

Mobile Development

Lecture 3: What is Android?

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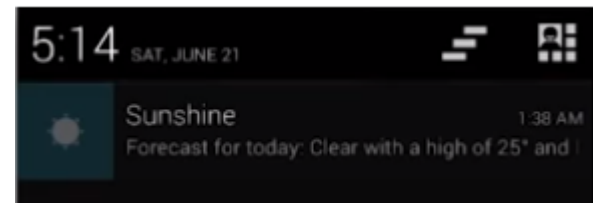
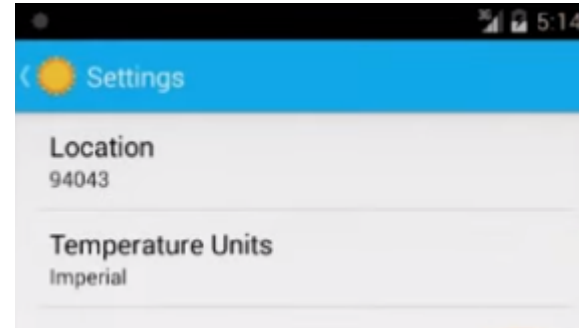
What we are going to do?



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Key Mobile Challenges?

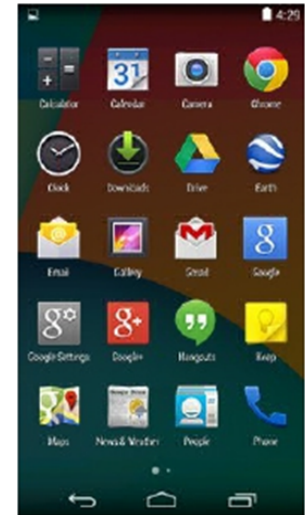
- Low processing power
- Limited RAM
- Low bandwidth, high latency data connection
- Impact on battery life
- Dealing with different screen sizes and orientations

What is Android?

- mobile operating system maintained by **Google**
 - originally purchased from Android, Inc. in 2005
- runs on phones, tablets, watches, TVs, ...
- based on **Java** (dev language) and **Linux** (kernel)

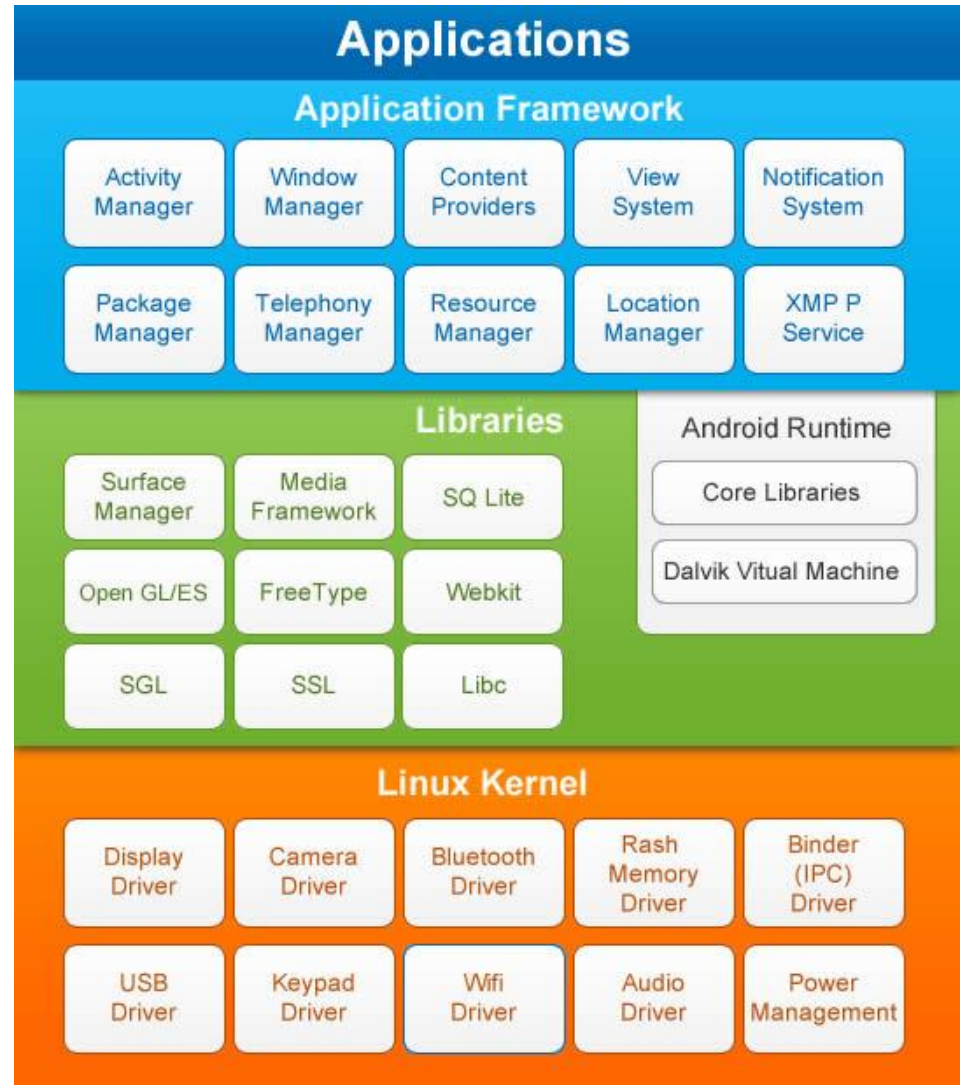
- the #1 mobile OS worldwide
 - and now #1 overall OS worldwide!
- has over 1 million apps published in Play Store

