Lifecycle Management

Android

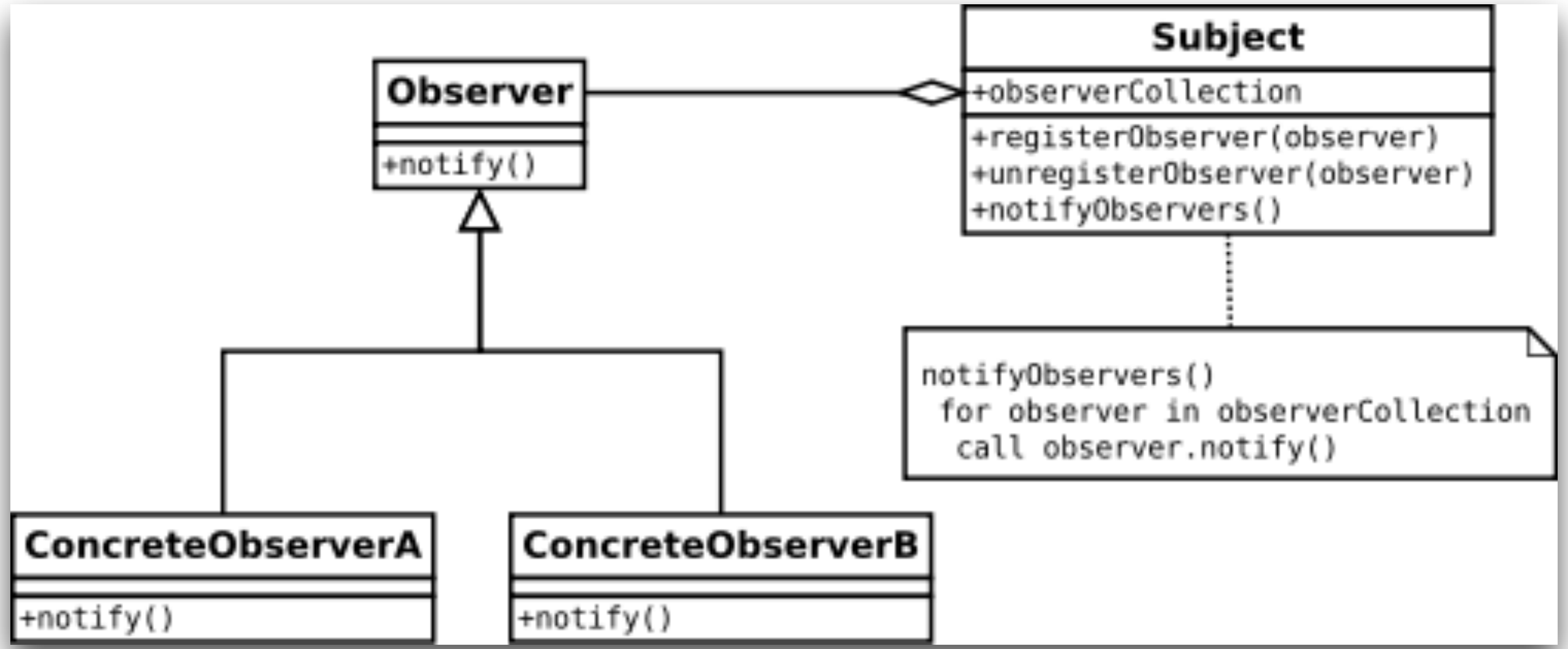
Mobile and Ubiquitous Games

ICS 163

Donald J. Patterson

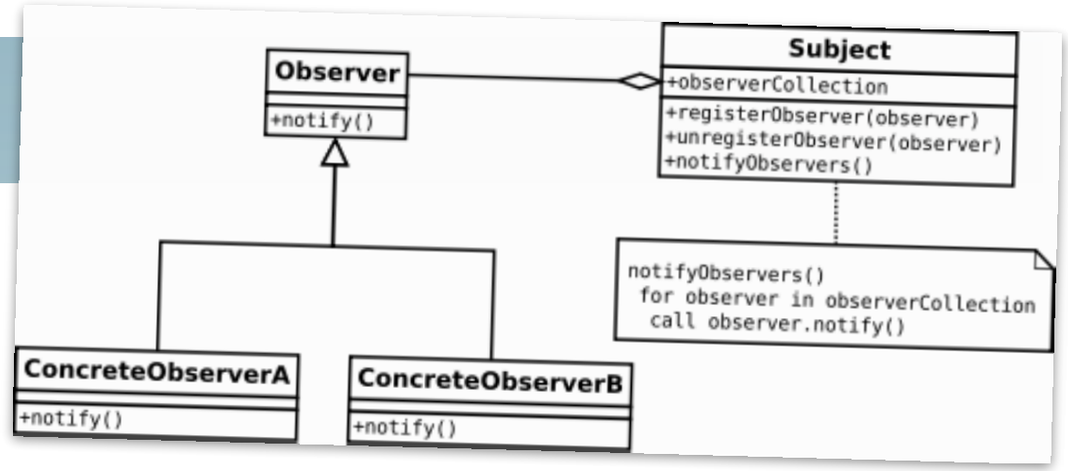
Android documentation

Callback



http://en.wikipedia.org/wiki/Observer_pattern

Activity Lifecycle

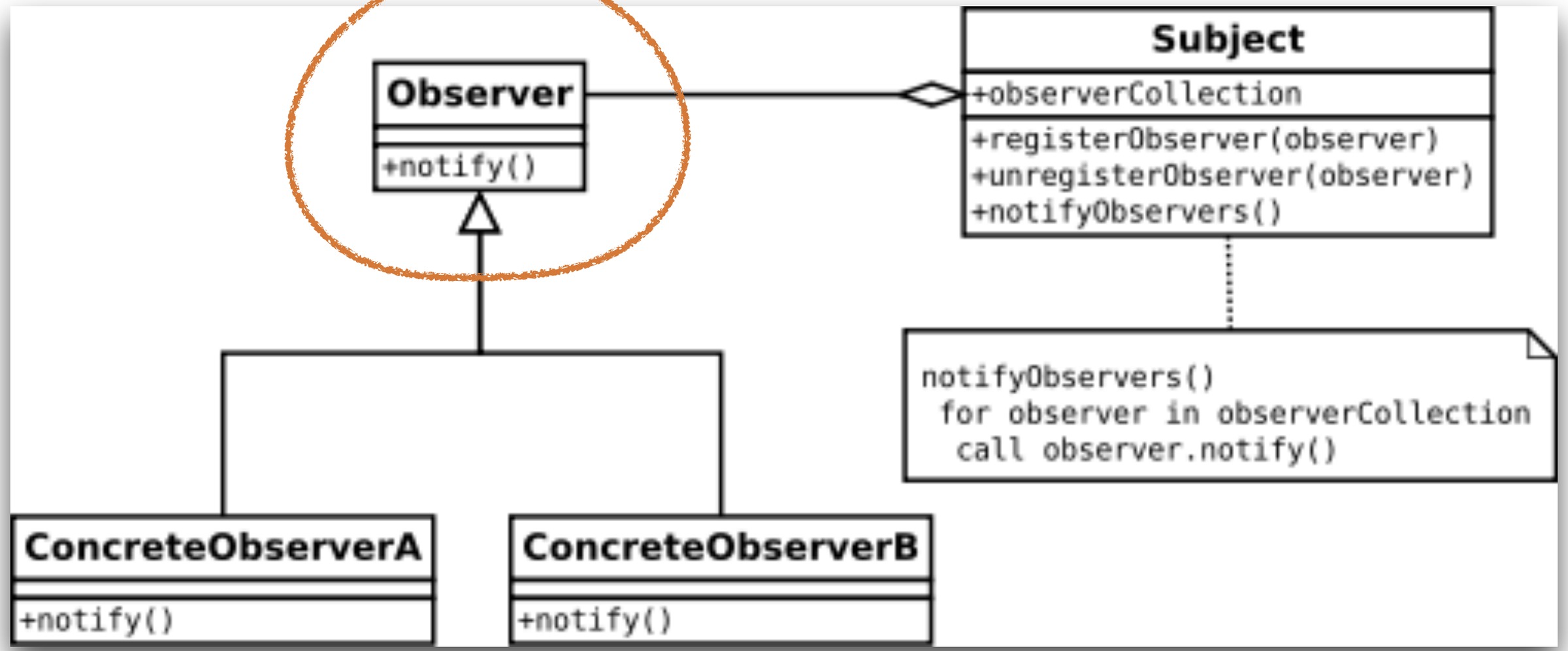


- Unlike traditional Java, Android does not use a "main" function
- It uses a sophisticated set of callbacks
- Each step of the callback corresponds to a step in the lifecycle of the app
- This is so that the phone can shut your app down when important things happen, like a phone calls arriving
- An implementation of the Activity class contains the callbacks
- "Activity" maps to "Observer"

