

# Android Environment SDK

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Notes are based on:

Android Developers

<http://developer.android.com/index.html>



# Android Environment: Eclipse & ADT



The Android Development Tools (ADT) plugin for Eclipse adds powerful extensions to the Eclipse integrated development environment. It allows you to create and debug Android applications easier and faster.

## Advantages

1. It gives you access to other Android development tools from inside the Eclipse IDE. For example, ADT lets you access the many capabilities of the DDMS tool: *take screenshots, manage port-forwarding, set breakpoints, and view thread and process information* directly from Eclipse.
2. It provides a *New Project Wizard*, which helps you quickly create and set up all of the basic files you'll need for a new Android application.
3. It *automates and simplifies the process of building* your Android application.
4. It provides an *Android code editor* that helps you write valid XML for your *Android manifest* and *resource files*.
5. It will *export* your project into a signed APK, which can be distributed to users.

# Android Setup Videos



Web resources available at

<http://www.hometutorials.com/google-android.html>

Five videos, a bit older (SDK1.0) but useful nonetheless.

1. How to setup Java.
2. How to install Eclipse IDE
3. How to Install Android SDK for Windows.
4. Installing Eclipse ADT plugin
5. Application development: "Hello World" using Eclipse + Android





# Android Setup Tutorial

## **Web resources available at:**

<http://androidcore.com/android-programming-tutorials/216-how-to-install-the-android-sdk-on-windows-xp.html>

## **How to install the Android SDK on Windows XP and Create an Application that Runs in the Android Emulator**

This (PPT) tutorial shows you how to download and install Android SDK (r1.0) to get you started developing Android applications (do the same for r1.5).

1. Download and Install the Android SDK and Test the Emulator
2. Install Java
3. Install Eclipse
4. Install the ADT Plugin in Eclipse
5. Create Hello World Application



# Android Setup Tutorial

This section is based on the tutorial available at:

<http://androidcore.com/android-programming-tutorials/216-how-to-install-the-android-sdk-on-windows-xp.html>

## Step 1. Download and Install the Android SDK and Test Emulator

1. Create a folder called "c:\android" in your c: hard-drive.
2. Go to [http://developer.android.com/sdk/1.5\\_r2/index.html](http://developer.android.com/sdk/1.5_r2/index.html)
3. Click on the android\_sdk\_windows... link, download and save it to c:\android.

### Download Android 1.5 SDK, Release 2

May 2009

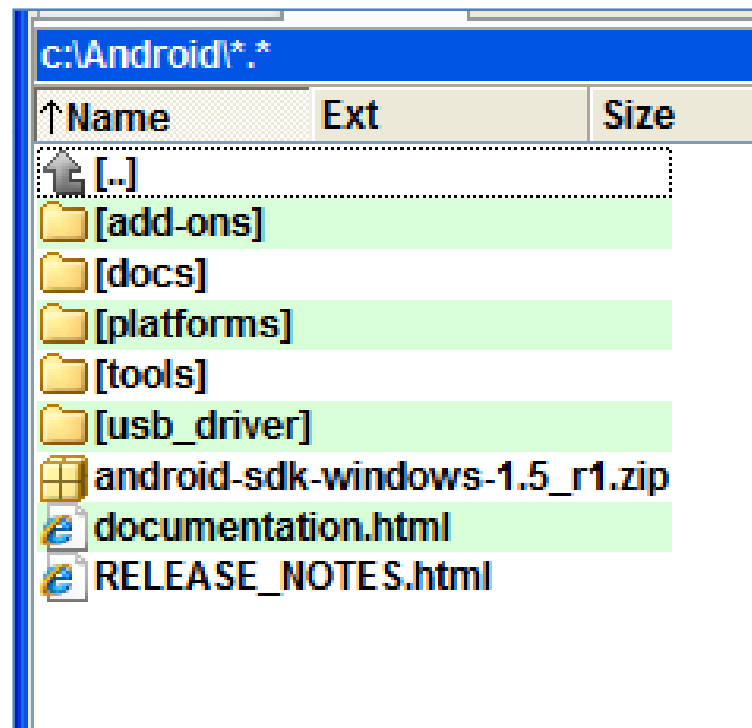
Before downloading, please read the [System Requirements](#) document. As you start the download, you will also need to review and agree to the Terms and Conditions that govern the use of the Android SDK.

Platform	Package	Size	MD5 Checksum
Windows	<a href="#">android-sdk-windows-1.5_r2.zip</a>	171346828 bytes	ba54ac6bda45921d442b74b6de6ff6a9
Mac OS X (intel)	<a href="#">android-sdk-mac_x86-1.5_r2.zip</a>	169945128 bytes	f4e06a5194410243f213d0177713d6c9
Linux (i386)	<a href="#">android-sdk-linux_x86-1.5_r2.zip</a>	165035130 bytes	1d3c3d099e95a31c43a7b3e6ae307ed3



# Android Setup Tutorial

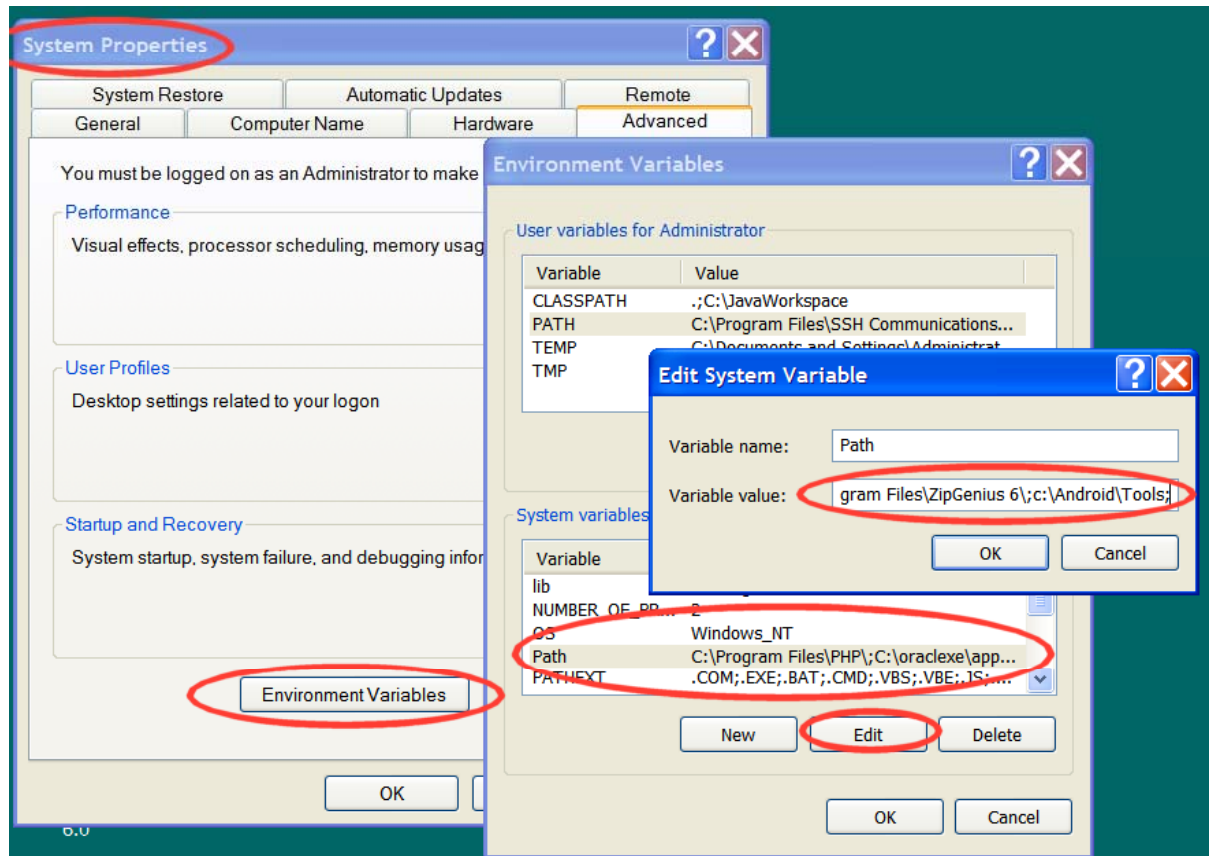
4. Unzip the downloaded file: [android-sdk-windows-1.5\\_r1.zip](#) and place its contents in **c:\android**.





