Computer Science E-76
Building Mobile Applications

Lecture 3: [Android] The SDK, Activities, and Views
February 13, 2012

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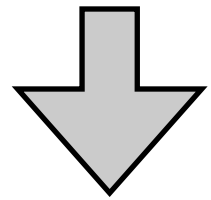
http://developer.android.com

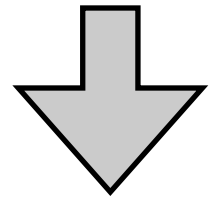
Android | SDK and NDK

.java (code)



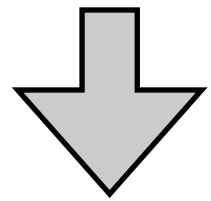
javac (compiler)

.class (bytecode)



dx (converter)

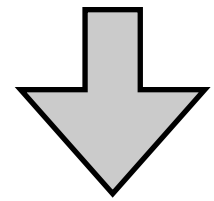
.dex (Dalvik executable)



zip, **aapt**, etc. (archiver)

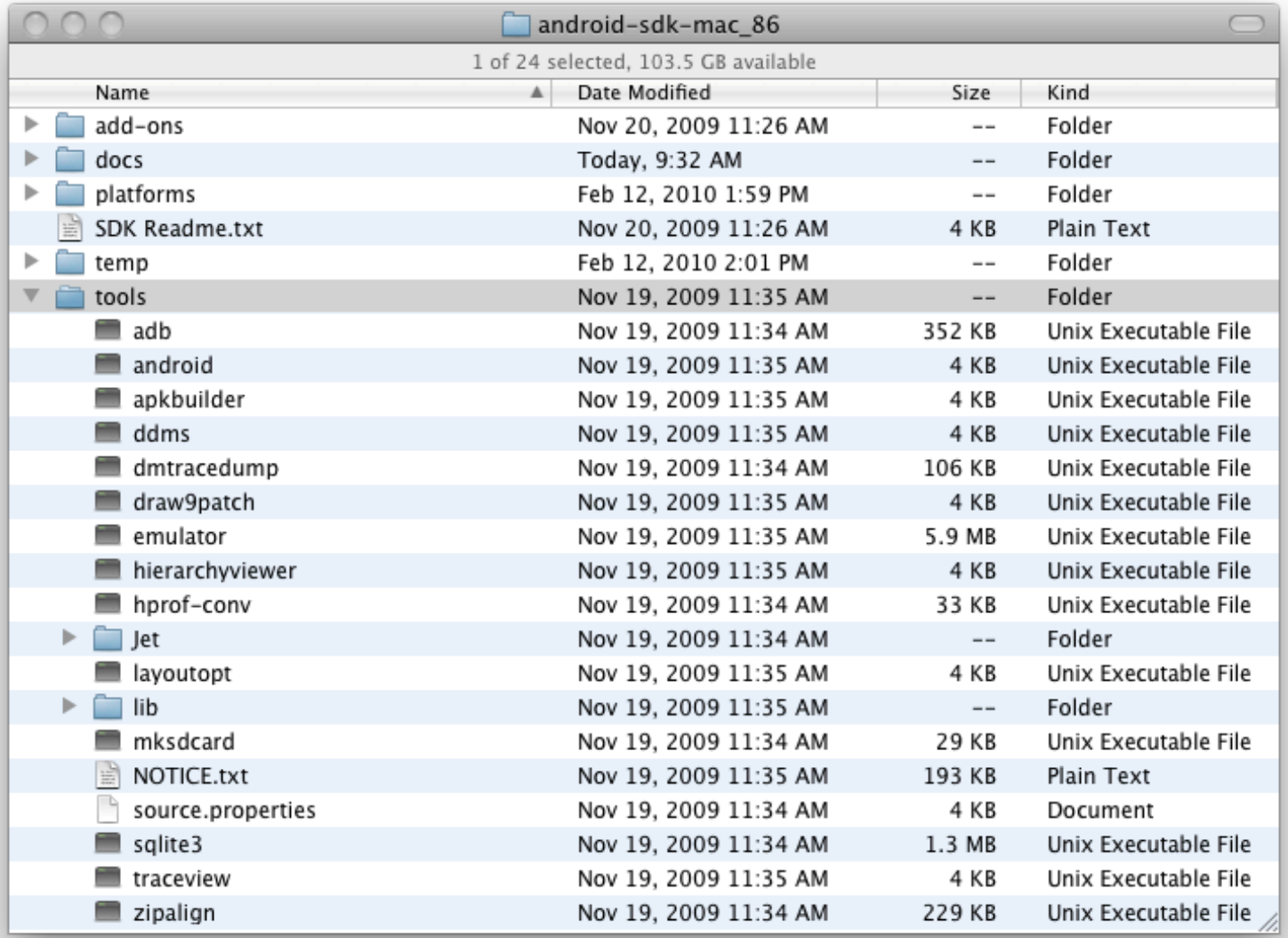
.apk (Android Package)