http://developer.android.com/training/basics/activity-lifecycle/starting.html

Callback

Activity Class



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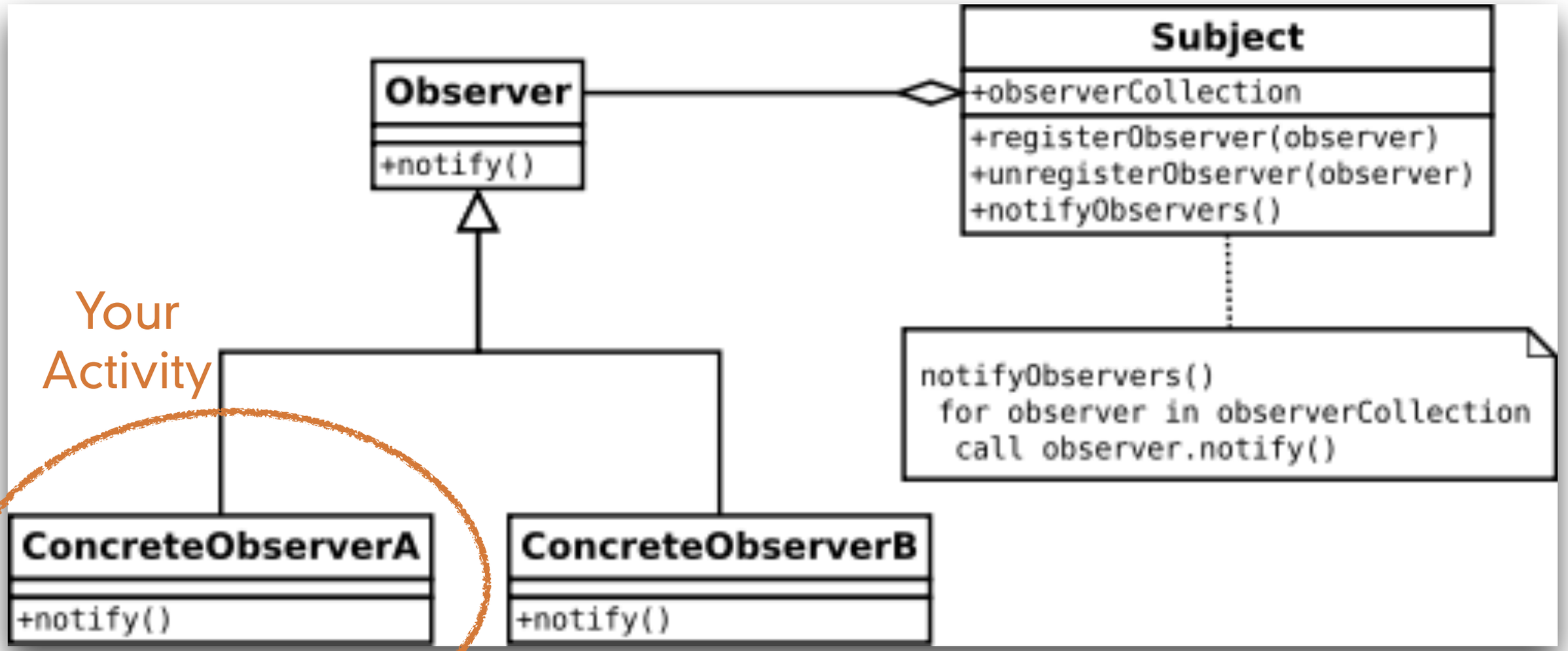
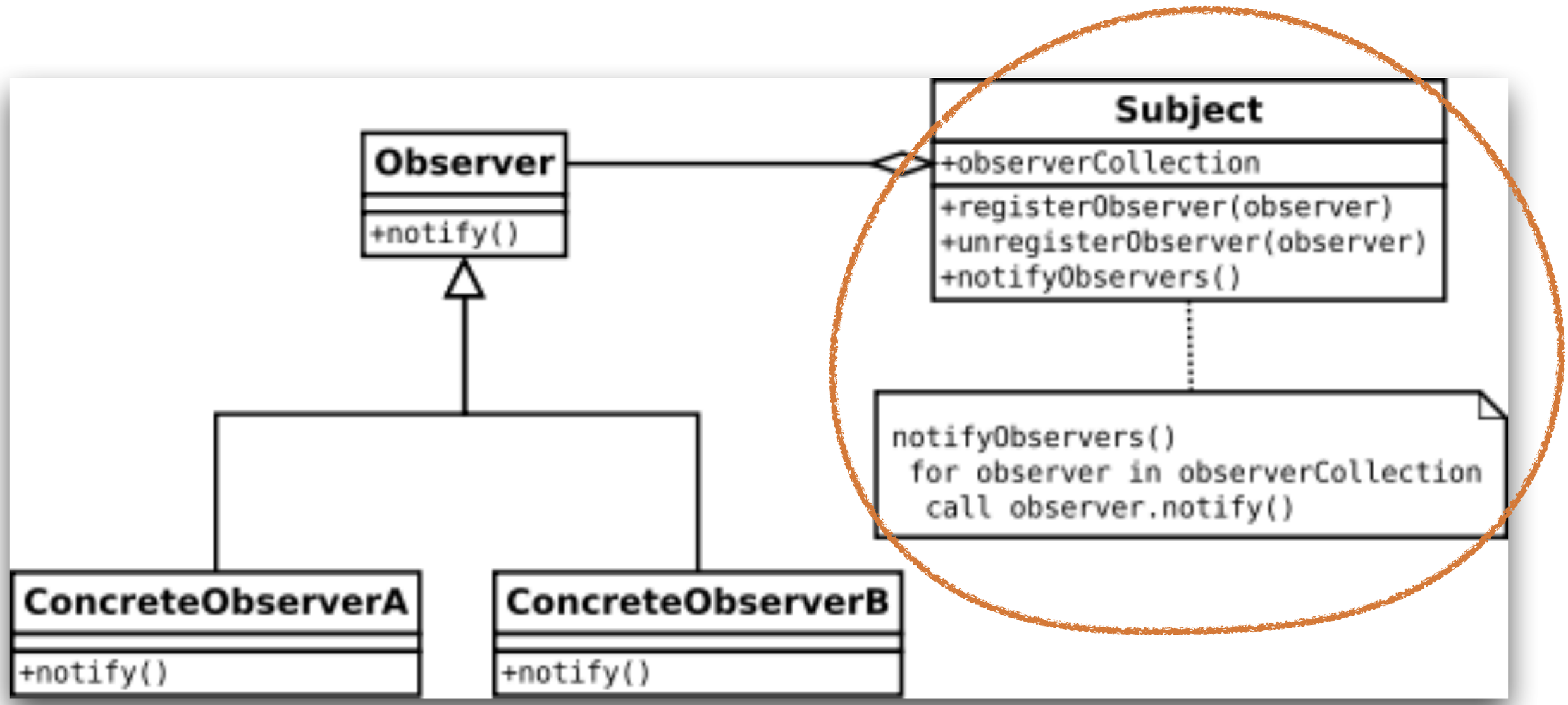


Your Activity

http://en.wikipedia.org/wiki/Observer_pattern

Callback

Android OS



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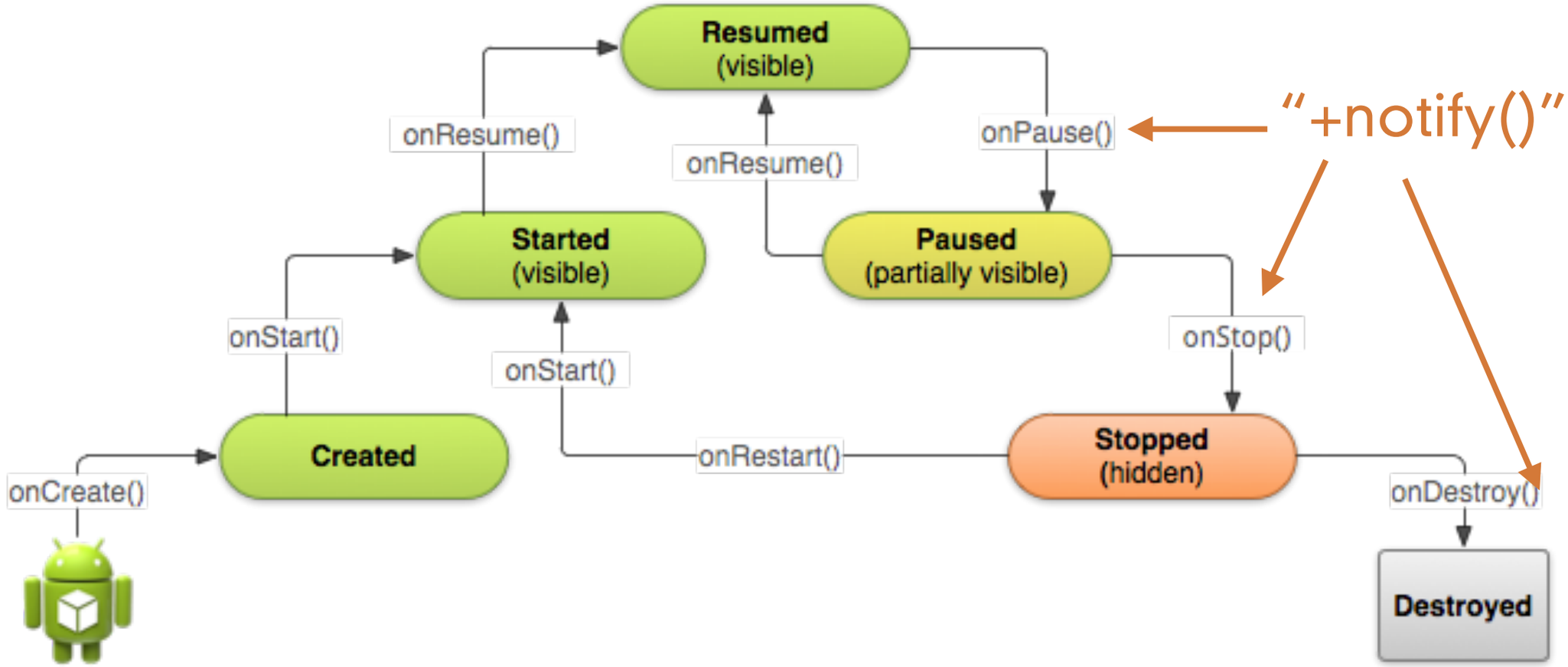
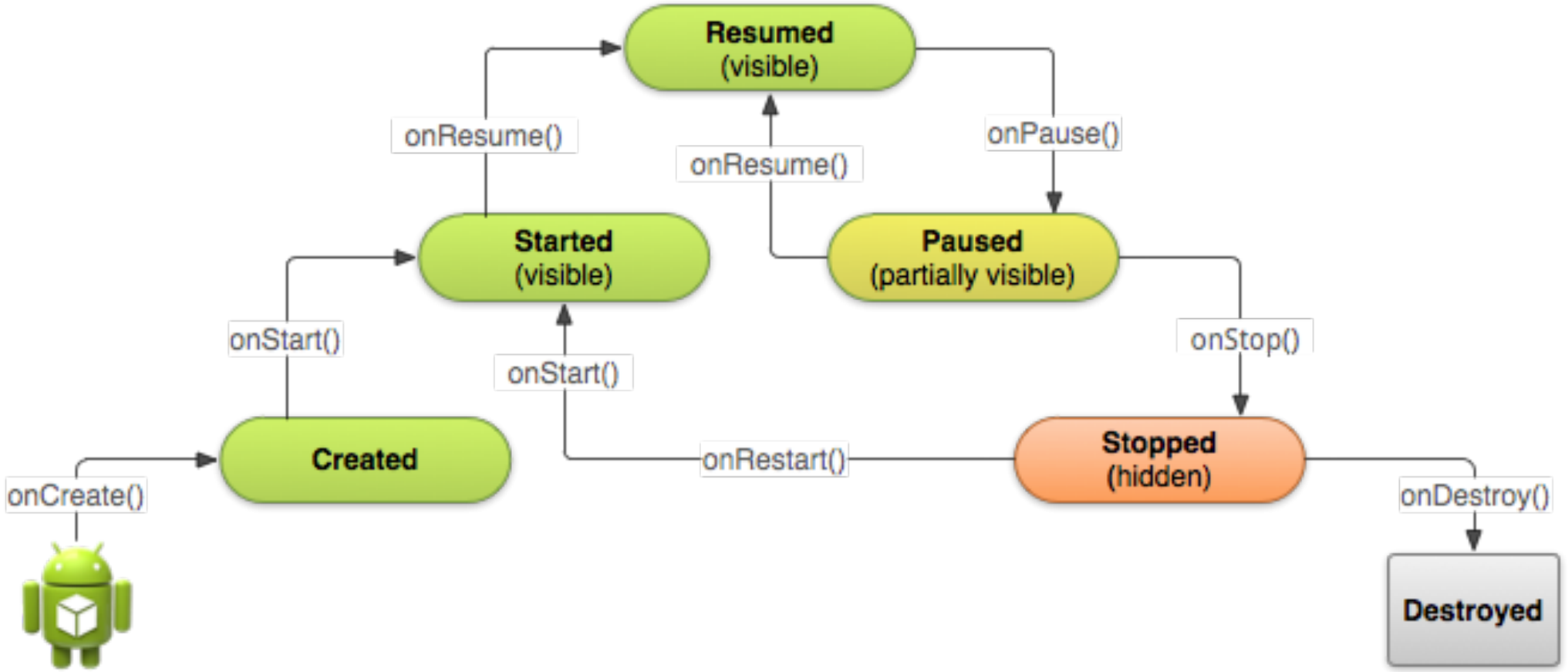
Activity Lifecycle