# Android Setup Tutorial

4. Now, set your **Environment Variable** by right click on *My Computer*, and select *Properties*.
5. Under the *Advanced* tab, hit *the Environment Variables* button.
6. In the dialog that comes up, double-click on *Path* under *System Variables* add the full path to the tools/ directory to the path, in this case, it is: **C:\android\tools**.
7. Then click OK , OK , OK.





# Android Setup Tutorial

## Step 2. (see appendix A)

### Creating an Android Virtual Device (AVD)

1. Open a command-line (e.g., "Command Prompt" application on Windows, or "Terminal" on Mac/Linux) and navigate to your SDK package's tools/ directory.

2. First, you need to select a Deployment Target. To view available targets, execute:

**android list targets**

This will output a list of available Android targets. Note the integer value of the id — you'll use this in the next step.

```
C:\Android\tools>android list target
Available Android targets:
id: 1
    Name: Android 1.1
    Type: Platform
    API level: 2
    Skins: HVGA (default), HVGA-L, HVGA-P, QVGA-L, QVGA-P
id: 2
    Name: Android 1.5
    Type: Platform
    API level: 3
    Skins: HVGA (default), HVGA-L, HVGA-P, QVGA-L, QVGA-P
id: 3
    Name: Google APIs
    Type: Add-On
    Vendor: Google Inc.
    Description: Android + Google APIs
    Based on Android 1.5 (API level 3)
    Libraries:
        * com.google.android.maps (maps.jar)
        API for Google Maps
    Skins: QVGA-P, HVGA-L, HVGA (default), QVGA-L, HVGA-P
```





# Android Setup Tutorial

## Step 2. Creating an Android Virtual Deice (AVD) cont.

4. Create a new AVD using your selected Deployment Target. Execute the command:

```
android create avd -n <your_avd_name> -t <available_targetID>
```

### Example:

```
android create avd -n myAVD3 -t 3
```

Later you'll see how the AVD is used when launching your application on an emulator.

```
C:\WINDOWS\system32\cmd.exe

C:\Android\tools>android list target
Available Android targets:
id: 1
  Name: Android 1.1
  Type: Platform
  API level: 2
  Skins: HVGA (default), HVGA-L, HVGA-P, QVGA-L, QVGA-P
id: 2
  Name: Android 1.5
  Type: Platform
  API level: 3
  Skins: HVGA (default), HVGA-L, HVGA-P, QVGA-L, QVGA-P
id: 3
  Name: Google APIs
  Type: Add-On
  Vendor: Google Inc.
  Description: Android + Google APIs
  Based on Android 1.5 (API level 3)
  Libraries:
    * com.google.android.maps (maps.jar)
    API for Google Maps
  Skins: QVGA-P, HVGA-L, HVGA (default), QVGA-L, HVGA-P

C:\Android\tools>android create avd -n myAVD3 -t 3
Created AVD 'myAVD3' based on Google APIs (Google Inc.)

C:\Android\tools>
```



# Android Setup Tutorial

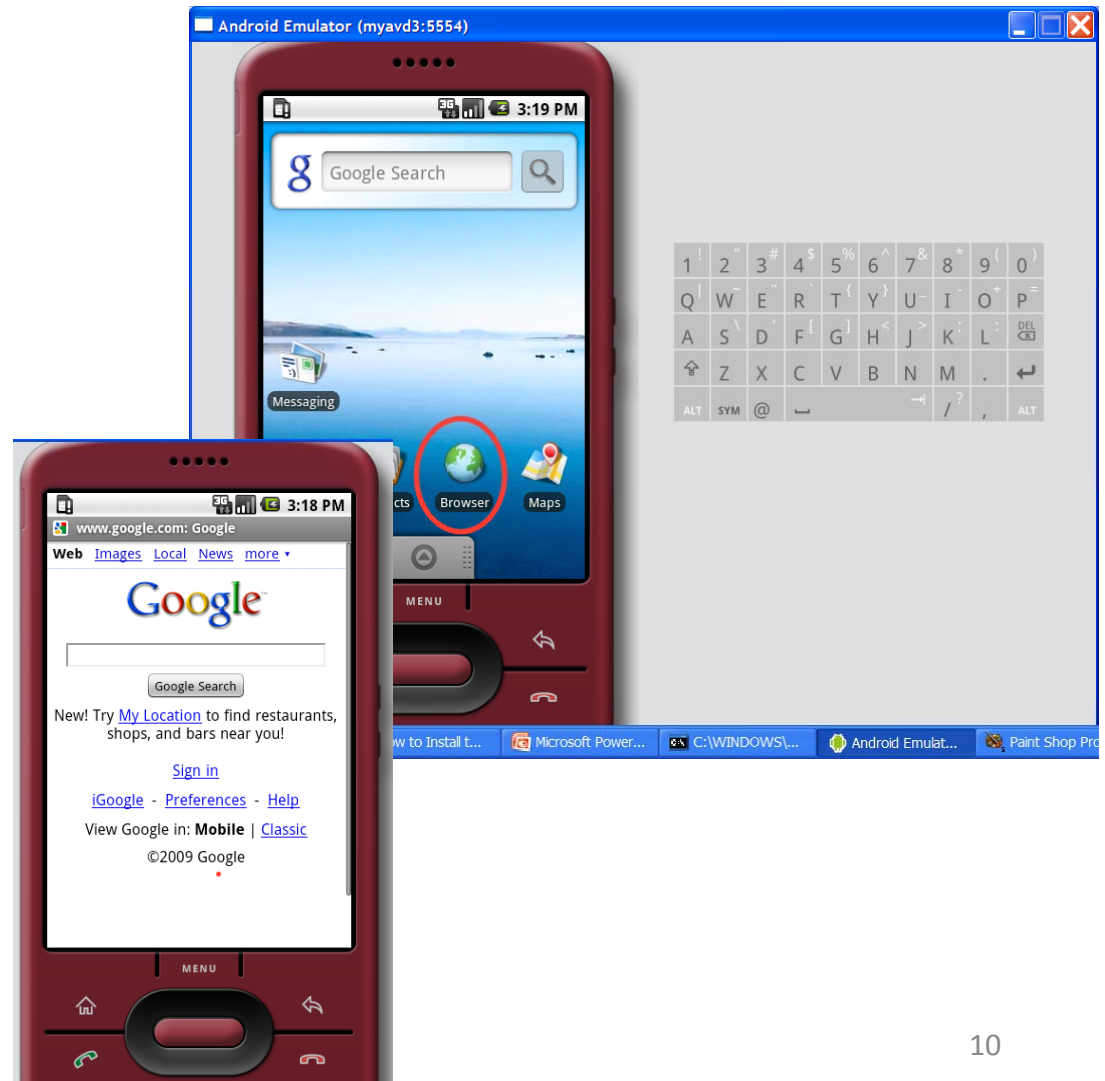
## Step 3. Test Android Emulator

Use Command Prompt to enter the following command

```
emulator -avd myAVD3
```

This invokes an instance of the emulator  
Using the AVD defined in the previous  
Step. *It may take a while to start !!!.*

Click on Browse icon, you *should* reach  
Phone's default web-site (Google.com).

