

# Understanding Heart and Body Status from a Smartphone

– Introduction on how to collect, display, measure, and communicate sensor signal –

## Smartphone application programming environment setting tutorial

### 1 Environment Requirements

We will use the following tools:

- DevelopmentKit (API): Android SDK r4  
<http://developer.android.com/sdk/index.html>
- Integrated Development Environment (IDE): Eclipse 3.4 (Ganymede) or 3.5 (Galileo)  
<http://www.eclipse.org/downloads/>
  - JDK 5 or JDK 6 (JRE alone is not sufficient)  
<http://java.sun.com/javase/downloads/index.jsp>
  - Android Development Tools plugin (optional)  
<http://developer.android.com/sdk/eclipse-adt.html>

**Note:** If JDK is already installed on your development computer, just make sure that it meets the version requirements listed above.

All the tools are included in the provided archive file. In the first step, we will set Eclipse environment so that it can access to Android API.

### 2 Installation Procedures:

#### 2.1 Install Android SDK

Download and install the Android SDK starter package “[android-sdk\\_r04-windows.zip](#).” To install the SDK, simply unpack the starter package to a safe location and then add the location to system PATH.

On Windows, right-click on “[My Computer](#)”, and select “[Properties](#)”. Under the “[Advanced tab](#)”, hit the “[Environment Variables](#)” button, and in the dialog that comes up, double-click on “[Path](#)” (under System Variables). For this lecture, we will use the location “[c:\utmech\sgs\android-sdk-windows](#)”.

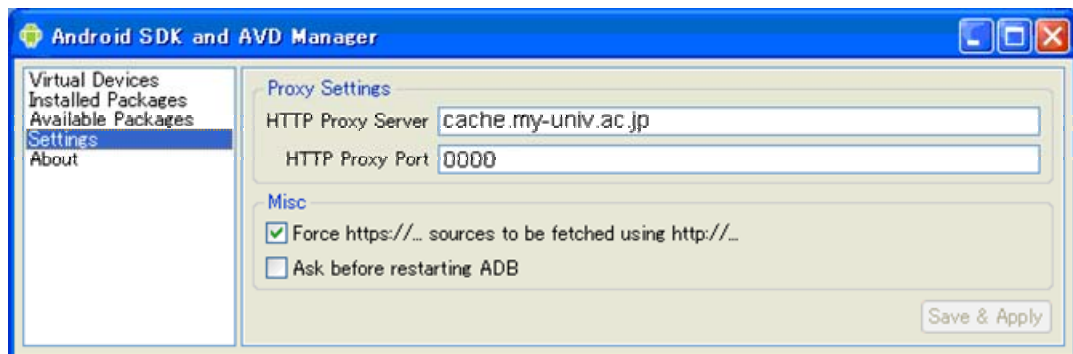
Then, we will add the location of the SDK's primary tools directory to the system PATH, to be able running **Android Debug Bridge (adb)** and the other command line tools without needing to supply the full path to the tools directory. The primary **tools/** directory is located at the root of the SDK folder. Add the full path to system PATH: “[c:\utmech\sgs\android-sdk-windows\tools](#)”.

#### 2.2 Installing SDK Components

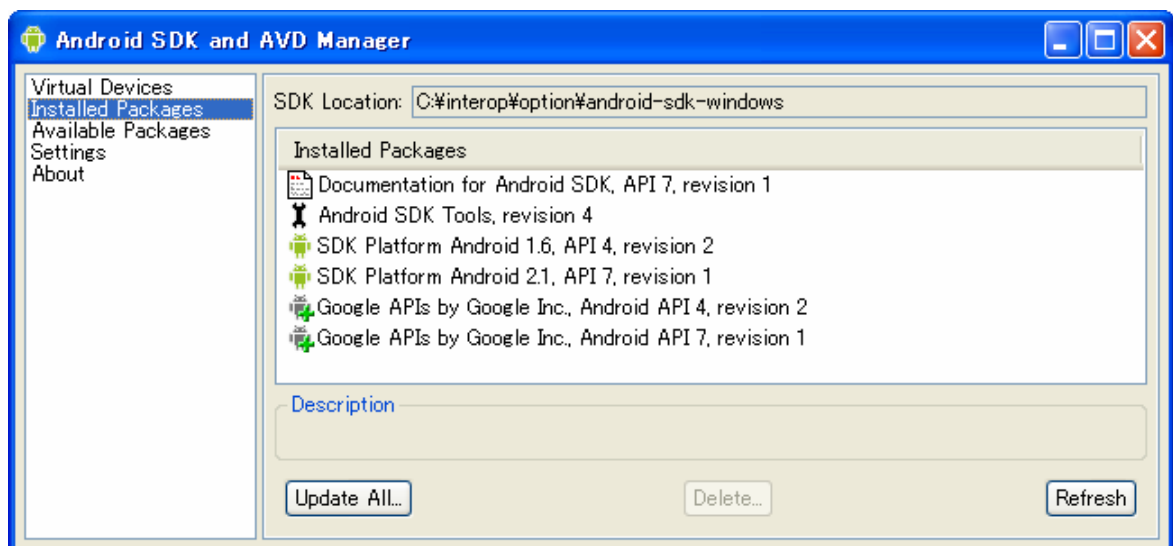
Use the Android SDK and AVD Manager to install new SDK components (“Setup.exe” in the SDK directory). Android SDK packages will be automatically installed from the Google repository.

