

Installation Guide for Android NDK & Tesseract Library on Windows 7 (64bit)



This guide shows the steps for the full installation of Android NDK Toolset and implementation of OCR library (Tesseract) in Android application. Tesseract is an OCR Engine that was developed at HP Labs between 1985 and 1995 and now at Google.

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Software requirement

- [Java JDK](#)
- [Android ADT Bundle for Windows \(including Android SDK + Eclipse\)](#)
- [Android NDK](#)
- [Cygwin](#)
- [Apache-ant](#)

Tested on OS:

Windows 7 Professional 64-bit (Service Pack 1)

WARNING

In all installation procedure, the **directory names** and **paths** should not contain any whitespaces.

Example:



C:\ndk-r9



C:\ndk r9

Java JDK

Download:

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

1. Click on JDK Download

Java Platform, Standard Edition
Java SE 7u25
This release includes important security fixes. Oracle strongly recommends that all Java SE 7 users upgrade to this release.
[Learn more](#) ▶
Which Java package do I need?

- **JDK:** (Java Development Kit). For Java Developers. Includes a complete JRE plus tools for developing, debugging, and monitoring Java applications.
- **Server JRE:** (Server Java Runtime Environment) For deploying Java applications on servers. Includes tools for JVM monitoring and tools commonly required for server applications, but does not include browser integration (the Java plug-in), auto-update, nor an installer. [Learn more](#) ▶
- **JRE:** (Java Runtime Environment). Covers most end-users needs. Contains everything required to run Java applications on your system.

JDK DOWNLOAD ▶	Server JRE DOWNLOAD ▶	JRE DOWNLOAD ▶
JDK 7 Docs <ul style="list-style-type: none">▪ Installation Instructions▪ ReadMe▪ Release Notes▪ Oracle License▪ Java SE Products▪ Third Party Licenses▪ Certified System Configurations	Server JRE 7 Docs <ul style="list-style-type: none">▪ Installation Instructions▪ ReadMe▪ Release Notes▪ Oracle License▪ Java SE Products▪ Third Party Licenses▪ Certified System Configurations	JRE 7 Docs <ul style="list-style-type: none">▪ Installation Instructions▪ ReadMe▪ Release Notes▪ Oracle License▪ Java SE Products▪ Third Party Licenses▪ Certified System Configurations

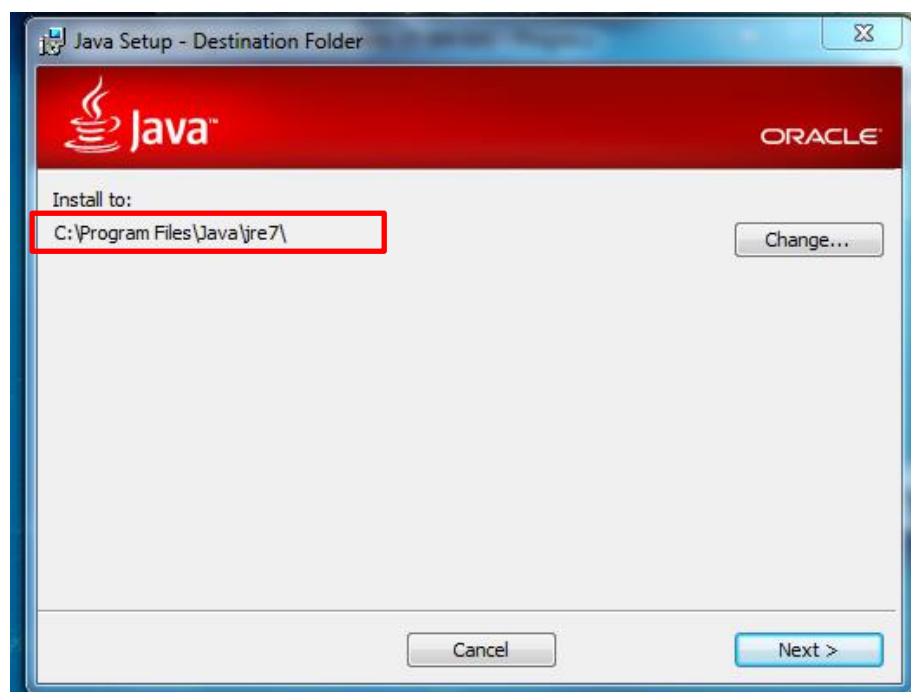
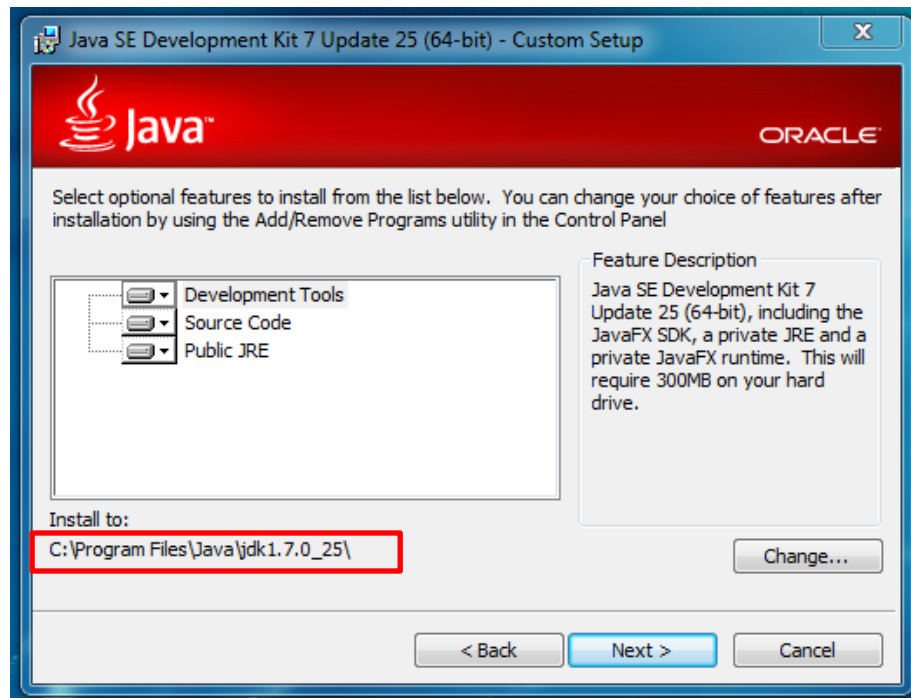
2. Click **Accept License Agreement** and then in the Download section the corresponding Windows **.exe** file version

