

Installing the Android Development Environment

Installation of the recommended development environment (which uses Eclipse™ as an IDE) is simply a matter of:

- Verifying that your development computer meets the minimum requirements
- Downloading and installing the Android™ SDK
- Downloading and installing Eclipse (if you already have a suitable version of Eclipse [as noted in the System Requirements] installed on your development computer, you can skip this step)
- Using Eclipse’s Software Update mechanism to download and install the Android Development Tools (ADT)

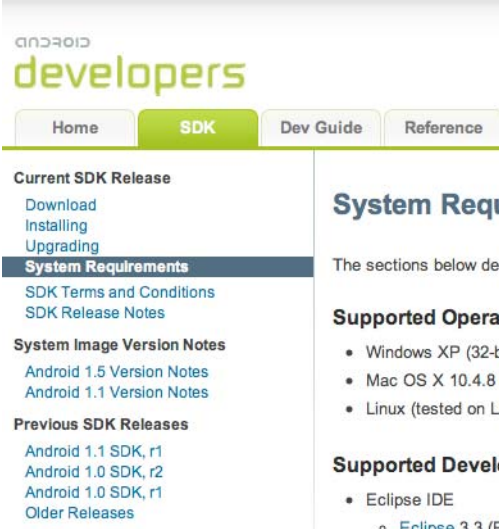
Once you have installed all of the necessary software, you can verify your installation by creating a quick “Hello World”-style application and deploying it on an emulated Android handset.

Verify That you Meet the System Requirements

Before installing, you must verify that your development computer meets the system requirements set out by Google™.

- 1 Point your web browser to <http://developer.android.com/>. Click the **SDK** tab at the top of the page.
- 2 On the left side of the page, under “Current SDK Release”, click **System Requirements**.
- 3 Ensure that your machine is running one of the listed operating systems, and that it has the proper JDK (Java Development Kit) as listed under “Eclipse IDE”.

If you need the JDK (the JRE alone is not sufficient; you need the full JDK), download the latest from <http://java.sun.com/javase/downloads/index.jsp> and install it. Download the 32-bit version even if you have a 64-bit computer and operating system.



The screenshot shows the Android Developers website with the 'SDK' tab selected. The 'System Requirements' section is highlighted, and the 'Supported Operating Systems' list includes Windows XP (32-bit), Mac OS X 10.4.8 or later, and Linux (tested on Linux).

Download and Install the Android SDK

- 1 Point your web browser to <http://developer.android.com/>. Click the **SDK** tab at the top of the page.
- 2 On the left side of the page, under “Current SDK Release”, click **Download**.
- 3 Click the appropriate link to download the SDK for your host platform. Note that you will need to agree to the terms of the Android SDK License Agreement.
- 4 Unzip the downloaded file to a directory of your choosing on your development computer. Within the chosen directory, the zip file unpacks as a directory named for the platform, release, and build (for instance, `android-sdk-mac_x86-1.5_r1`).
- 5 So that you don't have to supply the full path to the Android tools directory¹ when running tools from the command line, add it to your path:
 - On Microsoft® Windows®, right-click **My Computer** and select **Properties**. Select the **Advanced** tab and click **Environment Variables**. In the Environment Variables dialog, under System Variables, select **Path** and click **Edit**. Append the full path to the tools directory, separating it from the preceding path using a semicolon. Close all dialogs.
 - On Linux®, edit your `~/.bash_profile` or `~/.bashrc` file. If either sets the PATH environment variable, edit it so that it includes the full path to the tools directory. If neither file sets PATH, add the following line to either of the files:

```
export PATH=${PATH}:full_path_to_your_android_sdk_tools_dir
```
 - On Mac OS® X, look for a `.bash_profile` file in your home directory. If this file doesn't exist, create it with a single entry:

```
export PATH=${PATH}:full_path_to_your_android_sdk_tools_dir
```