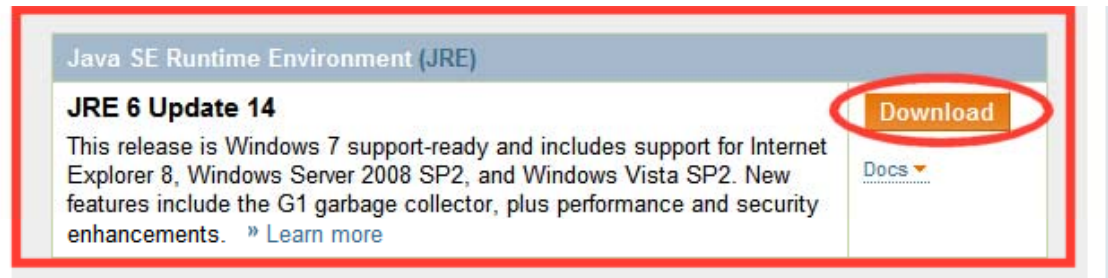




# Android Setup Tutorial

## Step 4. Install Java

1. Go to <http://developers.sun.com/downloads/>
2. Expand choice **Java SE**.
3. Click on: **Java SE (JDK) 6**
4. From the list of choices select the most recent *Java SE JDK* (Update 14 in our case).
5. Click on the *Download* button





# Android Setup Tutorial

## Step 4. Install Java

1. On the next screen select *Platform* (Windows) and accept license agreement.
2. Hit the *Continue* button.
3. Check box: *Java SE Development Kit 6u14* and click on the *download* (arrow) symbol
4. Save file to c:\

Sun Microsystems Downloads

SDN Home > Download Center >

### Java SE Development Kit 6u14

Provide Information, then Continue to Download

Select Platform and Language for your download:

Platform:

Language:

☒ I agree to the Java SE Development Kit 6u14 License Agreement

[Continue »](#)

Sun Microsystems Downloads

SDN Home > Download Center >

### Download Java SE Development Kit 6u14 for Windows, Multi-language

Download Information and Files

**Instructions:** Select the files you want, then click the "Download Selected with Sun Download Manager" (SDM) button below to automatically install and use SDM ([learn more](#)). Alternately, click directly on file names to download with your browser. (Use of SDM is recommended but not required.)

**Available Files**

<input checked="" type="checkbox"/>	File Description and Name	Size
<input checked="" type="checkbox"/>	Java SE Development Kit 6u14 jdk-6u14-windows-i586.exe	73.48 MB

[Download Selected with Sun Download Manager »](#)

Easily manage your downloads (pause, resume, restart, ...)

**Getting Started?**

- » New to Java Center
- » New to Solaris Center
- » Sun Studio

**Download Resources**

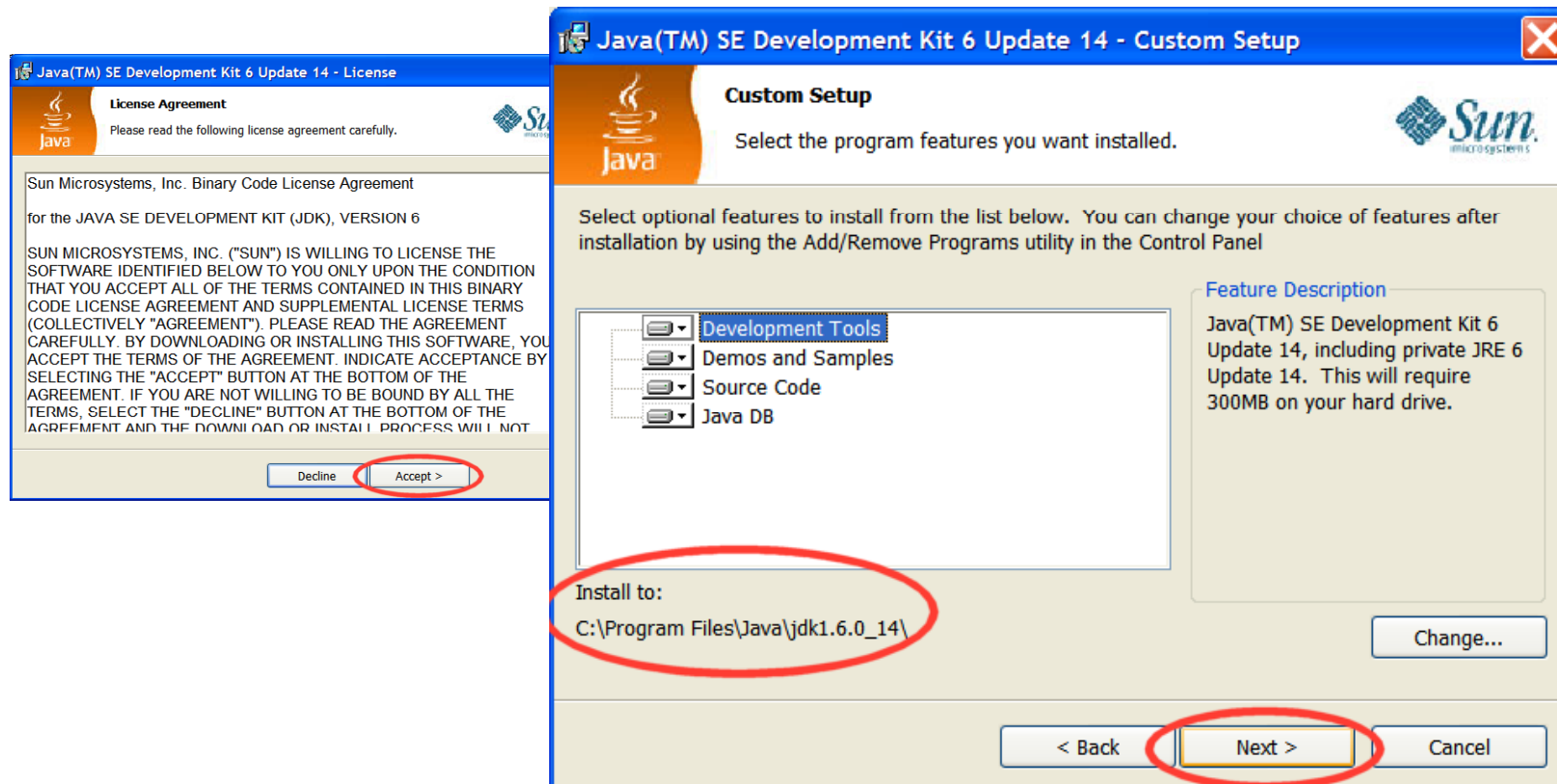
- » FAQs
- » Download History
- » Sun Download Manager



# Android Setup Tutorial

## Step 4. Install Java

5. Execute the downloaded file: *jdk-6u14-windows-i586.exe*
6. Click on *Accept* button to agree on licensing.
7. Note the Java folder location. Click on *Next* to complete installation.



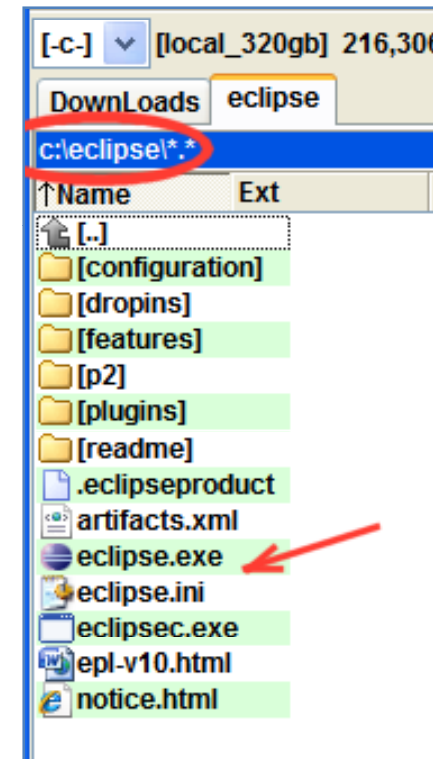
# Android Setup Tutorial



## Step 5. Install Eclipse IDE

**Eclipse** is a multi-language software development platform comprising an **IDE** and a **plug-in** system to extend it. It can be used to develop applications in Java and, by means of the various plug-ins, in other languages *(from Wikipedia)*

1. Go to <http://www.eclipse.org/downloads/>.
2. Download the current version (*Galileo* at the time of writing) and save it to drive C:\.
3. Unzip the compress file to your hard drive (c:\eclipse)
4. For convenience create a Shortcut to *eclipse.exe* and place it on your Desktop.

