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Android Platform

Getting Started

CSCI 4100U: Mobile Devices

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Outline

- In this section, we'll learn about:
  - The development environment
  - Debugging
  - The Android device emulator
    - Limitations
  - Deploying to real devices

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Android Platform

Development Environment

Android Studio

- Android Studio is a product developed jointly by Google and JetBrains
  - JetBrains had previously released a product called IntelliJ which developers found better than using Eclipse
  - IntelliJ and Android Studio are very similar
- Android Studio features:
  - Graphical user interface editor
  - Autocomplete
  - Integrated debugger
  - Integrated with Android SDK tools
  - Support for build environment (Gradle)

Android Studio

- Download Android Studio from:
  - `https://developer.android.com/sdk/index.html`
- Installing Android Studio is pretty straightforward:
  - First, install the Java development kit (Java SDK)
  - Windows: Double-click the installer
  - Mac:
    - Mount the .dmg file
    - Drag the app to the Applications folder
  - Linux:

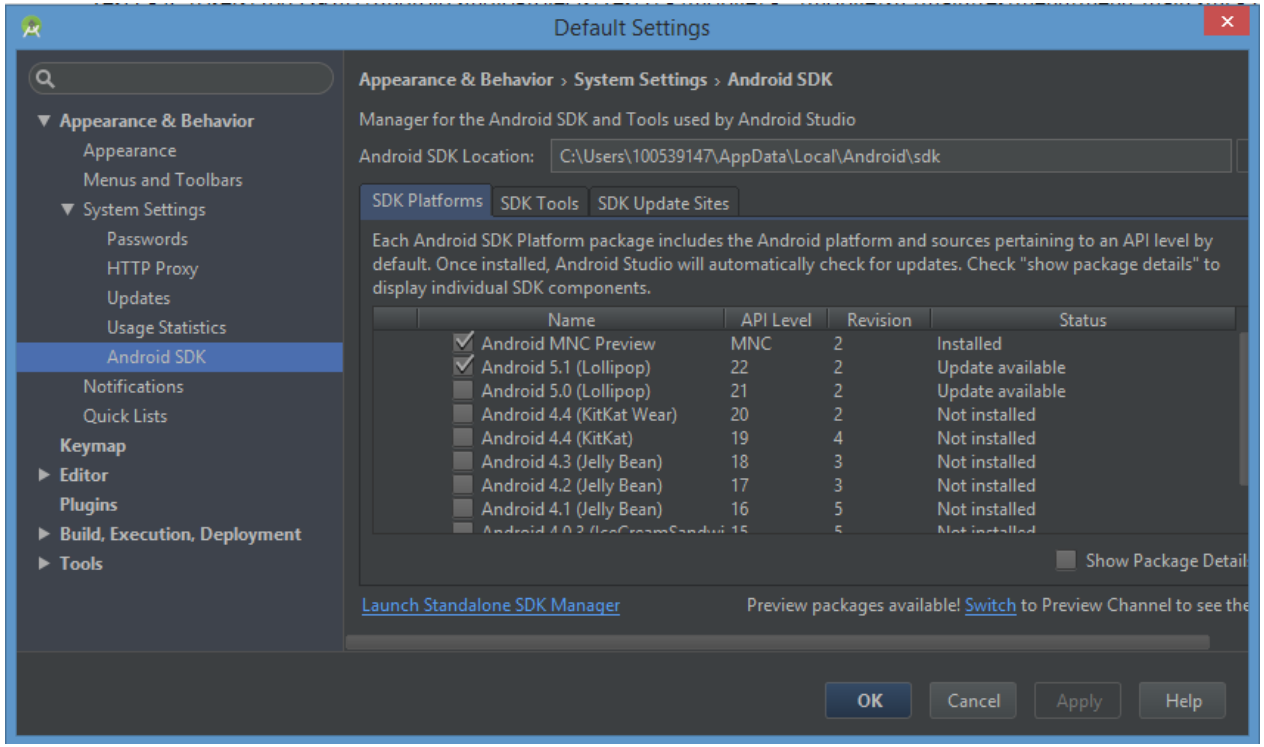
```
sudo add-apt-repository ppa:paolorotolo/android-studio
sudo apt-get update
sudo apt-get install android-studio
```

Android SDK

- The Android Studio package includes the Android SDK
  - Android SDK is a package of tools for Android developers
- Relevant tools allow you to:
  - Download more platform versions
  - Create virtual devices (emulated devices)
  - Deploy to real devices
  - Debug apps running on real or virtual devices
  - Interfacing with the emulator’s file system, ‘sensors’, etc.