- Key loops
  - Entire Lifetime
    - onCreate()- onDestroy()

http://developer.android.com/training/basics/activity-lifecycle/starting.html

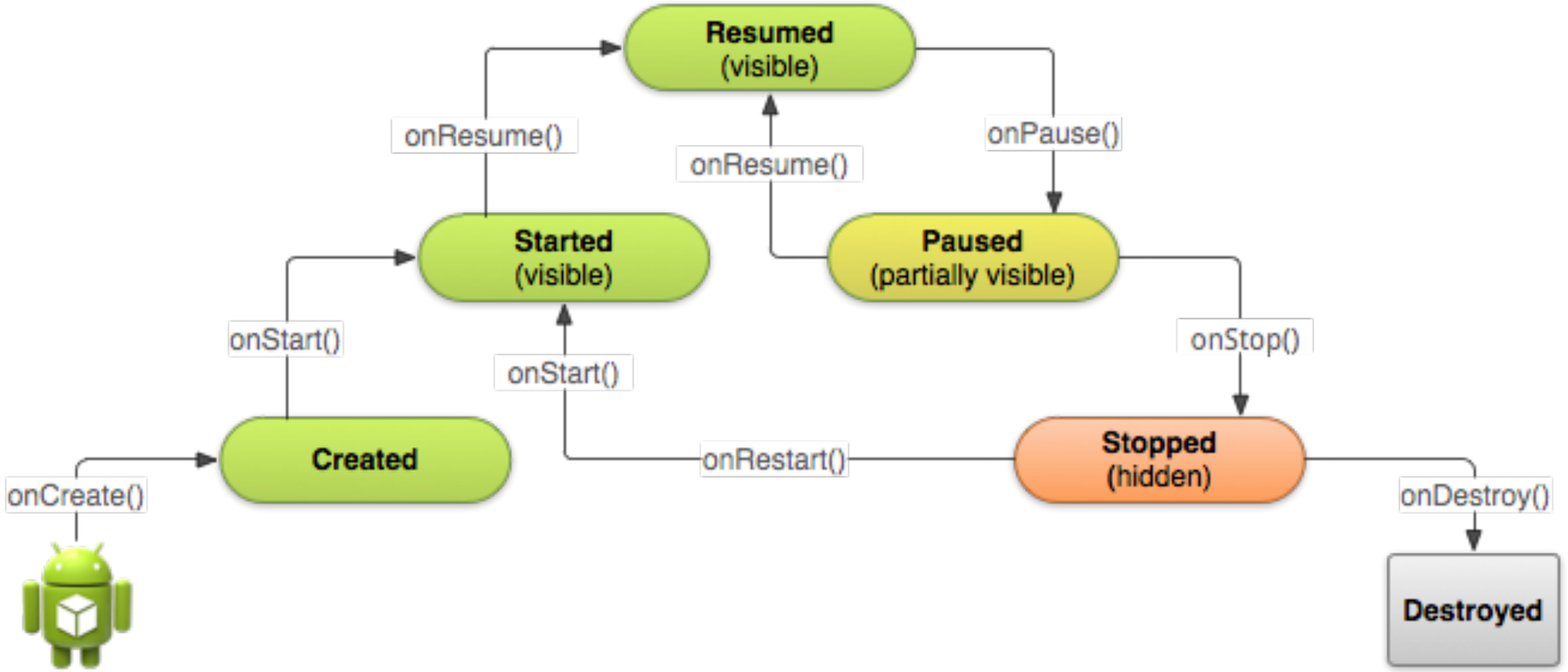
Activity Lifecycle



- Key loops
  - Visible Lifetime
    - onStart() - onStop()

http://developer.android.com/training/basics/activity-lifecycle/starting.html

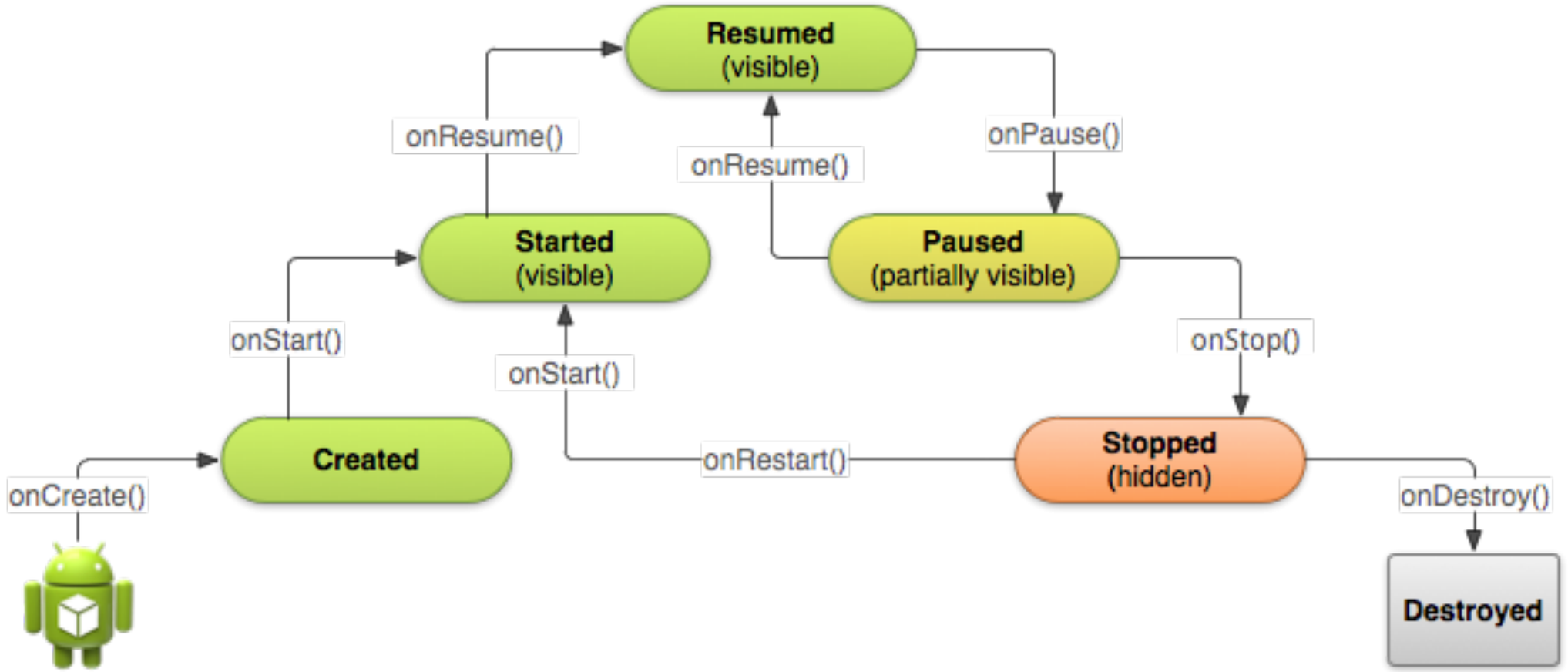
Activity Lifecycle



- Key loops
  - Foreground Lifetime
    - onResume() - onPause()