Java SE Development Kit 7u25
You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.
☒ **Accept License Agreement** ☐ **Decline License Agreement**

Product / File Description	File Size	Download
Linux x86	80.38 MB	jdk-7u25-linux-i586.rpm
Linux x86	93.12 MB	jdk-7u25-linux-i586.tar.gz
Linux x64	81.46 MB	jdk-7u25-linux-x64.rpm
Linux x64	91.85 MB	jdk-7u25-linux-x64.tar.gz
Mac OS X x64	144.43 MB	jdk-7u25-macosx-x64.dmg
Solaris x86 (SVR4 package)	136.02 MB	jdk-7u25-solaris-i586.tar.Z
Solaris x86	92.22 MB	jdk-7u25-solaris-i586.tar.gz
Solaris x64 (SVR4 package)	22.77 MB	jdk-7u25-solaris-x64.tar.Z
Solaris x64	15.09 MB	jdk-7u25-solaris-x64.tar.gz
Solaris SPARC (SVR4 package)	136.16 MB	jdk-7u25-solaris-sparc.tar.Z
Solaris SPARC	95.5 MB	jdk-7u25-solaris-sparc.tar.gz
Solaris SPARC 64-bit (SVR4 package)	23.05 MB	jdk-7u25-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	17.67 MB	jdk-7u25-solaris-sparcv9.tar.gz
Windows x86	89.09 MB	jdk-7u25-windows-i586.exe
Windows x64	90.66 MB	jdk-7u25-windows-x64.exe

Install:

Once the file has downloaded, install it. The installation paths should be as shown below or similar.

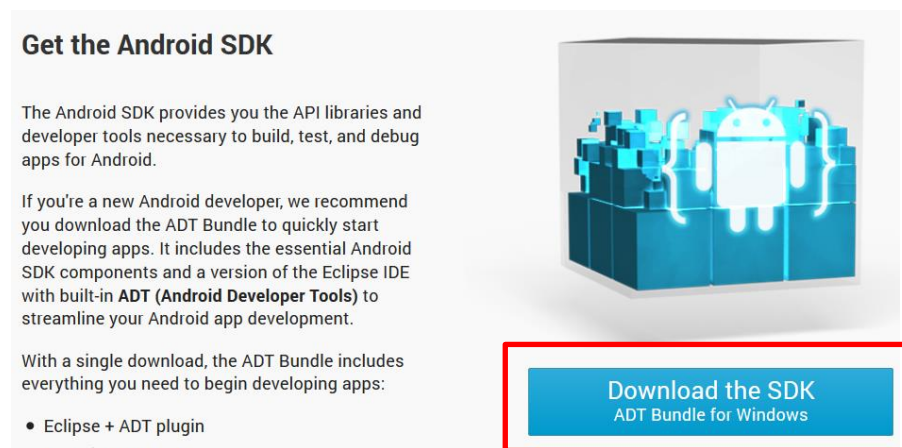


Android ADT Bundle for Windows (including Android SDK+Eclipse)

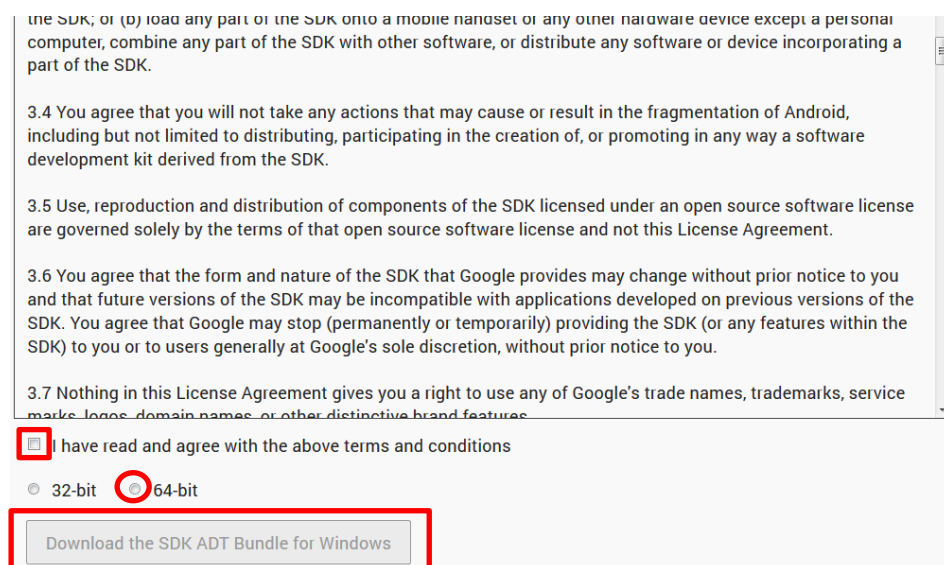
Download:

<http://developer.android.com/sdk/index.html#download>

1. Click Download the SDK



2. Accept the agreement, select system type and download the SDK ADT Bundle for Windows.



3. Once the file *adt-bundle-windows-x86_64-20130729.zip* downloaded, extract it on Desktop.

Android NDK

Download:

<http://developer.android.com/tools/sdk/ndk/index.html>

1. In the Package section click the corresponding Windows **.zip** file version.

Downloads			
Platform	Package	Size (Bytes)	MD5 Checksum
Windows 32-bit	android-ndk-r9-windows-x86.zip	485200055	8895aec43f5141212c8dac6e9f07d5a8
	android-ndk-r9-windows-x86-legacy-toolchains.zip	292738221	ae3756d3773ec068fb653ff6fa411e35
Windows 64-bit	android-ndk-r9-windows-x86_64.zip	514321606	96c725d16ace7fd487bf1bc1427af3a0
	android-ndk-r9-windows-x86_64-legacy-toolchains.zip	312340413	707d1eaa6f5d427ad439c764c8bd68d2

2. Accept the agreement and download the **android-ndk-r9-windows-x86_64.zip**

specifically including the Android system files, packaged APIs, and Google APIs add-ons) is licensed to you subject to the terms of this License Agreement. This License Agreement forms a legally binding contract between you and Google in relation to your use of the SDK.

1.2 "Android" means the Android software stack for devices, as made available under the Android Open Source Project, which is located at the following URL: <http://source.android.com/>, as updated from time to time.

1.3 "Google" means Google Inc., a Delaware corporation with principal place of business at 1600 Amphitheatre Parkway, Mountain View, CA 94043, United States.

