

# PhoneGap

Lesson I

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# Source Codes

<https://github.com/makzan/PhoneGap-Course-Examples>

# The mobile apps

# The mobile apps

- Every mobile brand is rolling out their mobile app stores

# Difficulties

- Every brand comes with their development toolkit and favorite language.
- XCode for iOS with Objective-C
- Android SDK with Java
- Windows Phone with C#
- BlackBerry SDK with Java
- Palm SDK with HTML and JavaScript

# The mobile web

# The modern web

- HTML5
- CSS3
- the new JavaScript

# CSS3

- Media Query
  - ▶ Define styles for different screen dimension
- Transition and Animation
  - ▶ GPU accelerated animation
- Color and Gradients

# HTML

- HTML, HTML4, HTML5, HTML6
- Local Storage
- Offline Cache
- Canvas
- New tags and attributes

# JavaScript

- Canvas API
- Local Database

# JavaScript

- Device API
  - ▶ Location
  - ▶ Orientation
  - ▶ Accelerometer
  - ▶ Gyroscope
  - ▶ Camera is coming

# The current problem of web application

- Lack of device access (yet)
  - No camera, No contact list, No local file access...
- Execution is slower than native application

# PhoneGap

- Provides device access for web application.
- Unifies the device access API.
- It is now part of the Apache and renamed to Cordova.

# How PhoneGap works

- Able to run a web view inside native app
- Able to communicate between the web and the native app
- PhoneGap fill in the gap that different device uses different approaches for web to communicate with native app.

# The mobile web

- Most of the mobile web browsers are based on WebKit
- Webkit is the web rendering engine behind Google Chrome and Safari.
- Webkit is modern that supports latest web standard.
- Webkit executes JavaScript fast.

# The mobile web

- CSS media query
  - Define style based on the screen dimension
  - Faster JavaScript execution

# How mobile web application differs from traditional web?

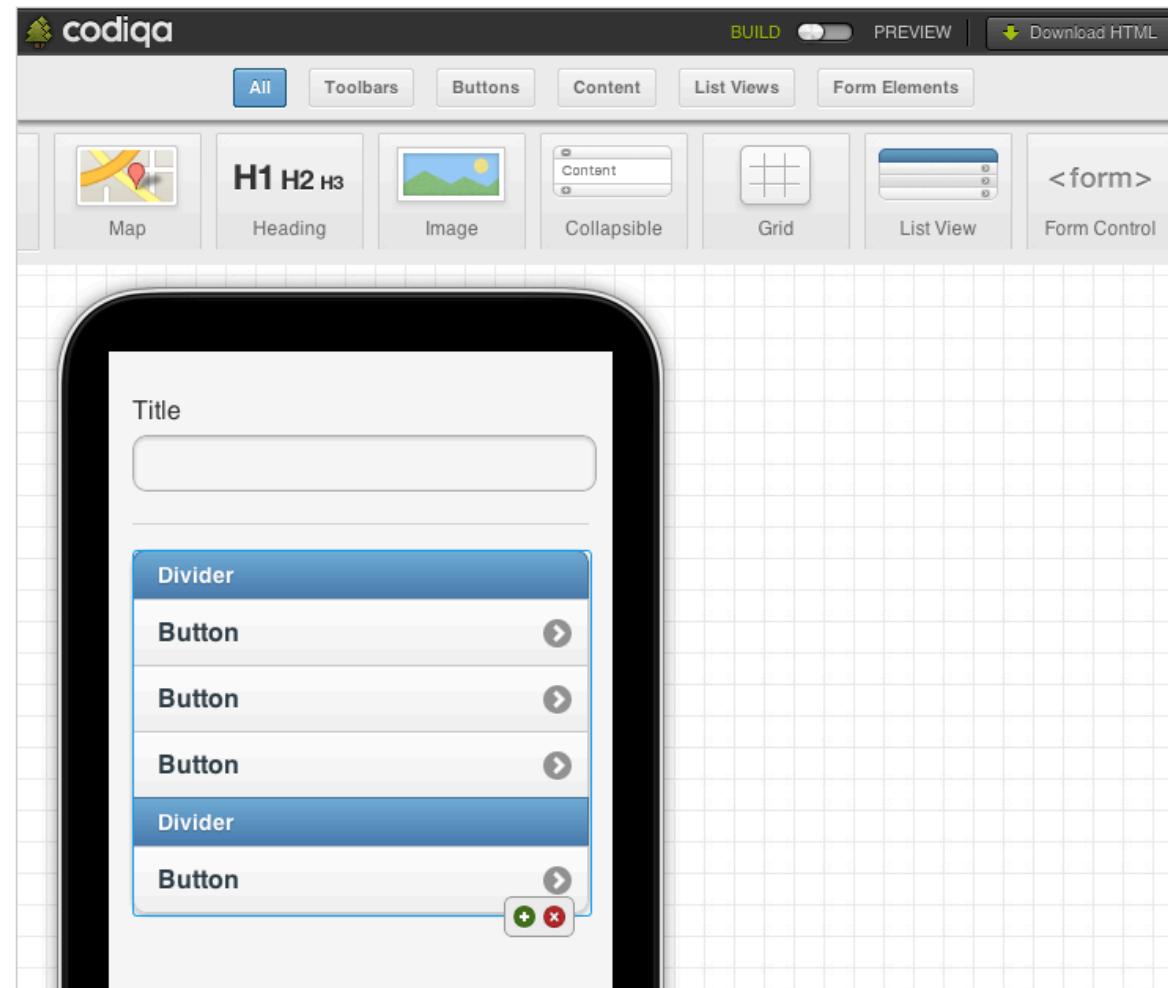
- Tapping area for small screen
- Listing things vertically
- Network not so reliable.
  - We need to put things offline
- Putting content into one page.