.java (code)



Eclipse (IDE)

.apk (Android Package)


android-sdk-mac_86
1 of 24 selected, 103.5 GB available
Name
Date Modified
Size
Kind
add-ons Nov 20, 2009 11:26 AM -- Folder
docs Today, 9:32 AM -- Folder
platforms Feb 12, 2010 1:59 PM -- Folder
SDK Readme.txt Nov 20, 2009 11:26 AM 4 KB Plain Text
temp Feb 12, 2010 2:01 PM -- Folder
tools Nov 19, 2009 11:35 AM -- Folder
adb Nov 19, 2009 11:34 AM 352 KB Unix Executable File
android Nov 19, 2009 11:35 AM 4 KB Unix Executable File
apkbuilder Nov 19, 2009 11:35 AM 4 KB Unix Executable File
ddms Nov 19, 2009 11:35 AM 4 KB Unix Executable File
dmtracedump Nov 19, 2009 11:34 AM 106 KB Unix Executable File
draw9patch Nov 19, 2009 11:35 AM 4 KB Unix Executable File
emulator Nov 19, 2009 11:35 AM 5.9 MB Unix Executable File
hierarchyviewer Nov 19, 2009 11:35 AM 4 KB Unix Executable File
hprof-conv Nov 19, 2009 11:34 AM 33 KB Unix Executable File
Jet Nov 19, 2009 11:34 AM -- Folder
layoutopt Nov 19, 2009 11:35 AM 4 KB Unix Executable File
lib Nov 19, 2009 11:35 AM -- Folder
mksdcard Nov 19, 2009 11:34 AM 29 KB Unix Executable File
NOTICE.txt Nov 19, 2009 11:35 AM 193 KB Plain Text
source.properties Nov 19, 2009 11:34 AM 4 KB Document
sqlite3 Nov 19, 2009 11:34 AM 1.3 MB Unix Executable File
traceview Nov 19, 2009 11:35 AM 4 KB Unix Executable File
zipalign Nov 19, 2009 11:34 AM 229 KB Unix Executable File

SDK

android - Android SDK manager. Create/ delete/view Android Virtual Devices and update the SDK with new platforms/add-ons.

ddms - Dalvik Debug Monitor Server. Screen caps, thread/heap info, process/state info, ..

SDK | Tools

emulator - The application responsible for opening AVDs instances.

sqlite3 - manage SQLite databases.