2. Accepting this License Agreement

2.1 In order to use the SDK, you must first agree to this License Agreement. You may not use the SDK if you do not accept this License Agreement.

☒ I have read and agree with the above terms and conditions

[Download android-ndk-r9-windows-x86_64.zip](#)

3. Once the **android-ndk-r9-windows-x86_64.zip** has downloaded extract it, rename it from android-ndk-r9 to ndk-r9 and then move it on C:\

Now the <ndk-directory> must be C:\ndk-r9

Note:

It shouldn't contain any whitespaces

Cygwin

Download:

<http://www.cygwin.com/>

1. Click **setup-x86_64.exe**

This is the home of the Cygwin project

What...

...is it?

Cygwin is:

- a collection of tools which provide a Linux look and feel environment for Windows.
- a DLL (cygwin1.dll) which acts as a Linux API layer providing substantial Linux API functionality.

...isn't it?

Cygwin is not:

- a way to run native Linux apps on Windows. You must rebuild your application *from source* if you want it to run on Windows.
- a way to magically make native Windows apps aware of UNIX® functionality like signals, ptys, etc. Again, you need to build your apps *from source* if you want to take advantage of Cygwin functionality.

The Cygwin DLL currently works with all recent, commercially released x86 32 bit and 64 bit versions of Windows, starting with Windows XP SP3.

For more information see the [FAQ](#).

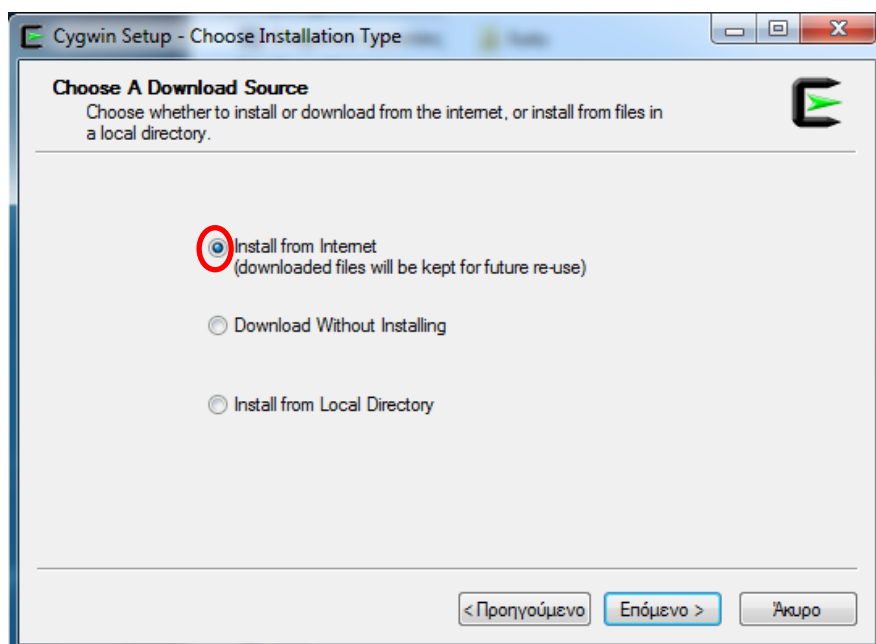
Current Cygwin DLL version

The most recent version of the Cygwin DLL is [1.7.23](#). Install it by running [setup-x86.exe](#) (32-bit installation) or [setup-x86_64.exe](#)

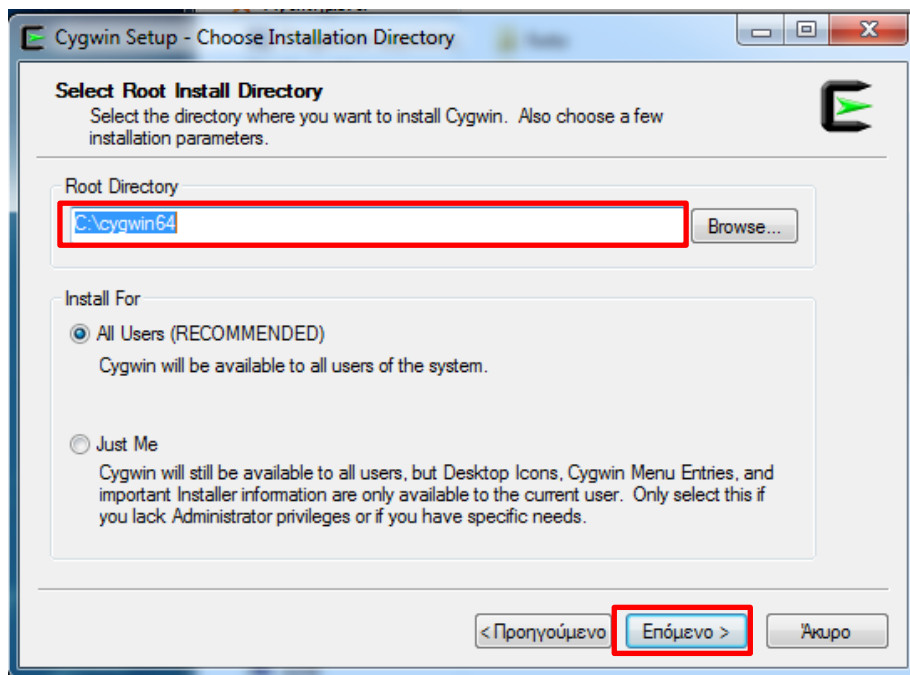
2. Once the Cygwin **setup-x86_64.exe** has downloaded, install it as shown below:

Install:

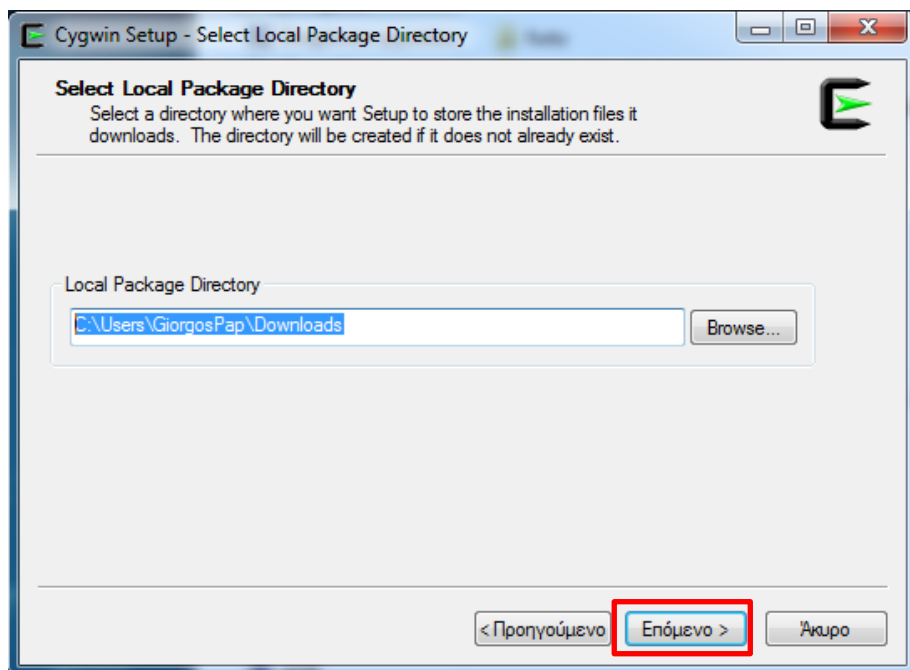
1. Choose **Install from Internet**



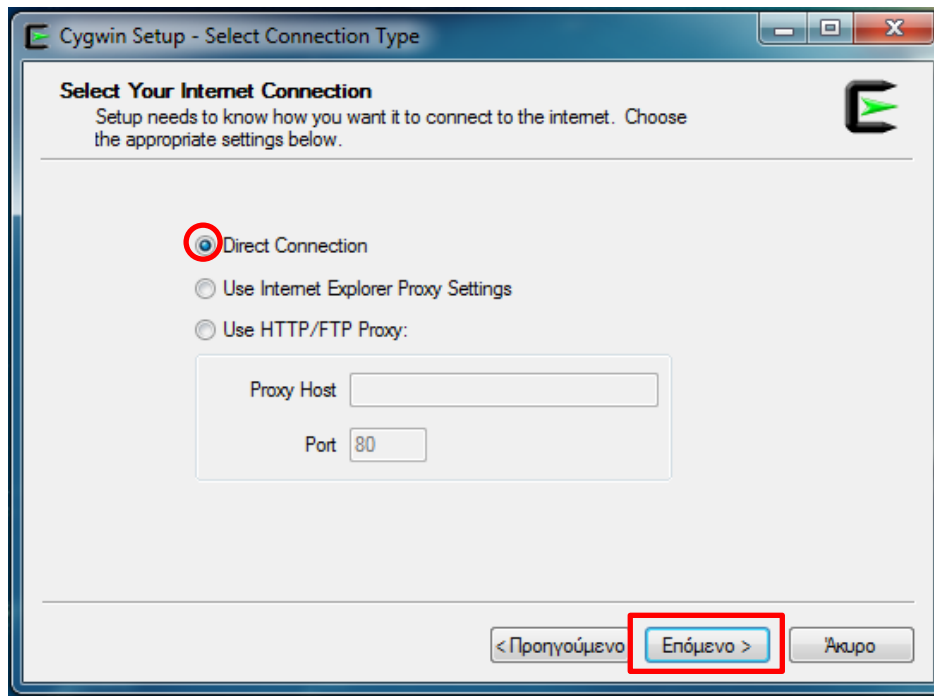
2. Leave the default installation directory and click **Next**



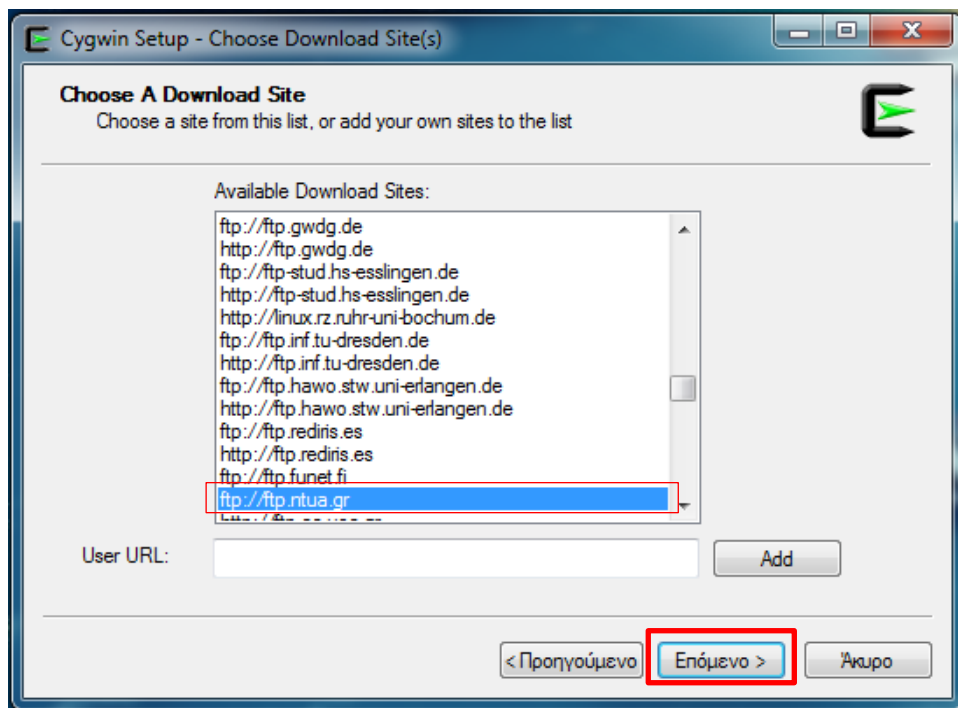
3. Leave the default Local Package Directory and click **Next**



