Android for .NET Developers Series
Getting Started
Setting Up Your Environment

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Outline

- What do we need?
- Android Virtual Devices (a.k.a. Emulators)
- Debugging using a real device
- Special considerations for Android 4.2.2 and newer
- Stay awake

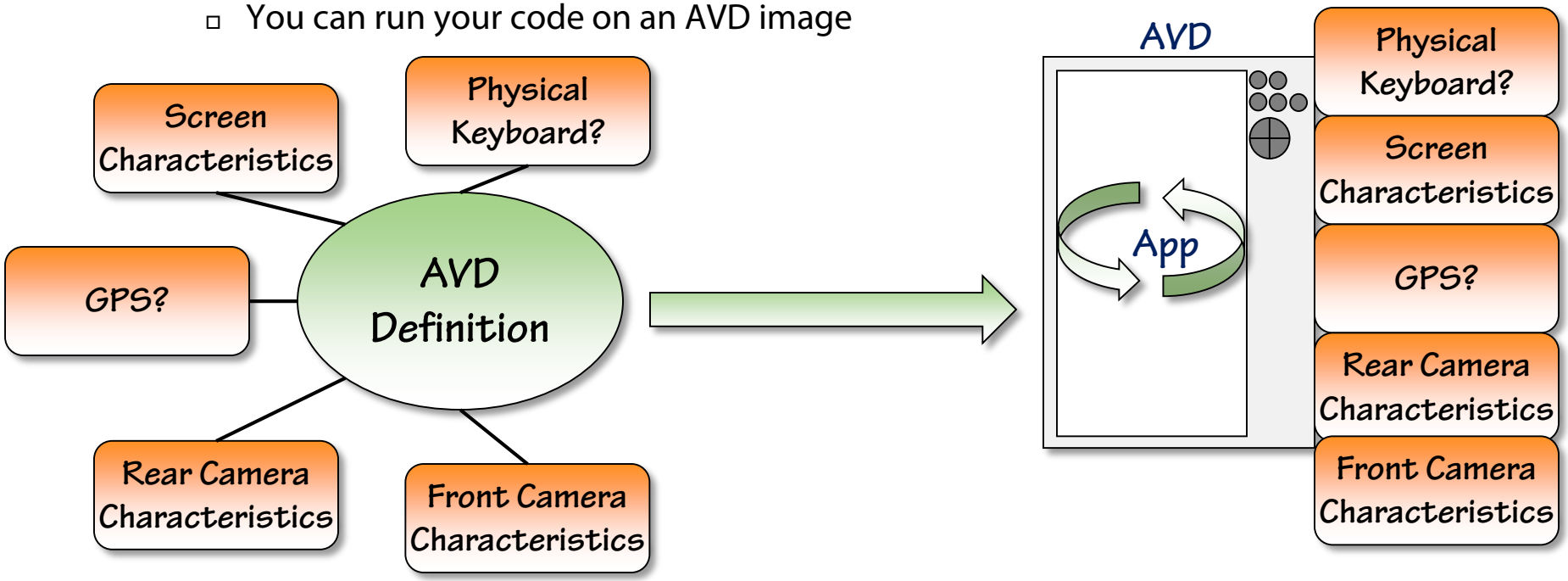
What do we need

- **Android Developer Tools (ADT) Bundle**
  - Eclipse Integrated Dev Environment (IDE)
  - ADT Plugin
    - Adds Android development features to Eclipse
  - Android SDK Tools
  - Android Platform Tools
  - Android Platform
  - Android emulator Images
- **Java Development Kit (JDK)**
  - Java compiler
  - Java libraries