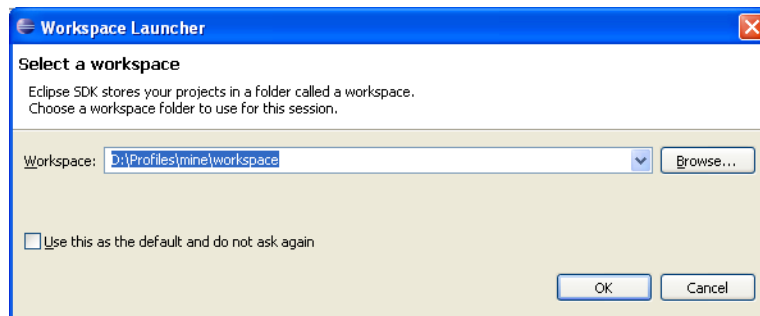
If you already have a `.bash_profile` file, check to see if it sets the PATH environment variable. If so, edit it so that it includes the full path to the tools directory. Otherwise, add the above line to it.

Download and Install Eclipse

- 1 Go to <http://www.eclipse.org/downloads/>. Find the entry labeled “Eclipse Classic” (as of this writing, version 3.4.2) and click the link on the right side appropriate for your platform.
- 2 From the page that appears, download the archive (`.zip` or `.tar.gz` depending upon your platform).
- 3 Extract the downloaded file to an appropriate location, such as `C:\Program Files\` or `/Applications/`. Extraction creates a directory named `eclipse` within the chosen location.
- 4 If desired, create a shortcut that will simplify the launching of Eclipse:
 - On Windows, open the `eclipse` folder, right click `eclipse.exe`, select **Send To**, and then select `Desktop (create shortcut)`.
 - On Mac OS X, open the `eclipse` folder and drag `Eclipse.app` to the Dock.

1. This is the directory named `tools` within the unpacked Android SDK directory. For instance, `C:\android-sdk-windows-1.5_r1\tools`.

- 5 Launch Eclipse. You will be asked to select a workspace:



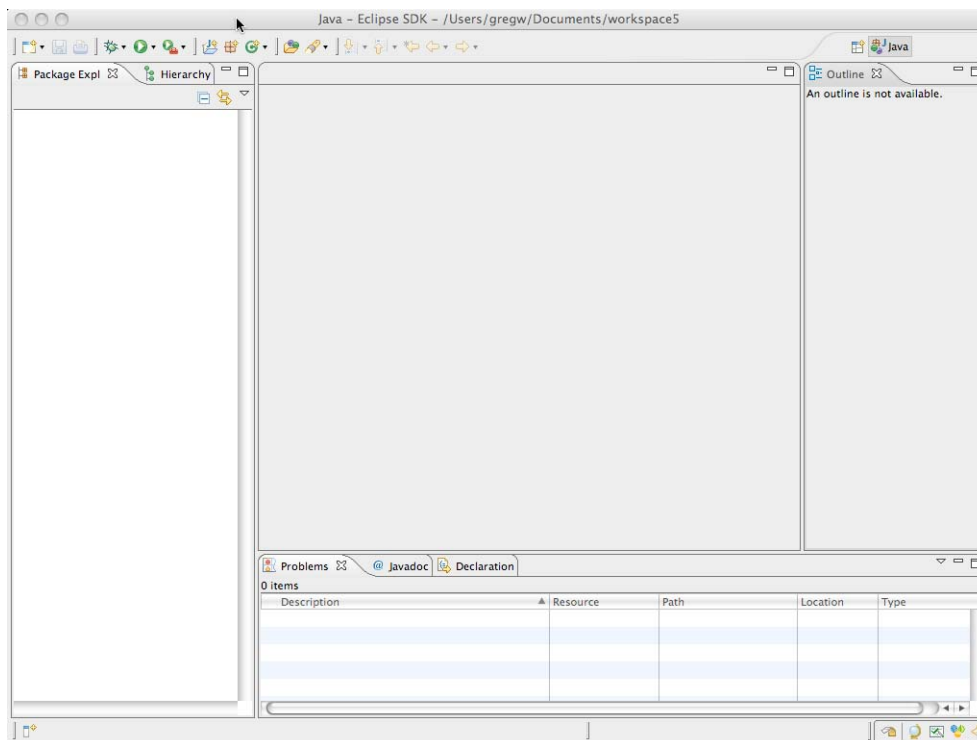
- 6 Specify a directory into which all of your Android projects should be stored. Note that you will probably want to create a new directory just for this purpose. If you do not want to be prompted for a workspace directory each time you launch Eclipse, select **Use this as the default and do not ask again**. Finally, click **OK**.