4. Select Direct Connection and click **Next**



5. Choose a download site to download Cygwin and click **Next**

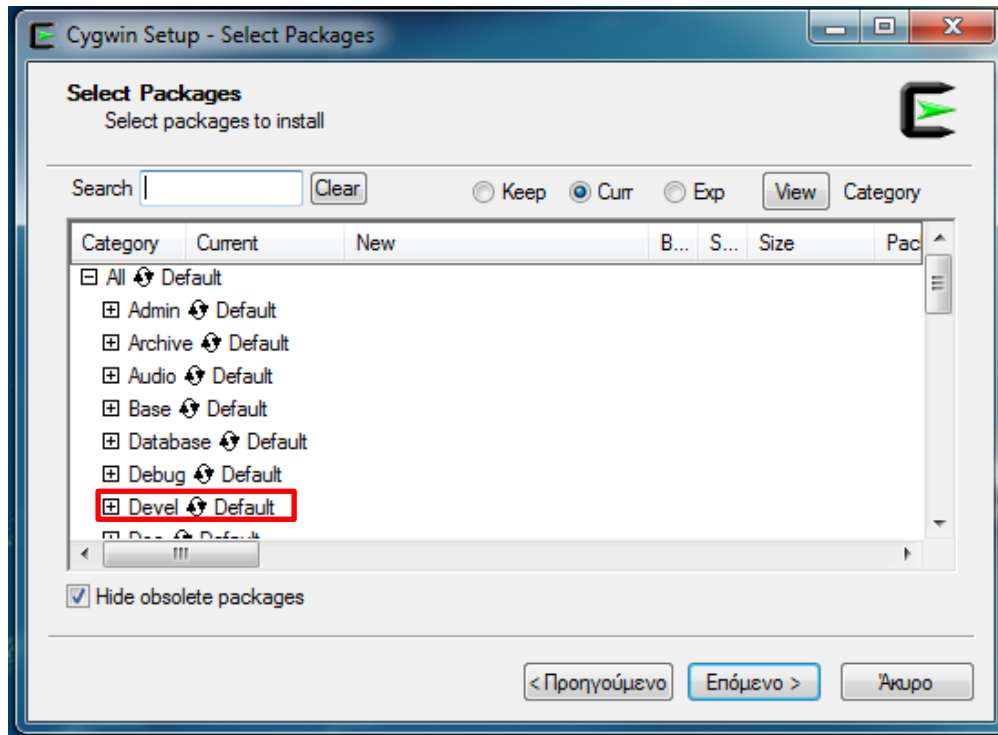


Note:

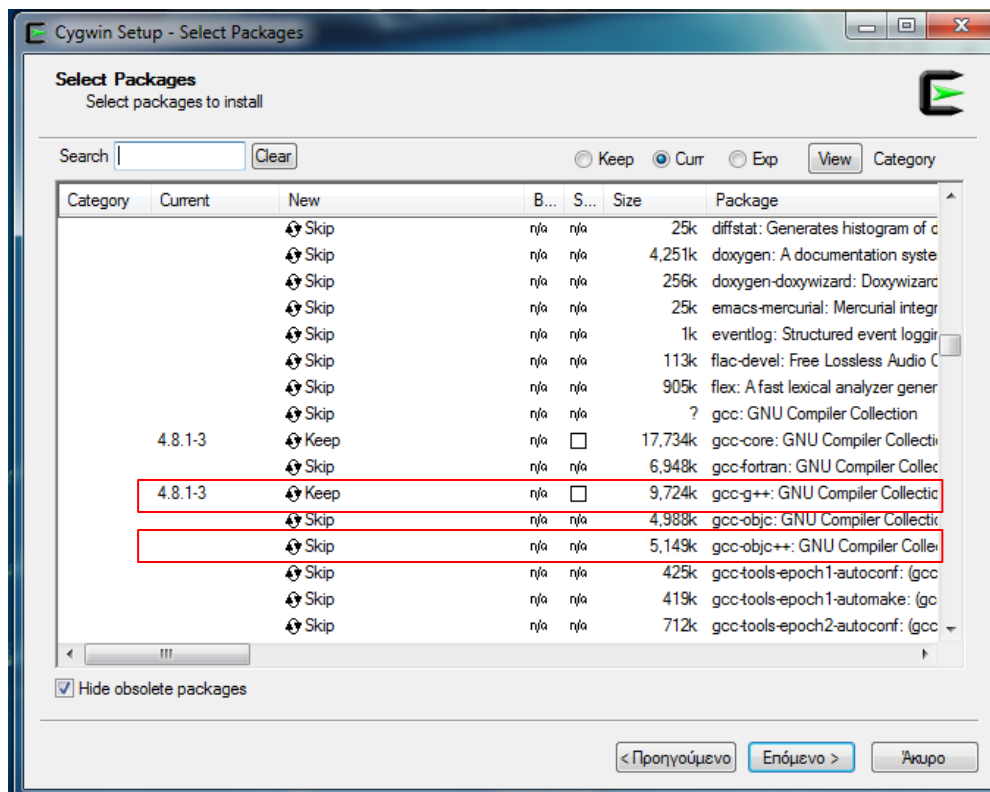
Usually we choose a site with our national TLD.