http://developer.android.com/training/basics/activity-lifecycle/starting.html

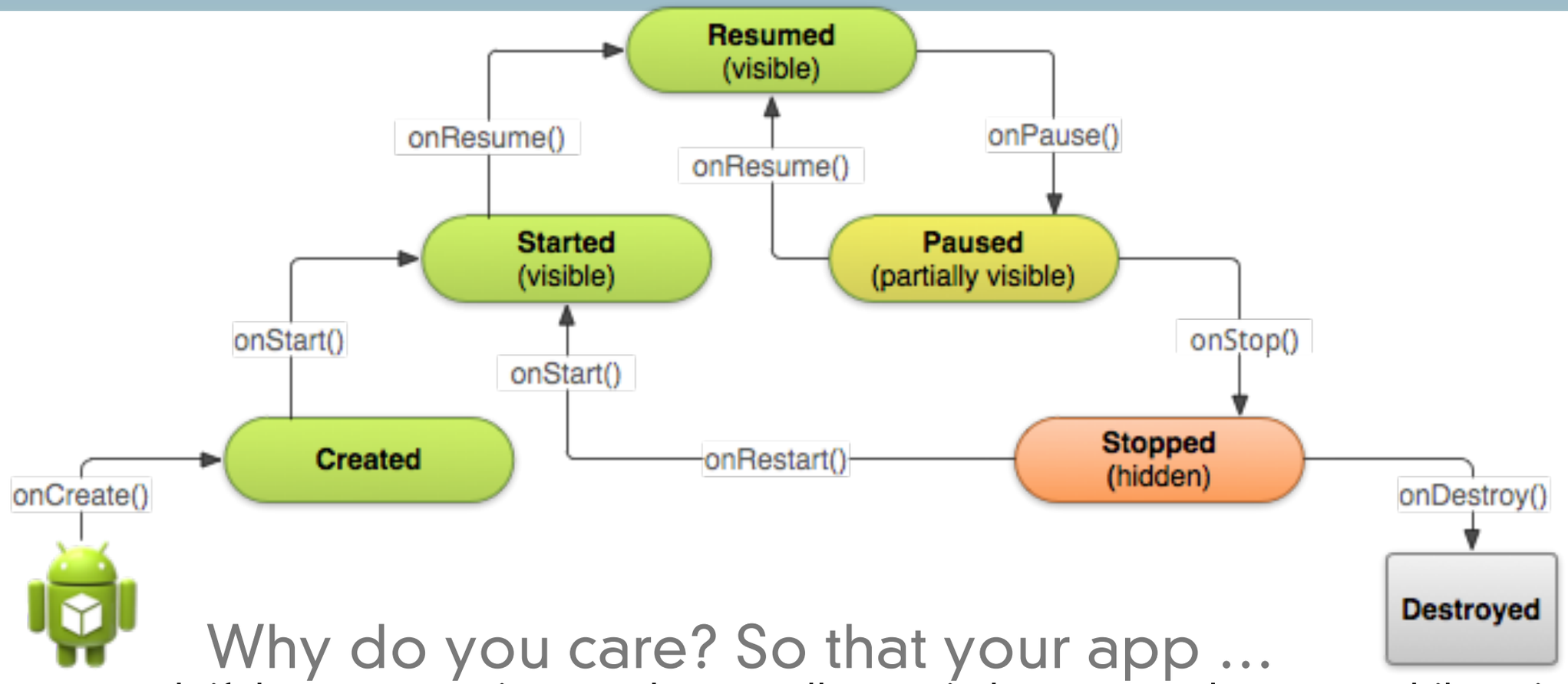
Activity Lifecycle



- onPause() may be followed by kill

http://developer.android.com/training/basics/activity-lifecycle/starting.html

Activity Lifecycle



Why do you care? So that your app ...

- Does not crash if the user receives a phone call or switches to another app while using your app.
- Does not consume valuable system resources when the user is not actively using it.
- Does not lose the user's progress if they leave your app and return to it at a later time.
- Does not crash or lose the user's progress when the screen rotates between landscape and portrait orientation.

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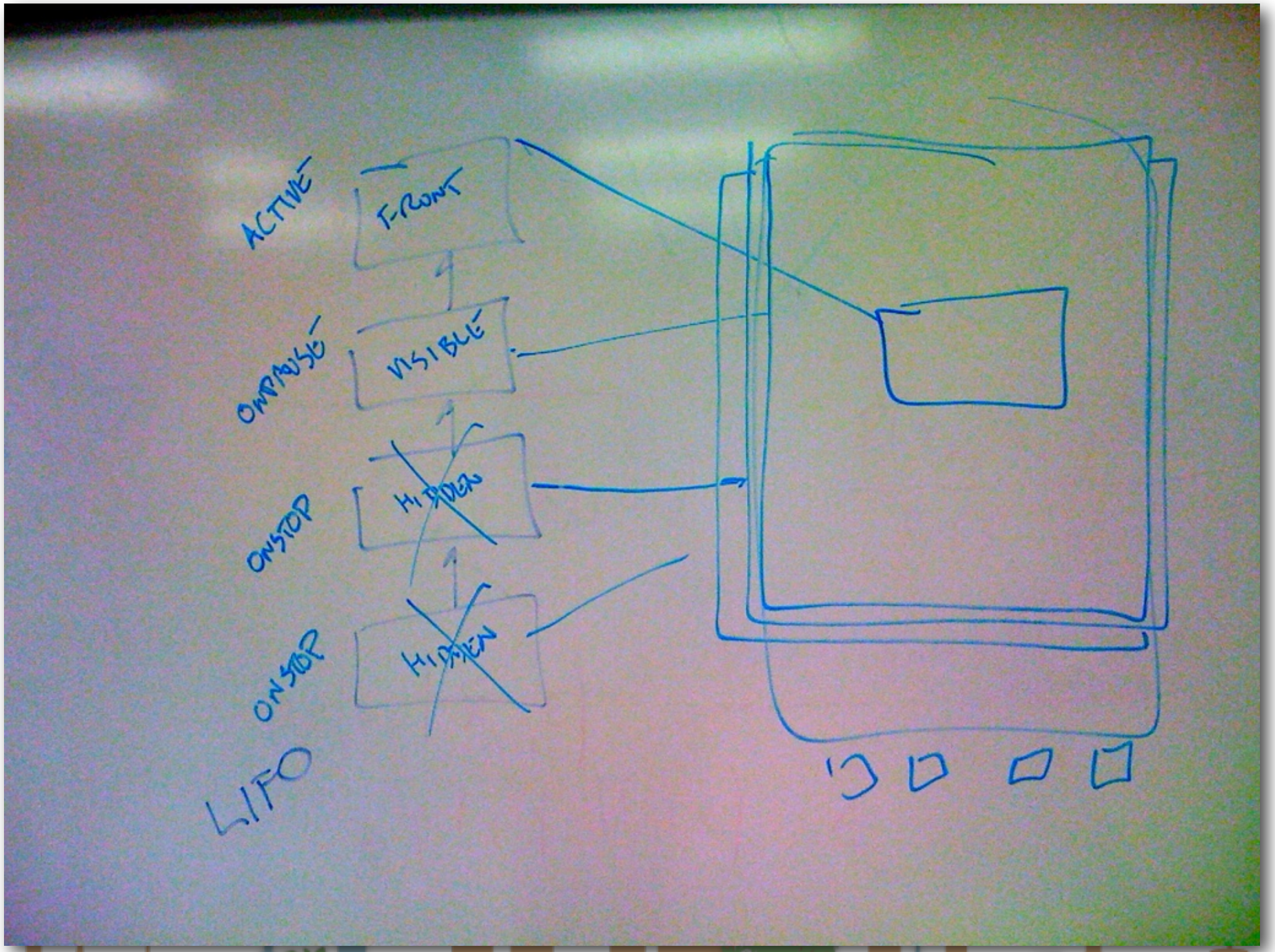
Activity Stack

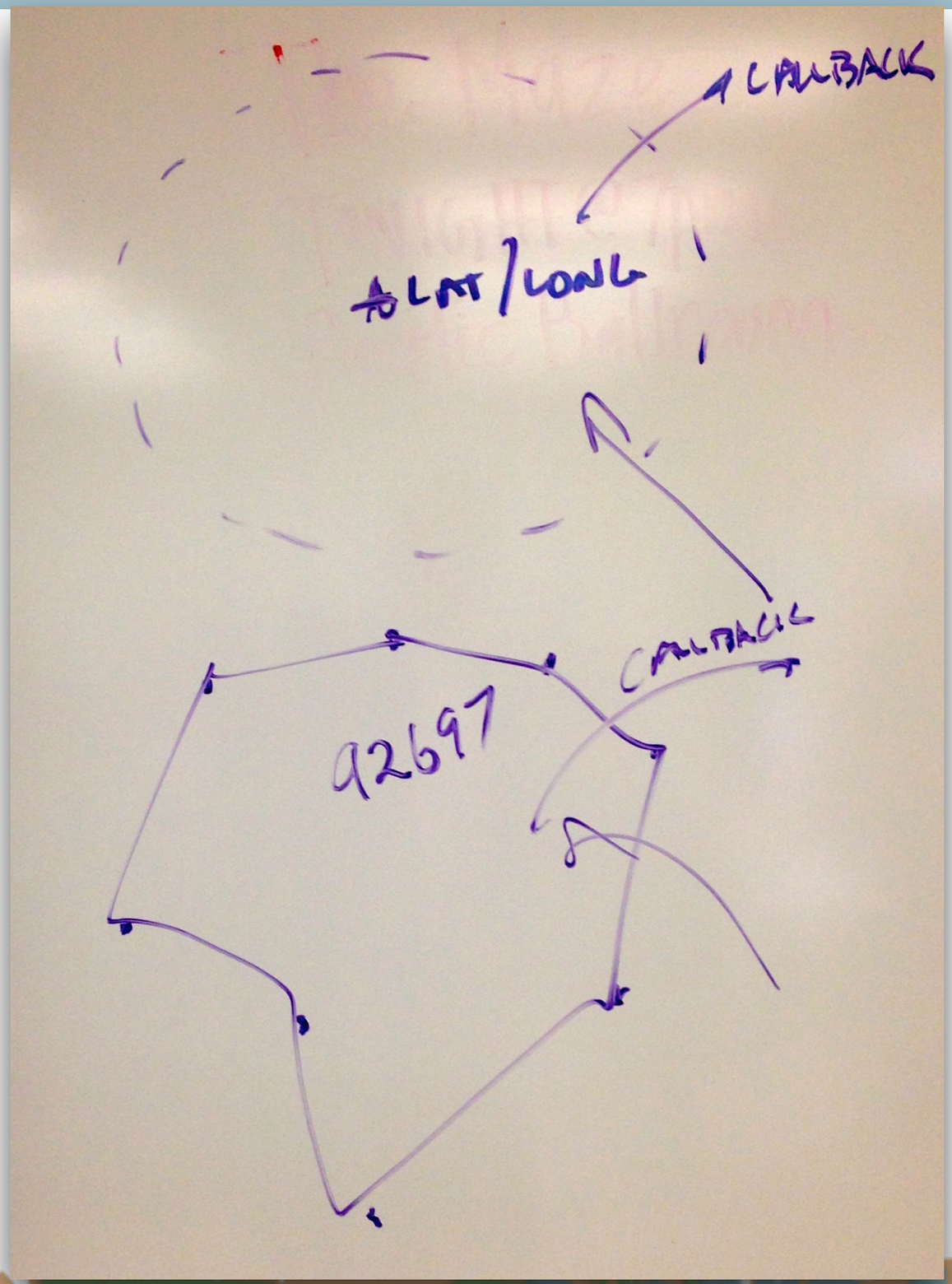


Working with Location

- Fused Location
  - Sensor fusion from a variety of different location sources
  - Asking for location based on high level concerns rather than technologies
- Geofencing
  - Setting up geographic triggers
- Activity Recognition