Be sure to check
Android SDK Requirements
For required JDK version

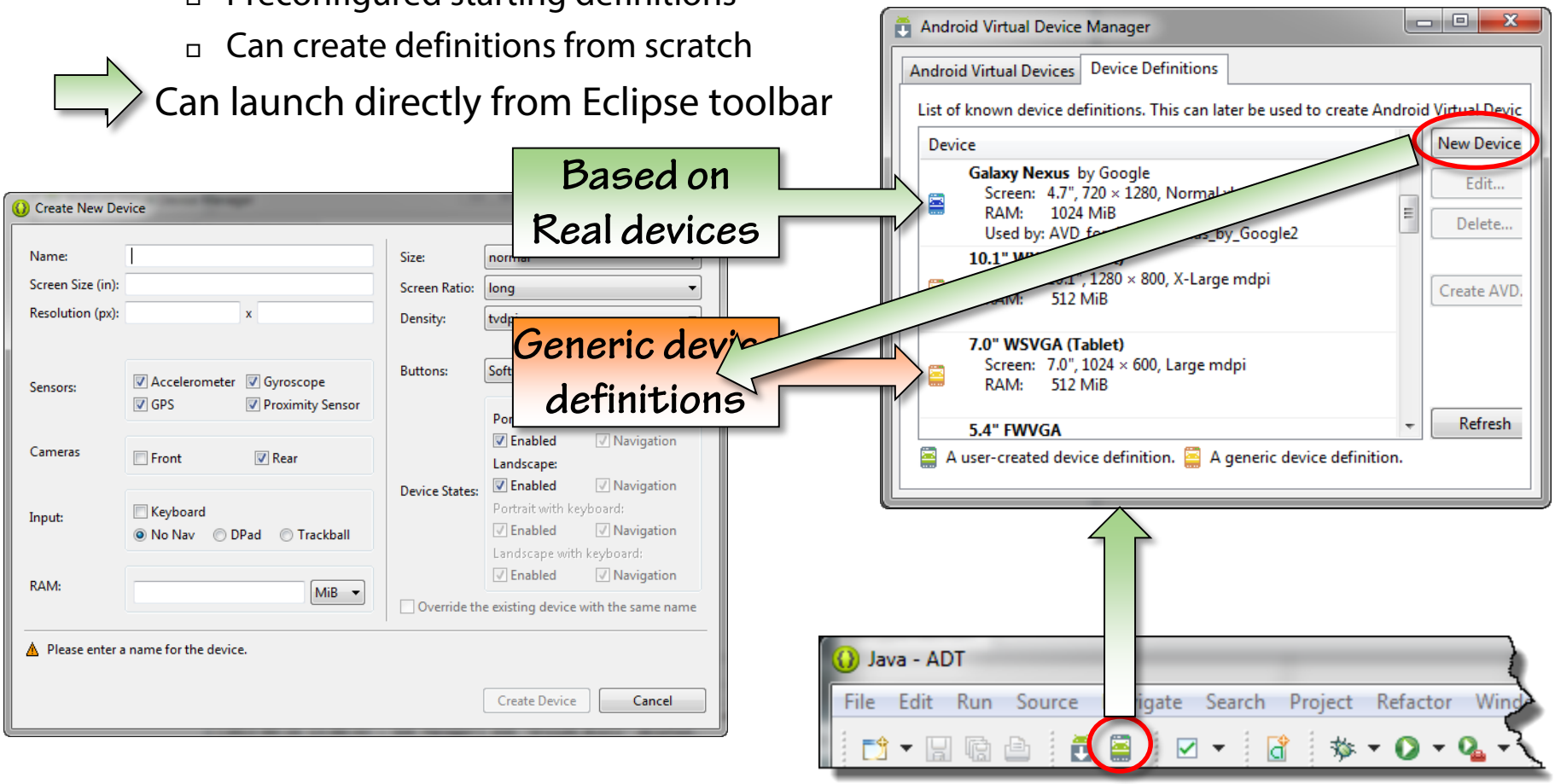
Android Virtual Devices (Emulators)

