# Configuring Android Application Development Environment

#### What is Android SDK ?

- ✓ The Android SDK includes a complete set of development tools. It includes a debugger, libraries, a handset emulator.
- ✓ Software written in Java can be compiled to be executed in the Dalvik virtual machine, which is a specialized VM implementation designed for mobile device use.

#### **Required Software to Install Android ?**

- 1. JDK6 Version
- 2. Android SDK for Windows (if you have Windows OS)
- 3. Eclipse IDE

#### Installing JDK6 (Java Development Kit)

The latest version of jdk is 6, at the time of writing my java tutorial. We can download thejdk from:

#### http://www.oracle.com/technetwork/java/javase/downloads/index.html.



**Step 1.** Once we download the exe file we can now install it. Just follow what i mentioned below: To install the jdk, double click on the downloaded exe file (jdk-6u1-windows-i586-p.exe) Double Click the icon of downloaded exe from the downloaded



#### location.

You will see jdk 6 update 1 window as shown below.



**Step 2:** Now a "**License Agreement**" window opens. Just read the agreement and click "**Accept**" button to accept and go further.

🙀 Java(TM) SE Development Kit 6 Update 1 - Licens	e	스
License Agreement		
Please read the following license agreement carefully.		Sun.
Sun Microsystems, Inc. Binary Code 1	License Agreement	
	stoemee ngreemeno	
for the JAVA SE DEVELOPMENT KIT (JD)	K), VERSION 6	
SUN MICROSYSTEMS, INC. ("SUN") IS W SOFTWARE IDENTIFIED BELOW TO YOU ON! THAT YOU ACCEPT ALL OF THE TERMS CO BINARY CODE LICENSE AGREEMENT AND S TERMS (COLLECTIVELY "AGREEMENT") AGREEMENT CAREFULLY BY DOWNLOADIW. SOFTWARE, YOU ACCEPT THE TERMS OF T INDICATE ACCEPTANCE BY SELECTING TH THE BOTTOM OF THE AGREEMENT. IF YOU BE BOUND BY ALL THE TERMS, SELECT T	ILLING TO LICENSE LY UPON THE CONDI WTAINED IN THIS UPPLEMENTAL LICEN PLEASE READ THE G OR INSTALLING T HE AGREEMENT. E "ACCEPT" BUTTON ARE NOT WILLING HE "DECLINE" BUTT	THE TION SE HIS AT TO ON
Decline	Accept >	
Step 3: Now a "Custon	<b>1 Setup"</b> wind	dow opei
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Step 3: Now a "Custon Java(TM) SE Development Kit 6 Update 1 - Custo Custom Setup Select the program features you want installed.	n Setup" wind	dow oper
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Step 3: Now a "Custon Java(TM) SE Development Kit 6 Update 1 - Custo Custom Setup Select the program features you want installed. Select optional features to install from the list below. You o installation by using the Add/Remove Programs utility in the	n Setup" wind m Setup tan change your choice of fe control Panel	dow oper
Step 3: Now a "Custom Java(TM) SE Development Kit 6 Update 1 - Custo Custom Setup Select the program features you want installed. Select optional features to install from the list below. You o installation by using the Add/Remove Programs utility in the Development Tools Demos and Samples Source Code Public JRE	n Setup" wind m Setup an change your choice of for control Panel Feature Description Java(TM) SE Developr Update 1, including pr Update 1, including pr Update 1, including pr Update 1, including pr Update 1, including pr	dow oper
Step 3: Now a "Custon Java(TM) SE Development Kit 6 Update 1 - Custo Custom Setup Select the program features you want installed. Select optional features to install from the list below. You of installation by using the Add/Remove Programs utility in the Development Tools Demos and Samples Source Code Public JRE Tostall to:	n Setup" wind m Setup an change your choice of fe control Panel Feature Description Java(TM) SE Developr Update 1, including pr Update 1, including pr Update 1, including pr Update 1, including pr	dow oper
Select optional features to install from the list below. You or installation by using the Add/Remove Programs utility in the Development Tools Demos and Samples Source Code Public JRE Install to: C:\Program Files\Java\jdk1.6.0_01\	A Setup" wind m Setup an change your choice of for control Panel Feature Description - Java(TM) SE Developr Update 1, including pr Update 1, ins will re 300MB on your hard d	dow oper

**Step 4:** Click on **"Change"** button to choose the installation directory. Here it is **"C:\Program Files\ Java\jdk1.6.0\_01"**. Now click on **"OK"** button.