http://developer.android.com/training/basics/activity-lifecycle/starting.html

Geofencing



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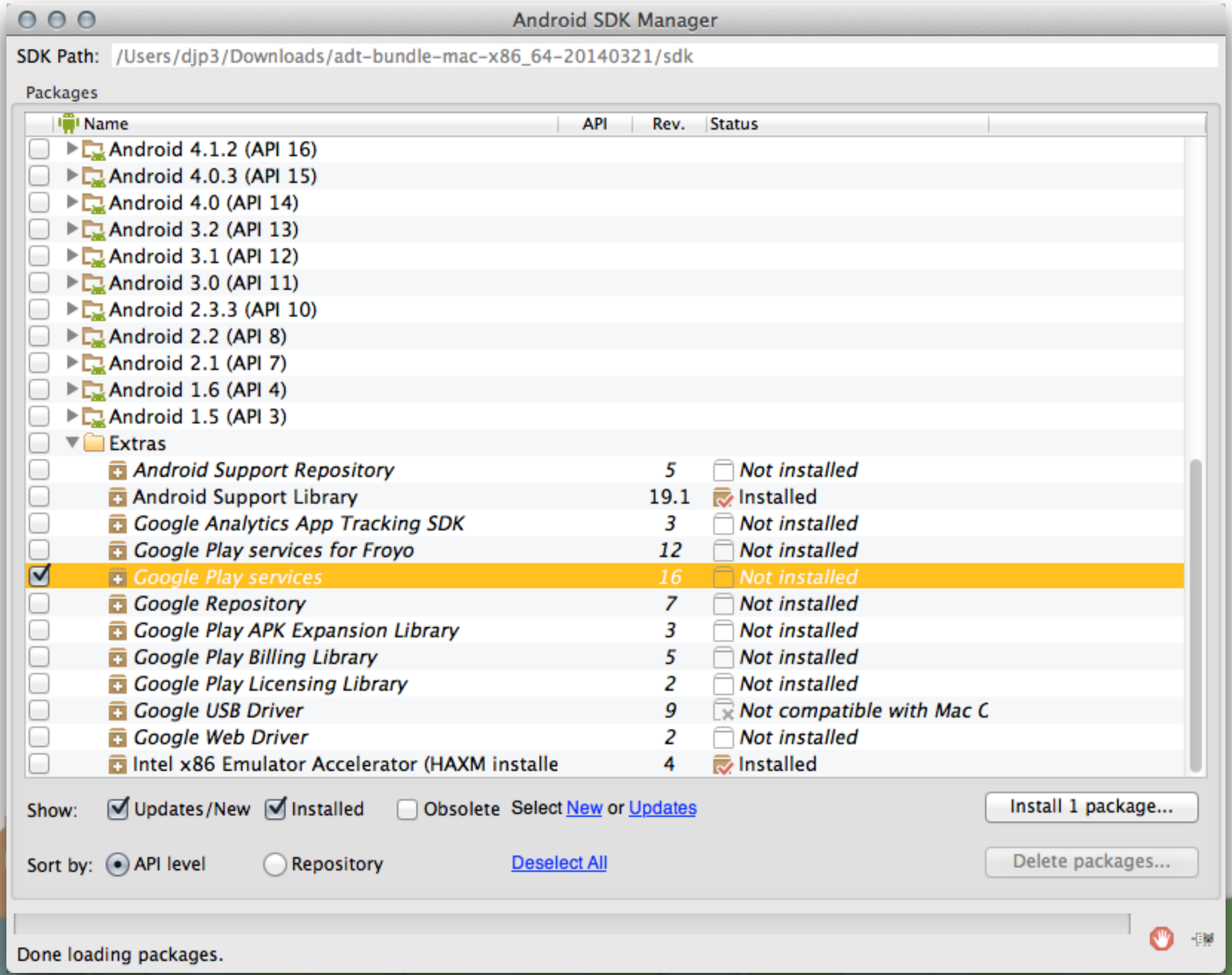

Working with Location

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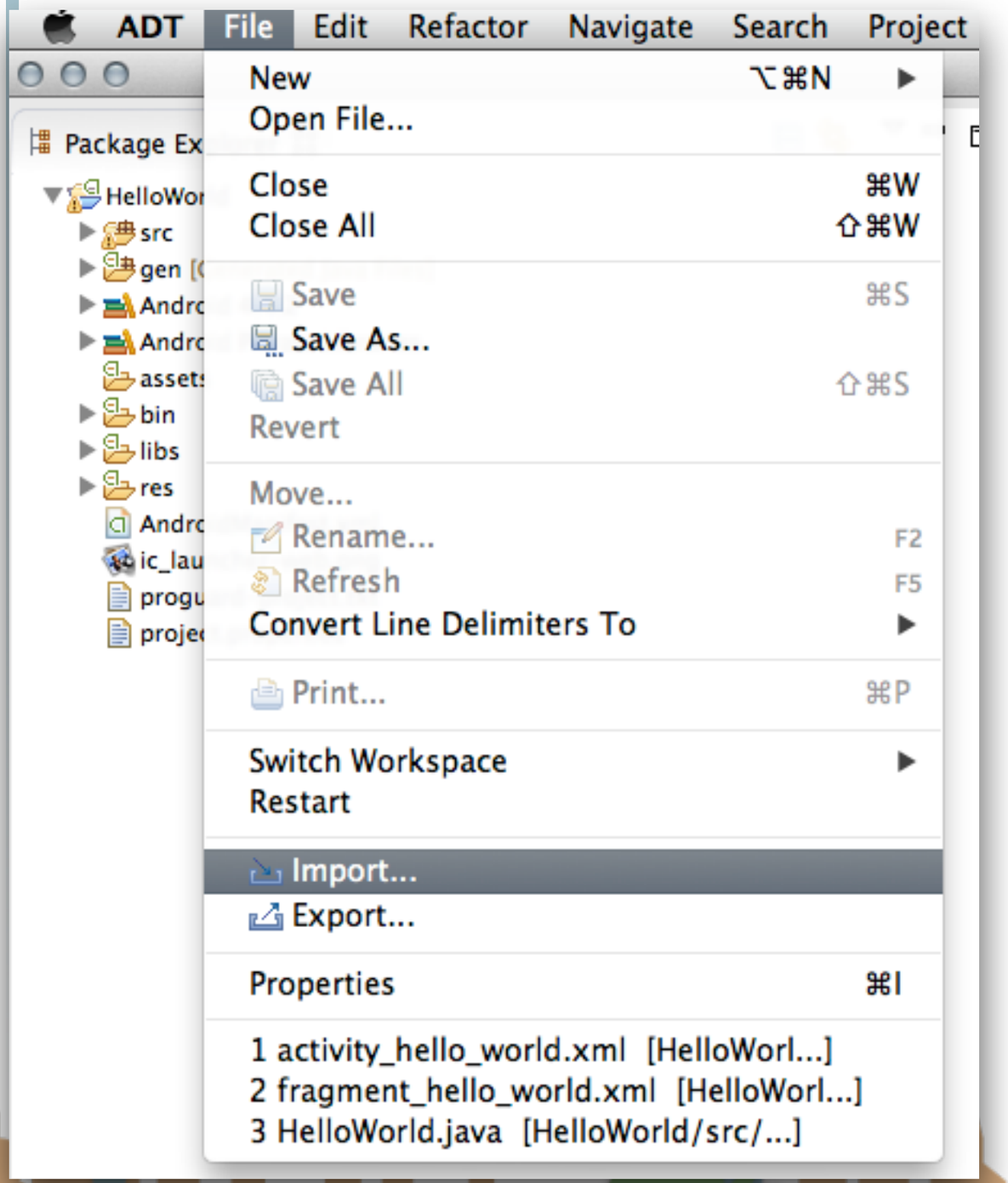

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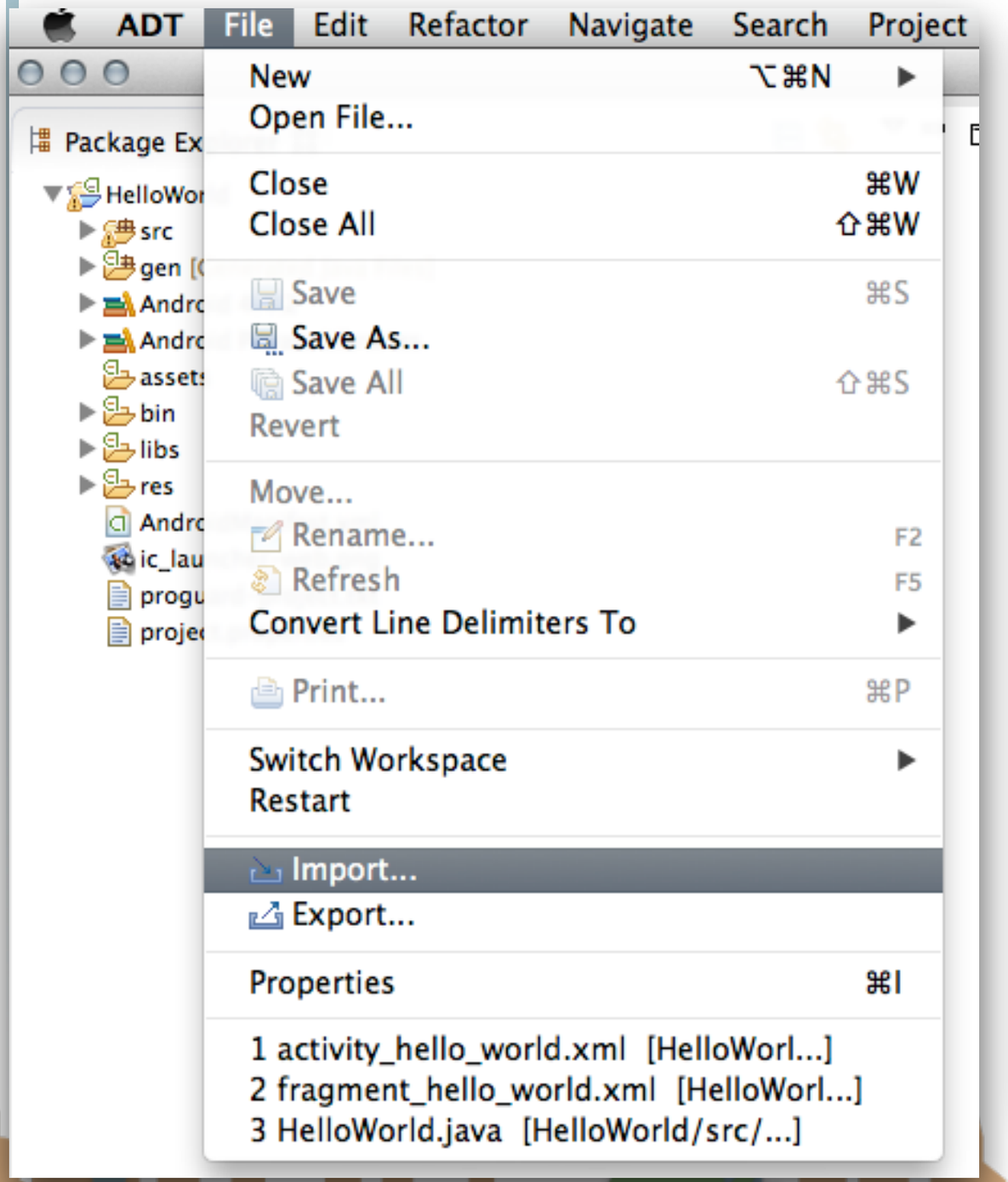