- **AVDs/Emulators allow you to test apps on your desktop**
  - An AVD definition describes characteristics of a device
    - Can be based on a real on-the-market device or generic set of characteristics
  - You create an AVD image from a definition
    - You can make modifications to some definition characteristics
    - Many images can be created from the same definition
    - You can run your code on an AVD image

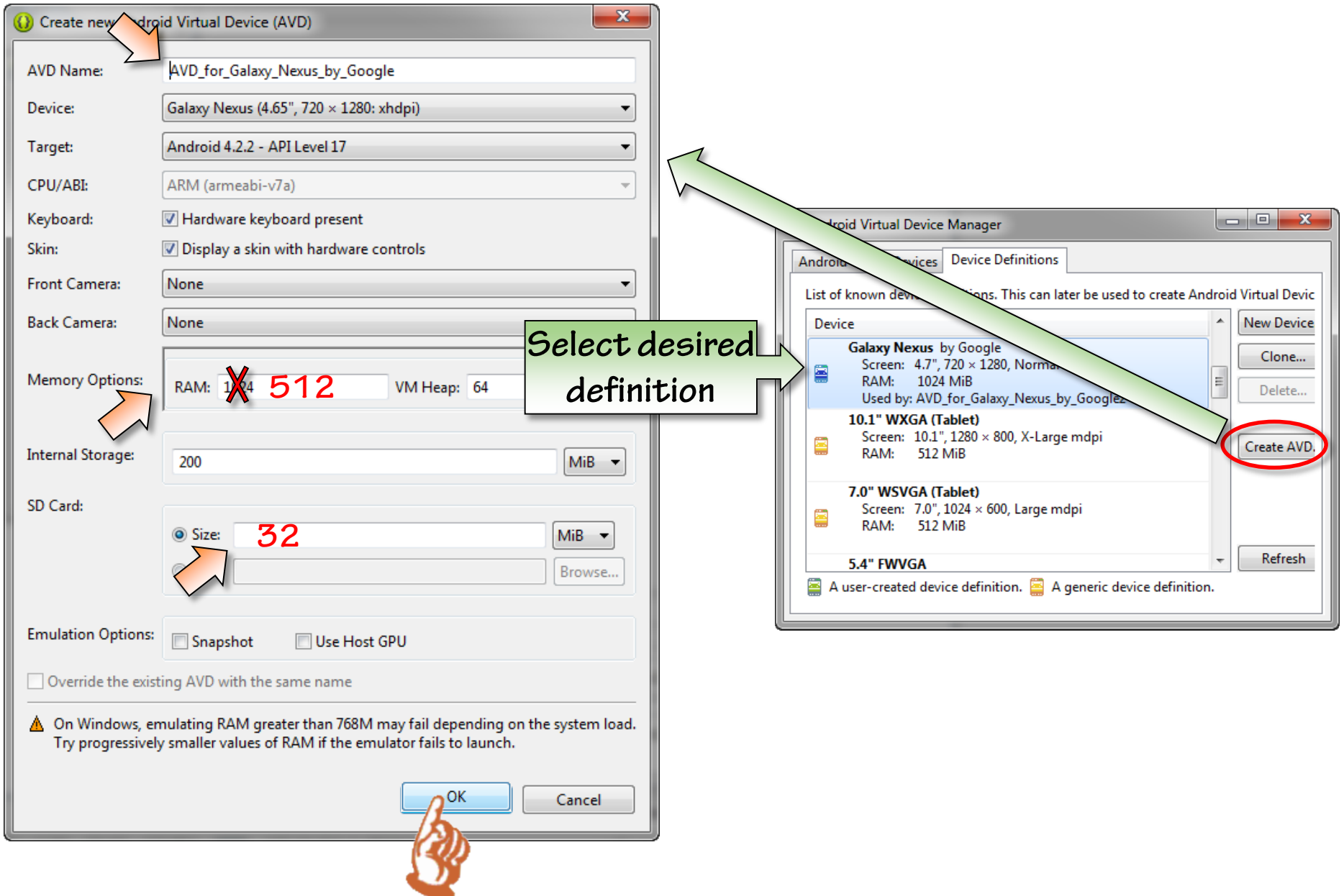


Android Virtual Device Manager

- **Use Android Virtual Device Manager to create and access AVDs**
  - Provides access to device definitions & AVDs
    - Preconfigured starting definitions
    - Can create definitions from scratch
  - Can launch directly from Eclipse toolbar