🛃 Java(TM) SE Development Kit 6 Update 1		×
Change Current Destination Folder		
Browse to the destination folder.		Sun.
Look in:		
💣 jdk1.6.0_01	•	1
Eolder name:		
C:\Program Files\Java\jdk1.6.0_01\		
	ОК	Cancel

Clicking the "OK" button starts the installation. It is shown in the following



Step 5: Next window asks to install Runtime Environment.



Click the **"Change"** button to choose the installation directory of Runtime Environment. We prefer not to change it. So click **"OK"** button.

👘 Java(TM)	) SE Runtime Environment 6 Update 1	
Change Cu	urrent Destination Folder	
Browse to	o the destination folder.	
Look in:		
📑 jrei	1.6.0_01	
Eolder na	me:	
C:\Progr	am Files\Java\jre1.6.0_01\	
InstallShield —		
	OK Cancel	
	Step 6: Click "OK" button starts the insta	Illation.
🙀 Java(TM	) SE Runtime Environment 6 Update 1 - Progress	×
Installing		
The prog	ram features you selected are being installed.	2.
12	Please wait while the Install Wizard installs Java(TM) SE Runtime Environment 6 Update 1. This may take several minutes.	
	Status:	
	Generating script operations for action:	
InstallShield –		

**Step 7:** Now **"Complete"** window appears indicating that installation of jdk 1.6 has completed successfully. Click **"Finish"** button to exit from the installation process.

🙀 Java(TM) SE Developmer	nt Kit 6 Update 1 - Complete 🔀
للان Java	Wizard Completed
	The Install Wizard has successfully installed Java(TM) SE Development Kit 6 Update 1. Click Finish to exit the wizard.
	Show the readme file
	⊗ <u>Sun</u>
	Finish

**Step 8:** The above installation will create two folders "jdk1.6.0\_01" and "jre1.6.0\_01" in "C:\ Program Files\ java" folder.

🔯 C:\Program Files\Java 📃 🗆 🗙
File Edit View Favorites Tools Help
↓ Back → → → 🖻   ② Search 💁 Folders ③ History   🖺 📡 🗙 🕫 📰 -
Address 🔁 C:\Program Files\Java 💌 🔗 Go
Folders     ComPlus Applications       ComPlus Applications     jdk1.6.0_01       Java     jdk1.6.0_01       Java     Microsoft frontpage       Microsoft Visual Studi     Microsoft Visual Studi       Outlook Express     Snapshot Viewer       Trend Micro     Years
2 object(s) (Disk free space: 16.2 GB) 0 bytes 📙 My Computer 🏿 🏸

## Installing Android SDK Tools & API ?

**Step-1)** Download Android SDK from <u>http://developer.android.com/sdk/index.html</u>, as I shown below.



We will get the downloaded exe file , as



Step-2) Double click on SDK Installer.exe file to install





Click on Next button

🚯 Android SDK Tools Setup	
Java SE Development Kit Detect whether Java SE Development Kit is installed.	THE CO
Android SDK relies on the Java SE Development Kit (JDK). Java SE Development Kit (JDK) version 1.6 has been found.	
Location: C:\Program Files\Java\jdk1.6.0_20\bin\java.exe	
Nullsoft Install System v30-Mar-2012.cvs	Cancel

Click on Next button



Step-3) Ensure Destination Folder, and click on Next button

🚯 Android SDK Tools Setup	
Choose Start Menu Folder Choose a Start Menu folder for the Android SDK Tools shortcuts.	- BER
Select the Start Menu folder in which you would like to create the program's shortcu can also enter a name to create a new folder.	ts. You
Android SDK Tools	
Accessories Administrative Tools Android SDK Tools Apache Tomcat 6.0 Tomcat6 avast! Free Antivirus AVG 2011 Canon MP250 series Canon MP250 series Canon MP250 series Canon Utilities EditPlus 3 Games	
Do not create shortcuts	
Nullsoft Install System v30-Mar-2012.cvs	Cancel