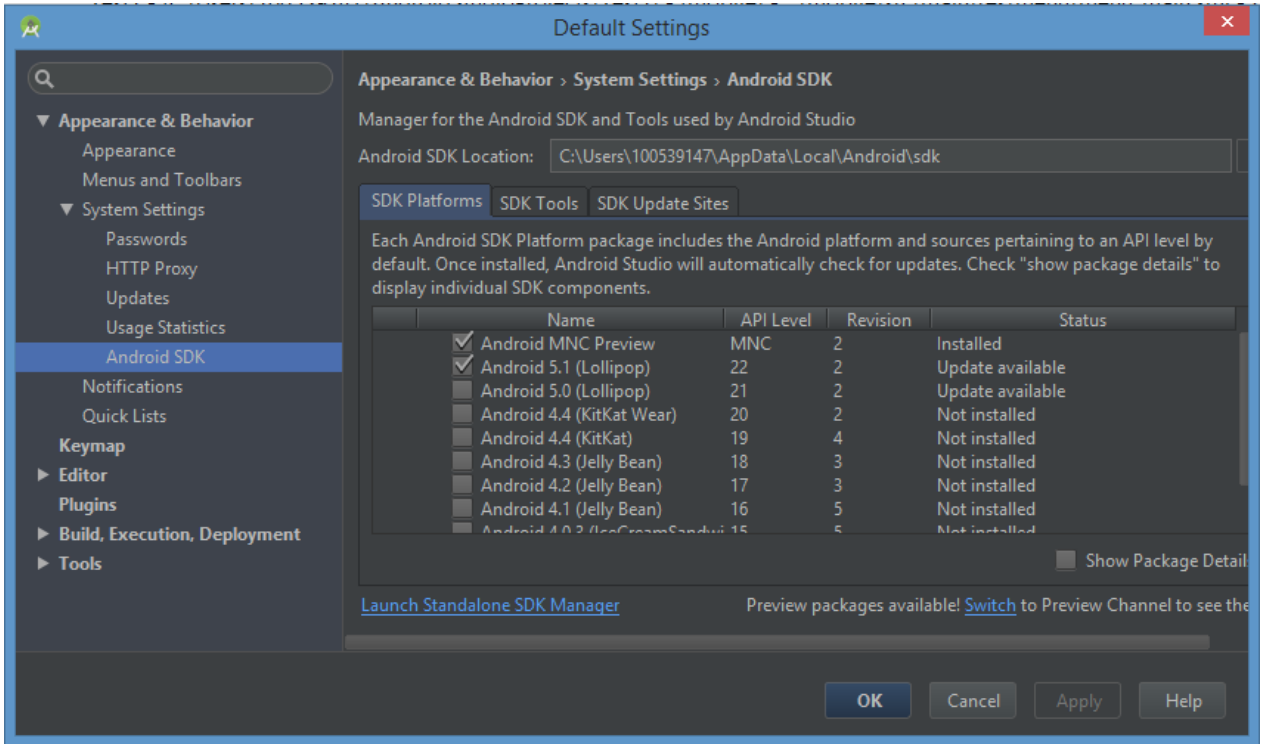
Android Studio: Platforms

- Run Android Studio
- We'll use SDK Manager to create install other platform versions (part of the Android SDK)
  - Choose Tools → Android → SDK Manager:



Android Studio: Platforms

- Install versions that you think your customers might use
  - To test, you'll need to create a device for each platform version
  - Obviously, this is time consuming