Creating Android Virtual Devices

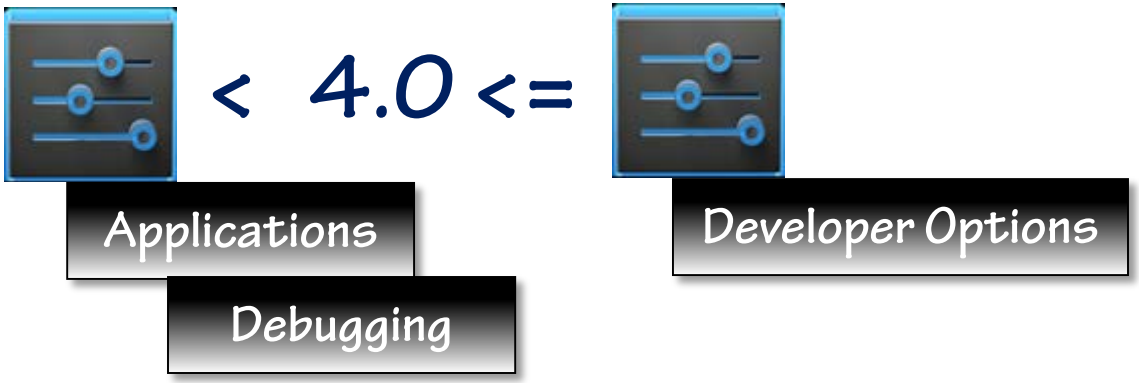


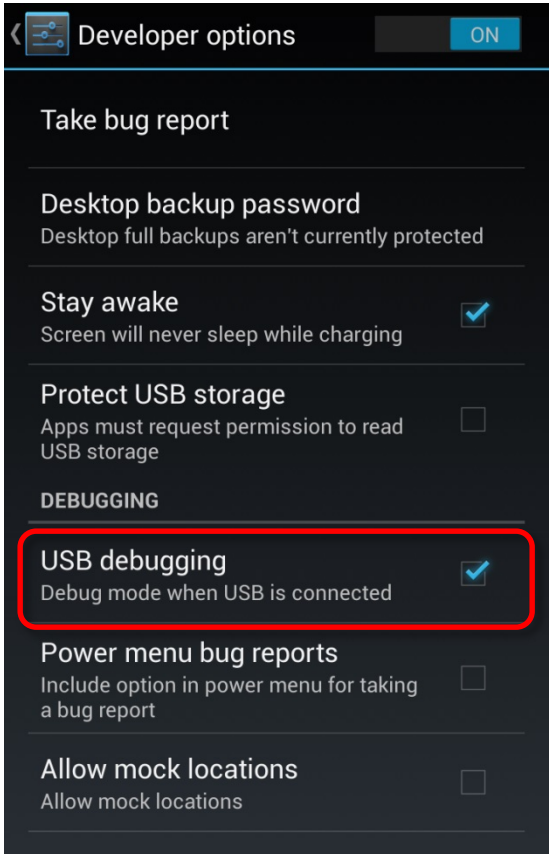
Debugging using a real device

- **Debugging using a real device must be part of your testing**
  - AVDs are not perfect replications of real devices
    - Some features are difficult to simulate
    - Some features behave slightly different
  - Debugging on a real device requires extra setup
    - Enable USB debugging on your phone
    - Install USB drivers on your desktop computer