# jQuery Mobile

- Single Page Application
- Put page into <div> tags
- iOS-like User Interface

<http://jquerymobile.com/test/>

# jQuery Mobile



Try before we start writing code.

# Installing Android SDK

- You need to have JDK installed.
- (Optionally) You can install Android Development Plugin for Eclipse.
- Be sure to install it in place other than C:\ Program Files

# Installing Android SDK

The screenshot shows a web browser window with the URL [developer.android.com/sdk/index.html](http://developer.android.com/sdk/index.html). The page is titled "Android Developers" and has tabs for "Design", "Develop", and "Distribute". The "Tools" tab is selected. On the left, there's a sidebar with "Developer Tools" and a "Download" section containing links for "Installing the SDK", "Exploring the SDK", "NDK", "Workflow", "Tools Help", "Revisions", "Extras", "Samples", and "ADK". The main content area features a large image of an Android robot standing on a stack of blue blocks. To the right, a section titled "Get the Android SDK" explains that the SDK provides API libraries and developer tools for building apps. It includes a prominent blue "Download the SDK for Windows" button and links for "Other platforms" and "System requirements". At the bottom, there's a note about Creative Commons Attribution 2.5 licensing and links for "About Android", "Legal", and "Support".

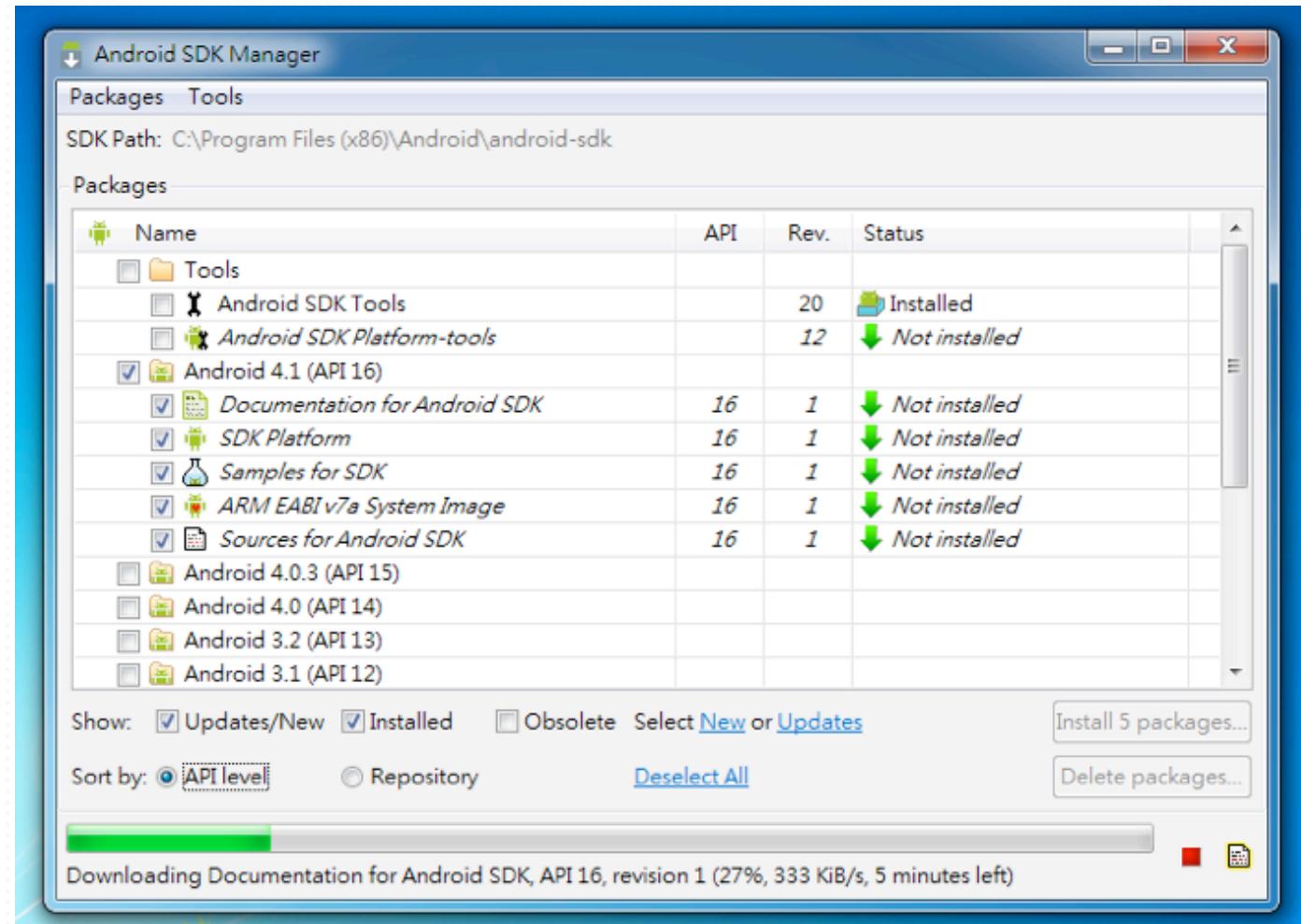
## Download the Android SDK

# Installing Android SDK

The screenshot shows a web browser window with the title bar "Eclipse downloads - mirror" and "Java SE Downloads". The address bar contains the URL "www.oracle.com/technetwork/java/javase/downloads/index.html". The page itself is the Oracle Java SE Downloads page. At the top, there's a navigation bar with links for "Products and Services", "Solutions", "Downloads", "Store", "Support", "Training", "Partners", "About", and "Oracle Technology Network". Below this is a secondary navigation bar with links for "Overview", "Downloads" (which is selected), "Documentation", "Community", "Technologies", and "Training". The main content area is titled "Java SE Downloads" and features four download buttons for "Latest Release": Java (with Java logo icon), JavaFX (with JavaFX logo icon), NetBeans (with NetBeans logo icon), and Java EE (with Java logo icon). To the left of the main content is a sidebar with links for Java SE, Java EE, Java ME, Java SE Support, Java SE Advanced & Suite, Java Embedded, JavaFX, Java DB, Web Tier, Java Card, and Java TV. To the right of the main content are two columns of links under "Java SDKs and Tools" and "Java Resources".

