

# User Interaction: Intro to Android

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INF 133 Fall 2014



# Intro to Android: SDK

- **Both:** Restart Eclipse after installing the SDKs
- This is a snapshot of what worked for me.

Android SDK Manager

SDK Path: /Users/djp3/Development/Android/adt-bundle-mac-x86\_64-20140702/sdk

Packages

Name	API	Rev.	Status
Tools			
Android SDK Tools		23.0.5	Installed
Android SDK Platform-tools		21	Installed
Android SDK Build-tools		21.1.1	Installed
Android SDK Build-tools		21.1	Not installed
Android SDK Build-tools		21.0.2	Not installed
Android SDK Build-tools		21.0.1	Not installed
Android SDK Build-tools		21	Not installed
Android SDK Build-tools		20	Not installed
Android SDK Build-tools		19.1	Not installed
Android SDK Build-tools		19.0.3	Not installed
Android SDK Build-tools		19.0.2	Not installed
Android SDK Build-tools		19.0.1	Not installed
Android SDK Build-tools		19	Not installed
Android SDK Build-tools		18.1.1	Not installed
Android SDK Build-tools		18.1	Not installed
Android SDK Build-tools		18.0.1	Not installed
Android SDK Build-tools		17	Not installed
Android 5.0 (API 21)			
Documentation for Android SDK	21	1	Not installed
SDK Platform	21	1	Installed
Samples for SDK	21	3	Installed
Android TV ARM EABI v7a System Image	21	1	Not installed
Android TV Intel x86 Atom System Image	21	1	Not installed
ARM EABI v7a System Image	21	1	Installed
Intel x86 Atom_64 System Image	21	1	Not installed
Intel x86 Atom System Image	21	1	Not installed
Google APIs	21	1	Installed
Google APIs ARM EABI v7a System Image	21	2	Installed
Google APIs Intel x86 Atom_64 System Image	21	2	Not installed
Google APIs Intel x86 Atom System Image	21	2	Not installed
Sources for Android SDK	21	1	Not installed
Android 4.4W.2 (API 20)			
Android 4.4.2 (API 19)			
Android 4.3.1 (API 18)			
Android 4.2.2 (API 17)			
Android 4.1.2 (API 16)			
Android 4.0.3 (API 15)			
Android 4.0 (API 14)			
Android 3.2 (API 13)			
Android 3.1 (API 12)			
Android 3.0 (API 11)			

<http://developer.android.com/sdk/adt.html>

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<input type="checkbox"/>	<input checked="" type="checkbox"/> Android TV ARM EABI v7a System Image	21	1	<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android TV Intel x86 Atom System Image	21	1	<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> ARM EABI v7a System Image	21	1	<input checked="" type="checkbox"/> Installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Intel x86 Atom_64 System Image	21	1	<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Intel x86 Atom System Image	21	1	<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google APIs	21	1	<input checked="" type="checkbox"/> Installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google APIs ARM EABI v7a System Image	21	2	<input checked="" type="checkbox"/> Installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google APIs Intel x86 Atom_64 System Image	21	2	<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google APIs Intel x86 Atom System Image	21	2	<input type="checkbox"/> Not installed
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<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 4.4W.2 (API 20)			
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<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 4.3.1 (API 18)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 4.2.2 (API 17)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 4.1.2 (API 16)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 4.0.3 (API 15)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 4.0 (API 14)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 3.2 (API 13)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 3.1 (API 12)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 3.0 (API 11)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 2.3.3 (API 10)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 2.2 (API 8)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 2.1 (API 7)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 1.6 (API 4)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android 1.5 (API 3)			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Extras			
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android Support Repository	9		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android Support Library	21.0.2		<input checked="" type="checkbox"/> Installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Play services for Froyo	12		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Play services	21		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Repository	13		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Play APK Expansion Library	3		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Play Billing Library	5		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Play Licensing Library	2		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Android Auto API Simulators	1		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google USB Driver	11		<input checked="" type="checkbox"/> Not compatible with
<input type="checkbox"/>	<input checked="" type="checkbox"/> Google Web Driver	2		<input type="checkbox"/> Not installed
<input type="checkbox"/>	<input checked="" type="checkbox"/> Intel x86 Emulator Accelerator (HAXM installer)	5.2		<input type="checkbox"/> Not installed

Show:  Updates/New  Installed Select [New](#) or [Updates](#)