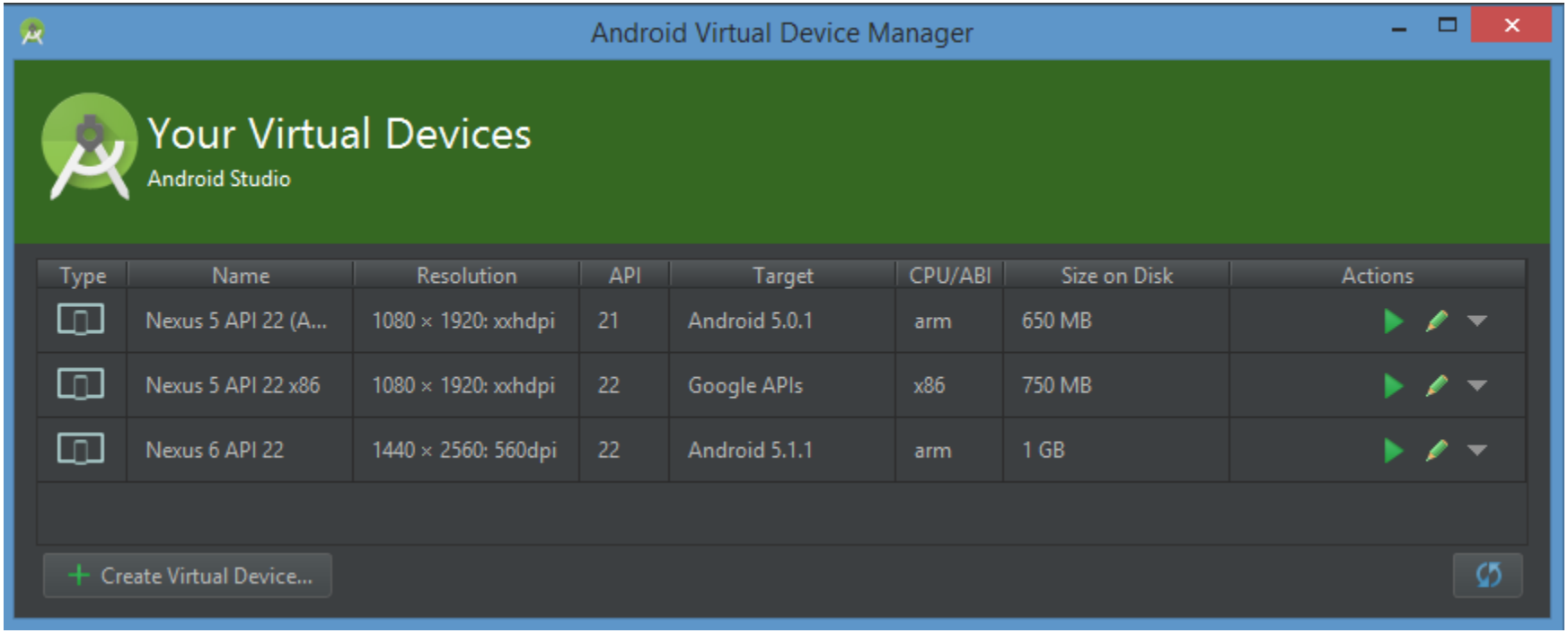


A Note on Platforms

- Android projects have two platform settings:
  - Target
    - This specifies the platform version that you want to use for primary testing
    - e.g. 5.1
  - Minimum SDK version
    - Google Play will restrict people with earlier versions from downloading your app
    - e.g. 4.0