Important: Before you install SDK components, we recommend that you disable any antivirus programs that may be running on your computer.

- i. Proxy setting: If we need to set Proxy server and port to be able to access the Internet from inside the University Intranet. Proxy server is “**cache.my-univ.ac.jp**” and port number is “**0000**.” Just in case, check the box to force “https://...” sources to be fetched using “http://...”



- ii. Add Android platforms: Use the Android SDK and AVD Manager, included in the SDK starter package, to add one or more Android platforms to your SDK (i.e. **Android 1.6**, **Android 2.1**)



- iii. Smartphone Emulator: We will need to create a virtual device to test our program. For that, select the **Virtual Devices** Tab, and enter the parameters as shown in following snapshot.

Create new AVD

Name:Emulator

Target:Android 1.6 - API Level 4

SD Card:

Size:192MiB

File:Browse...

Skin:

Built-in:Default (HVGA)

Resolution: x

Hardware:

Property	Value	
GPS support	yes	
Accelerometer	yes	
Abstracted LCD density	160	
Camera support	yes	

New...

Delete

☐ Force create

The AVD name 'Emulator' is already used.  
Check "Force create" to override existing AVD.

Create AVD

Cancel

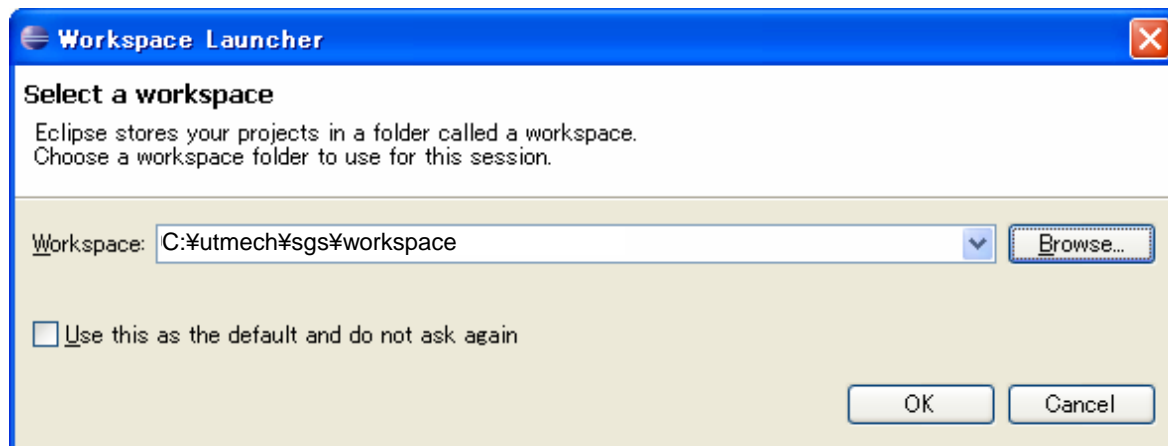
### 2.3 Install Eclipse

Download the version “[Eclipse IDE for Java Developers.](#)”

UnZip the package into our working directory (“`c:\utmech\sgs\`”).