Click on Install Button

🔕 Android SDK Tools Setup	
Installing Please wait while Android SDK Tools is being installed.	NUE
Extract: jython.jar 83%	
Extract: guavalib.jar 100% Extract: hiardware-properties.ini 100% Extract: hiararchyviewer2.jar 100% Extract: hiararchyviewer1b.jar 100% Extract: httpcient-4.1.1.jar 100% Extract: httpcient-4.1.1.jar 100% Extract: httpcimme-4.1.1.jar 100% Extract: jfreechart-1.0.9-jar 100% Extract: jfreechart-1.0.9-jar 100% Extract: jfreechart-1.0.9-jar 100% Extract: jilver.jar 100% Extract: jilver.jar 100%	
Nullisoft Install System v30-Mar-2012,cvs	Cancel
🚯 Android SDK Tools Setup	
Installation Complete Setup was completed successfully.	NOTE OF
Completed	
Extract: proguardgui.jar 100% Extract: retrace.jar 100% Output folder: C:\Program Files\Android\android-sdk\tools\support Extract: annotations.jar 100% Output folder: C:\Program Files\Android\android-sdk Output folder: C:\Program Files\Android\android-sdk Created uninstaller: C:\Program Files\Android\android-sdk Created uninstaller: C:\Program Files\Android\android-sdk Cutput folder: C:\Documents and Settings\All Users\Start Menu\Programs\And Create shortcut: C:\Documents and Settings\All Users\Start Menu\Programs\A Create shortcut: C:\Documents and Settings\All Users\Start Menu\Programs\A Create shortcut: C:\Documents and Settings\All Users\Start Menu\Programs\A Create shortcut: C:\Documents and Settings\All Users\Start Menu\Programs\A Completed	roid 5 ndroid ndroid ndroid
Nullsoft Install System v30-Mar-2012.cvs	

Click on Next button



Click on Finish button

**Step-4)**Installing Android SDK tools and Android API Levels.

Ensure the following installed Android SDK location in file system, and click on SDK manager from the **android-sdk** directory.



It opens the following window,

**Step-5)** This step is very important , from the following Window, select tools, API Levels like API15, API 10, ...etc , and also select Extras-> Google USB Driver package for USB Connections with real device.

👸 Android SDK Manager				_ <b>D X</b>
Packages Tools				
SDK Path: C:\Program Files (x86)\Android\android-sdk				
Packages				
🐳 Name	API	Rev.	Status	
A V G Tools				
V X Android SDK Tools		16	🎒 Installed	
📝 🙀 Android SDK Platform-tools		10	Not installed	=
A V (API 15)				
Documentation for Android SDK	15	1	🖊 Not installed	
👿 🏟 SDK Platform	15	2	🖊 Not installed	
📝 🕁 Samples for SDK	15	1	🖊 Not installed	
👿 👾 ARM EABI v7a System Image	15	1	🖊 Not installed	
📝 🐳 Google APIs by Google Inc.	15	1	🖊 Not installed	
📝 🔝 Sources for Android SDK	15	1	🖊 Not installed	
D 🔄 🚔 Android 4.0 (API 14)				
Image: Marcel Marcel Android 3.2 (API 13)				
D I Android 3.1 (API 12)				
Image: Android 3.0 (ADI 11)				
Show: 🗹 Updates/New 📝 Installed 📃 Obsolete Select	New or Up	dates	Install 8 p	ackages
Sort by:  API level  Repository	ect All		Delete 1 p	oackage
Done loading packages.				

Click on Install XX Packages button.

🛱 Choose Packages to Install		
Packages Android SDK Tools, revision 20 Android SDK Platform-tools, revision 12 [*]	Package Description & License Package Description Android SDK Tools, revision 20 This update will replace revision 16 with revision 20. Dependencies Installing this package also requires installing: - Android SDK Platform-tools, revision 12 Archive Description Archive for Windows Size: 86.1 MiB SHA1: f958e6b7b6f79e33e0b0c3b8e34888465fd79cfa Site Accept Reject Accept Acce	Accept All
[*] Something depends on this package	Install	Cancel

Be patient Installation will start will take more time..

## Installing Eclipse & Configuring Android Plugin for Eclipse :

## **Configuring Android Tools for Eclipse:**

Step-1) Download eclipse software from www.eclipse.org\downloadslocation.



**Step-2)** Confirm the downloaded .zip file location, and decompress using either winzip (or) winrar software.



**Step-3)** Open Eclipse.exe file, from the file system location.

Address 🛅 F:\Android Soft\eclipse-java-indigo-SR1-win32\eclipse-java-indigo-SR1-win32\eclipse					
Name 🔺 Size Type Date Modif					
🚞 configur	ation		File Folder	8/16/2012 1:48 PM	
🚞 dropins			File Folder	9/15/2011 10:00 PM	
features	5		File Folder	2/27/2012 12:13 AM	
🚞 p2			File Folder	9/15/2011 9:59 PM	
🚞 plugins			File Folder	2/27/2012 12:08 AM	
🚞 readme			File Folder	9/15/2011 10:00 PM	
.eclipsep	product	1 KB	ECLIPSEPRODUCT File	7/29/2010 10:36 AM	
🔤 artifacts		102 KB	XML File	2/27/2012 12:13 AM	
eclipse		52 KB	Application	3/21/2011 4:05 PM	
ipse 🥑	Open		Configuration Settings	2/27/2012 12:13 AM	
eclipsec	Run as		Application	3/21/2011 4:05 PM	
🔁 epl-v10	🜀 Scan eclipse.exe	1	HTML Document	2/25/2005 6:53 PM	
🕘 notice	🚰 Scan with AVG		HTML Document	2/4/2011 3:39 PM	
	EditPlus 3				
	EAdd to archive				
	EAdd to "eclipse.rar"				
	Ecompress and email		Open eclipse e	va application file	
	Compress to "eclipse.	rar" and email	open compreses	ve application the	
	Send To	•			
	Cut				
	Сору				
	Create Shortcut				
	Delete				
	Rename				
	Properties				