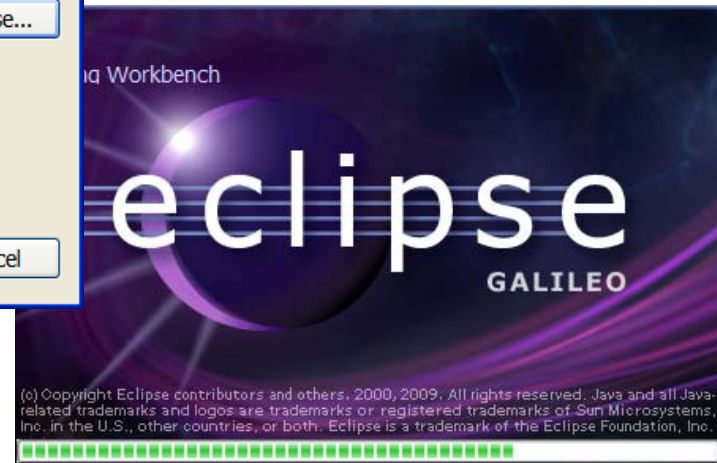
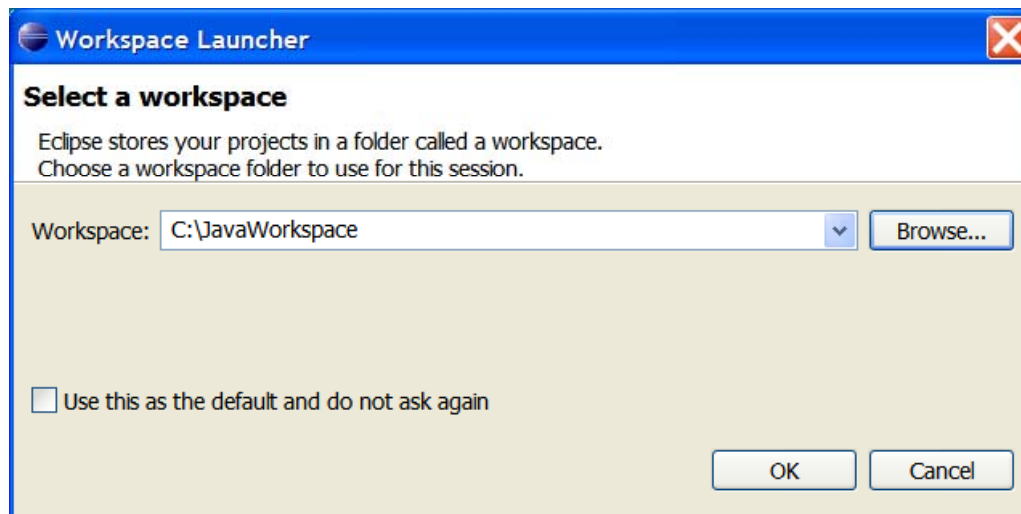




# Android Setup Tutorial

## Step 5. Install Eclipse IDE

1. Launch *eclipse* application.
2. Create a folder to be your workspace





# Android Setup Tutorial

## Step 6. Install Eclipse's ADT Plugin

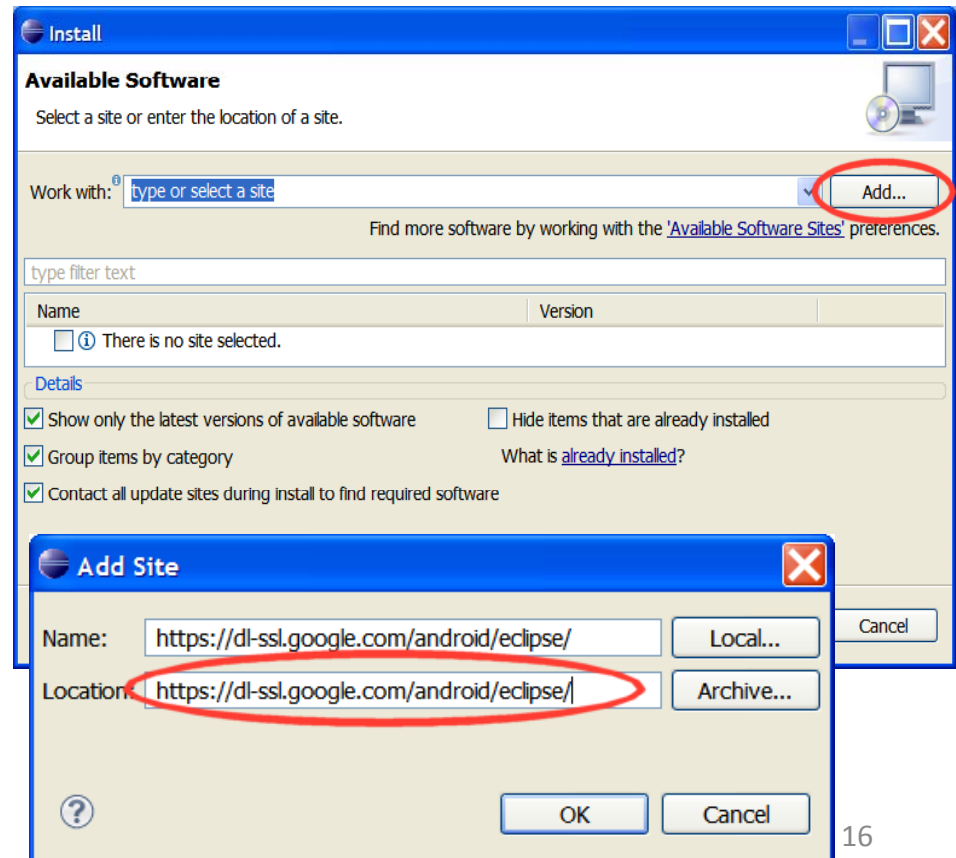
Eclipse's **ADT** (***A**ndroid **D**evelopment **T**ools*) plugin consists of various extensions that facilitates the creating, running, and debugging of Android applications.

1. Start Eclipse. Use main menu, click *Help > Install New Software* (Assuming you are using a direct Internet connection)

2. The *Install* windows is displayed click button *Add...*

3. Fill the *Name* and *Location* boxes of the *Add Site* window with the URL <https://dl-ssl.google.com/android/eclipse/>