SDK | Tools

- No support for placing or receiving actual phone calls. You can simulate phone calls (placed and received) through the emulator console, however.
- No support for USB connections
- No support for camera/video capture (input).
- No support for device-attached headphones
- No support for determining connected state
- No support for determining battery charge level and AC charging state
- No support for determining SD card insert/eject
- No support for Bluetooth

 # adb - Android Debug Bridge. A client/ server program that manages the state of an emulated device.

 # aapt - Android Asset Packaging Tool.

 # dx - The converter; converts .class files to Android bytecode.

SDK | Platform Tools

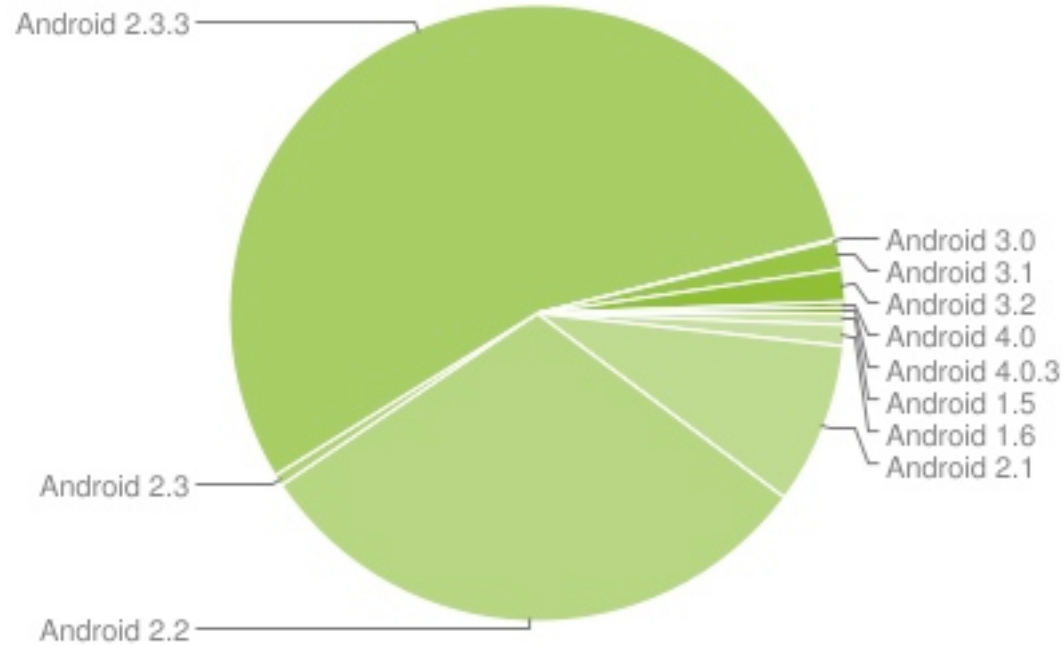
`telnet localhost <console-port>`

console-port: 5554+2n
where n is the emulator number (0th, 1st, 2nd)

Use commands like:

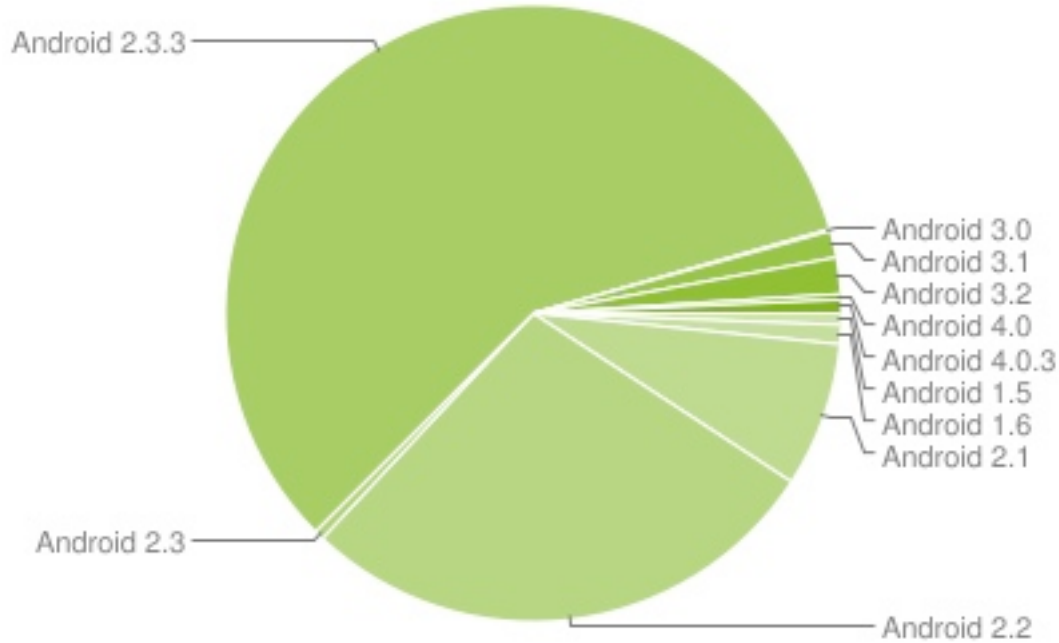
`redir, power, geo, network, gsm, sms`

SDK | Emulator Console



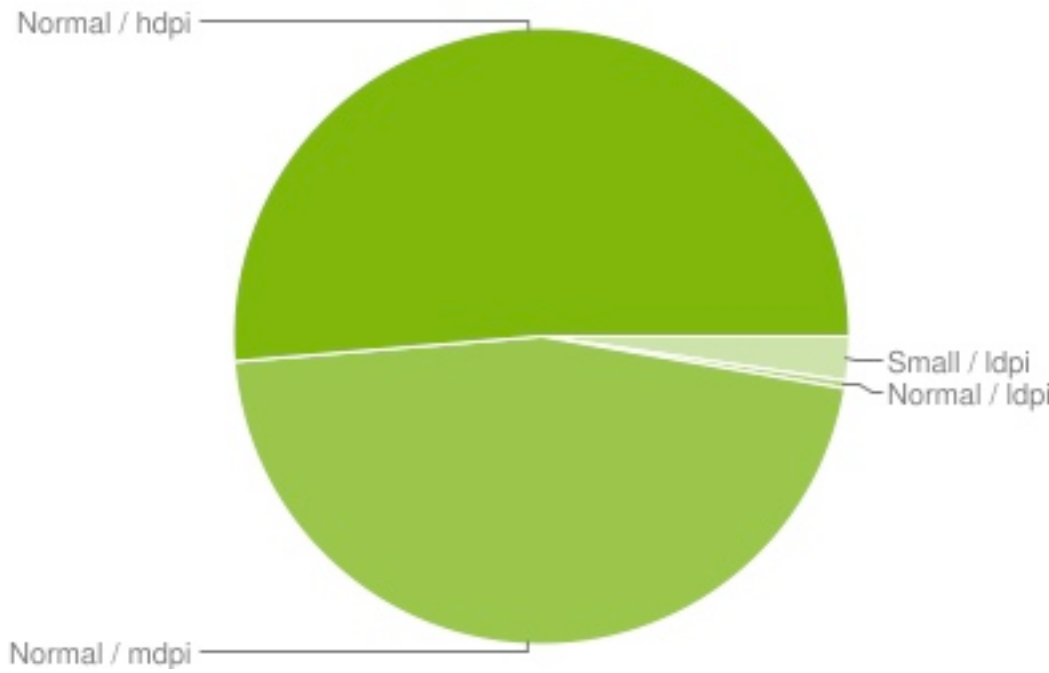
Data as of 1/3/2012. From: http://developer.android.com/resources/dashboard/platform-versions.html