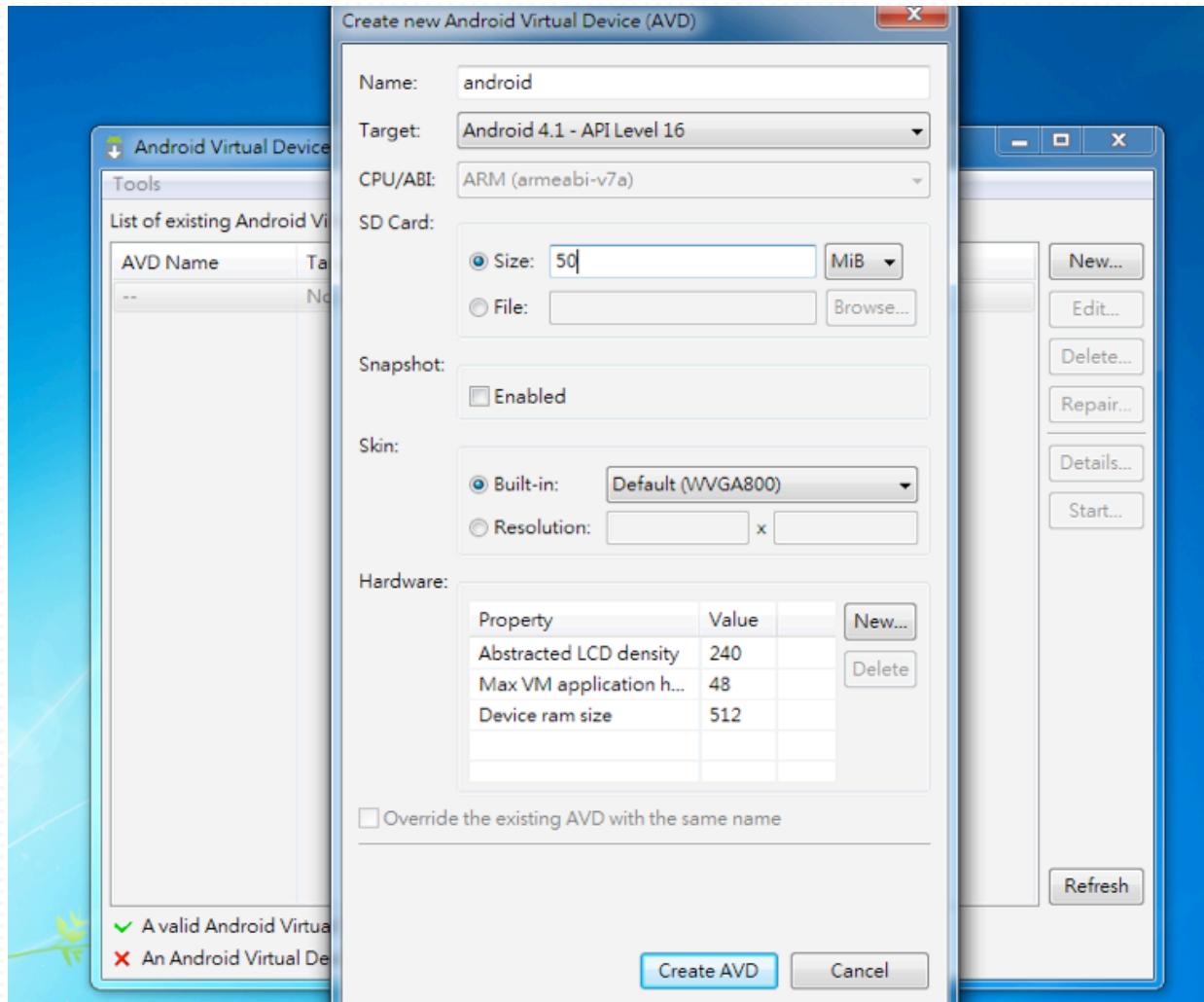
If JDK is not installed, we need it before installing Android SDK.

# Installing Android SDK



In the SDK Manager, select android version to install.

# Android Virtual Device



After SDK installation, we need to create a virtual device

# Android Virtual Device



This is the android emulator running.

# Setup Eclipse for Android

Installing the Eclipse Plug x Eclipse Downloads x f (19) Facebook x

www.eclipse.org/downloads/ Startup Quote + Pocket + Save to drafts Pin It Preview and Edit St... Extract Style Sheets Preview Page WatchList Today Signals CSS Edit Read Later » 其他書

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## Eclipse Downloads

Packages Projects Follow @EclipseFdn 誉 2.7 萬

Eclipse Juno (4.2) Packages for Windows

Eclipse IDE for Java EE Developers, 221 MB Downloaded 422,555 Times Details	Windows 32 Bit Windows 64 Bit
Eclipse Classic 4.2, 182 MB Downloaded 313,082 Times Details Other Downloads	Windows 32 Bit Windows 64 Bit
Eclipse IDE for Java Developers, 149 MB Downloaded 167,956 Times Details	Windows 32 Bit Windows 64 Bit
Actuate BIRT iServer Dashboards, analytics & interactive reporting - with secure scheduled deployment Promoted Download	Download Windows 32 Bit
Eclipse IDE for C/C++ Developers 143 MB Downloaded 29,129 Times Details	Windows 64 Bit