Enable USB debugging on a device

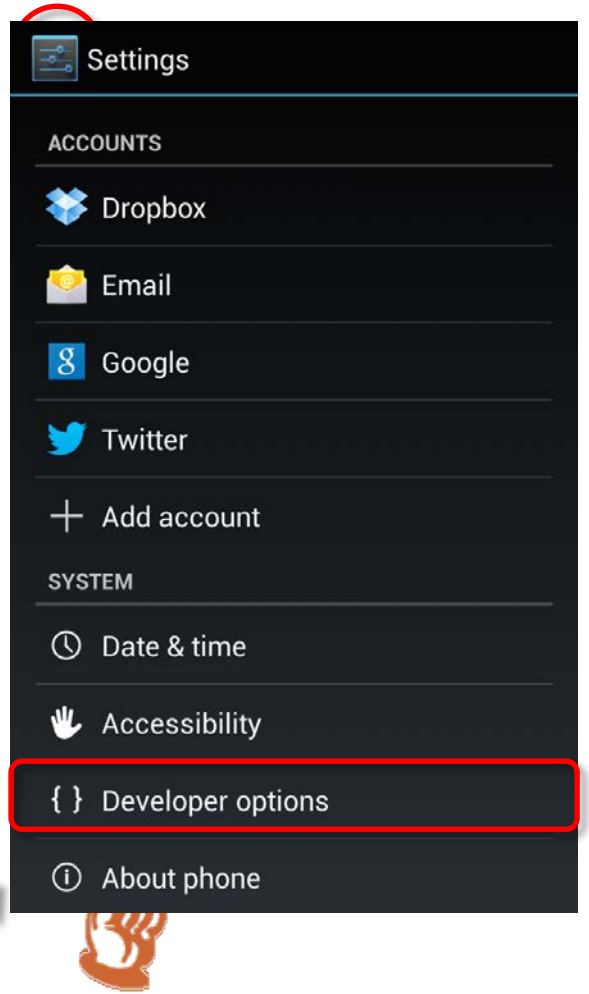
- **Enabling USB debugging is easy … well … sort of**
  - Simply check the "USB debugging" entry on the appropriate screen
  - The location of the checkbox varies by Android version
    - On most pre-Android 4.0 devices
      - Settings > Applications > Debugging
    - On most Android 4.0 and 4.1 devices
      - Settings > Developer Options
    - And then there's Android 4.2 and newer devices…





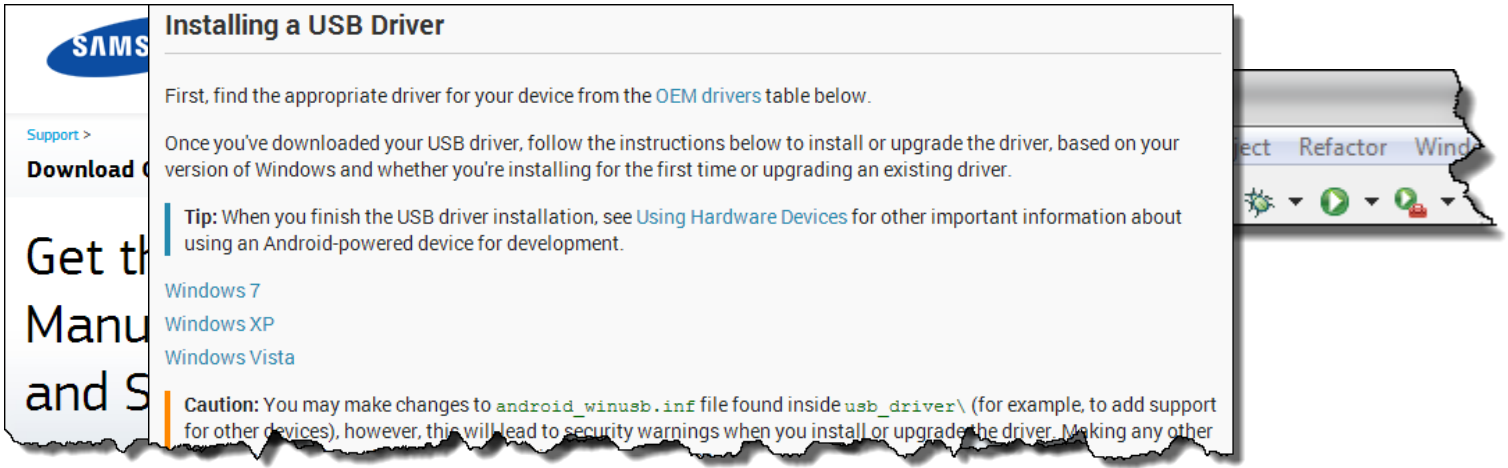
Enable USB debugging on Android 4.2 device