- code is released as open source (periodically)
 - easier to customize, license, pirate, etc. than iOS



Android Architecture

- Android OS provides libraries for many system features like contacts, phone dialing, notifications, camera, audio, input/output, ...
- ◆ Android Java code is compiled into a special Dalvik binary format



Android Version History

API Level 1



Angel Cake
Android 1.0



Battenberg
Android 1.1



Cupcake
Android 1.5



Donut
Android 1.6



Eclair
Android 2.02.1



Froyo
Android 2.2



Gingerbread
Android 2.3

API Level 8

ANDROID VERSIONS



Honeycomb
Android 3.0



Ice Cream Sandwich
Android 4.0



Jelly Bean
Android 4.1



KitKat
Android 4.4



Lollipop
Android 5.0



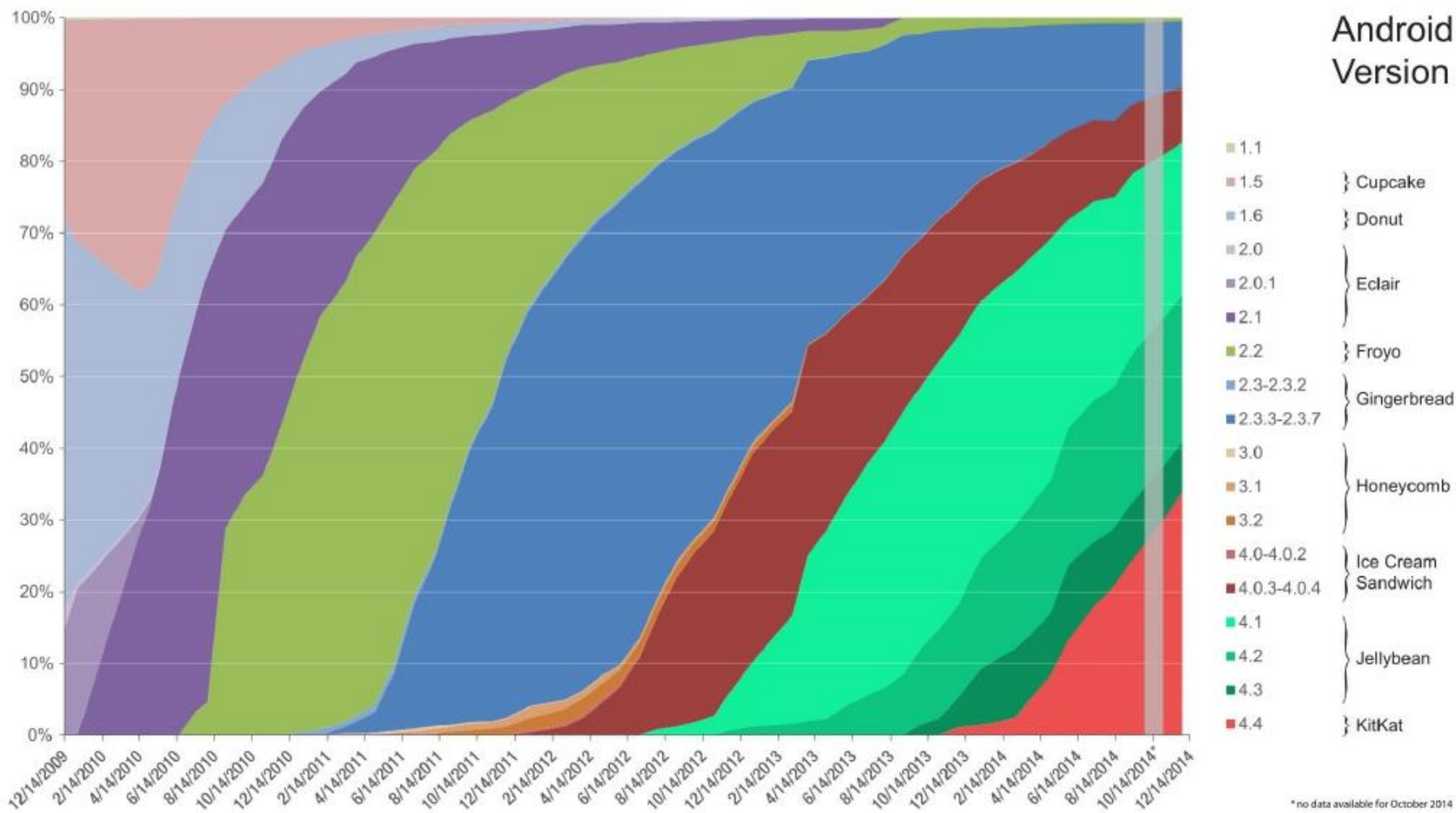
Marshmallow
Android 6.0

API Level 19,20

API Level 21