Example: Greece ➡ **.gr**

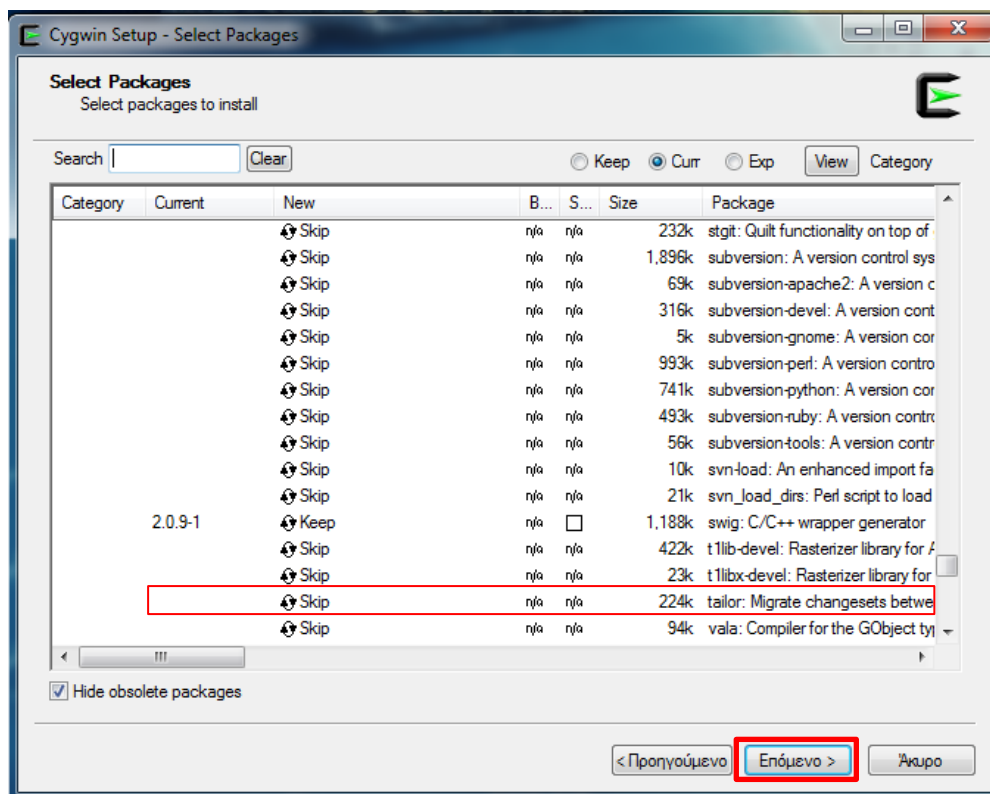
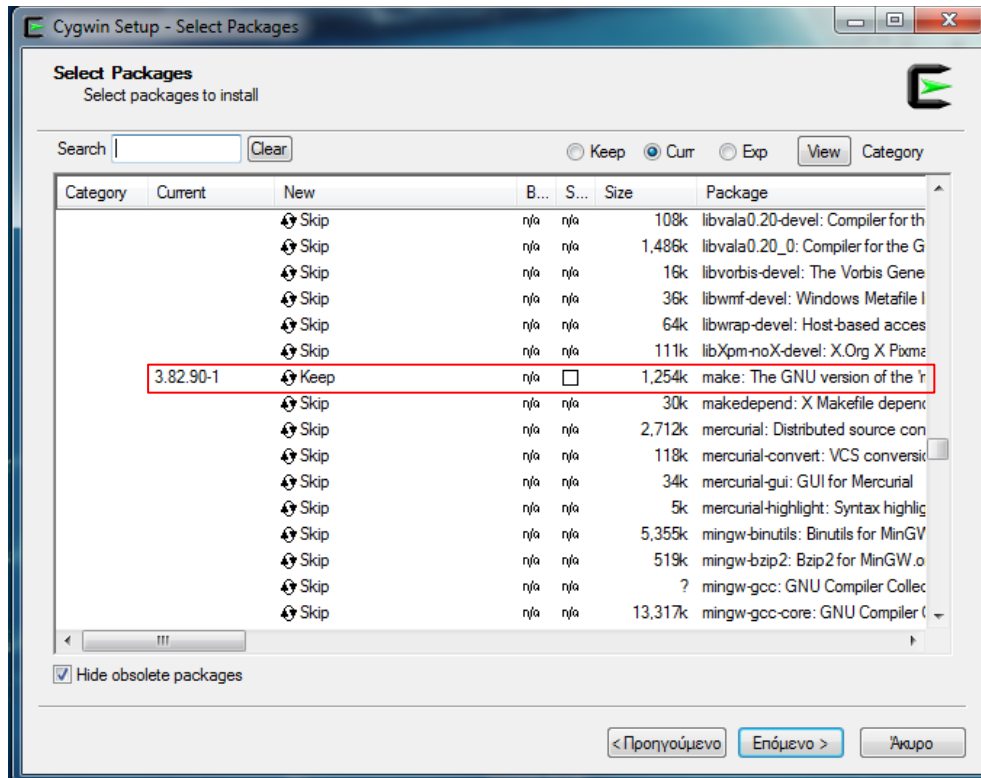
6. In the next screen we have to select the necessary packages. Click in the **Devel** selection



7. Scroll down until you find **gcc-core** and **gcc-g++** packages. Then click on them (once selected, the *New* section must show *Keep* label)



8. Again scroll down until you find **make** and **swig** packages. Then click on them (once selected, the *New* section must show *Keep* label). Final click **Next** to install Cygwin.



Apache - Ant

Download:

<http://ant.apache.org/>

1. Click on <http://ant.apache.org/bindownload.cgi>.

Welcome

Apache Ant™

Apache Ant is a Java library and command-line tool whose mission is to drive processes described in build files as targets and extension points dependent upon each other. The main known usage of Ant is the build of Java applications. Ant supplies a number of built-in tasks allowing to compile, assemble, test and run Java applications. Ant can also be used effectively to build non Java applications, for instance C or C++ applications. More generally, Ant can be used to pilot any type of process which can be described in terms of targets and tasks.

Ant is written in Java. Users of Ant can develop their own "antlibs" containing Ant tasks and types, and are offered a large number of ready-made commercial or open-source "antlibs".

Ant is extremely flexible and does not impose coding conventions or directory layouts to the Java projects which adopt it as a build tool.

Software development projects looking for a solution combining build tool and dependency management can use Ant in combination with [Apache Ivy](#).

The Apache Ant project is part of the [Apache Software Foundation](#).

Apache Ant 1.9.2

July 12, 2013 - Apache Ant 1.9.2 Released

Apache Ant 1.9.2 is now available for download as source or binary from <http://ant.apache.org/bindownload.cgi>.

2. Scroll down and in the Current Release of Ant section, click on **apache-ant-1.9.2-bin.zip**

Mirror

You are currently using <http://apache.forthnet.gr/>. If you encounter a problem with this mirror, please select another mirror. If all mirrors are failing, there are *backup* mirrors (at the end of the mirrors list) that should be available.

Other mirrors:

Current Release of Ant

Currently, Apache Ant 1.9.2 is the best available version, see the [release notes](#).

Note

Ant 1.9.2 was released on 12-July-2013 and may not be available on all mirrors for a few days.

Tar files may require gnu tar to extract

Tar files in the distribution contain long file names, and may require gnu tar to do the extraction.

- .zip archive: [apache-ant-1.9.2-bin.zip](#) [PGP] [SHA1] [SHA512] [MD5]
- .tar.gz archive: [apache-ant-1.9.2-bin.tar.gz](#) [PGP] [SHA1] [SHA512] [MD5]
- .tar.bz2 archive: [apache-ant-1.9.2-bin.tar.bz2](#) [PGP] [SHA1] [SHA512] [MD5]

