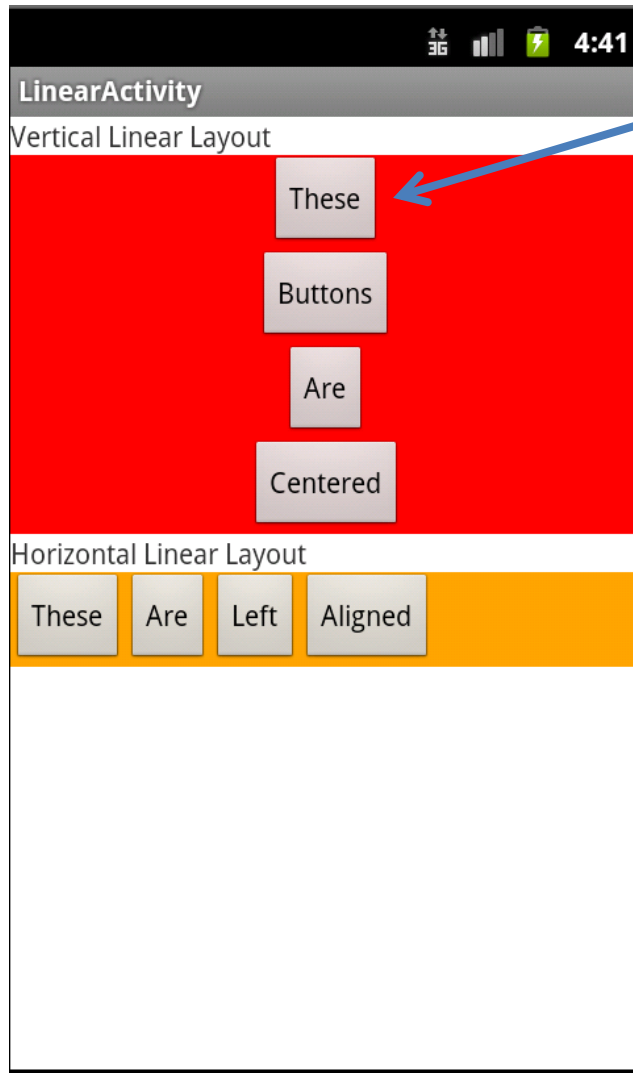


- 3 today
 - Linear (3_layoutExample project)
 - Relative “
 - Framelayout “

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" />
```

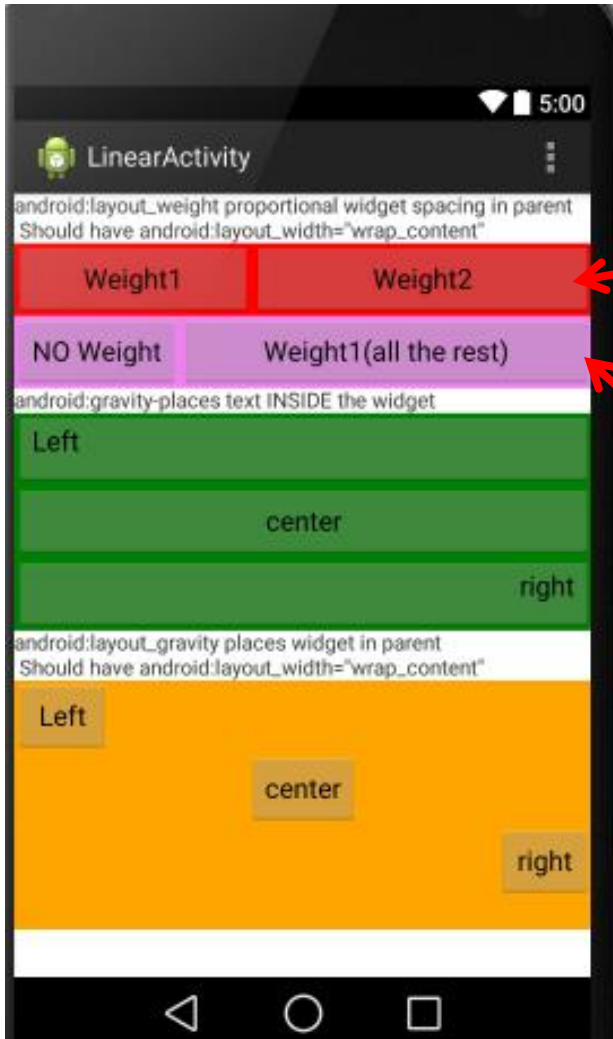
layout-gravity – align widget in parent

```
<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

RelativeLayout



```
<Button
    android:id="@+id/leftButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentLeft="true"
    android:layout_alignParentTop="true"
    android:text="Left" />
```

```
<Button
    android:id="@+id/MidButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Mid"
    android:layout_centerVertical="true"
    android:layout_centerHorizontal="true" />
```

```
<Button
    android:id="@+id/RightButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentBottom="true"
    android:layout_toRightOf="@id/MidButton"
    android:text="Bot" />
```