API Level 23

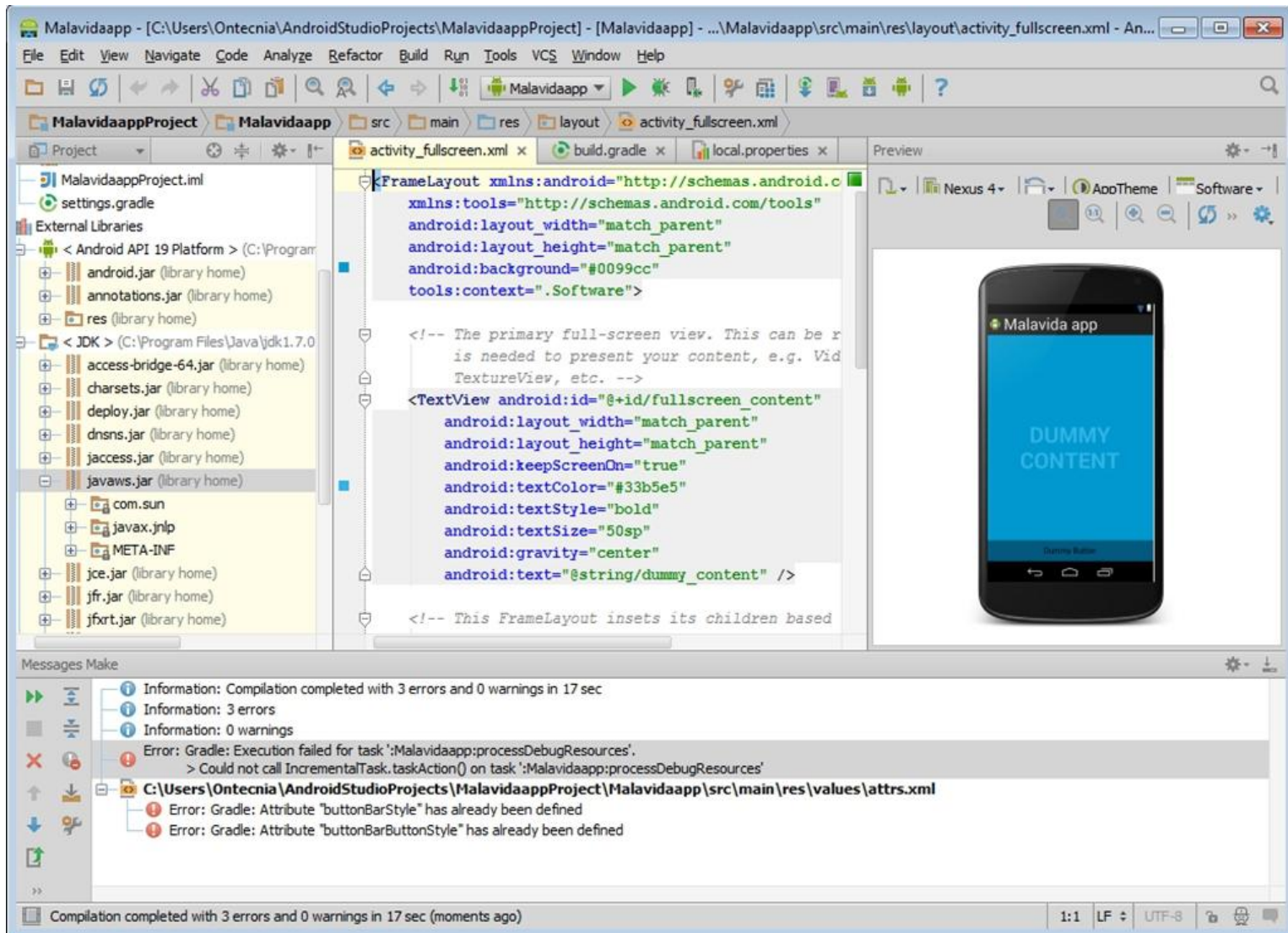
Android Version Distribution



Android Program Components

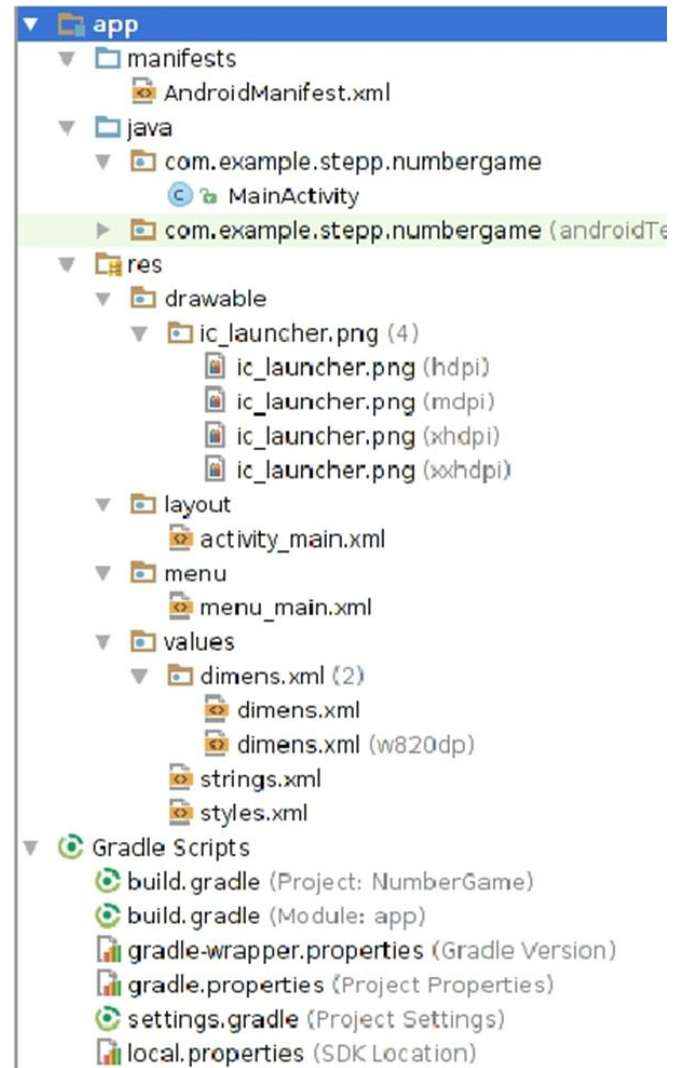
- Activity (Created in application manifest)
 - ◆ User visible window
- Service
 - ◆ Background service (no UI)
- Broadcast Receiver:
 - ◆ Receiving broadcasts from apps and system services
- *Content Provider*:
 - ◆ Provide contents and data to apps