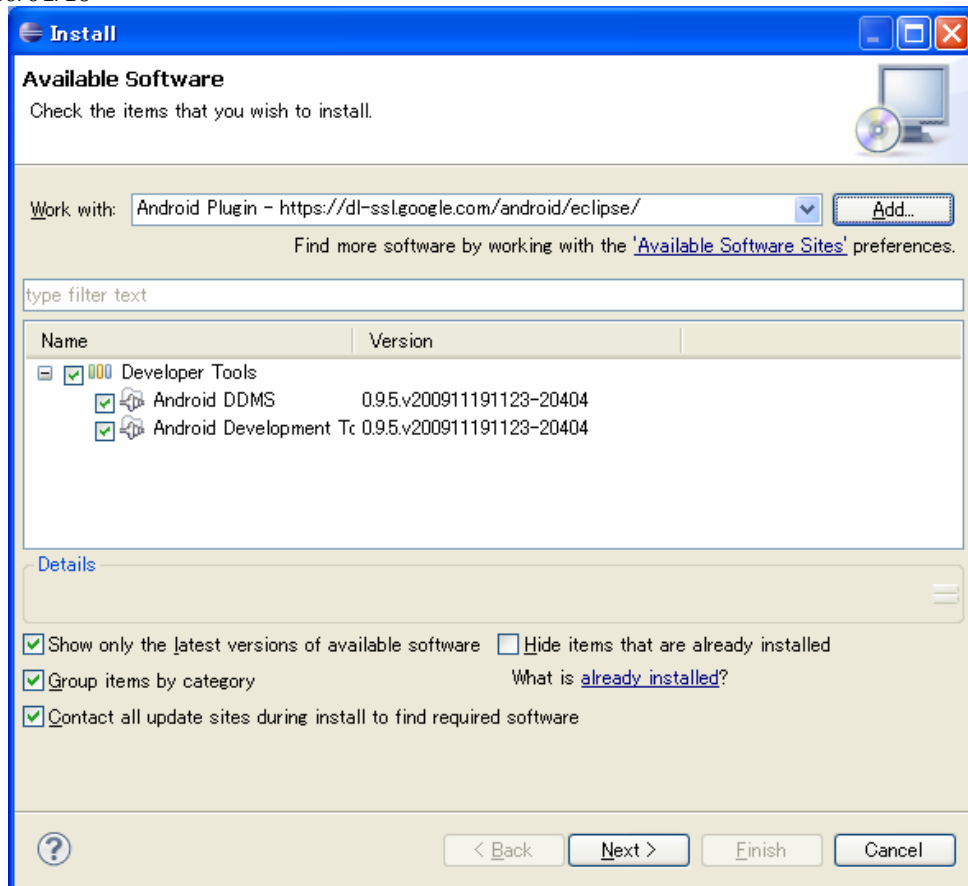
Start Eclipse: “`c:\utmech\sgs\eclipse\eclipse.exe`”.

The first time we start Eclipse, it asks to set the project workspace. We will use the following directory:  
“`c:\utmech\sgs\workspace`”

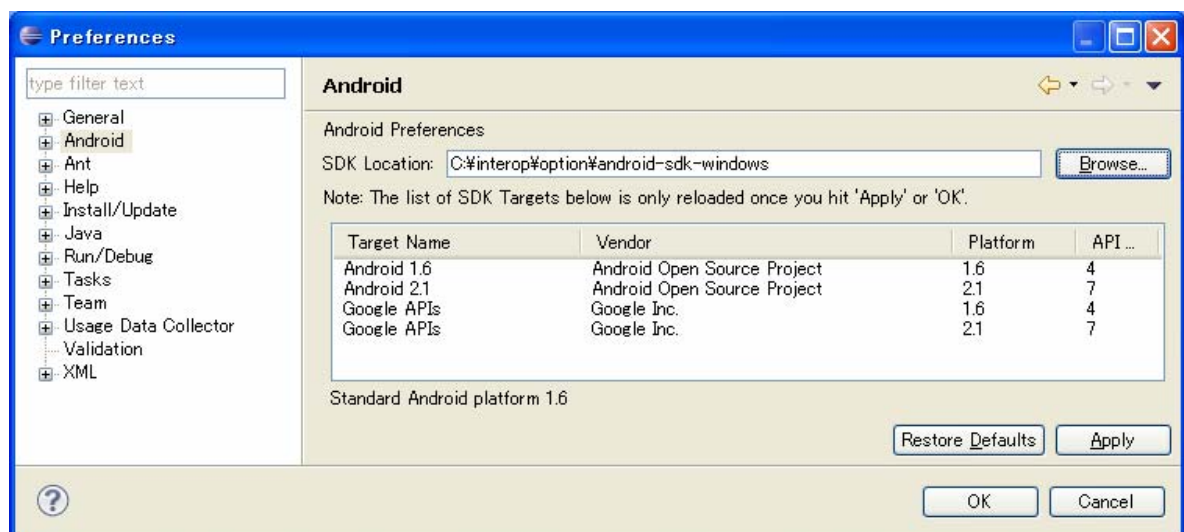


### 2.4 Set Android ADT Plugin

- i. Start Eclipse, then select [Help>Install New Software.](#)
- ii. In the Available Software dialog, click [Add....](#)
- iii. Enter a name for the remote site in the "Name" field (for example, "[Android](#)"). In the "Location" field, enter the URL: <http://dl-ssl.google.com/android/eclipse/>. Click [OK](#).
- iv. Back in the Available Software view, you should now see "Developer Tools" added to the list. Select the checkbox next to Developer Tools, which will automatically select the nested tools Android DDMS and Android Development Tools. Click [Next](#).
- v. In the resulting Install Details dialog, the Android DDMS and Android Development Tools features are listed. Click [Next](#) to read and accept the license agreement and install any dependencies, then click [Finish](#).
- vi. Restart Eclipse.



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



- i. Select **Window>Preferences...** to open the Preferences panel.
- ii. Select **Android** from the left panel.
- iii. For the SDK Location in the main panel, click **Browse...** and locate your downloaded SDK directory: **"c:\utmech\sgs\android-sdk-windows"**.
- iv. Click **Apply**, and then **OK**.

Done! If you haven't encountered any problems, then you're ready to begin developing Android applications.