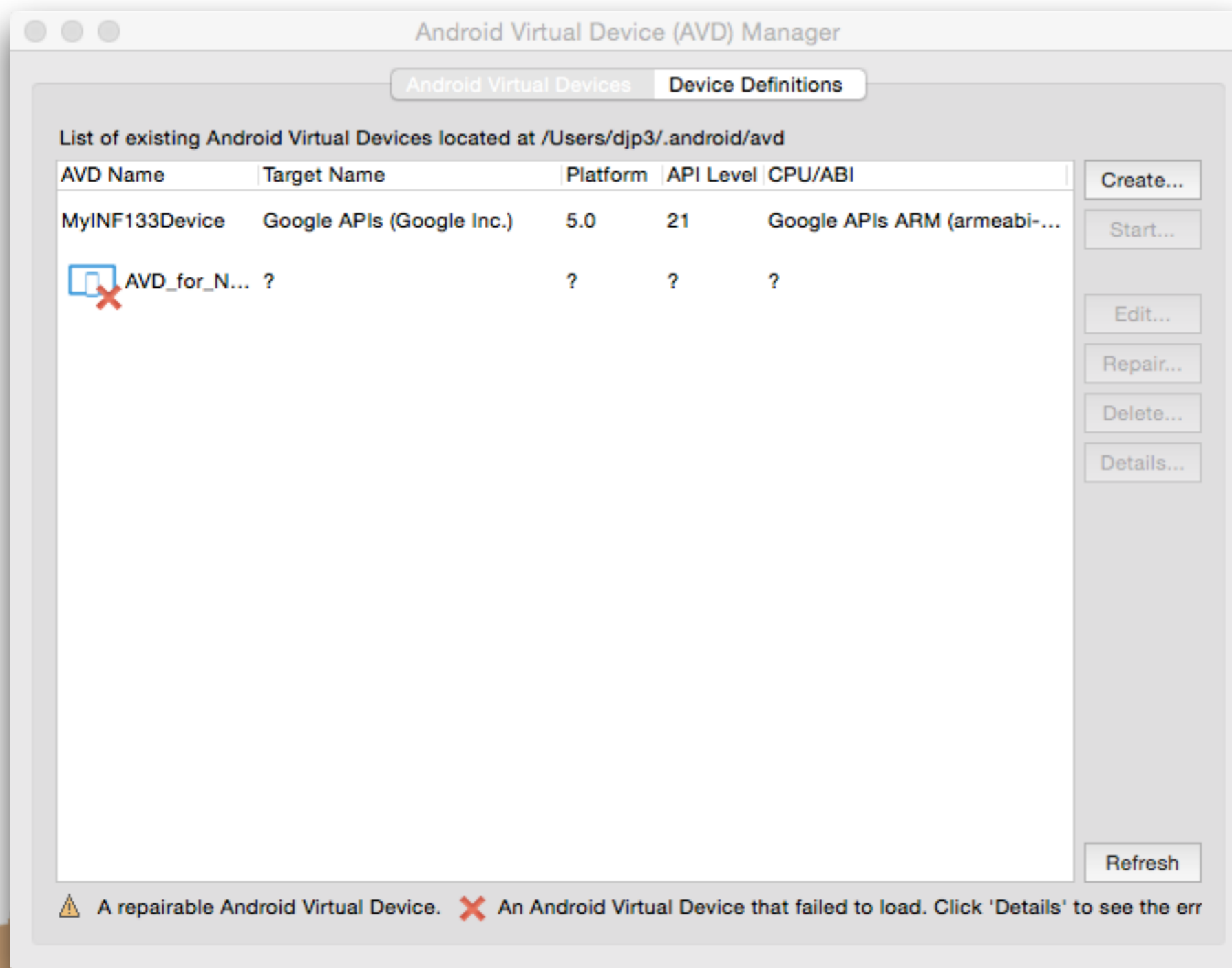
Obsolete [Deselect All](#)

Done loading packages.