SDK | Platform Versions

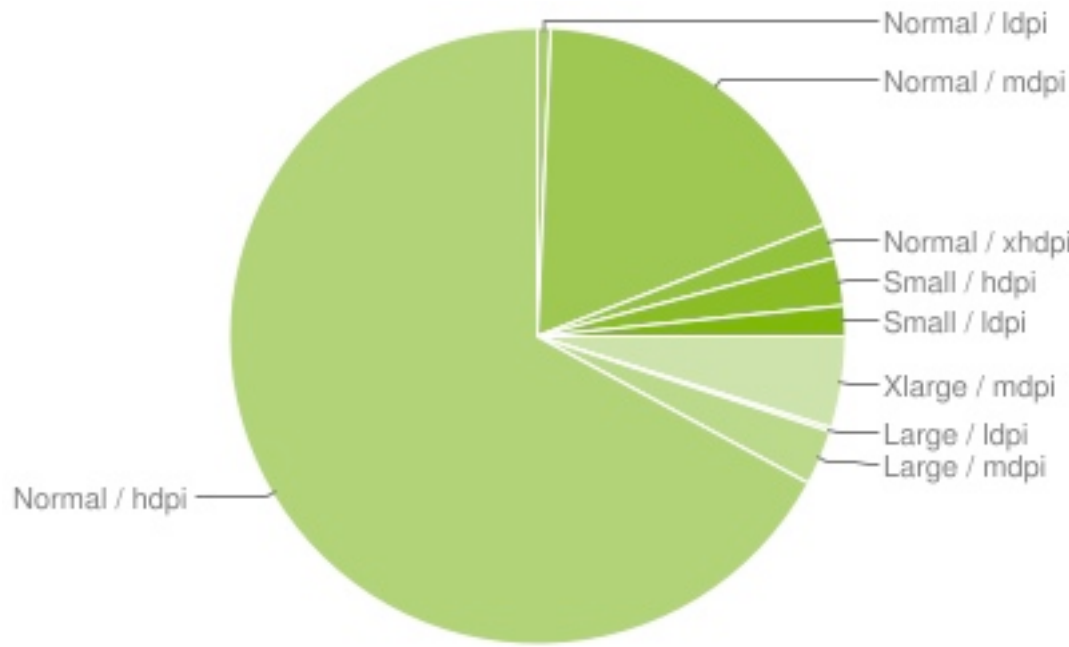


Data as of 2/1/2012. From: http://developer.android.com/resources/dashboard/platform-versions.html

SDK | Platform Versions



Data collected during 2 weeks in Jul 2010. From: http://developer.android.com/resources/dashboard/screens.html



Data collected over 1 week ending on 2/1/2012. From: http://developer.android.com/resources/dashboard/screens.html

```
package com.android.helloworld;

import android.app.Activity;
import android.os.Bundle;
import android.widget.TextView;

public class HelloWorld extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        TextView tv = new TextView(this);
        tv.setText("Hello, World!");
        setContentView(tv);
    }
}
```

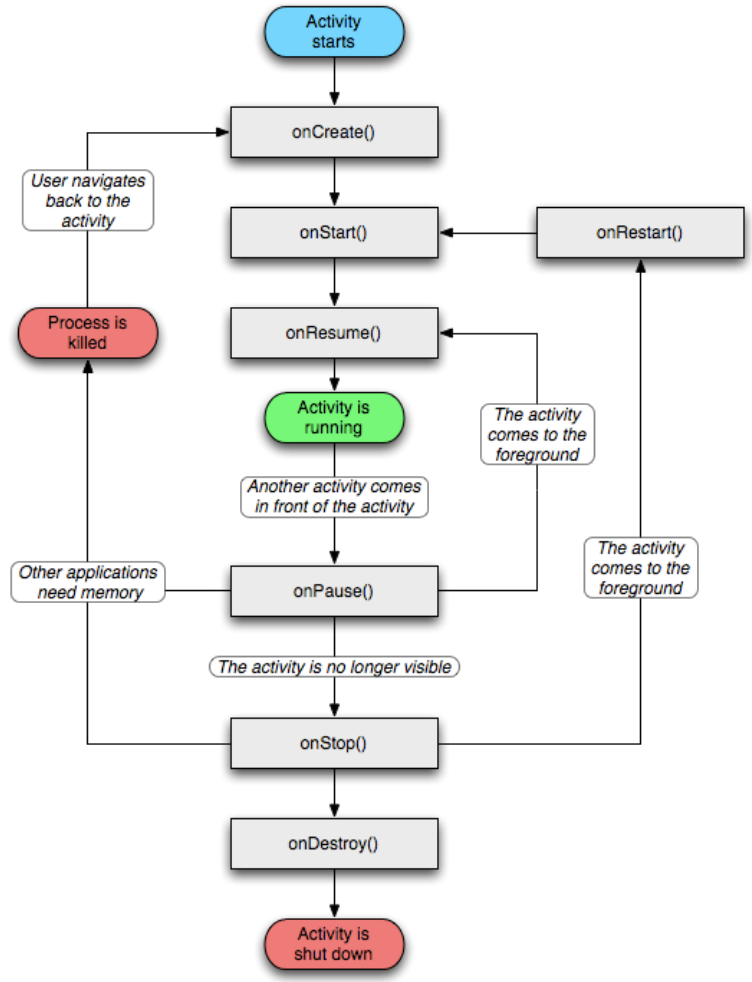
Code adapted from: http://developer.android.com/resources/tutorials/hello-world.html