Installing Eclipse

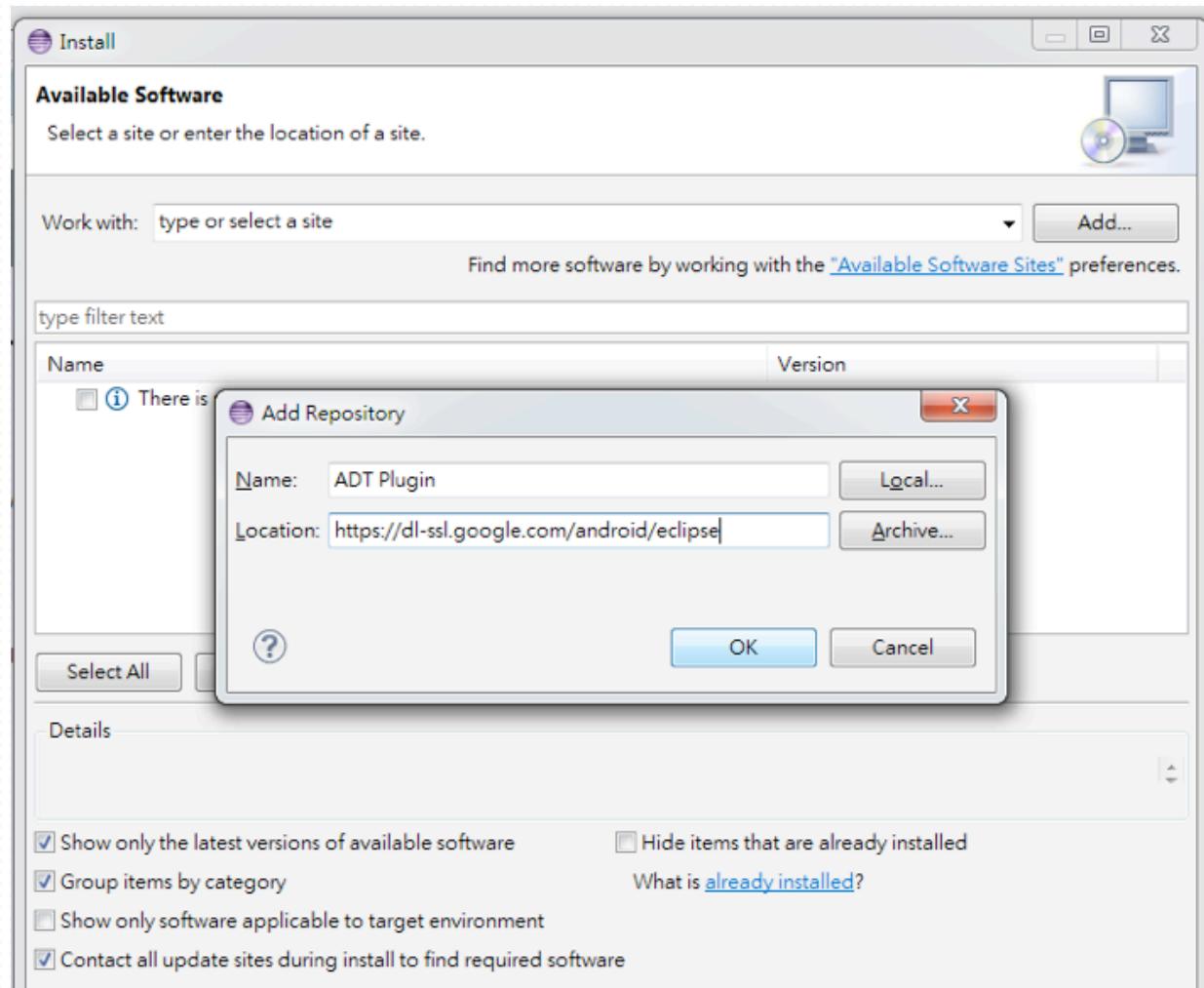
- Install Guide
- Compare/Combine Packages
- Known Issues
- Updating Eclipse