<http://developer.android.com>

# Intro to Android: AVD

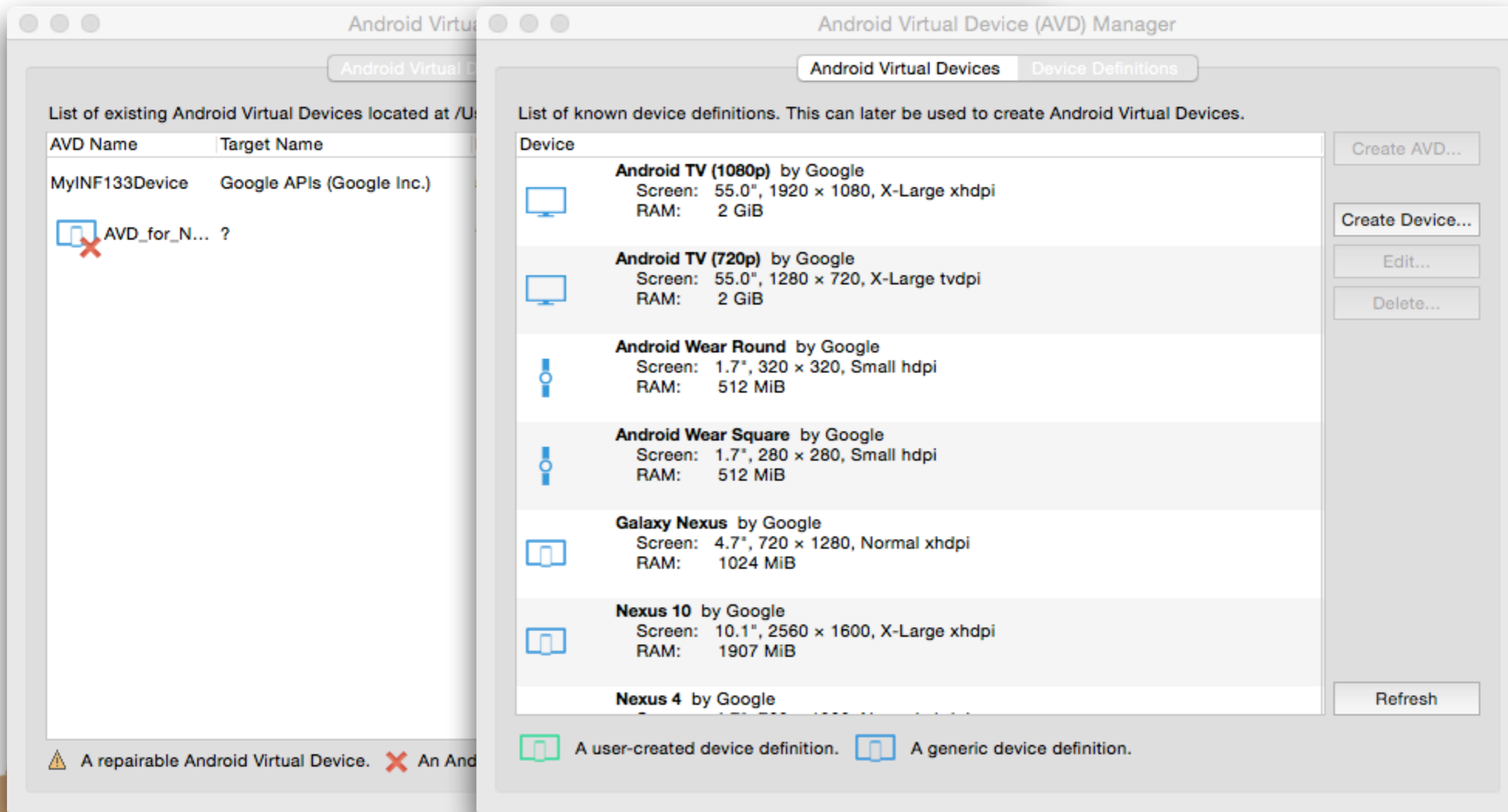
- Set up a virtual device



<http://developer.android.com/tools/devices/managing-avds.html>

# Intro to Android: AVD

- Set up a virtual device



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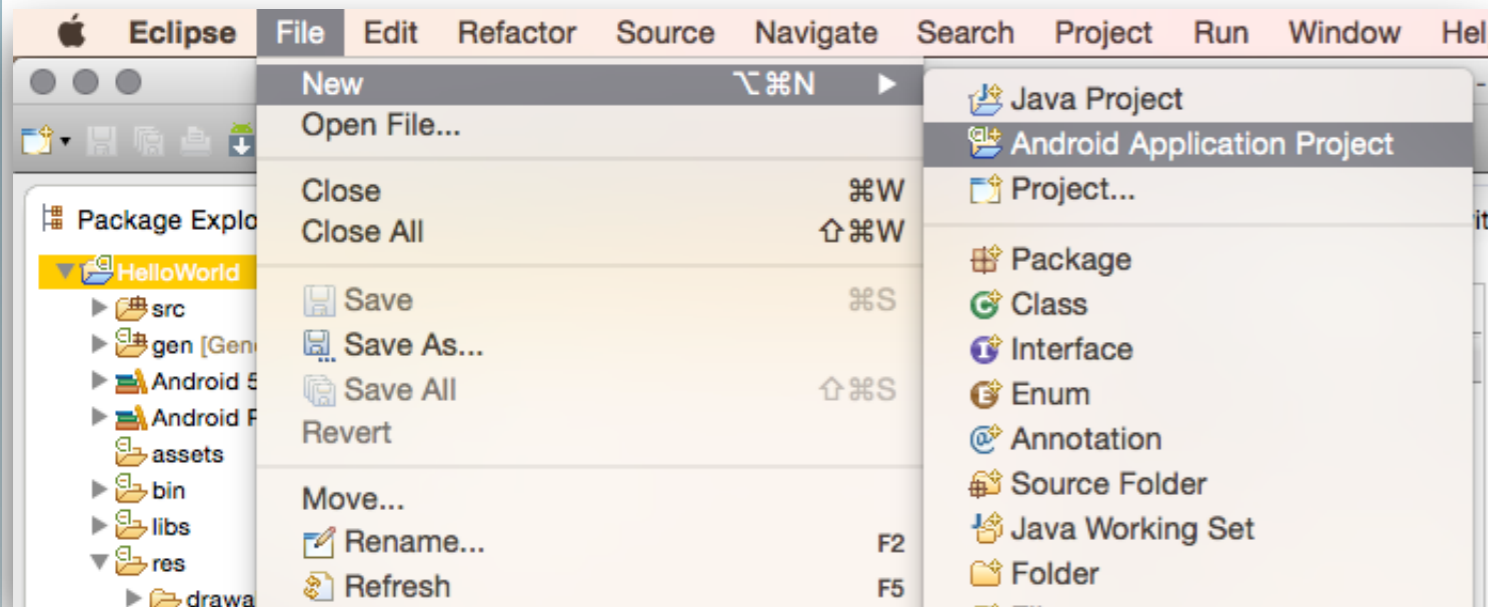
# Intro to Android: AVD