4. Click *Ok*.





# Android Setup Tutorial



## Step 6. Install Eclipse's ADT Plugin

5. Check *Developer Tools* boxes.

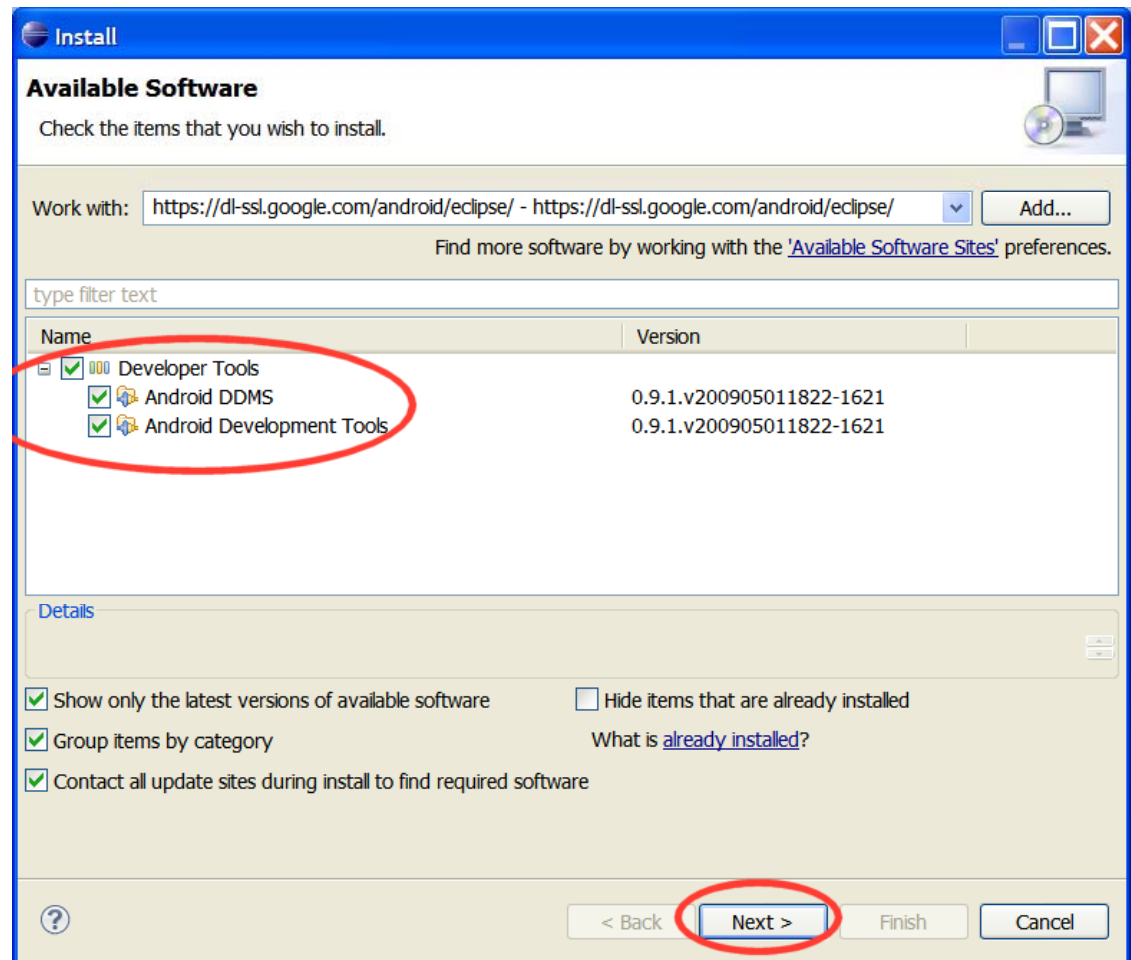
Make sure both options:

*Android DDMS* and

*Android Development Tools*

are selected.

6. Click *Next*.





# Android Setup Tutorial

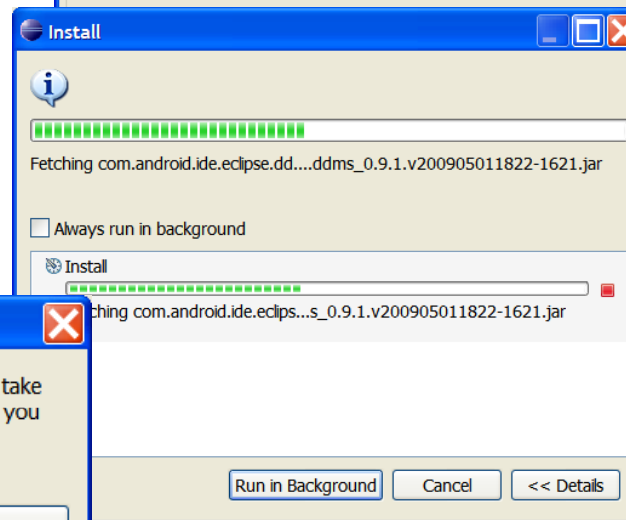
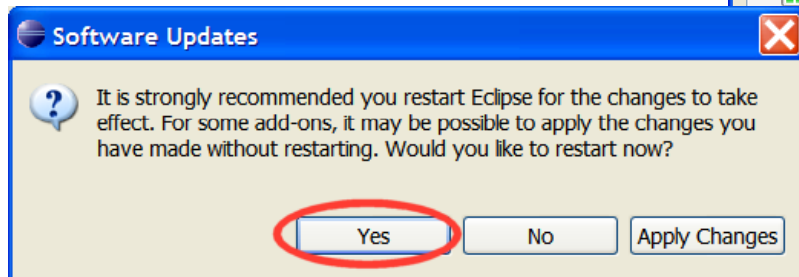
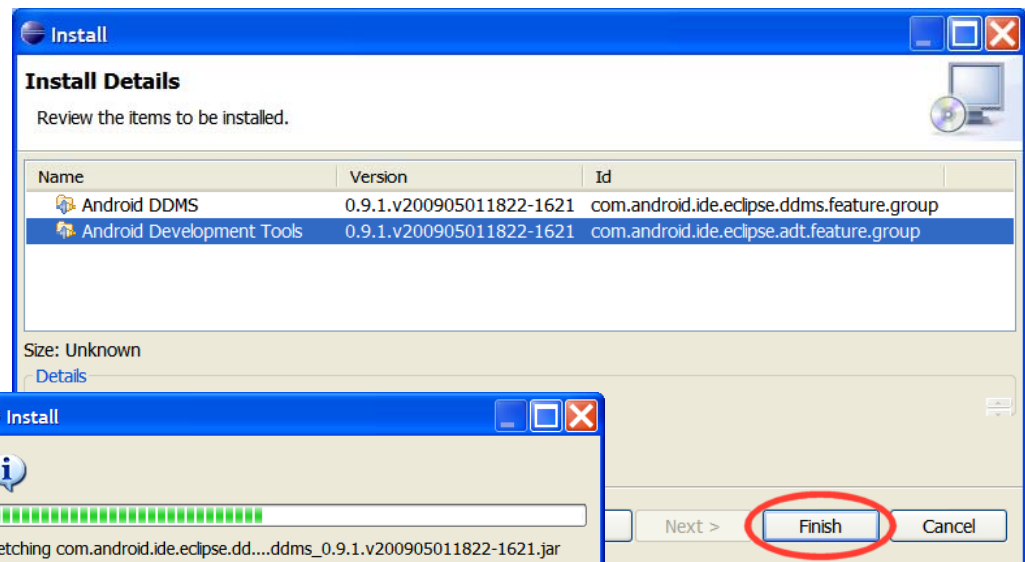
## Step 6. Install Eclipse's ADT Plugin

The *Install* window will be displayed offering details about the selected components.

7. Click *Finish*.

8. Wait for the *Progress Window* to indicate completion of the installation.

9. Finally you will be urged to re-start Eclipse. Click *Yes*.



# Android Setup Tutorial

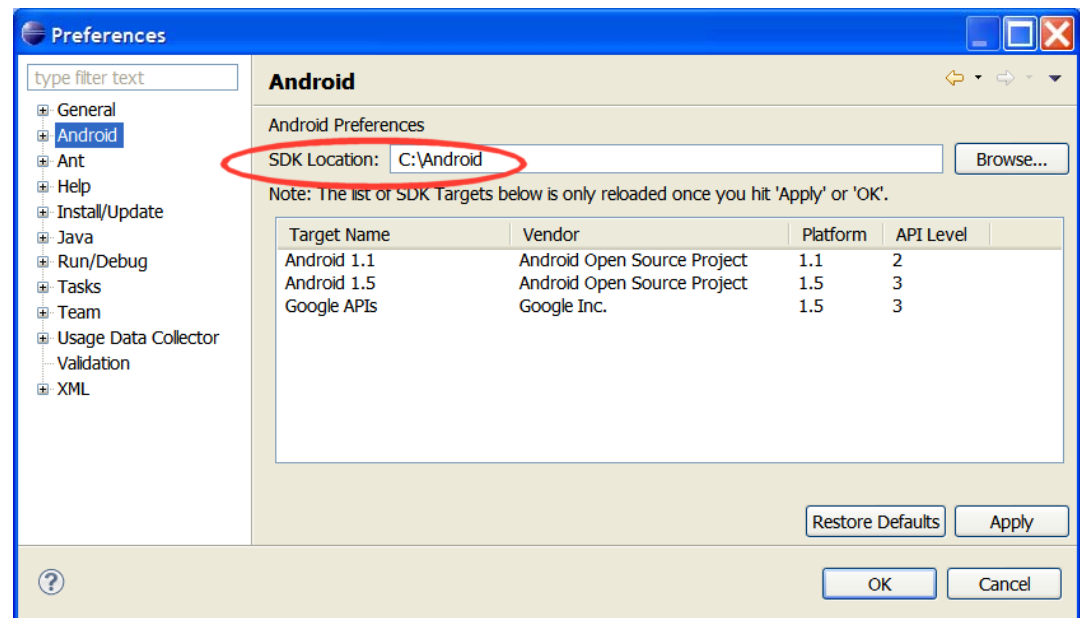


## Step 6. Install Eclipse's ADT Plugin

Now modify your Eclipse preferences to point to the Android SDK directory.