ORACLE Enterprise Pack for Eclipse

Google provide official SDK plugin for Eclipse

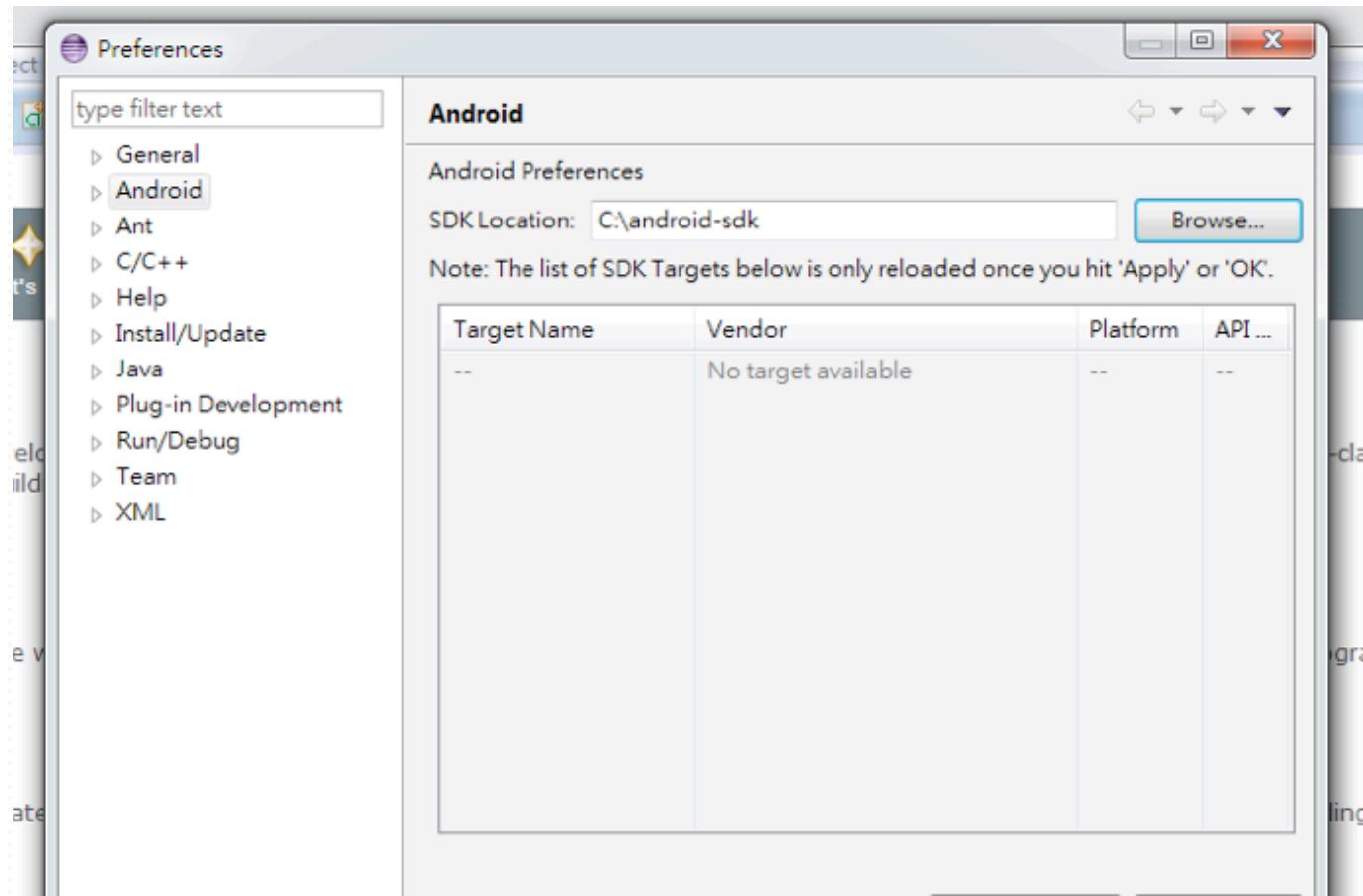