Android Studio



Project Structure

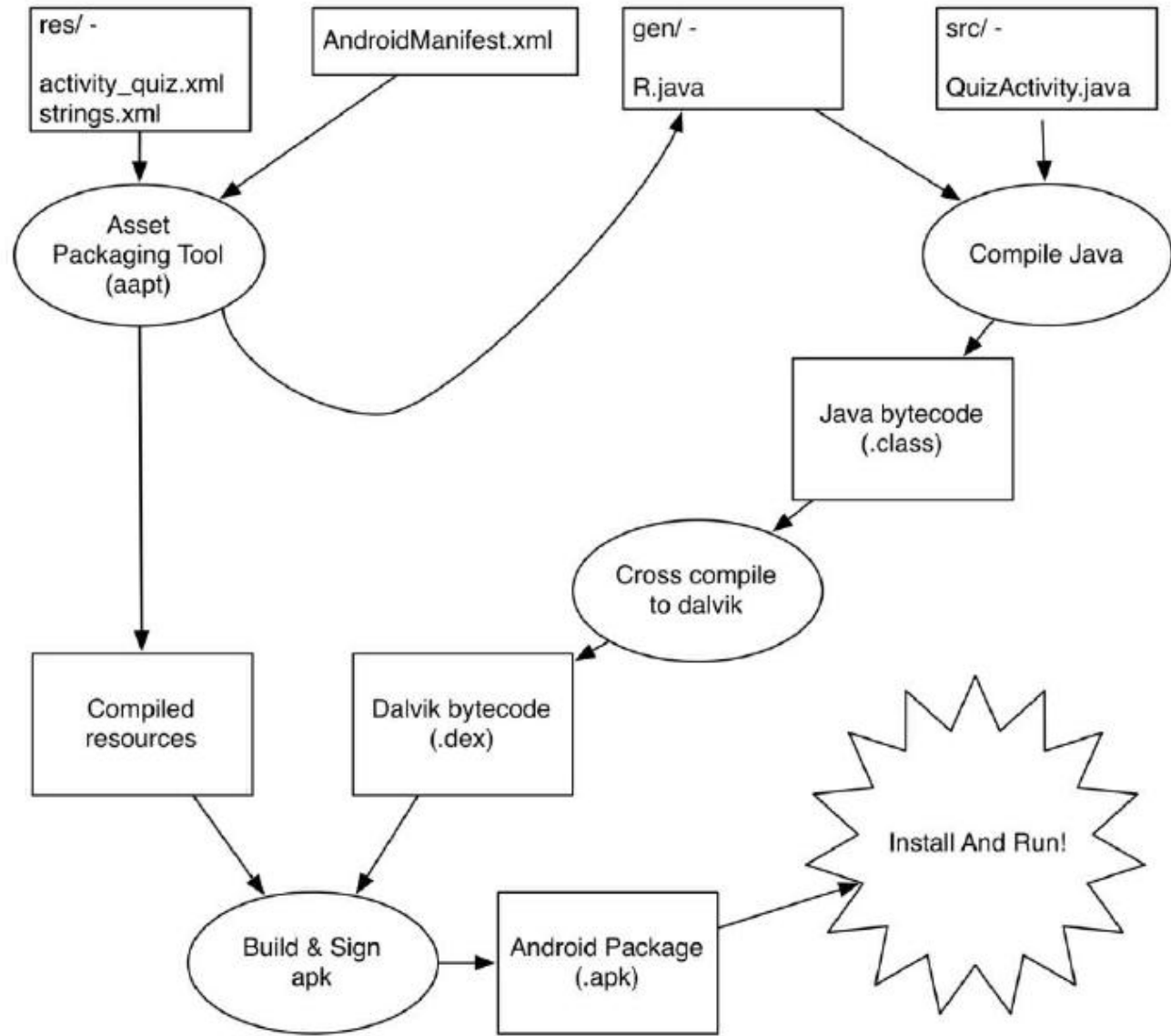
- **AndroidManifest.xml**
 - overall project config and settings
- **src/java/...**
 - source code for your Java classes
- **res/...** = resource files (*many are XML*)
 - drawable/ = images
 - layout/ = descriptions of GUI layout
 - menu/ = overall app menu options
 - values/ = constant values and arrays
 - strings = localization data
 - styles = general appearance styling
- **Gradle**
 - a build/compile management system
 - **build.gradle** = main build config file



What is Gradle?

- Gradle is a sophisticated build system that lets you use a simple, declarative DSL to configure the build process of your app.
 - ◆ www.gradle.org
- After building the project it uses the ADB to run the app on the emulator or actual device
- ADB → Android Debug Bridge

App Build Process



GenyMotion Emulator