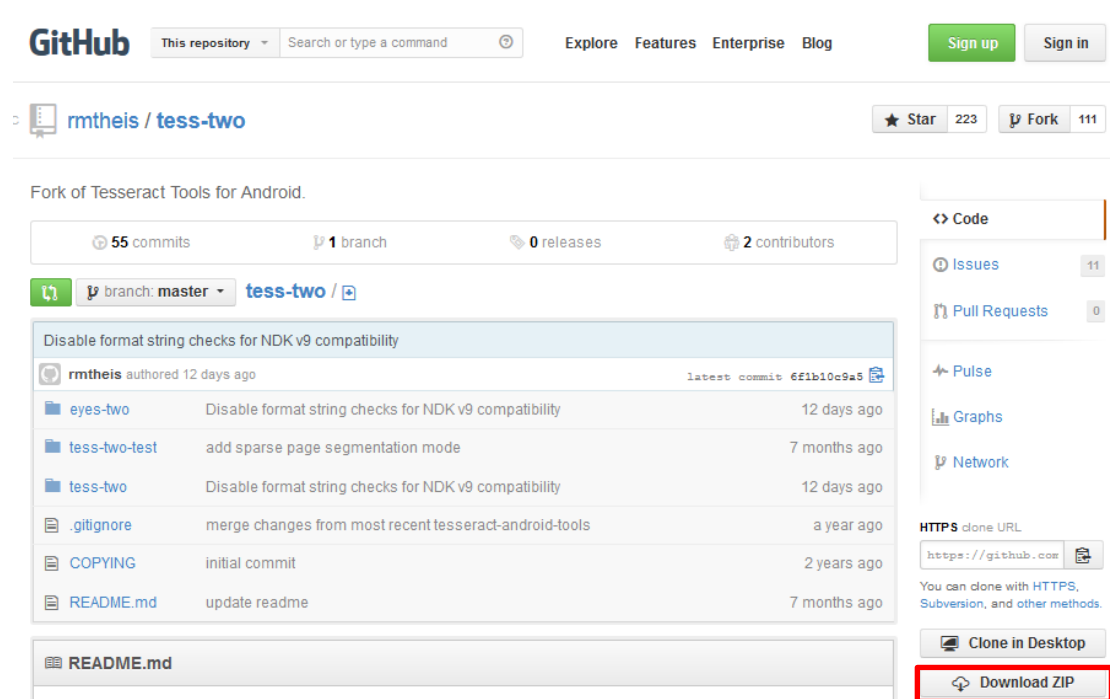
Once the **apache-ant-1.9.2-bin.zip** is downloaded extract it on C:\
Now the <apache ant-directory> must be C:\apache-ant-1.9.2

Tesseract Library

Download:

<https://github.com/rmtheis/tess-two>

1. Click Download ZIP



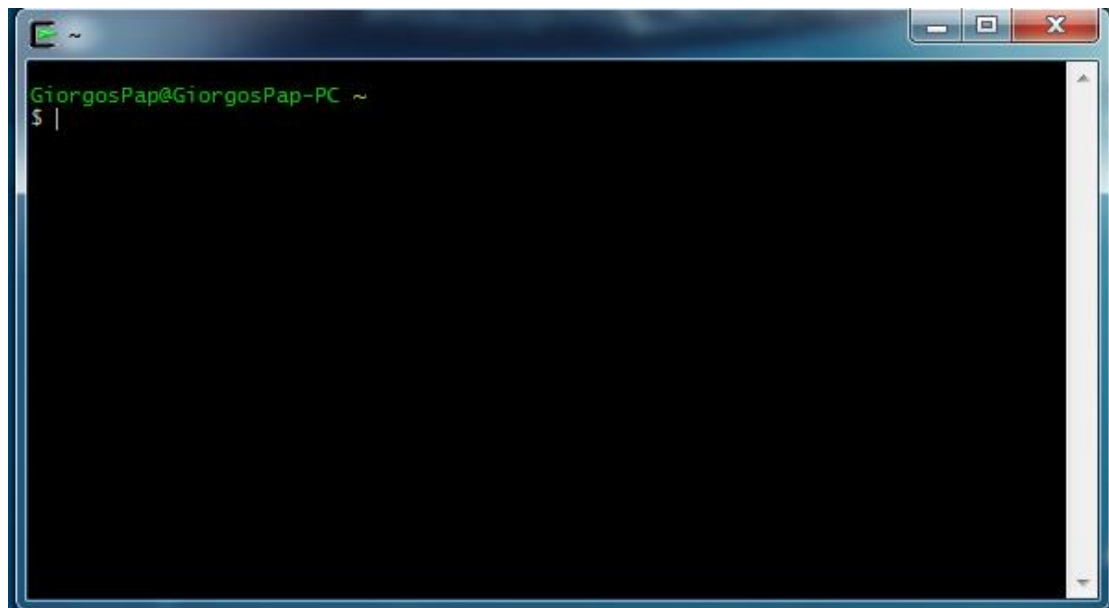
The screenshot shows the GitHub repository page for **rmtheis / tess-two**. The repository is a fork of Tesseract Tools for Android. It has 55 commits, 1 branch, 0 releases, and 2 contributors. The current branch is **master**. The commit history shows several commits, including one titled "Disable format string checks for NDK v9 compatibility" by rmtheis, authored 12 days ago. The right sidebar contains links to Code, Issues, Pull Requests, Pulse, Graphs, and Network. At the bottom of the sidebar, there are buttons for "Clone in Desktop" and "Download ZIP", with the latter being highlighted by a red rectangle.

2. Once downloaded extract **tess-two-master** file on desktop.

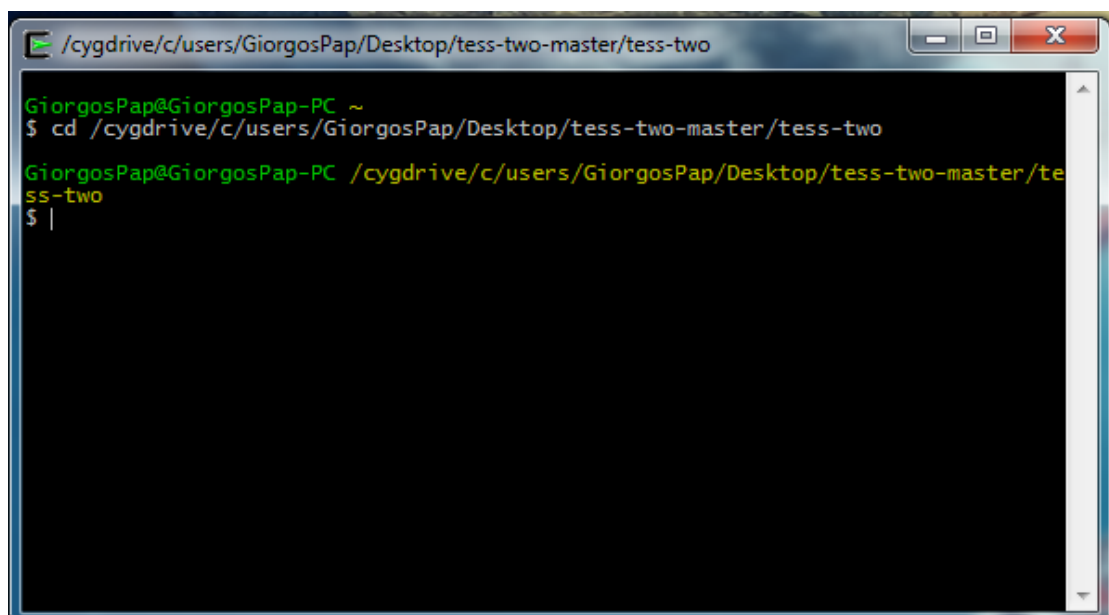
(example: C:\Users\GiorgosPap\Desktop\tess-two-master)