Related LINKS Documentation

# Setup Eclipse for Android



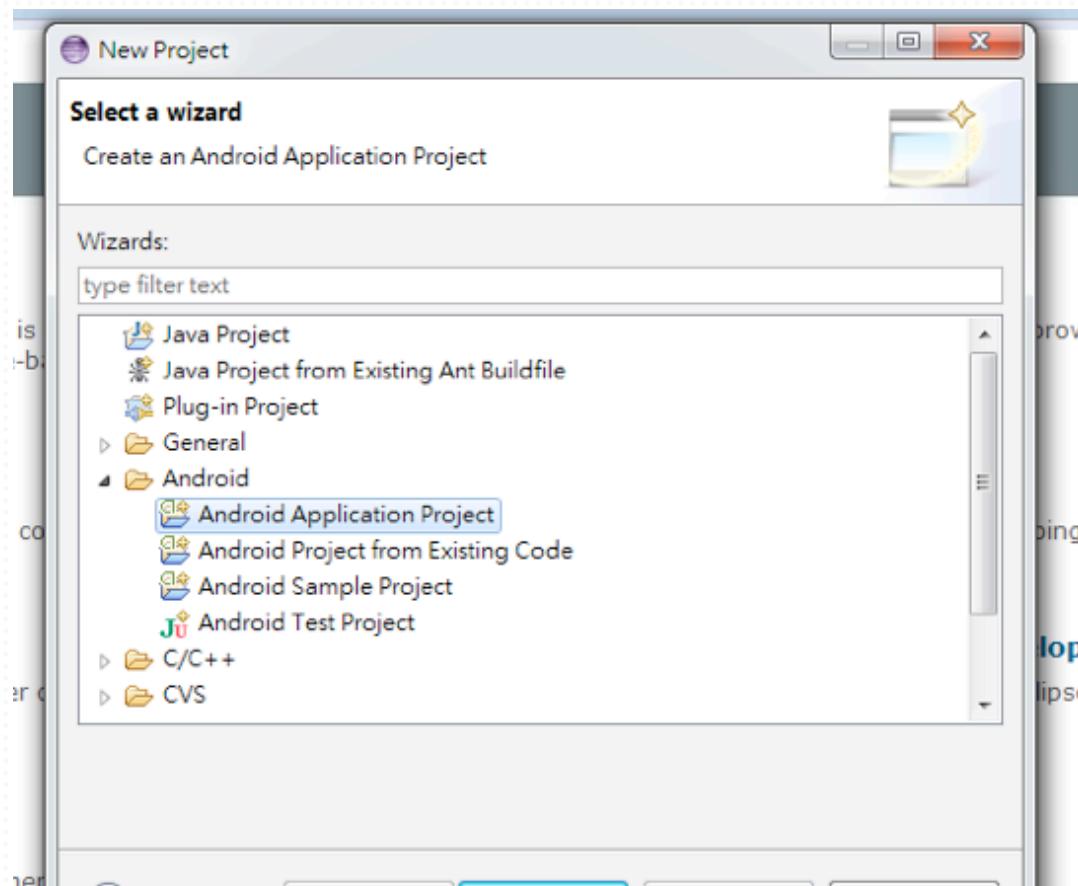
Add the Android Developer Toolkit URL in Eclipse.