- Set up a virtual device

The screenshot displays the Android Studio interface with three overlapping windows:

- AVD Manager (Left):** Shows a table of existing virtual devices. The table has two columns: "AVD Name" and "Target Name". One device, "MyINF133Device", is listed with the target "Google APIs (Google Inc.)". Below the table, there is a red 'X' icon and the text "AVD\_for\_N... ?".
- Device Definitions (Middle):** Shows a list of known device definitions with their respective icons, names, screen sizes, and RAM. The devices listed are:
  - Android TV (1080p) by Google: Screen: 55.0", 1920 x 1080, RAM: 2 GiB
  - Android TV (720p) by Google: Screen: 55.0", 1280 x 720, RAM: 2 GiB
  - Android Wear Round by Google: Screen: 1.7", 320 x 320, RAM: 512 MiB
  - Android Wear Square by Google: Screen: 1.7", 280 x 280, RAM: 512 MiB
  - Galaxy Nexus by Google: Screen: 4.7", 720 x 1280, RAM: 1024 MiB
  - Nexus 10 by Google: Screen: 10.1", 2560 x 1600, RAM: 1907 MiB
  - Nexus 4 by Google: Screen: 4.7", 720 x 1280, RAM: 1024 MiB
- Edit Android Virtual Device (AVD) (Right):** Shows the configuration for a new AVD named "MyINF133Device". The settings are:
  - Device: Nexus 5 (4.95", 1080 x 1920: xxhdpi)
  - Target: Google APIs (Google Inc.) - API Level 21
  - CPU/ABI: Google APIs ARM (armeabi-v7a)
  - Keyboard:  Hardware keyboard present
  - Skin: Skin with dynamic hardware controls
  - Front Camera: Webcam0
  - Back Camera: Webcam0
  - Memory Options: RAM: 2048, VM Heap: 64
  - Internal Storage: 200 MiB
  - SD Card:  Size: [ ] MiB,  File: [ ] Browse...
  - Emulation Options:  Snapshot,  Use Host GPU
  - Override the existing AVD with the same name
  - Warning: This AVD may not work unless you install the Google APIs ARM (armeabi-v7a) system image for Android 5.0 (API 21) first.

# Intro to Android:



<http://developer.android.com/sdk/installing/installing-adt.html>

# Intro to Android:

**New Android Application**  
Creates a new Android Application

Application Name:

Project Name:

Package Name:

Minimum Required SDK:

Target SDK:

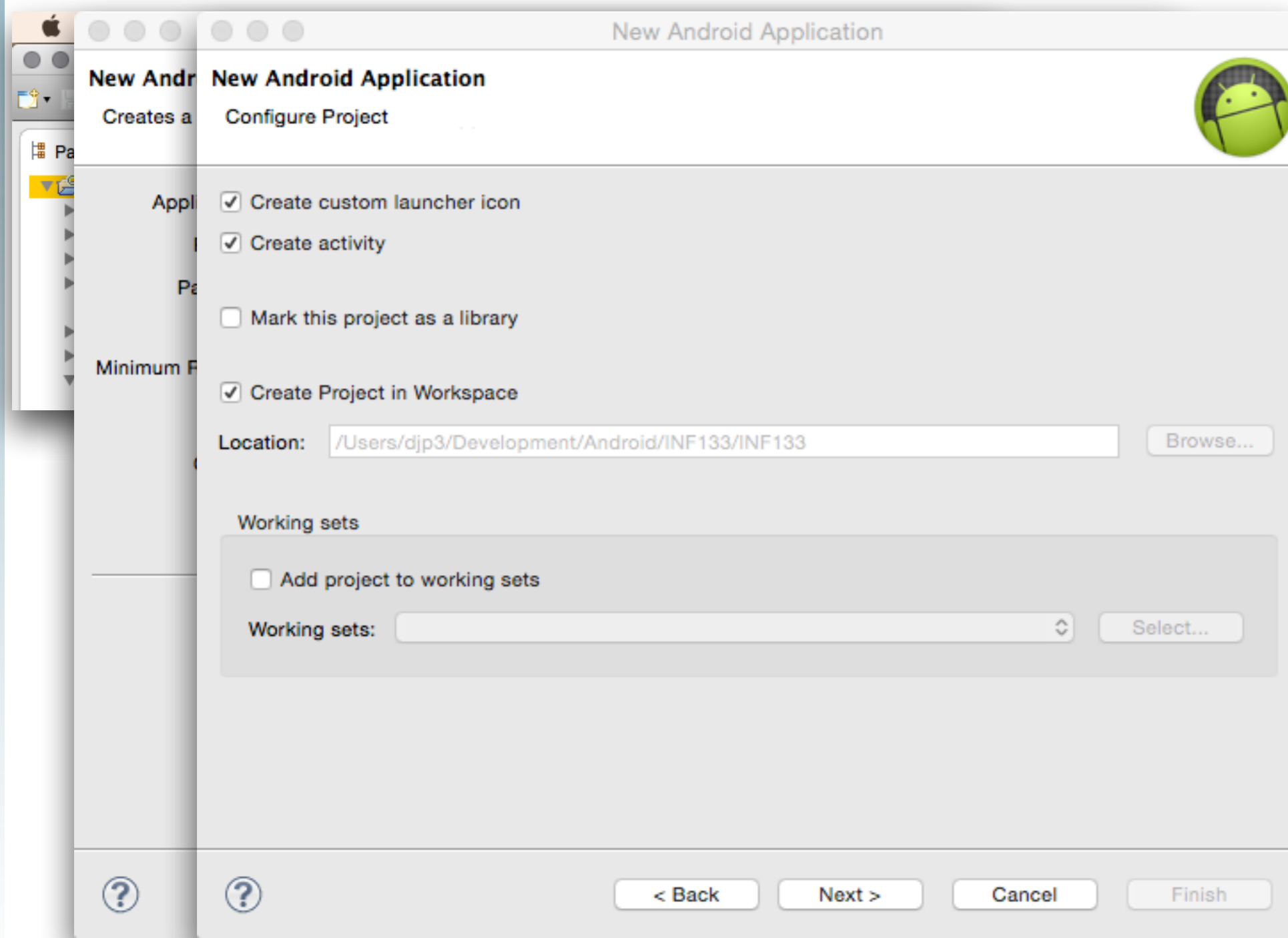
Compile With:

Theme:

<http://developer.android.com/sdk/installing/installing-adt.html>

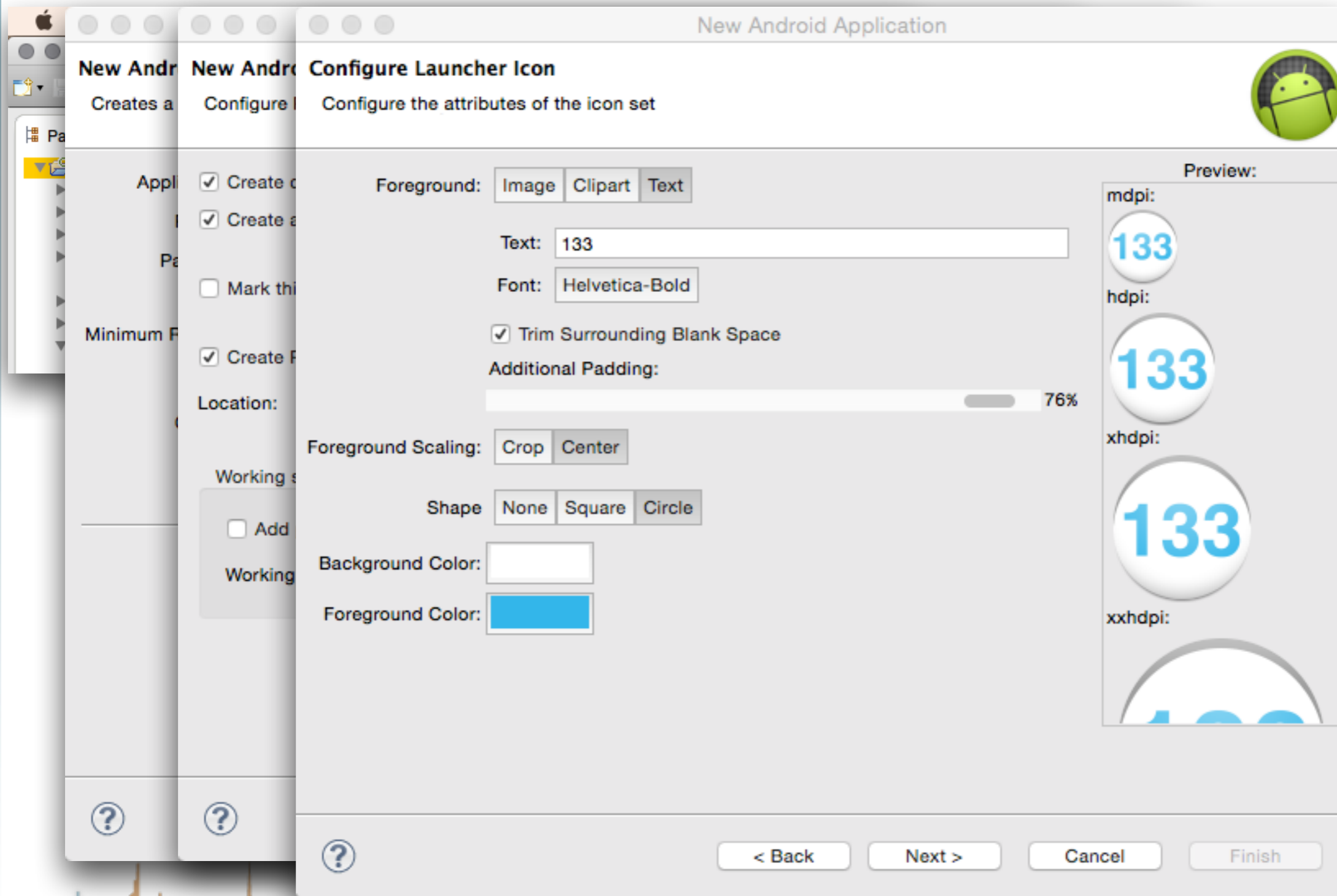


# Intro to Android:



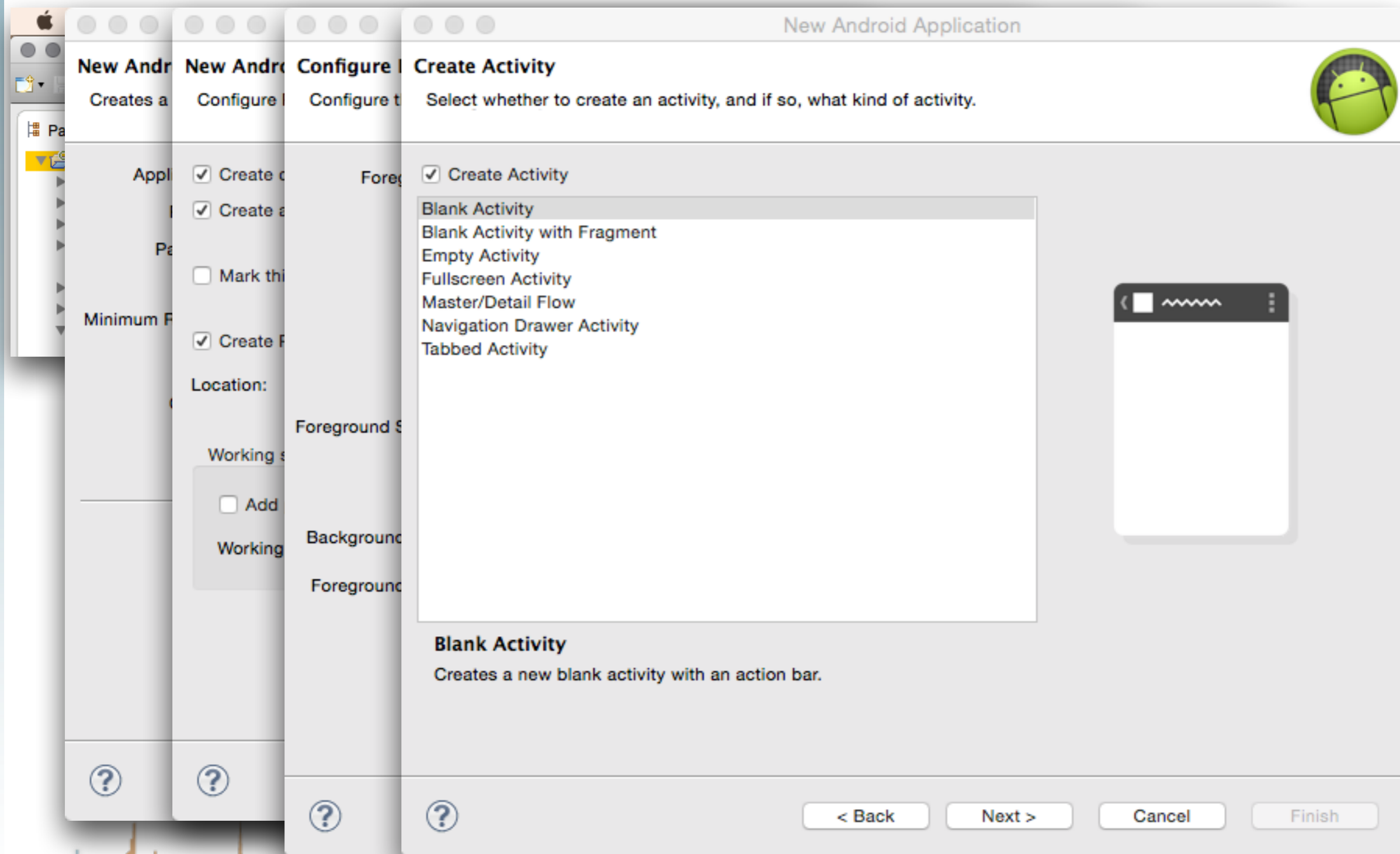
<http://developer.android.com/sdk/installing/installing-adt.html>