- **Starting in Android 4.2, Developer Options is hidden**
  - You must specifically make Developer Options available
    - Open Settings menu
    - Select “About phone”
    - Scroll until “Build number” is visible
    - Tap on the “Build number” 7 times
  - Once enabled, the same as 4.0 & 4.1 devices
    - Settings > Developer options



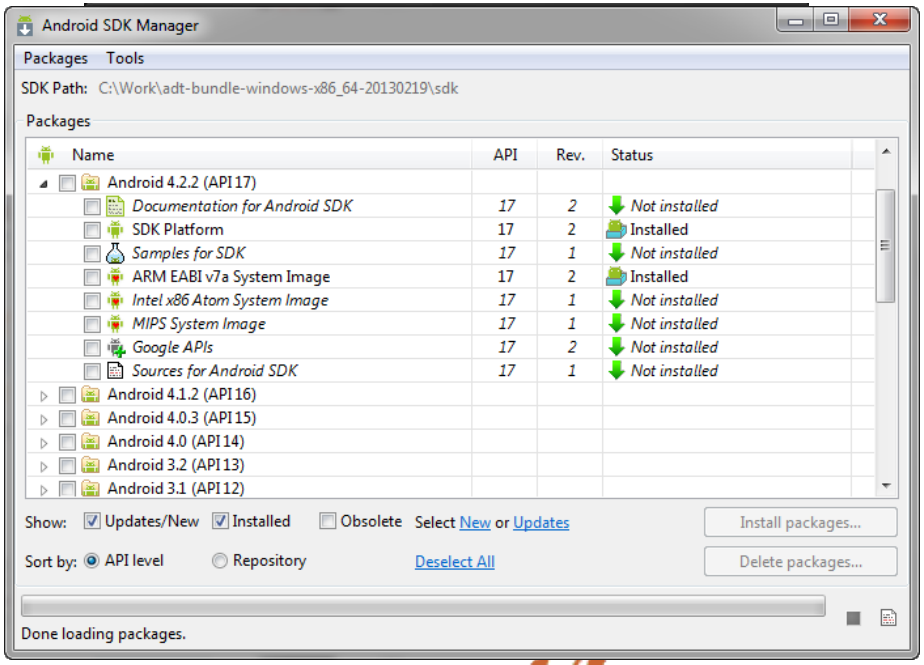
Install USB drivers on your desktop

- **The USB driver enables dev tools to communicate with device**
  - You must download the appropriate USB driver for your device
    - Most "Android Developer Phones" use the Google USB Driver
      - Available through SDK Manager
      - Examples of phones this applies to are Nexus 1 and Nexus s
    - The Galaxy Nexus relies on a Samsung provided driver
      - Download from: http://bit.ly/13GS2ML
    - For all other phones, you must download the manufacturer drivers
      - List of manufacturer download sites: http://bit.ly/15Va7Lc
  - Install the USB driver much like any other
    - Specific instructions for each version of Windows at http://bit.ly/11RhKy6