#### **Step-4)** Configruing the ADT Plugin :

• Start Eclipse, then select Help>Install New Software.

🖶 Java - Eclipse				
File Edit Run Source Navigate Search Pro	ject Refactor	Window	Help	
📬 🕶 🖆 👷 🐘 🚊   🛃 🚍   🗹	] 🔒 🗗 🖥	☆.	🚳 Welcome	
Package Explorer			Help Contents	F
			😵 Search	F
			Dynamic Help	
			Key Assist Ctrl+:	5hift+L
			Tips and Tricks	
			🛒 Report Bug or Enhancement	
			Cheat Sheets	
			Check for Updates	
Select Help-> Install New Software			Install New Software	
		,	Eclipse Marketplace	
			About Eclipse	

🔘 Install	<u> ×</u>
Available Software Select a site or enter the location of a site.	5
Work with: https://dl-ssl.google.com/android/eclipse/	More software by working with the ' <u>Available Software Sites'</u> preferences.
Add Site       Name       Image:	Indroid/eclipse/ archive OK Cancel
Show only the latest versions of available software     Group items by category     Contact all update sites during install to find required software	Hide items that are already installed What is <u>already installed</u> ?
?	<back next=""> Finish Cancel</back>

- Click **Add**, in the top-right corner.
- In the Add Repository dialog that appears, enter "ADT Plugin" for the *Name* and the following URL for the *Location*:

https://dl-ssl.google.com/android/eclipse/

• Click OK.

If you have trouble for the plugin, try using "http" in the Location URL, instead of "https" (https is preferred for security reasons).

🗑 Install		
Available Software Check the items that you wish to install.		
Work with: https://dl-ssl.google.com/android/eclipse/ Find more s	oftware by working with the <u>'Available Softw</u>	Add
	1	
Details		
E Channeach, the latest mensions of sociable software		
	hide items that are aiready installed	
Contact all update sites during install to find required software	nak is <u>an cauy notanou</u> :	
0	< Back Next > Finish	a Cancel

- In the Available Software dialog, select the checkbox next to Developer Tools and click **Next**.
- In the next window, we'll see a list of the tools to be downloaded. Click **Next**.

💮 Install		
Available Software Check the items that you wish to install.		
Work with: https://dl-ssl.google.com/android/eclipse/	software by working with the ' <u>Available Software Sites'</u>	Add
type filter text		
Name	Version	
Details		
Show only the latest versions of available software	Hide items that are already installed	
Group items by category V	Vhat is <u>already installed</u> ?	
Contact all update sites during install to find required software	<back next=""> Finish</back>	Cancel

Click on "Next" button

🔅 Install		
Available Software Check the items that you wish to install.		
Work with: https://dl-ssl.google.com/android/eclipse/	more software by working with the <u>'Available Soft</u>	Add
type filter text		
Name	Version	
Details-		Ξ
Show only the latest versions of available software	Hide items that are already installed	
Group items by category	What is <u>already installed</u> ?	
${\ensuremath{\overline{\mathrm{M}}}}$ Contact all update sites during install to find required software		
Calculating requirements and dependencies.		
?	< Back Next > Fin	ish Cancel

- Read and accept the license agreements, then click **Finish**.
- If you get a security warning saying that the authenticity or validity of the software can't be established, click **OK**.
- When the installation completes, restart Eclipse.