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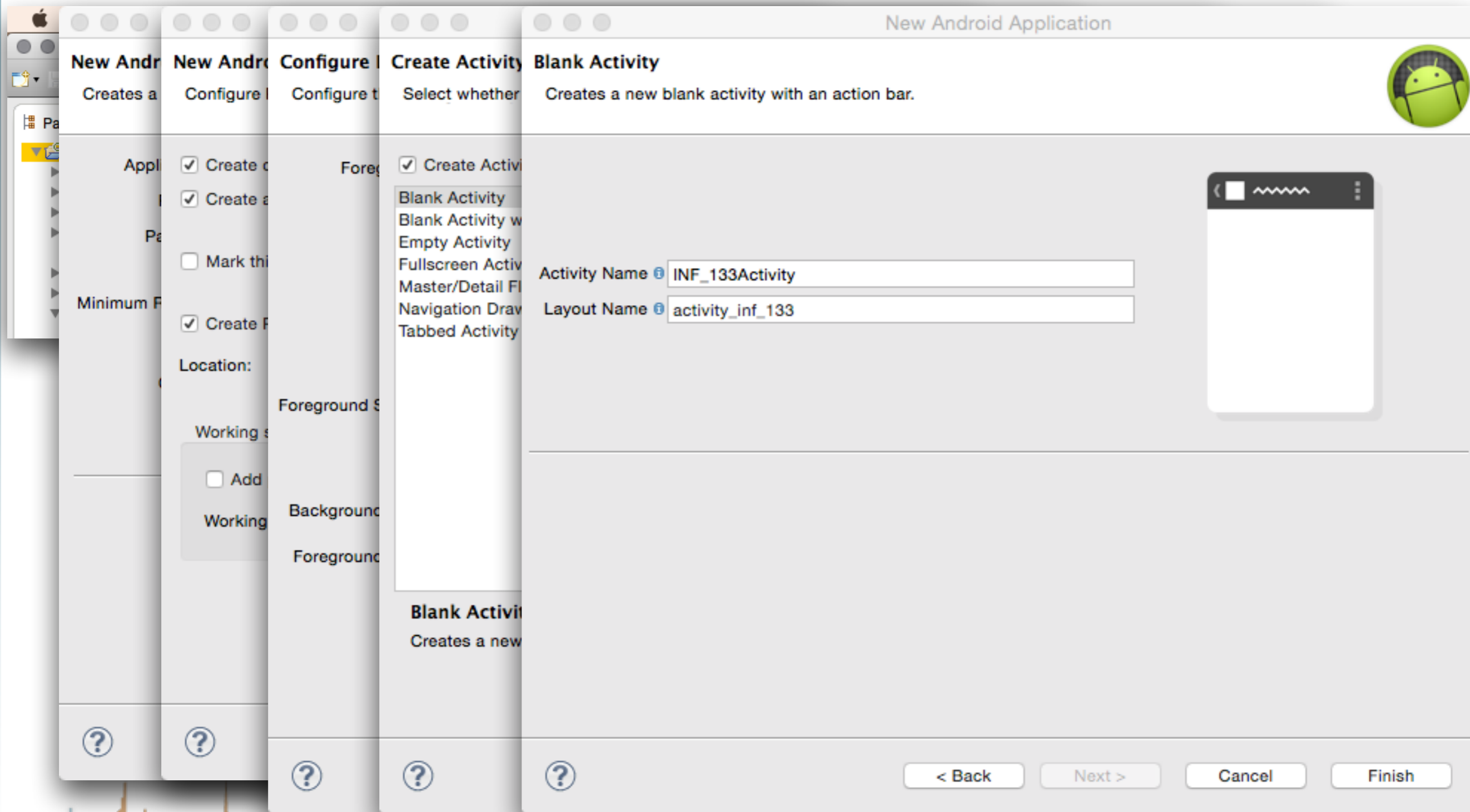
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# Intro to Android:

- Set up a project





### Package Explorer

- INF133
  - src
  - gen [Generated Java Files]
  - Android 5.0
  - Android Private Libraries
  - assets
  - bin
  - libs
  - res
    - drawable-hdpi
    - drawable-ldpi
    - drawable-mdpi
    - drawable-xhdpi
    - drawable-xxhdpi
    - layout
    - activity\_inf\_133.xml
    - menu
    - values
    - values-v11
    - values-v14
    - values-w820dp
    - AndroidManifest.xml
    - ic\_launcher-web.png
    - proguard-project.txt
    - project.properties

### activity\_inf\_133.xml

Palette

Form Widgets

TextView Large Medium Small Button

Small OFF  CheckBox

RadioButton CheckedTextView

Spinner  
Sub Item

Progress indicators and stars

OFF

# Actually Developing for Android

- Requirements
- SDK/AVD
- Eclipse Plug-in
- Hello World

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# Hello World

- Create a project
- Build a basic U/I
- Run the Application
- Improve the U/I
- Debug the Application

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# Intro to Android: Eclipse Plug-in