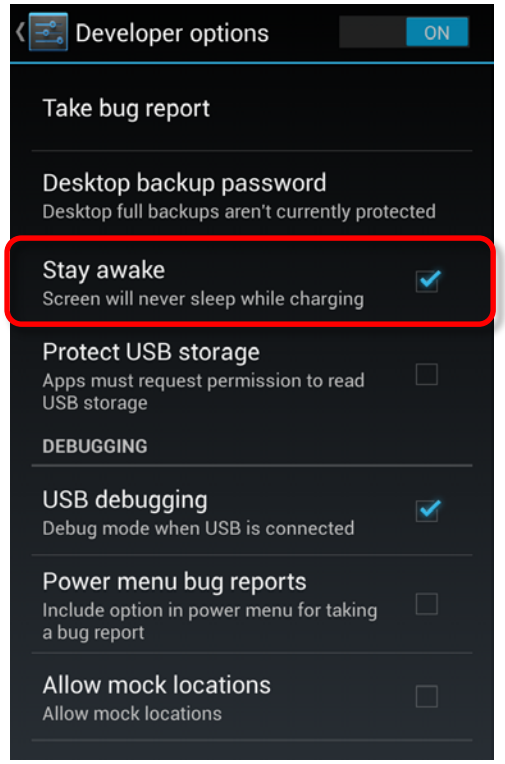
Special considerations for Android 4.2.2 or newer

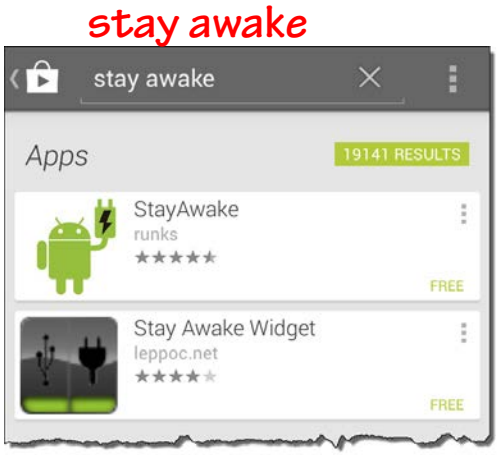
- **Android 4.2.2 increased the security on USB debugging**
  - Device prompts you the first time it's connected to a desktop
    - Will present an RSA key for that desktop
    - You must tell the device to accept the key to be able to debug
  - You must be sure that you have an up-to-date version of the tools
    - Needs to be Android Platform Tools r16.0.1or newer
    - If you installed the ADT Bundle in the past, use SDK Manager to update

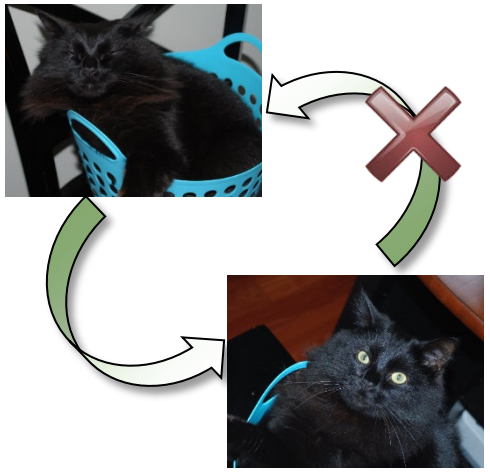


Stay Awake

- **A helpful debugging setting is to keep the device awake**
  - Device going to sleep can be annoying during debugging
  - Can set device to stay awake when connected to USB
    - Many devices have setting on Developer Options screen
    - If no device option, can download app that provides this behavior







Summary

- **Android Developer Tools (ADT) Bundle is the core of development**
- **Need to also install JDK**
  - Be sure you download and install the correct version
- **Android Virtual Devices allow testing of apps on desktop**
  - AVD definitions represent device configurations
  - Must make an image from a definition to run your code
- **Testing your code on a real device requires some extra setup**
  - Enable USB debugging on device
    - Remember that option is hidden on Android 4.2 and newer
  - Install appropriate USB driver on desktop
- **Enable Stay Awake feature to ease debugging effort**