Eclipse launches, and the Welcome view appears.

- 7 On the right side of the Welcome view, click the “Go to the Workbench” icon:



You should now see the Eclipse workbench:

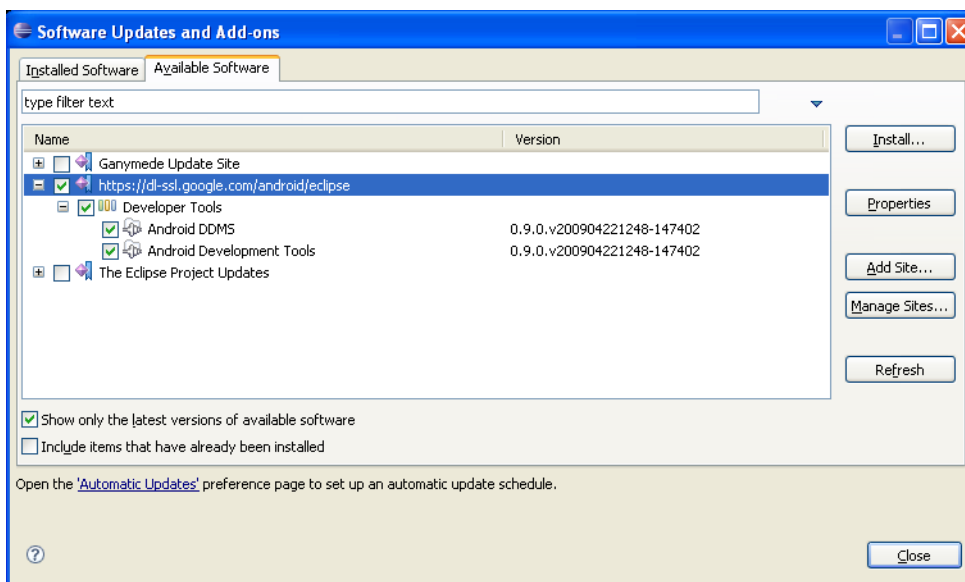


Install the Android Development Tools (ADT)

NOTE: Eclipse uses its own proxy settings (and not those of your host computer) when accessing the Internet. If you access the Internet through a proxy server, you must configure Eclipse accordingly. Select **Preferences** from the **Window** menu (on Mac OS X, **Preferences** are located in the **Eclipse** menu). On the left side of the Preferences dialog, expand **General** and select **Network Connections**. Select **Manual proxy configuration** and fill in the fields as appropriate for your network setup. (Note that the Android Development Tools are installed using https; thus, you need to configure the SSL proxy.) Click **OK** when done.

- 1 From within Eclipse, select **Software Updates** from the **Help** menu. The Software Updates and Add-ons dialog appears.
- 2 At the top of the dialog, click **Available Software**.
- 3 On the right side of the dialog, click **Add Site**. The Add Site dialog appears.
- 4 Enter the following URL into the **Location** field and click **OK**:

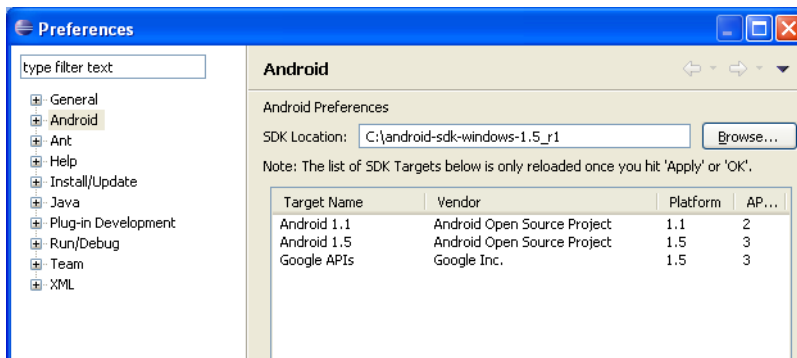
```
https://dl-ssl.google.com/android/eclipse/
```
- 5 The URL you just added should now appear in the Available Software list. Click the checkbox to the left of it, and then click **Install**.