The screenshot shows the Eclipse IDE with the Android plug-in installed. The main editor displays the code for `INF_133Activity.java`, which extends the `Activity` class and implements the `onCreate` method. The Package Explorer on the left shows the project structure, and the Task List and Outline views on the right provide additional context.

```
package edu.uci.ics.luci.inf133;

import android.app.Activity;

public class INF_133Activity extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
    }
}
```

The Package Explorer shows the project structure:

- INF\_133
  - src
    - edu.uci.ics.luci.inf133
      - INF\_133Activity.java
    - gen [Generated Java Files]
    - Android 2.3.3
    - assets
    - bin
    - res
    - AndroidManifest.xml
    - proguard.cfg
    - project.properties

The Task List and Outline views show the following information:

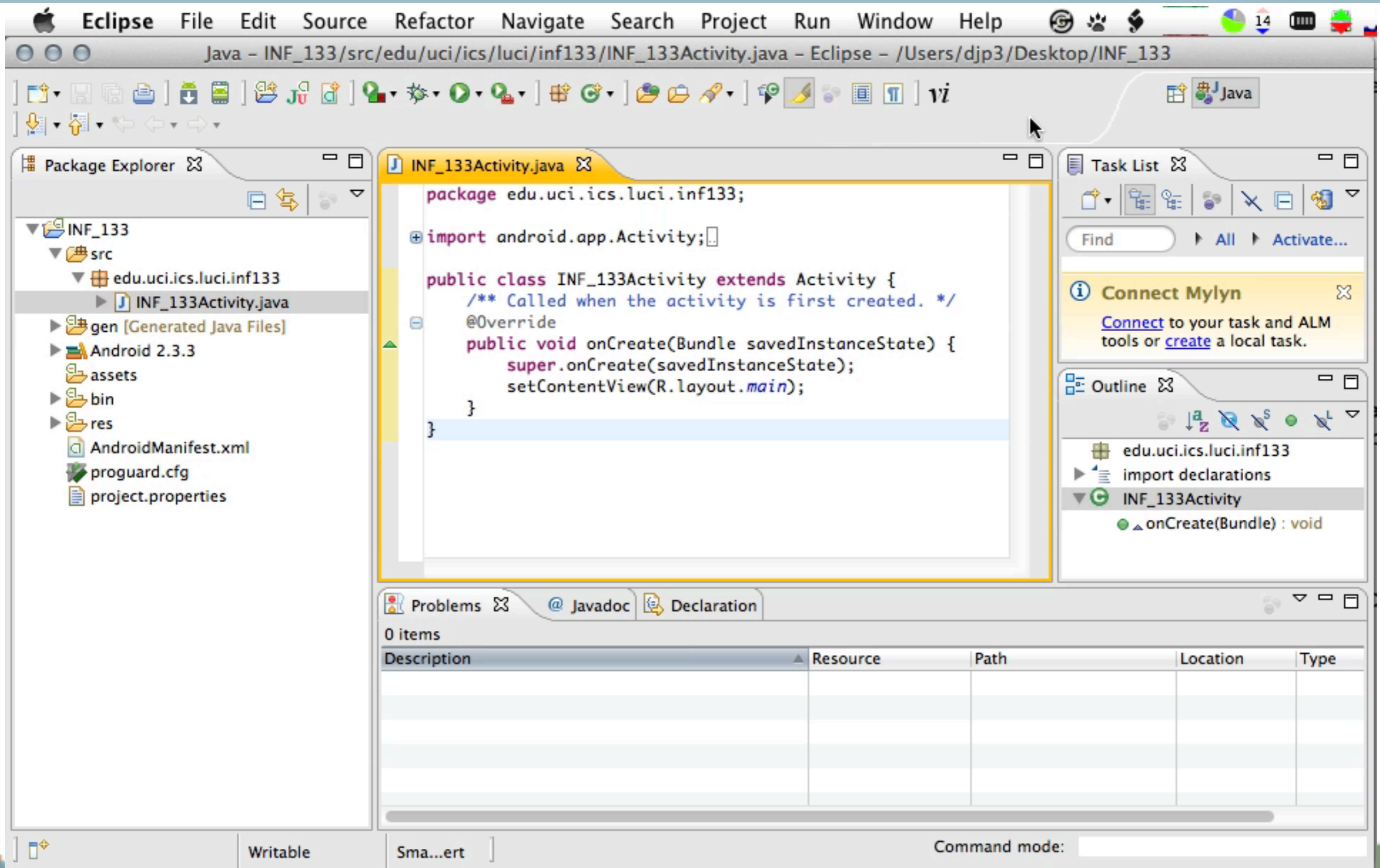
- Task List: Connect Mylyn. Connect to your task and ALM tools or create a local task.
- Outline: edu.uci.ics.luci.inf133
  - import declarations
  - INF\_133Activity
    - onCreate(Bundle) : void

The Problems view shows 0 items.

Description	Resource	Path	Location	Type

Command mode:

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