Hello, World!

```
public class Activity extends ApplicationContext {
    protected void onCreate(Bundle savedInstanceState);

    protected void onStart();

    protected void onRestart();

    protected void onResume();

    protected void onPause();

    protected void onStop();

    protected void onDestroy();
}
```

http://developer.android.com/reference/android/app/Activity.html

Activity Methods



http://developer.android.com/reference/android/app/Activity.html

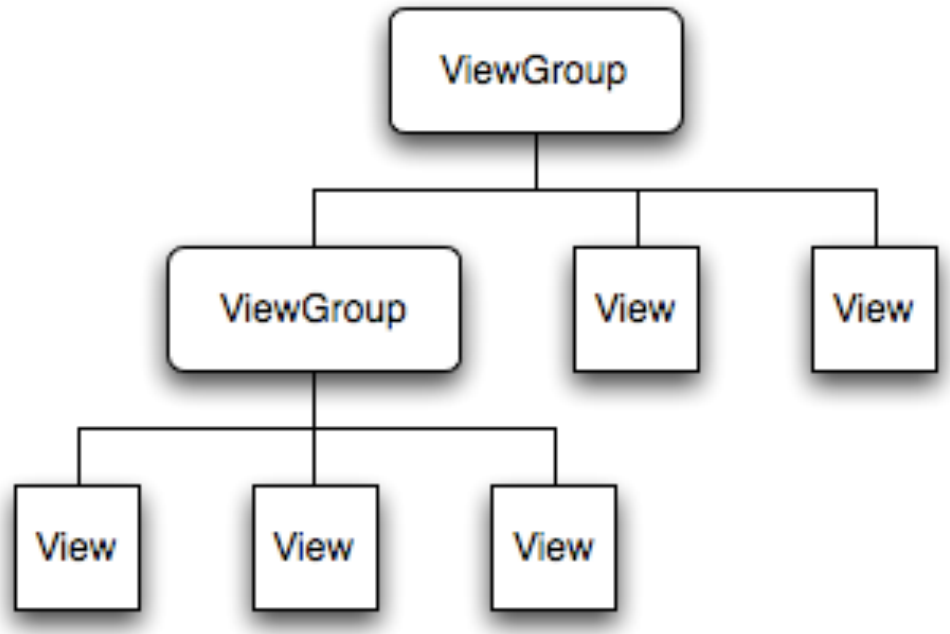
Activity Lifecycle

```
TextView tv = new TextView(this);
tv.setText("Hello, Android");
```

– or –

```
<?xml version="1.0" encoding="utf-8"?>
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="fill_parent"
  android:layout_height="fill_parent"
  android:text="@string/hello"/>
```

http://developer.android.com/resources/tutorials/hello-world.html



http://developer.android.com/guide/topics/ui/index.html

Views | Layouts

FrameLayout
Gallery
GridView
LinearLayout
ListView
RelativeLayout
ScrollView
Spinner
SurfaceView
TabHost
TableLayout
ViewFlipper
ViewSwitcher

More: http://developer.android.com/reference/android/widget/package-summary.html

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