10. Select *Window > Preferences...* to open the Preferences panel (Mac: Eclipse > Preferences).
11. Select *Android* from the left panel.
12. For the *SDK Location* in the main panel, click *Browse...* and locate your downloaded SDK directory.
13. Click *Apply*, then *OK*.

*Done! You should be ready to start creating Android applications.*



# Android Setup Tutorial



## Creating an Android Project

Reference: <http://developer.android.com/guide/developing/eclipse-adt.html>

**Hola Mundo**

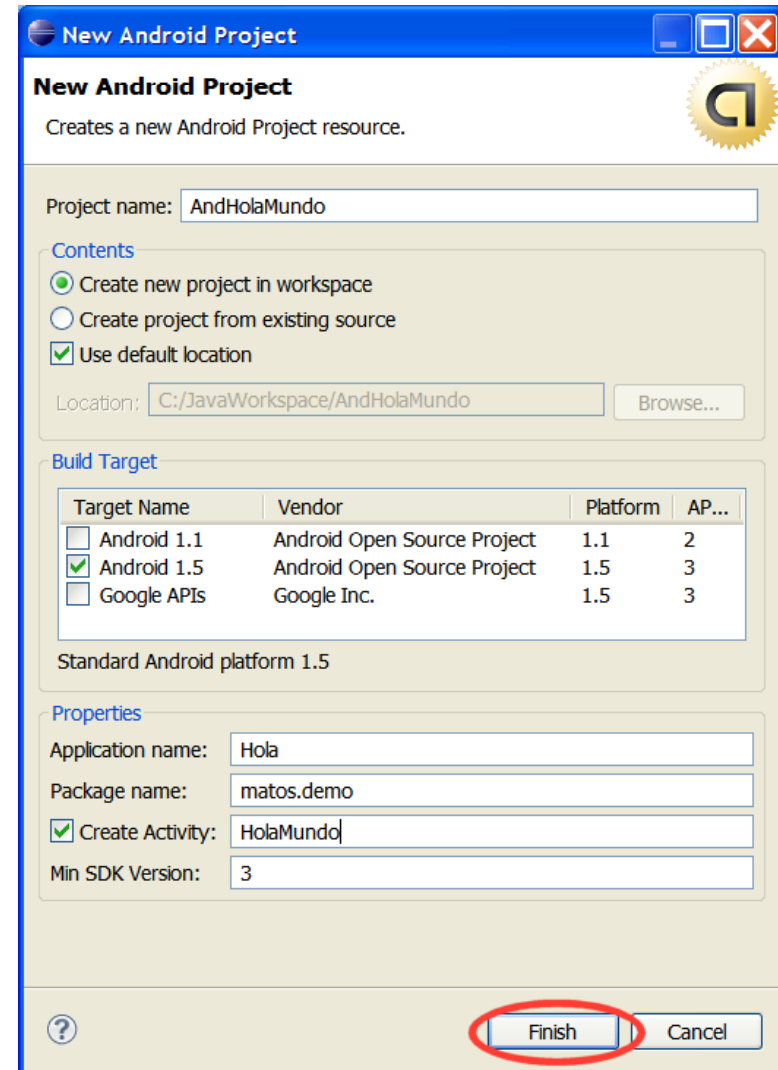
# Android Setup Tutorial



## Creating an Android Project

To create a new project:

1. Start **Eclipse**
2. Select **File > New > Project**.
3. Select **Android > Android Project**, and click **Next**.
4. Enter Project name: *AndHolaMundo*.
5. Select Target *Android 1.5*.
6. Application name: *Hola*.
7. Package name: *cis493.demo*.
8. Create Activity: *HolaMundo*.
9. Min SDK Version: *3*.
10. Click *Finish*.





# Android Setup Tutorial

## Creating an Android Project

Once you complete the New Project Wizard, ADT creates the following folders and files in your new project:

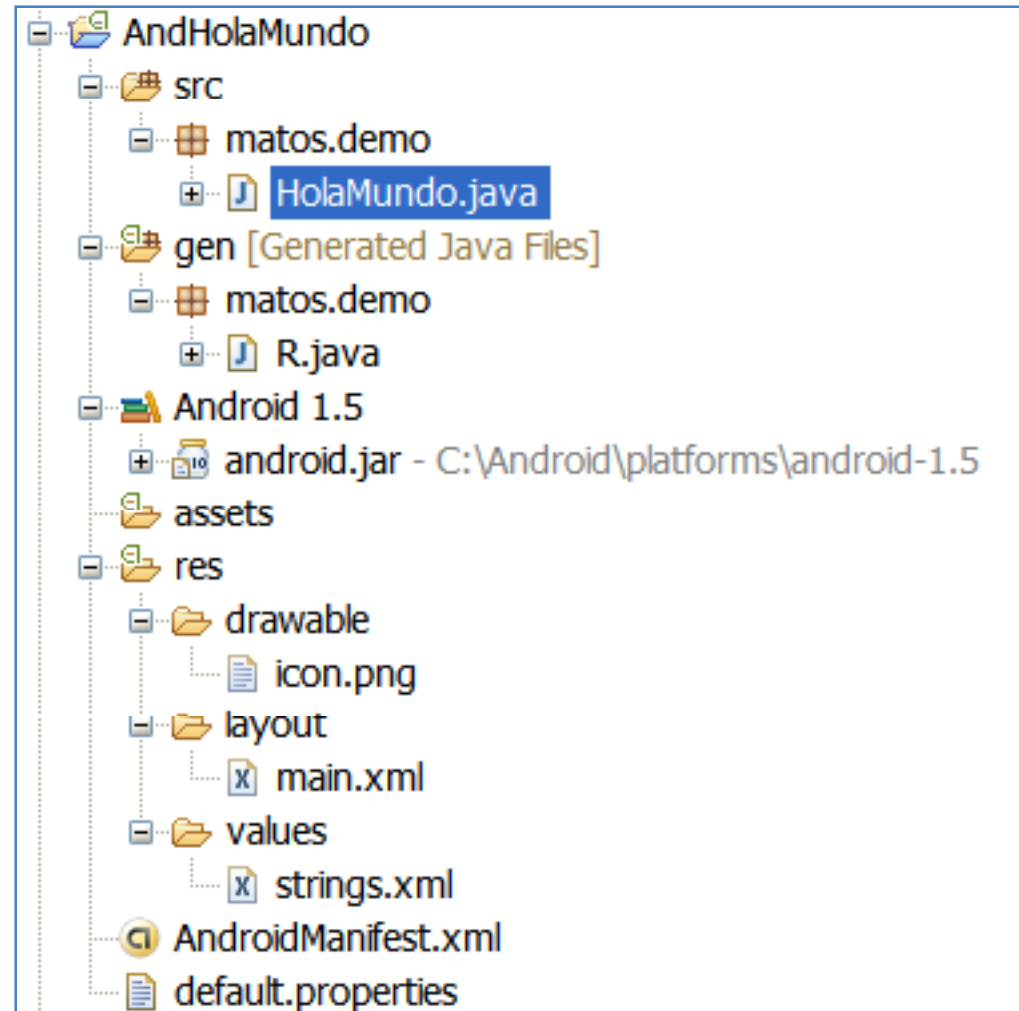
- **src/** Includes your stub Activity Java file. All other Java files for your application go here.
- **<Android Version>/** (e.g., Android 1.5/) Includes the android.jar file that your application will build against.
- **gen/** This contains the Java files generated by ADT, such as your R.java file and interfaces created from AIDL files.
- **assets/** This is empty. You can use it to store raw asset files.
- **res/** A folder for your application resources, such as *drawable* files, *layout* files, *string* values, etc.
- **AndroidManifest.xml** The Android Manifest for your project.
- **default.properties** This file contains project settings, such as the build target.