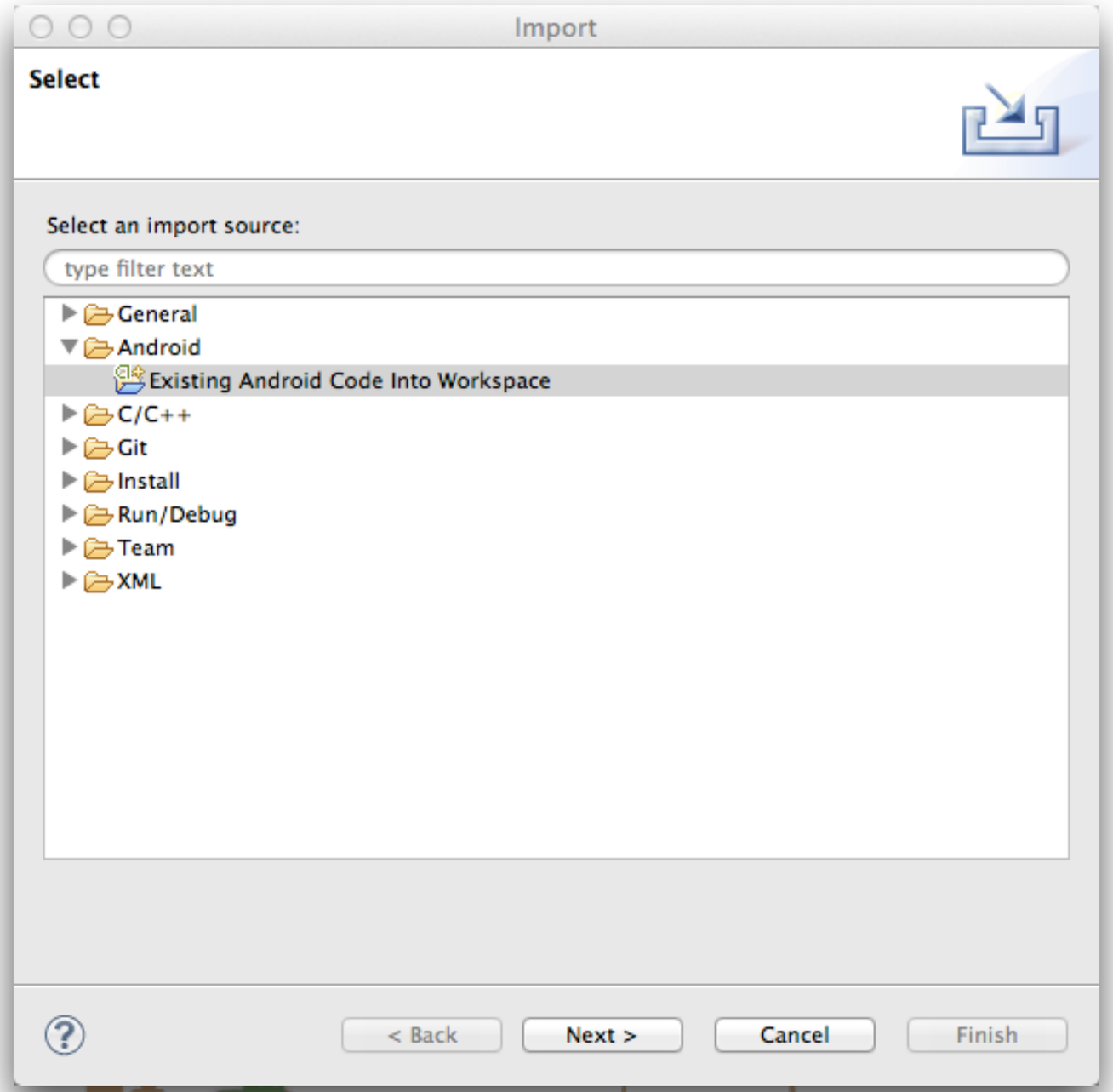

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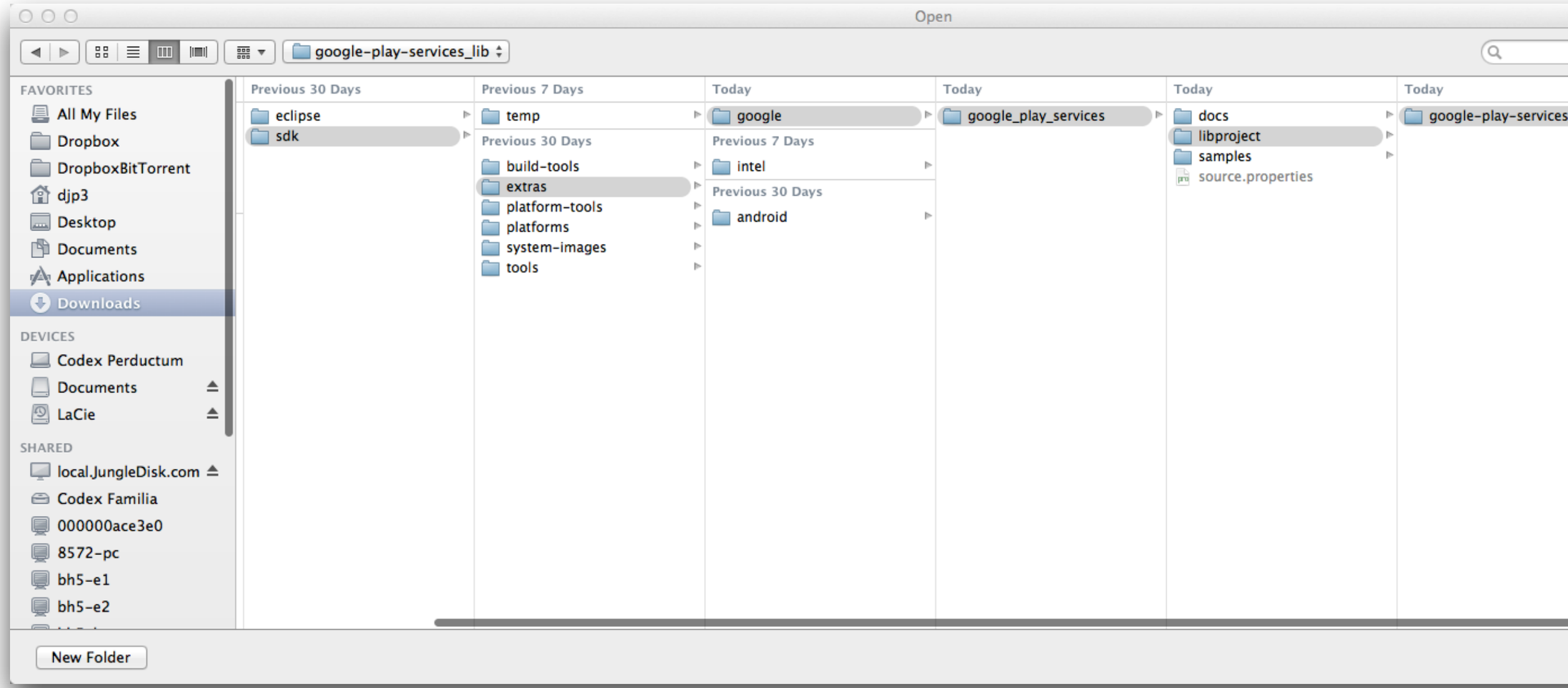

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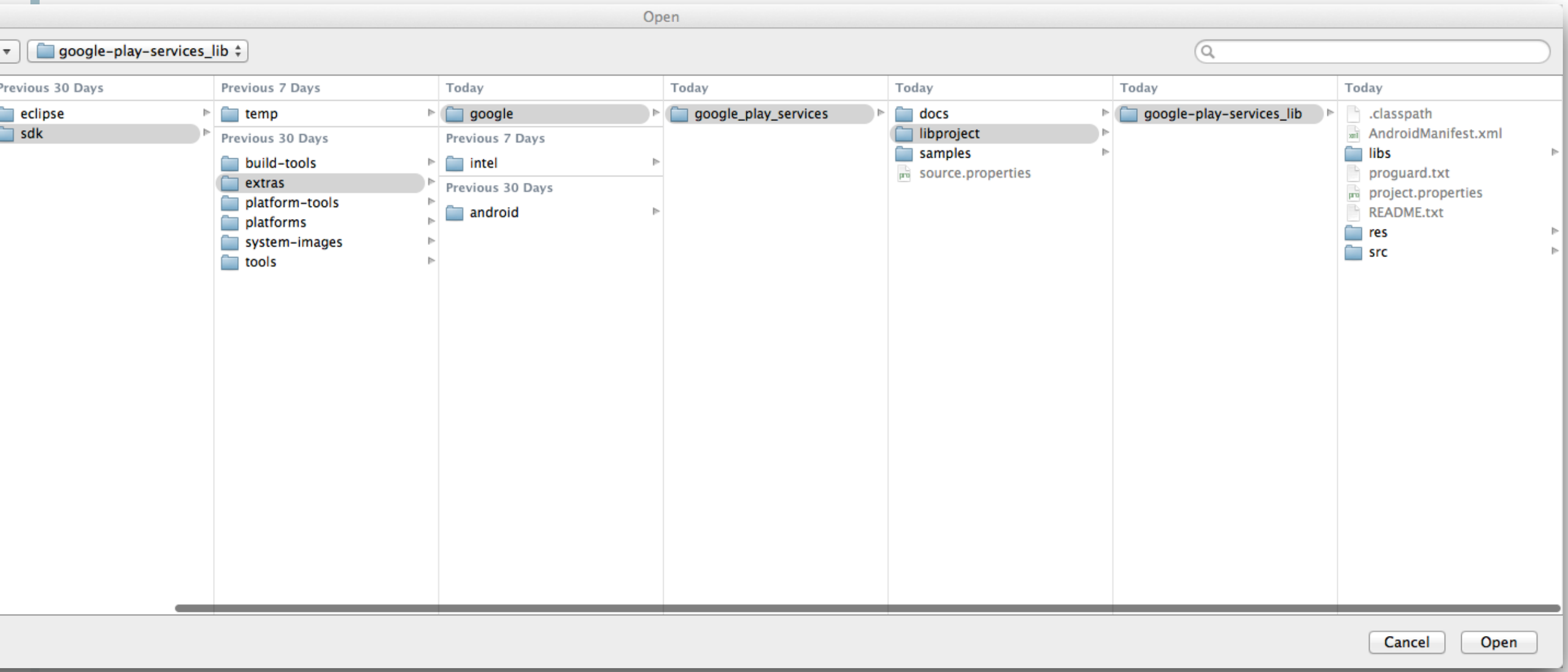