# Setup Eclipse for Android



There is an issue that Google installs android SDK inside Program Files directory. It is suggested to move it outside the Program Files. Then we need to configure the SDK location in Eclipse.

# Creating Android Project



Now we should be able to create new  
Android project in Eclipse.

# Creating Android Project

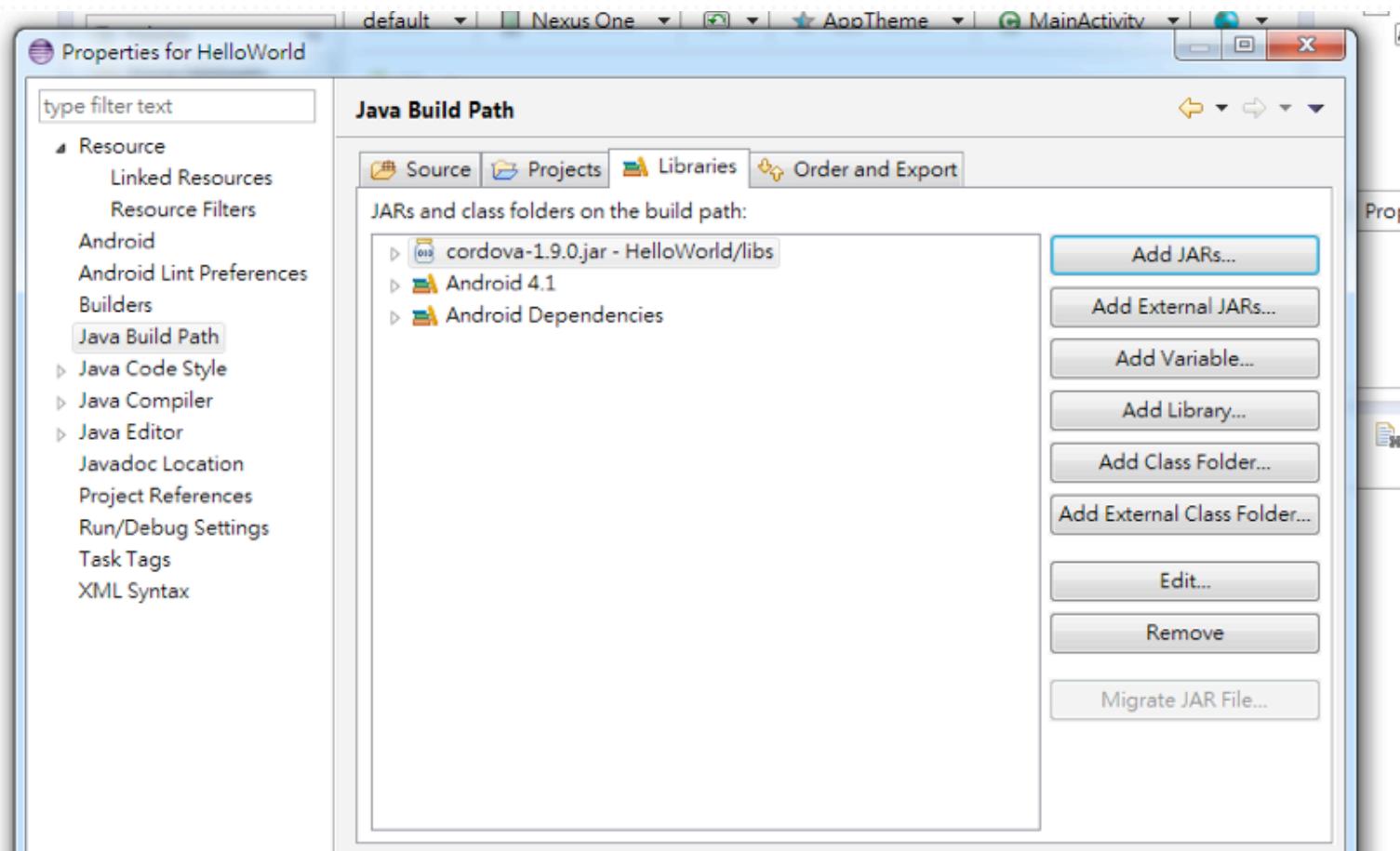
- Create new Android project in Eclipse
- Once the project is created, ensure the following folders are there. Or create them.