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;  
    }  
}
```

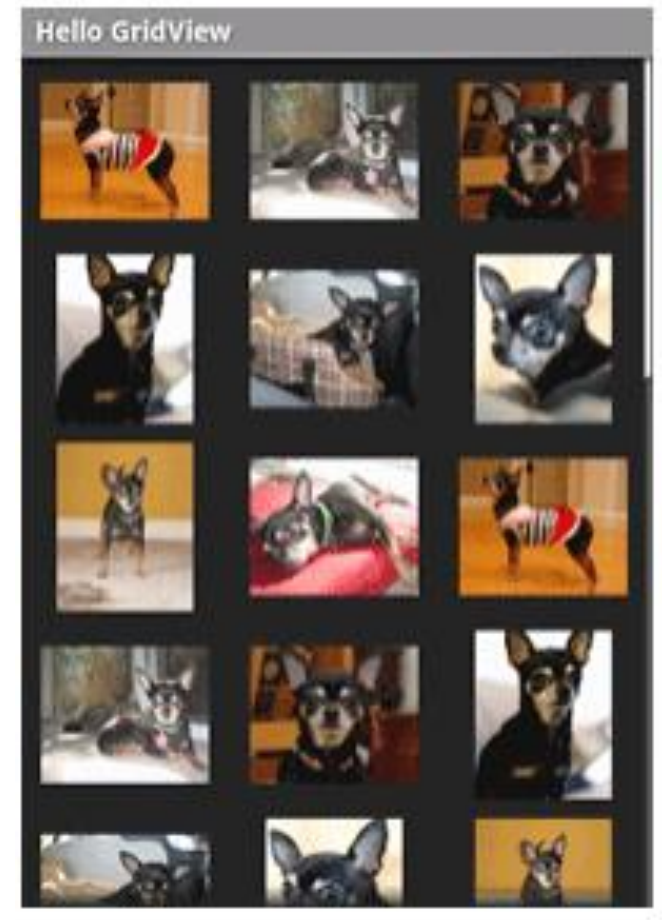
TableLayout

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



Other Layouts - GridView

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



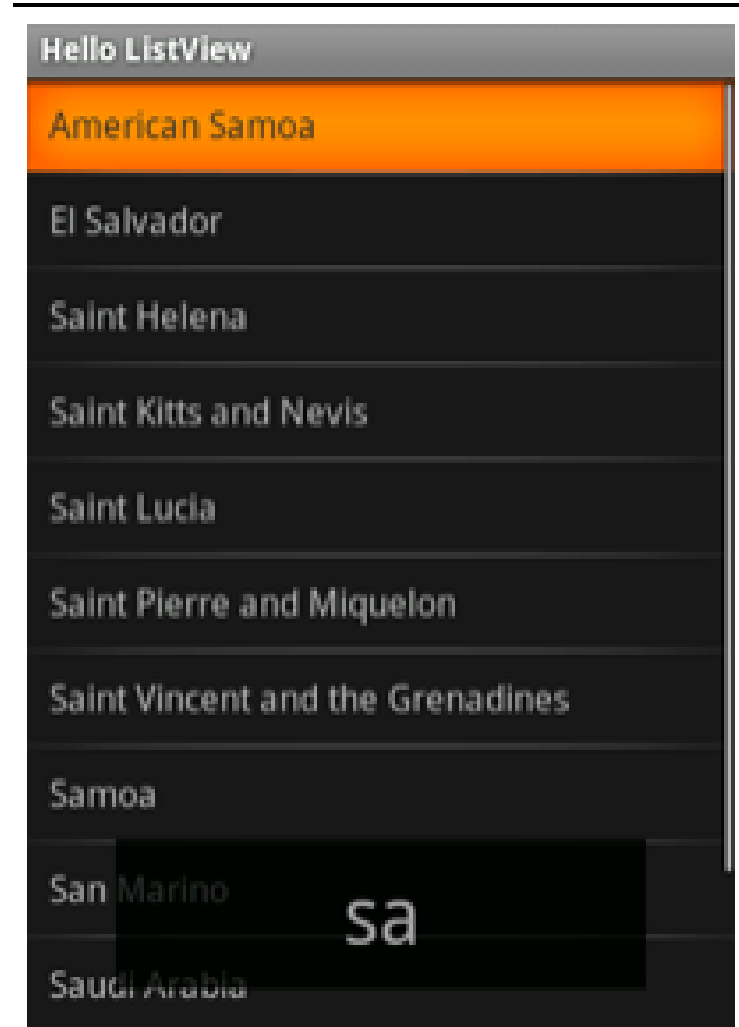
Other Layouts - TabLayout

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



Other Layouts - ListView

- Creates a list of scrollable items
- Items added via a ListAdapter as in GridView
- May see this later



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