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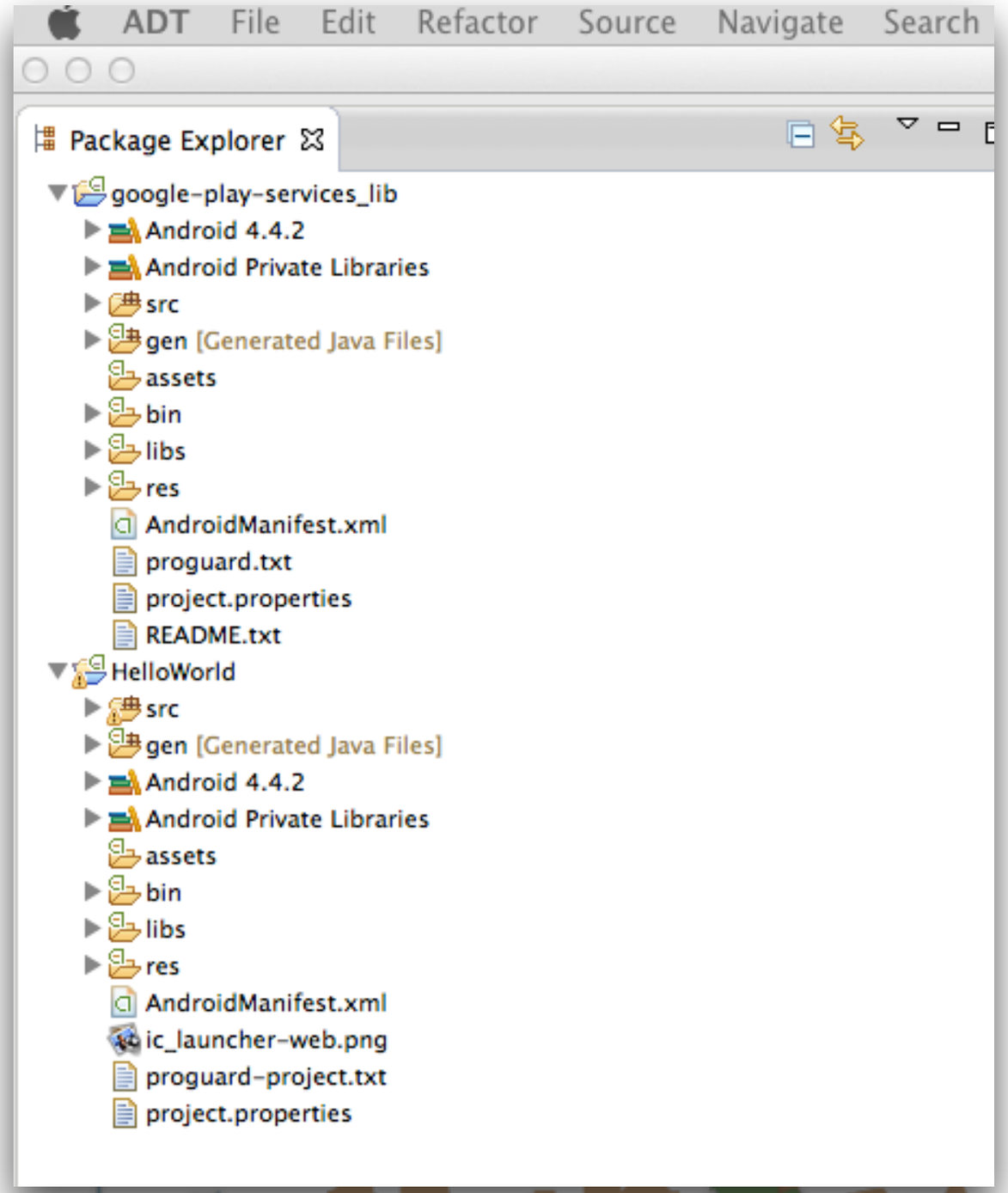

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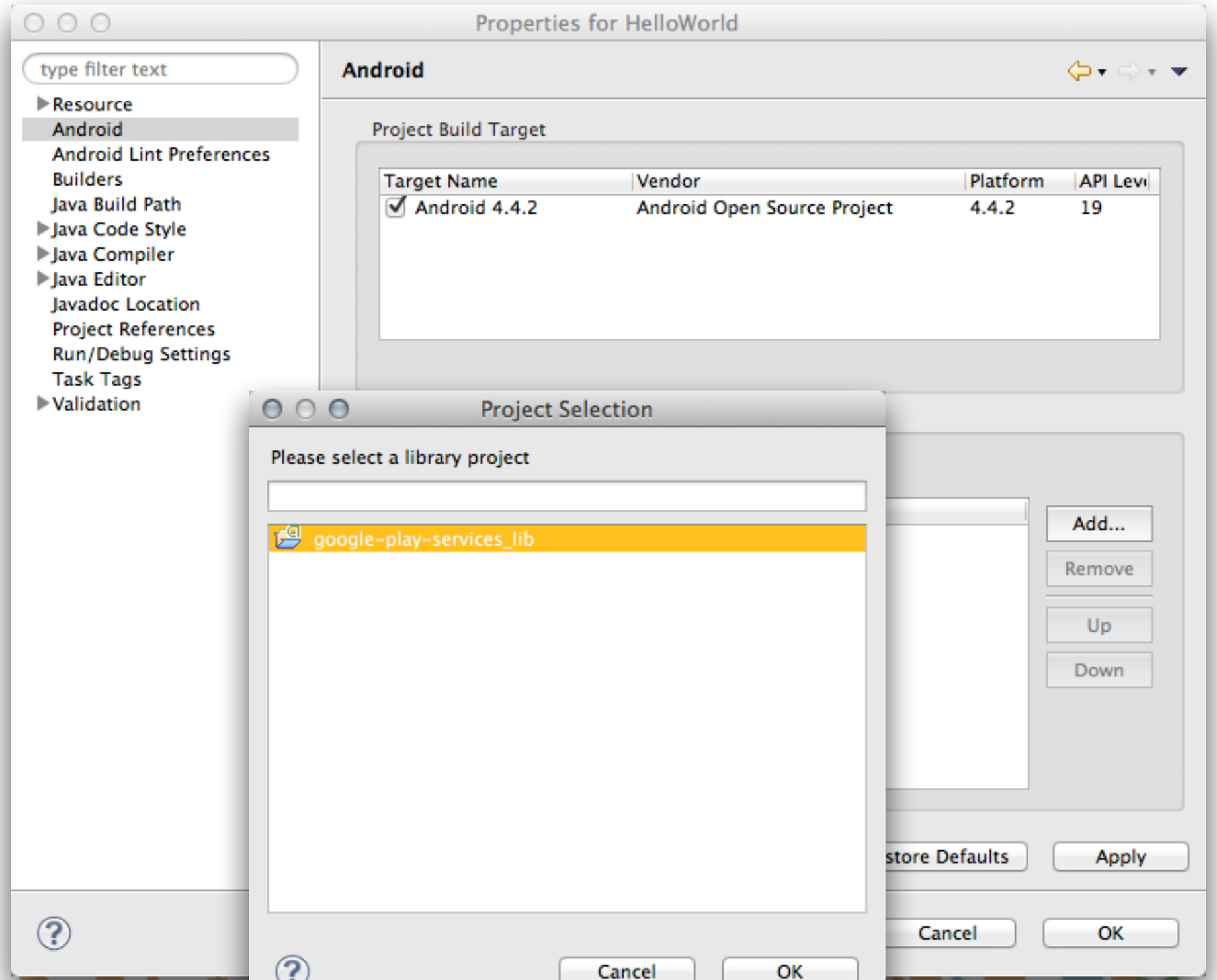

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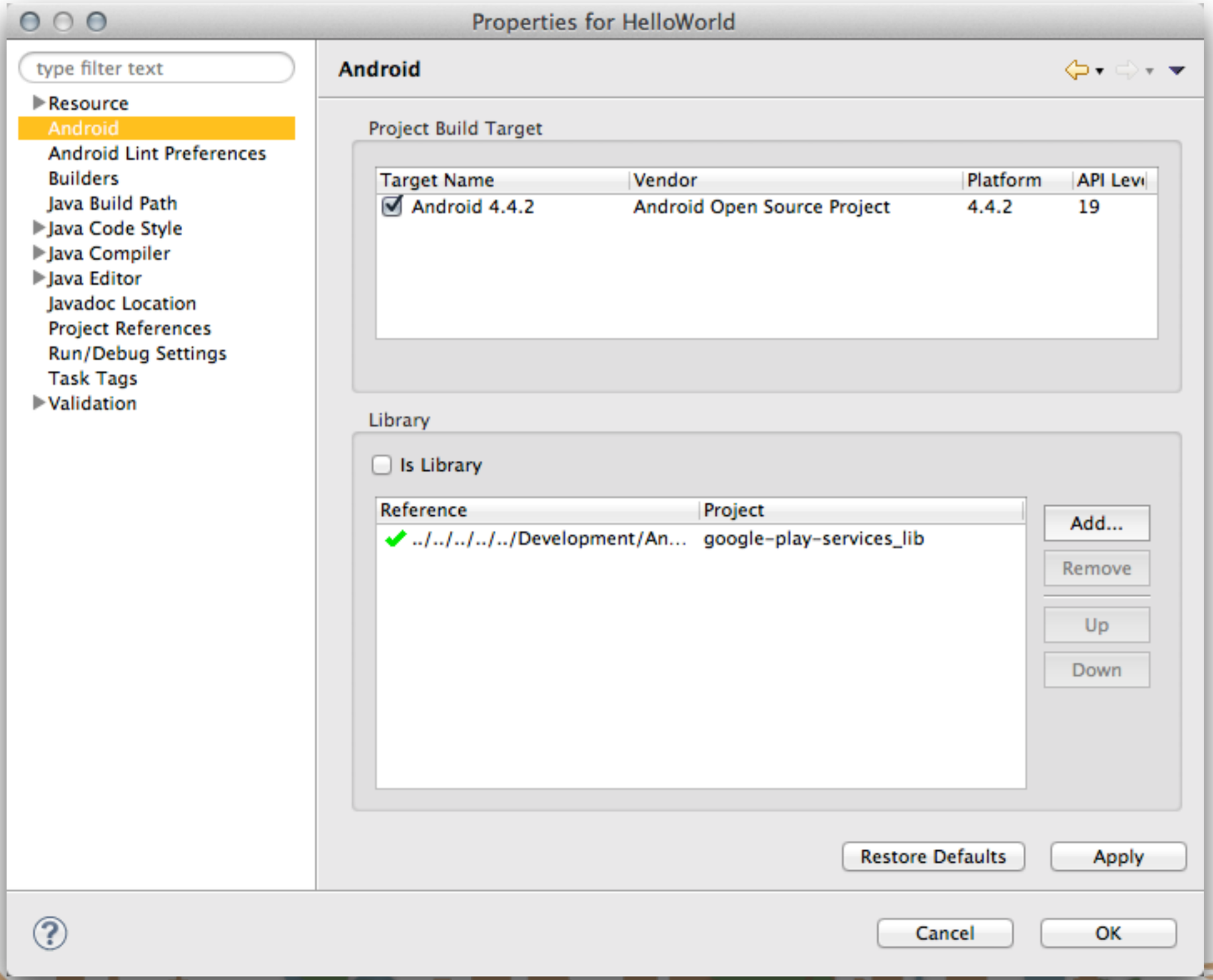