# Android Setup Tutorial

## Creating an Android Project

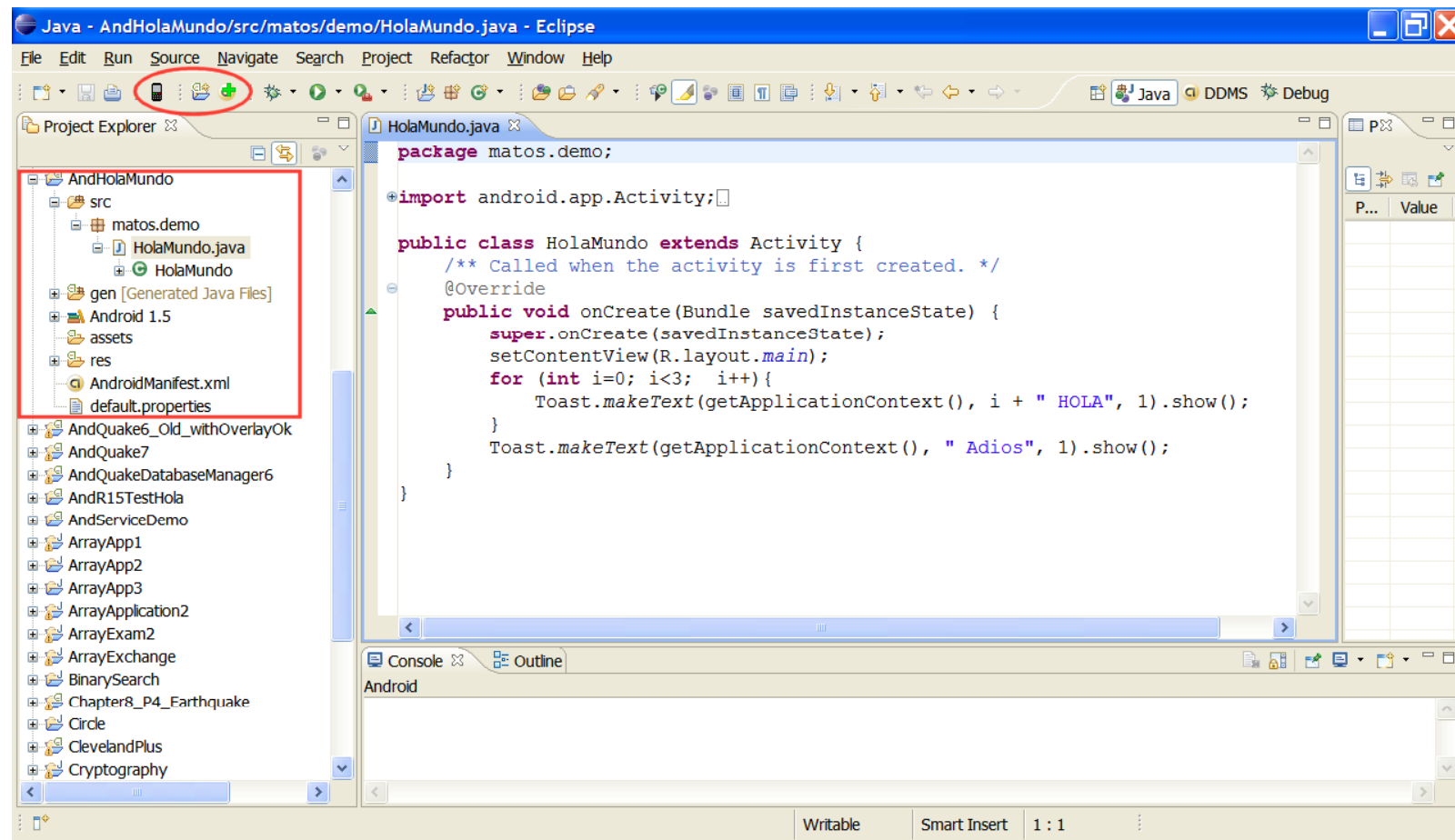
Once you complete the New Project Wizard, ADT creates the following folders and files in your new project:



# Android Setup Tutorial



## Creating an Android Project

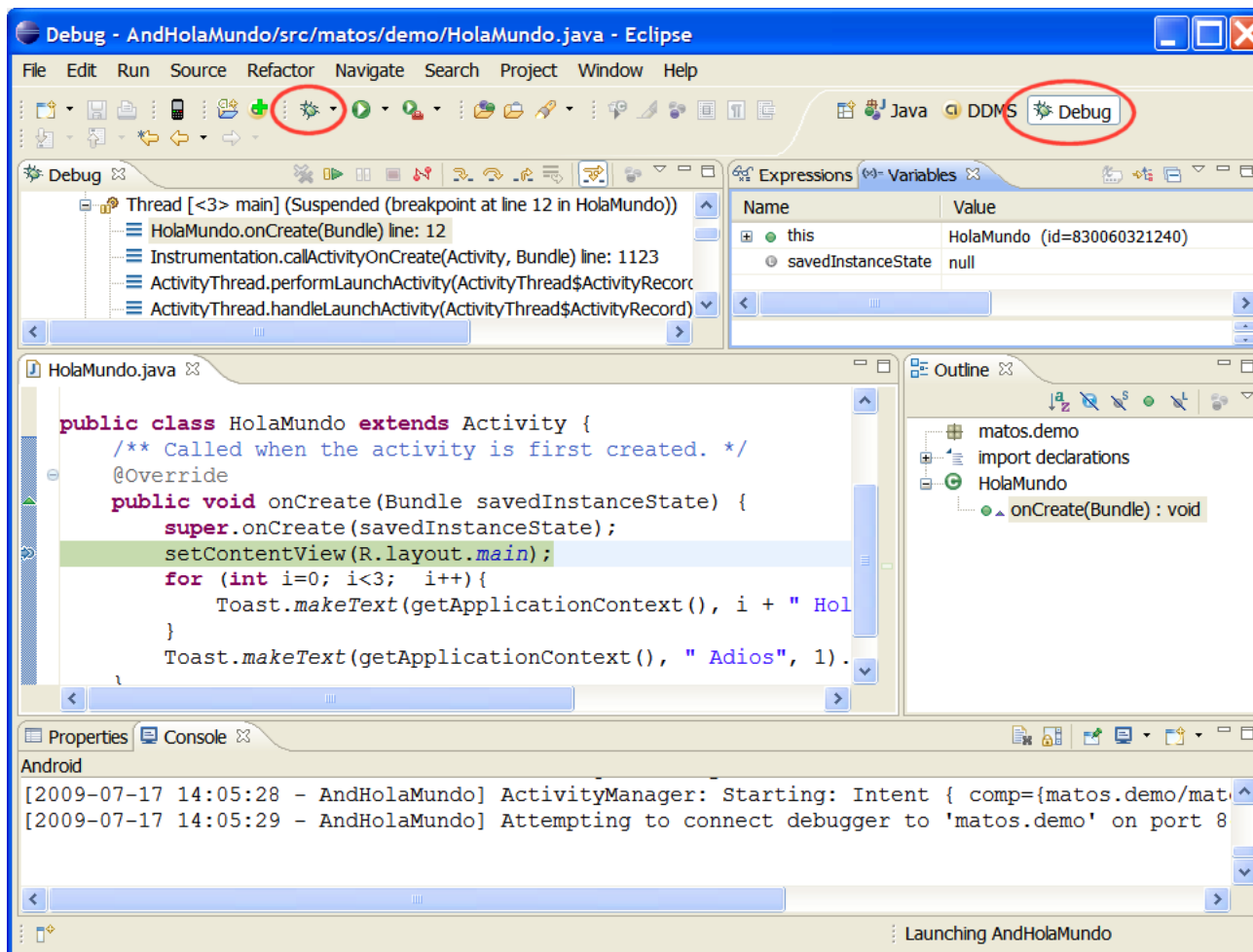






# Android Setup Tutorial

## Creating an Android Project - Debugging



# Android Setup Tutorial



## Creating an Android Project

```
package matos.demo;

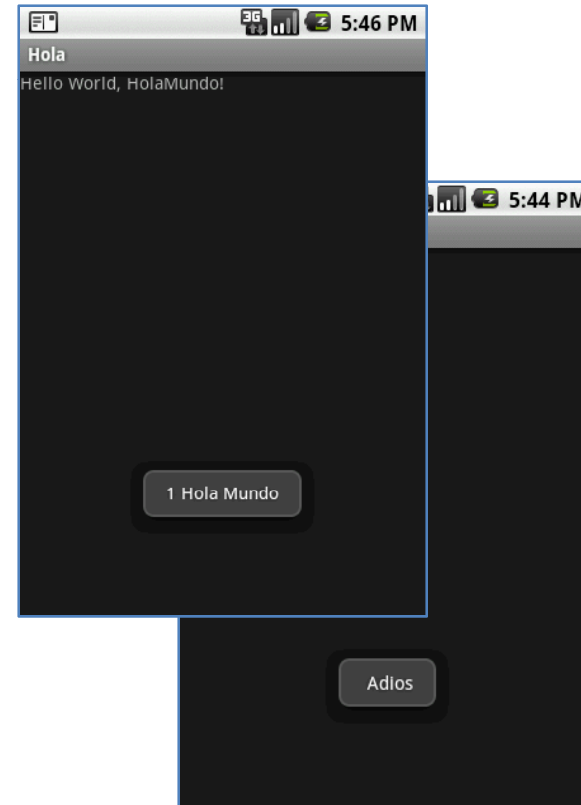
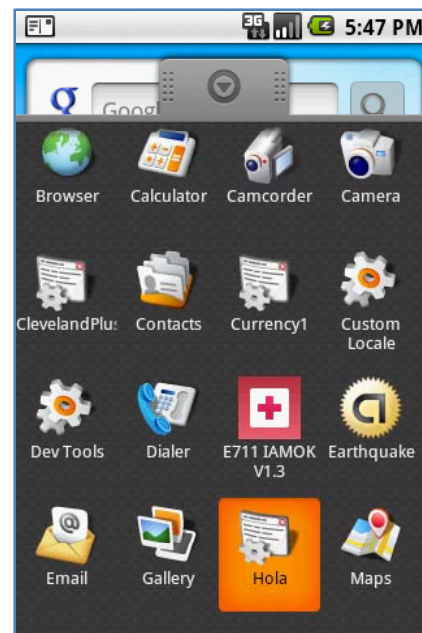
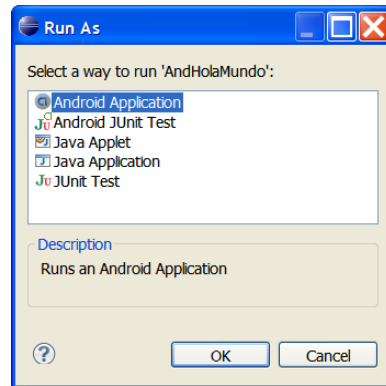
import android.app.Activity;
import android.os.Bundle;
import android.widget.Toast;

public class HolaMundo extends Activity {
    /** Called when the activity is first created. */
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
        for (int i=0; i<3; i++){
            Toast.makeText(getApplicationContext(), i + " Hola Mundo", 1).show();
        }
        Toast.makeText(getApplicationContext(), " Adios", 1).show();
    }
}
```



# Android Setup Tutorial

## Creating an Android Project



# Android Setup Tutorial



**Questions ?**

# Android Setup Tutorial

## Summary of Android On-line Installation Resources



### 0. JAVA

[http://www.dailymotion.com/video/x77uqg\\_google-android-emulator-tutorial-tr\\_tech](http://www.dailymotion.com/video/x77uqg_google-android-emulator-tutorial-tr_tech)

### 1. ECLIPSE

[http://www.dailymotion.com/related/x77v5t\\_google-android-eclipse-adt-tutorial\\_tech/video/x77usr\\_google-android-eclipse-tutorial-tra\\_tech](http://www.dailymotion.com/related/x77v5t_google-android-eclipse-adt-tutorial_tech/video/x77usr_google-android-eclipse-tutorial-tra_tech)

### 2. ANDROID-SDK

**Android ADT Eclipse Plug-in link:** <https://dl-ssl.google.com/android/eclipse/>

[http://www.dailymotion.com/related/x77v5t\\_google-android-eclipse-adt-tutorial\\_tech/video/x77uou\\_google-android-sdk-emulator-tutoria\\_tech](http://www.dailymotion.com/related/x77v5t_google-android-eclipse-adt-tutorial_tech/video/x77uou_google-android-sdk-emulator-tutoria_tech)

### 3. ECLIPSE-PLUGIN

[http://www.dailymotion.com/related/x77usr\\_google-android-eclipse-tutorial-tra\\_tech/video/x77v5t\\_google-android-eclipse-adt-tutorial\\_tech?from=rss](http://www.dailymotion.com/related/x77usr_google-android-eclipse-tutorial-tra_tech/video/x77v5t_google-android-eclipse-adt-tutorial_tech?from=rss)

### 4. HELLO WORLD TUTORIAL

[http://www.dailymotion.com/video/x77v6w\\_google-android-apps-tutorial-traini\\_tech](http://www.dailymotion.com/video/x77v6w_google-android-apps-tutorial-traini_tech)

### 5. DROID\_DRAW

<http://www.droiddraw.org>

### 6. MAKING SDCARD

[http://www.anddev.org/emulating\\_a\\_sd-card-t263.html](http://www.anddev.org/emulating_a_sd-card-t263.html)

[http://groups.google.com/group/android-developers/browse\\_thread/thread/9d068936b43c5f27](http://groups.google.com/group/android-developers/browse_thread/thread/9d068936b43c5f27)

[http://www.anddev.org/problem\\_pushing\\_files\\_onto\\_sdcard-t2467.html](http://www.anddev.org/problem_pushing_files_onto_sdcard-t2467.html)

### 7. Three GOOD videos from Google

1. <http://www.youtube.com/watch?v=QBGfUs9mQYY&eurl=http://developerlife.com/theblog/?p=454>

2. <http://www.youtube.com/watch?v=fL6gSd4ugSI&feature=related>

3. <http://www.youtube.com/watch?v=MPukbH6D-IY&feature=related>

### 8. More APPS

<http://www.youtube.com/watch?v=1FJHYqEORDg&feature=channel>

<http://www.youtube.com/watch?v=l6ObTqliYfE&feature=channel>

<http://www.helloandroid.com/taxonomy/term/29>

# Android Setup Tutorial



## Appendix A.

### Android Virtual Devices

An AVD tells the emulator what kind of device it is suppose to impersonate. Currently there are only a few of these targets:

Target	Description
<b>1</b>	Designates an <b>Android 1.1 device</b> , such as a non-upgraded Tmobile G1
<b>2</b>	Indicates an <b>Android 1.5 device that lacks Google Maps</b> support, what you might get from a homebrew port of Android onto a device
<b>3</b>	Identifies an <b>Android 1.5 device that has Google Maps support</b> [mostly all new Android devices]