#### **Configuring the ADT Plugin for Eclipse :**

After we've installed ADT and restarted Eclipse, we must specify the location of our Android SDK directory:

1. Select **Window>Preferences...** to open the Preferences panel (on Windows OS X, select **Eclipse>Preferences**).

🚝 Java - Eclipse					
File Edit Run Source Refactor Navigate So	earch Project	Window	Help		
	] 😫 <b>Ji</b> 🖥	New New I	<b>Window</b> Editor	G	* • ] 🖻 🤔 🖨 🛷 • ]
Image Package Explorer X		Open Show	Perspective View	•	
		Custo Save Resel Close Close	mize Perspective Perspective As t Perspective Perspective All Perspectives		
		Navig	jation	•	
		🛅 Andro	oid SDK Manager		
		🚔 AVD I	Manager		4
		📝 Run A	Android Lint	<u> </u>	Enure ofter restort
		Prefe	rences		
			$\uparrow$		
		Now, S	elect Window-	>Prefe	erences

- Select Android from the left panel.
   You may see a dialog asking whether you want to send usage statistics to Google. If so, make your choice and click Proceed.
- 3. For the *SDK Location* in the main panel, click **Browse...** and locate your downloaded Android SDK directory (such as android-sdk-windows).
- 4. Click Apply, thenOK.

🖶 Preferences				<u>_ 🗆 ×</u>
type filter text	Android		¢	• = • •
⊡-General 1	Android Preferences		,	2
Build	SDK Location: C:\Pro	ogram Files\Android\android-sdk 🛛 🗸		Browse
DDMS Editors	Note: The list of SDK T	argets below is only reloaded once you	hit 'Apply' or 'OK'.	
Launch	Target Name	Vendor	Platform	API
… Lint Error Checking … LogCat … Usage Stats ⊕ Ant	Android 2,3,3 Android 4,0 Android 4,0,3	Android Open Source Project Android Open Source Project Android Open Source Project	2.3.3 4.0 4.0.3	10 14 15
<ul> <li>Help</li> <li>Install/Update</li> <li>Java</li> <li>Maven</li> <li>Mylyn</li> <li>Run/Debug</li> <li>Team</li> <li>Usage Data Collector</li> <li>Validation</li> <li>WindowBuilder</li> <li>XML</li> </ul>				
			Restore Defaults	3 Apply
?				> Cancel

**Note** : "With this your Android Installation part is completed, we can configure Android plugin for other IDE's like Netbeans, IntelliJ IDE also. "

#### What is AVD ? How to Configure AVD?

- ✓ AVD, stands Android Virtual Device, AVD's are used to start emulator. When we launch the emulator, we should specify the AVD configuration that we want to load..
- ✓ Before Configuring AVD, first confirm SDK tools and API levels are installed or not !
- ✓ Then select AVD Manager from **Window -> AVD Manager**.



Fools					
ist of existing And	droid Virtual Devices located at (	C:\Users\user\.android	l∖avd		
AVD Name	Target Name	Platform	API Level	CPU/ABI	New
	No AVD available				Edit
					Delete.
					Repair.
					Details.
					Start
					Refrest

 Click New... button, name your new AVD, select API target, SD Card size, then click Create AVD button.

Name:	Android					
Target:	Android 4	.0.3 - /	API Level 15			
CPU/ABI:	ARM (arm	neabi-1	/7a)			
SD Card:						
	Size:	512				MiB 👻
	© File:					Browse
Snapshot:						
	Enabl	ed				
Skin:						
	Built-in: Default (W		√GA800) <del>~</del>			
	Resolution	ution:	[	x		
Hardware:						
	Propert	y		Value		New
	Abstrac	ted LC	D density	240		Delete
	Max VIv	1 appli	cation hea	48		Delete
	Device	ram siz	e	512		
Overrid	e the existir	ng AVE	) with the san	ne name		

 Click Start... button to start your new AVD. It will takes a few minutes for creating new AVD.

Fools					
ist of existing And	Iroid Virtual Devices located a	t C:\Users\user\.android	d∖avd		
AVD Name	Target Name	Platform	API Level	CPU/ABI	New
Android	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Edit
					Delete.
					Repair
					Details
					Start
					Refrest

# What is Emulator ? How to Start ?

✓ The emulator lets you prototype, develop and test Android applications without using a physical device.

- ✓ To use the emulator, first we must create AVD configuration, Remember, If project is used with Android API15 level , then we should use AVD API level also 15.
- Every Emulator needs one AVD support, because the AVD configuration provides both software and hardware support for Emulator, like it can use the services of the Android platform to invoke other applications, access the network, play audio and video, store and retrieve data, notify the user, and render graphical transitions and themes.
- ✓ The emulator also includes a variety of debug capabilities.
- ✓ The emulator provides dynamic binary translation of device machine code to the OS and processor architecture of your development machine.
- ✓ The Android emulator contains all of the hardware and software features of a real mobile device, except that it cannot place actual phone calls, can't carry.
- Emulator provides a screen like as real device to display output of our testing application, using this we can easily test our applications.