/libs

/assets/www

- copy cordova-1.9.0.js to assets/www
- copy cordova-1.9.0.jar to libs
- create a file named index.html inside assets/www

# Creating Android Project



After import the cordova.jar, we need to ensure it is presented in the Java Build Path.

# Creating Android Project



The screenshot shows a code editor window with the file `MainActivity.java` open. The code is written in Java and defines a class `MainActivity` that extends `DroidGap`. The `onCreate` method is overridden to load the URL from the file:///android\_asset/www/index.html asset.

```
activity_main...  MainActivity.j...  C:\Users\makz...  index.html  HelloWorld Ma...
package com.example.helloworld;

import android.os.Bundle;
import org.apache.cordova.*;

public class MainActivity extends DroidGap {

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        super.loadUrl("file:///android_asset/www/index.html");
    }

}
```

In the `MainActivity.java`, we modify the original code to the above one.

# PhoneGap on iPhone

- You need a Mac.
- XCode can be found on App Store.
- It's free to run app on iOS simulator.
- You need to enroll into the iOS developer program to run the app on actual device.

# Installing XCode

The screenshot shows the Mac App Store interface. At the top, there's a navigation bar with icons for Featured, Top Charts, Categories, Purchases, and Updates, along with a search bar. Below the navigation bar, the Xcode app page is displayed. On the left, there's a large icon of a hammer and blueprints, with the word "Xcode" next to it. A "Installed" button is visible below the icon. In the center, there's a thumbnail image of a Mac monitor displaying the Xcode IDE interface. To the right of the thumbnail, there's a brief description of Xcode: "Xcode provides everything developers need to create great applications for Mac, iPhone, and iPad. Xcode 4 has been streamlined to help you write better apps. It has unified user interface design, coding, testing, and debugging all within a single window. The Xcode IDE analyzes the details of your project to identify mistakes in both syntax and logic, it can even help fix your code for you." Below this description, there's a "...More" link. Further down, there's a section titled "What's New in Version 4.3.3" with a bulleted list: "Includes iOS 5.1 SDK and an updated SDK for OS X Lion.", "Provides additional bug fixes and stability improvements....", and "...More". To the right of the main content, there are links to "Apple Web Site", "Xcode Support", and "App License Agreement", each with a "More" link. At the bottom, there's a preview window showing the Xcode welcome screen and a sidebar with recent projects. To the right of the preview window, there's an "Information" sidebar with details about the app: Category: Developer Tools, Updated: 11 June 2012, Version: 4.3.3, Price: Free, Size: 1.43 GB, Language: English, Developer: iTunes S.a.r.l., © 2012 Apple Inc., Rated 4+, Requirements: OS X 10.7.3 or later.

**Xcode**

Xcode provides everything developers need to create great applications for Mac, iPhone, and iPad. Xcode 4 has been streamlined to help you write better apps. It has unified user interface design, coding, testing, and debugging all within a single window. The Xcode IDE analyzes the details of your project to identify mistakes in both syntax and logic, it can even help fix your code for you.

...More

**What's New in Version 4.3.3**

- Includes iOS 5.1 SDK and an updated SDK for OS X Lion.
- Provides additional bug fixes and stability improvements....

...More

**Apple Web Site**

**Xcode Support**

**App License Agreement**

**Information**

Category: Developer Tools  
Updated: 11 June 2012  
Version: 4.3.3  
Price: Free  
Size: 1.43 GB  
Language: English  
Developer: iTunes S.a.r.l.  
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Rated 4+  
Requirements: OS X 10.7.3 or later

# The Project

- You are going to work on a project after the course.
- Plan earlier.