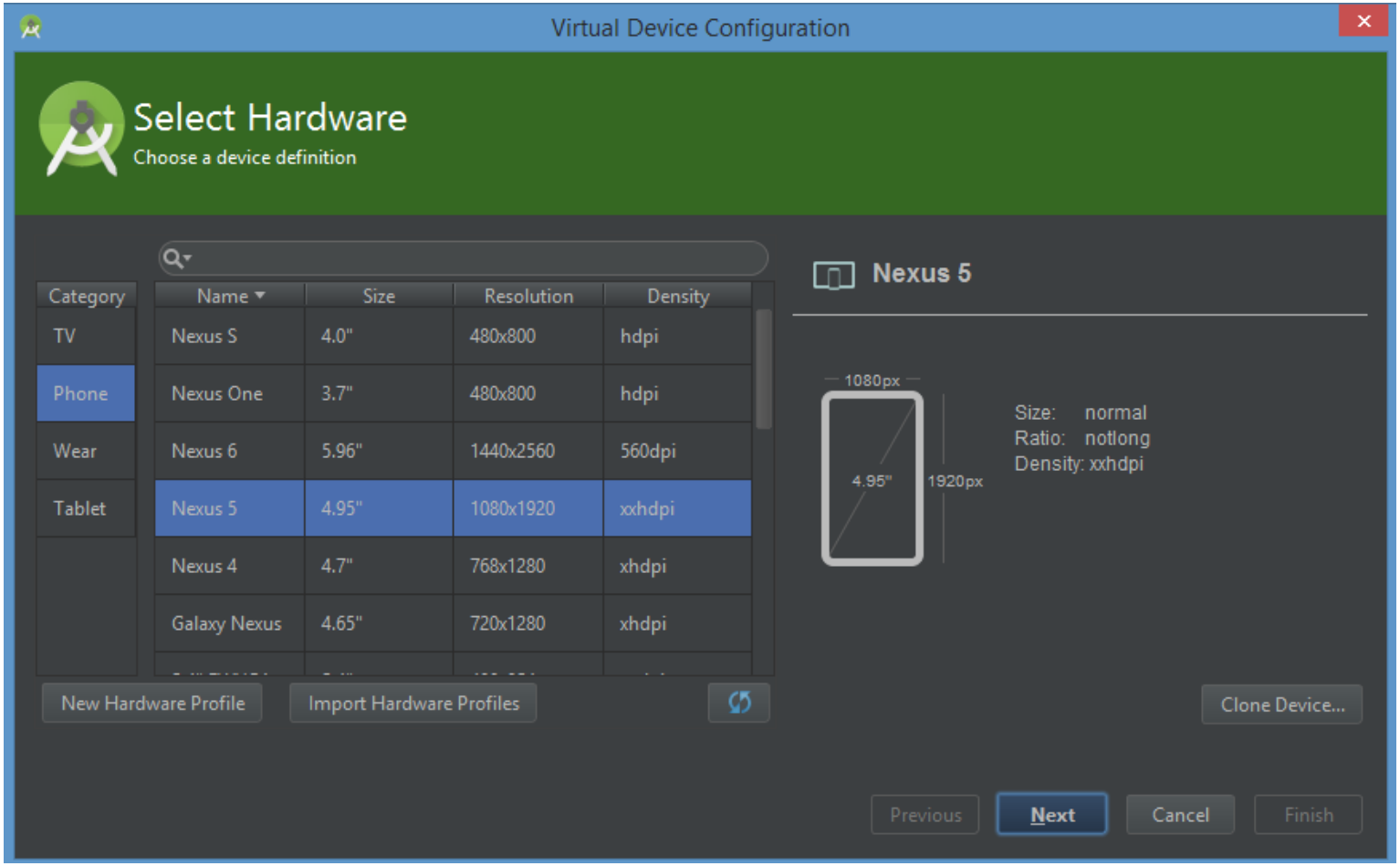
Android Studio: Virtual Devices

- Run Android Studio
- We'll use AVD Manager to create a device (part of the Android SDK)
  - Choose Tools → Android → AVD Manager:



Android Studio: Virtual Devices

- Choose ‘Create Virtual Device’



Android Studio: Virtual Devices

- Choose your parameters
  - For the UOIT laptops, that do not have VT-x enabled in the BIOS, you'll need to use an ARM platform, not x86
    - x86 is quite a bit faster, but requires virtualization support to be enabled for your CPU
  - CPU, memory, platform version are up to you
    - Choose a device that represents a typical customer
    - Click 'Finish' when done
- Start your device by clicking the play button

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Demo and Tour

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Wrap-up

- We are now familiar with:
  - Using Android Studio for Android Development
  - Installing new platforms
  - Creating and running virtual devices
  - The basic structure of an Android app
  - How to run Android apps on virtual devices