Working with Location

- Install the Google Play SDK
- Import the Google Play Lib into your workspace
- Add it to your project as an Android Library
- Restart Eclipse

http://developer.android.com/google/play-services/setup.html#Install

Working with Location

GOOGLE PLAY SDK

- INSTALL IT SDK MANAGER
- IMPORT IT INTO WORKSPACE
- INCLUDE IT IN YOUR BUILD PROPERTIES AS A PROJECT

http://developer.android.com/google/play-services/setup.html#Install

Working with Location

- Add Permissions for your app to use location

http://developer.android.com/google/play-services/setup.html#Install

Java – HelloWorld/res/values/integers.xml – ADT – /Users/djp3/Documents/ClassResources/2014_03_ICS163/workspace

Java | Debug

Quick Access

Package Explorer

- google-play-services_lib
  - Android 4.4.2
  - Android Private Libraries
  - src
  - gen [Generated Java Files]
  - assets
  - bin
  - libs
  - res
  - AndroidManifest.xml
  - proguard.txt
  - project.properties
  - README.txt
- HelloWorld
  - src
  - gen [Generated Java Files]
  - Android 4.4.2
  - Android Private Libraries
  - assets
  - bin
  - libs
  - res
  - AndroidManifest.xml
  - ic_launcher-web.png
  - proguard-project.txt
  - project.properties

HelloWorld Manifest | integers.xml

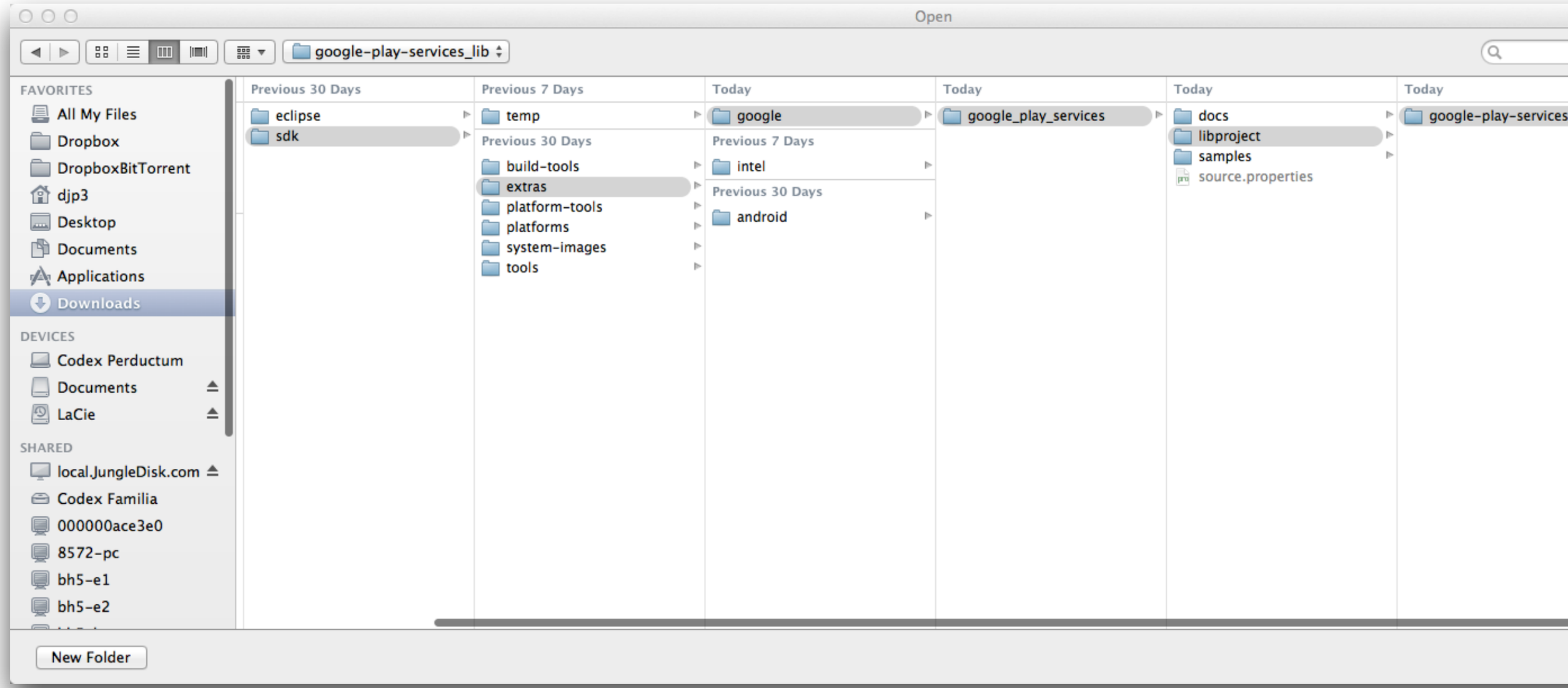
```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <integer name="google_play_services_version">1</integer>
</resources>
```

Resources | integers.xml

resources/integer/#text

150M of 371M | Android SDK Content Loader

Working with Location



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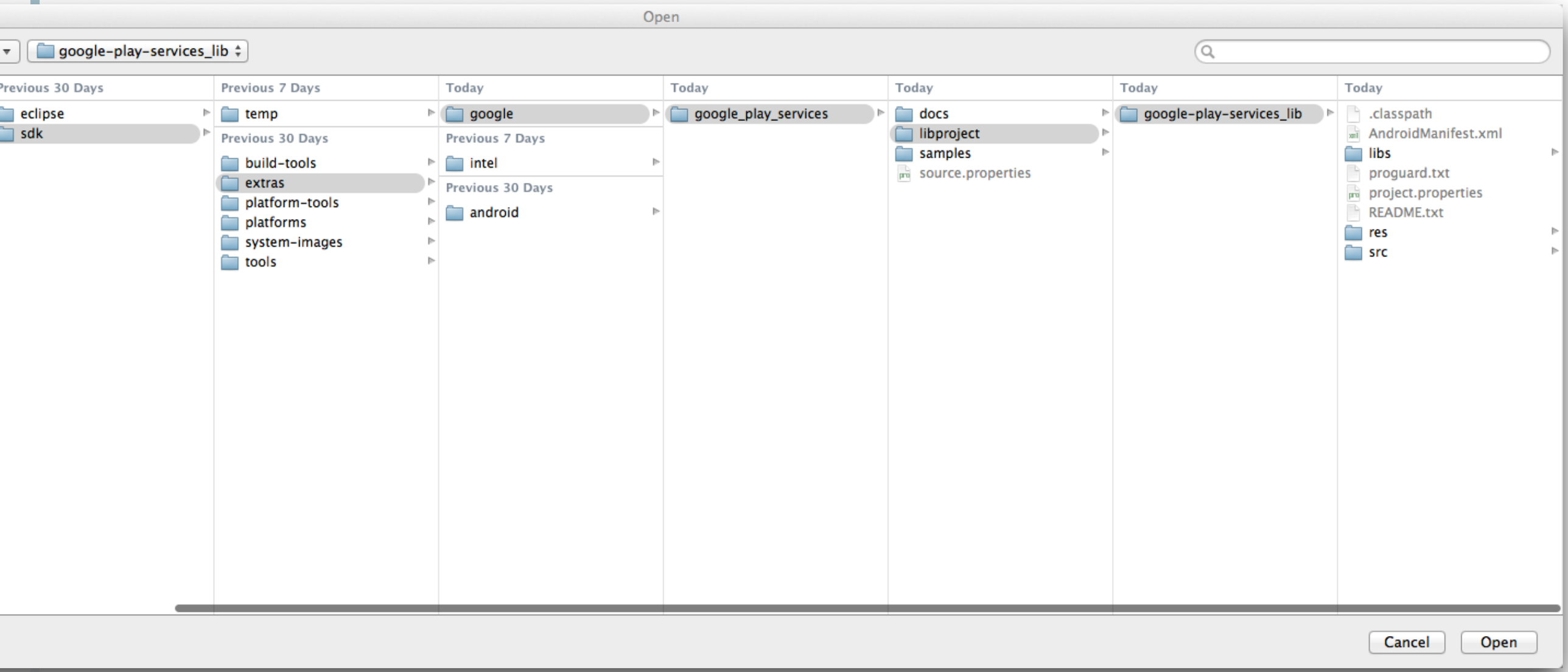

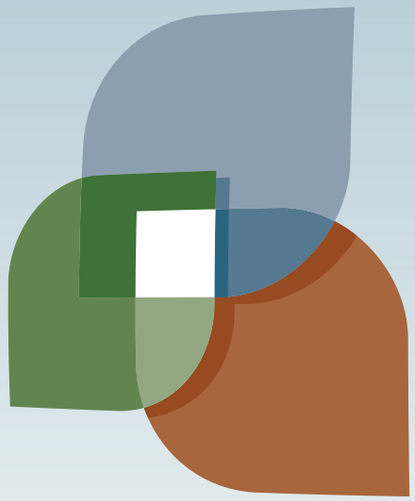

LUCI

Setting up your environment