- 6 When the Install dialog appears, asking you to review and confirm the software being installed, click **Next**.
- 7 You are now asked to review and accept the licenses for the software being installed. If you accept them, select **I accept the terms of the license agreements** and then click **Finish**.

The Android Development Tools are downloaded and installed.

- 8** When installation is complete, you will be asked if you want to restart Eclipse. Click **Yes** and let it restart. Once Eclipse has restarted, you have one last task to perform: you need to tell Eclipse where the Android SDK resides.
- 9** Open the Preferences dialog (on Windows or Linux, **Window > Preferences**; on Mac OS X, **Eclipse > Preferences**).
- 10** On the left side of the Preferences dialog, click **Android**. A warning dialog appears, indicating that the location of the Android SDK has not been set up. Click **OK** to dismiss the warning.
- 11** In the **SDK Location** field, specify the directory that contains the Android SDK.
- 12** Click **OK** to register the SDK with Eclipse and close the Preferences dialog.



Test Your Installation

First, you must create at least one Android Virtual Device (AVD)¹ to which you can deploy applications. Note that AVDs can be re-used; you need not create a new one each time you want to run an application.

- 1** Open a Command Prompt (a Terminal window).
- 2** Change to the Android SDK Tools directory. For instance:
- 3** Enter the following command to create an AVD named “android1_5”:

```
cd \android-sdk-windows-1.5_r1\tools
```

```
android create avd -n android1_5 -t 3
```

The “-t 3” specifies that the target device runs Android 1.5 (API level 3) and supports the Google APIs; to create a target running Android 1.1, you would use “-t 1” instead.

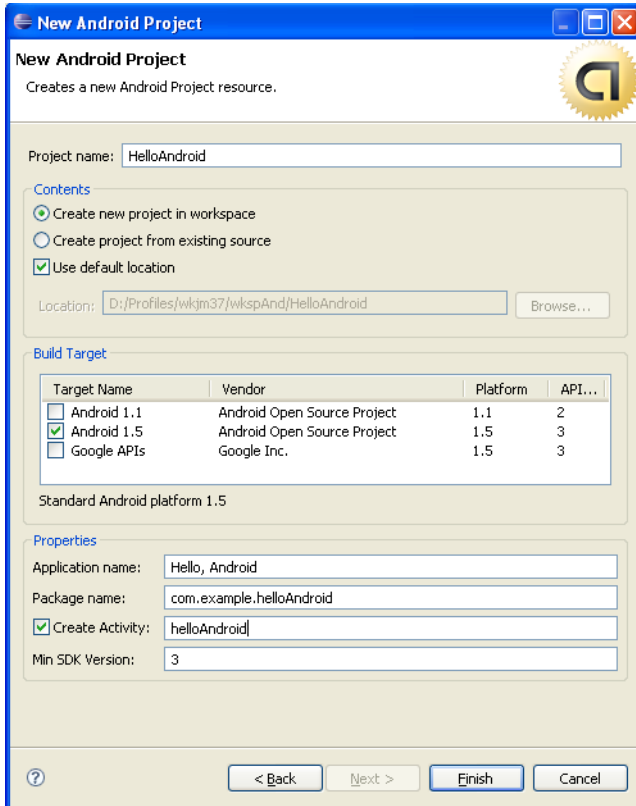
Now, from within Eclipse, you can create and run an application:

- 1** Click **File > New > Other**. From the list of wizards, select **Android > Android Project** and click **Next**.

The New Android Project dialog appears.

1. Each AVD is a particular configuration of hardware options, system image, data storage, and an emulator “skin,” all of which emulates an actual device. You can create multiple AVDs to enable testing on different emulated device types.

- Fill out the dialog as shown below (making sure to select **Android 1.5** as the Build Target), and click **Finish**.

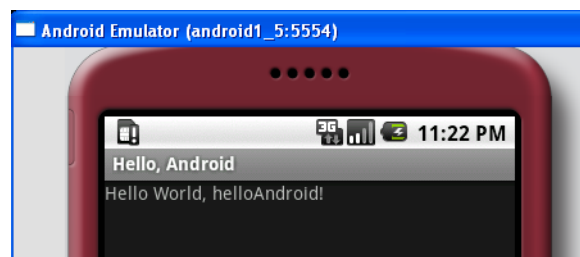


The project is created and added to the Package Explorer.

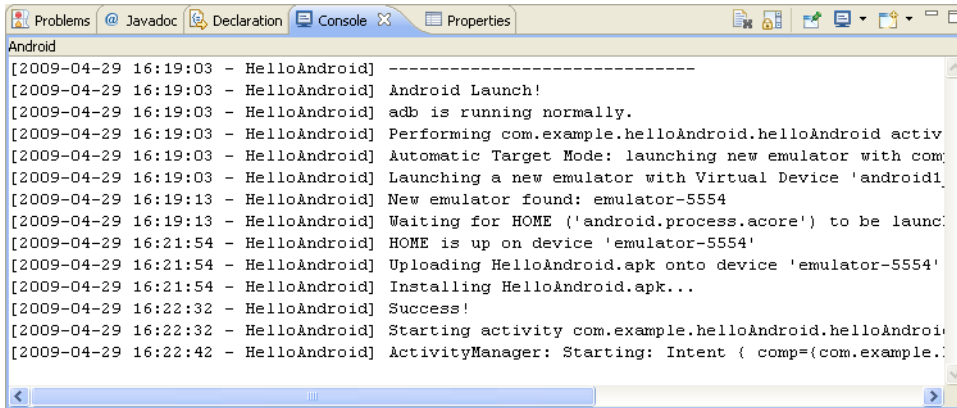
NOTE: If you see errors in the Console view (“no classfiles specified”) and the project name in the Package Explorer has a small red “X” icon attached to it, right-click the project name in the Package Explorer and select **Refresh**.

- Right-click **HelloAndroid** in the Package Explorer, and select **Run As > Android Application**.

The emulator launches in a separate window. Note that the emulator takes a few minutes to fully launch.



Watch Eclipse’s Console view for an indication of how the launch is proceeding. In particular, when the “Uploading...” and “Installing...” messages appear, your application is being transferred to the emulated device. Then, the “Starting activity...” message indicates that your application is being launched.



```
Android
[2009-04-29 16:19:03 - HelloAndroid] -----
[2009-04-29 16:19:03 - HelloAndroid] Android Launch!
[2009-04-29 16:19:03 - HelloAndroid] adb is running normally.
[2009-04-29 16:19:03 - HelloAndroid] Performing com.example.hello&android.helloAndroid activ
[2009-04-29 16:19:03 - HelloAndroid] Automatic Target Mode: launching new emulator with com
[2009-04-29 16:19:03 - HelloAndroid] Launching a new emulator with Virtual Device 'android1
[2009-04-29 16:19:13 - HelloAndroid] New emulator found: emulator-5554
[2009-04-29 16:19:13 - HelloAndroid] Waiting for HOME ('android.process.acore') to be launc
[2009-04-29 16:21:54 - HelloAndroid] HOME is up on device 'emulator-5554'
[2009-04-29 16:21:54 - HelloAndroid] Uploading HelloAndroid.apk onto device 'emulator-5554'
[2009-04-29 16:21:54 - HelloAndroid] Installing HelloAndroid.apk...
[2009-04-29 16:22:32 - HelloAndroid] Success!
[2009-04-29 16:22:32 - HelloAndroid] Starting activity com.example.helloAndroid.helloAndroi
[2009-04-29 16:22:42 - HelloAndroid] ActivityManager: Starting: Intent { comp={com.example.}
```

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