Build Android NDK and Tesseract Library using Cygwin

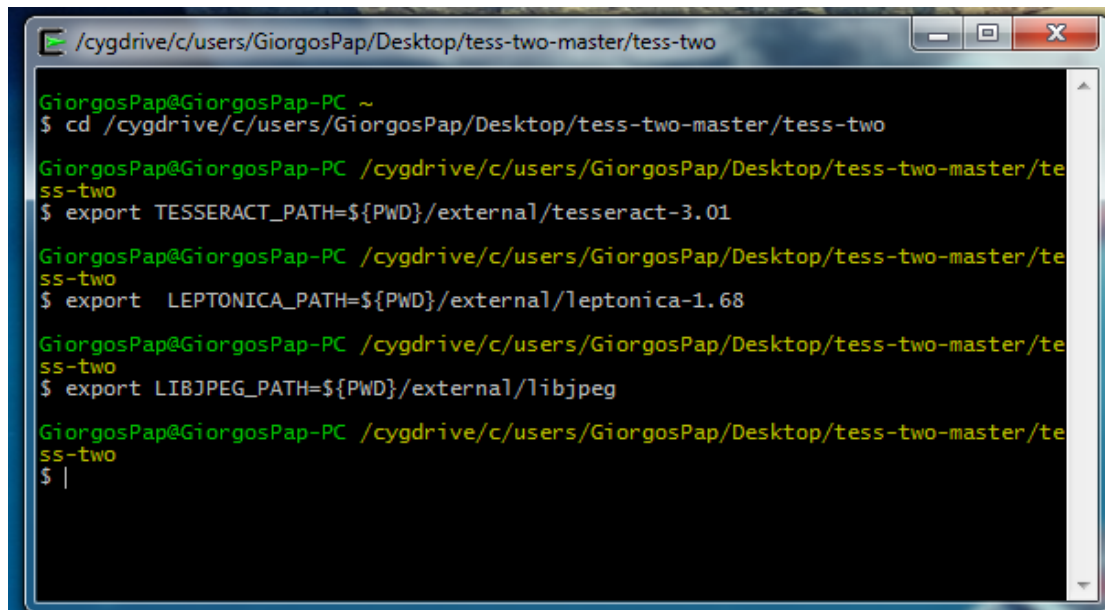
1. Run Cygwin64 Terminal:



2. `cd <project-directory>/tess-two`

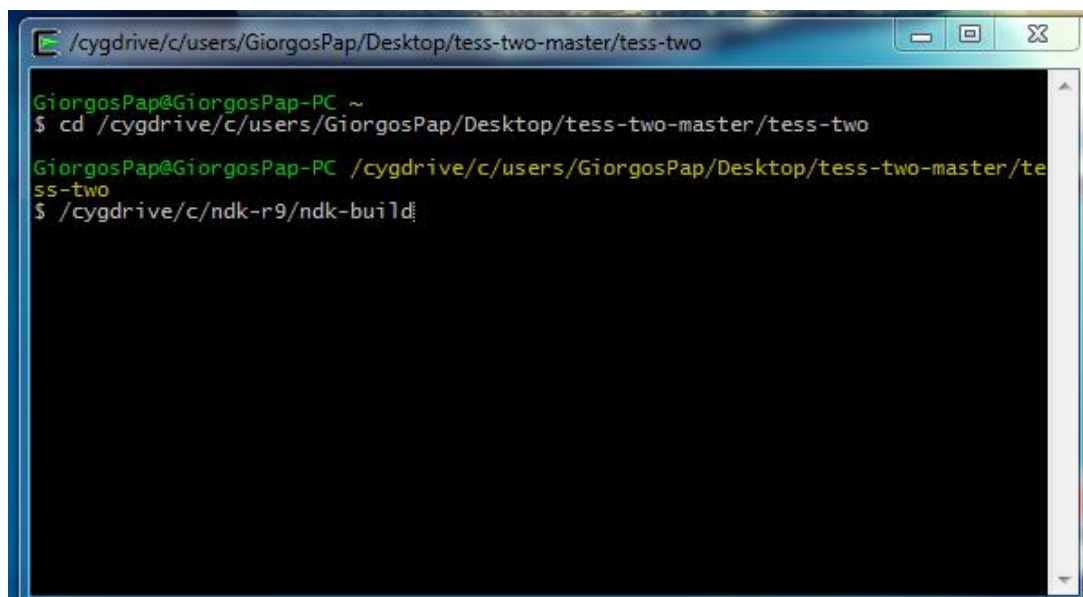


3. `export TESSERACT_PATH=${PWD}/external/tesseract-3.01`
4. `export LEPTONICA_PATH=${PWD}/external/leptonica-1.68`
5. `export LIBJPEG_PATH=${PWD}/external/libjpeg`



```
/cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
GiorgosPap@GiorgosPap-PC ~
$ cd /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ export TESSERACT_PATH=${PWD}/external/tesseract-3.01
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ export LEPTONICA_PATH=${PWD}/external/leptonica-1.68
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ export LIBJPEG_PATH=${PWD}/external/libjpeg
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ |
```

6. /cygdrive/<ndk-directory>/ndk-build

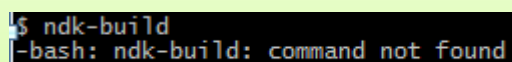


```
/cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
GiorgosPap@GiorgosPap-PC ~
$ cd /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ /cygdrive/c/ndk-r9/ndk-build
```

You have to wait about 45-60 minutes to build the ndk (depending on the computer's performance)

Note:

If you haven't installed additional libraries **gcc-core**, **gcc-g++**, **make**, **swig** with Cygwin then this error is shown:



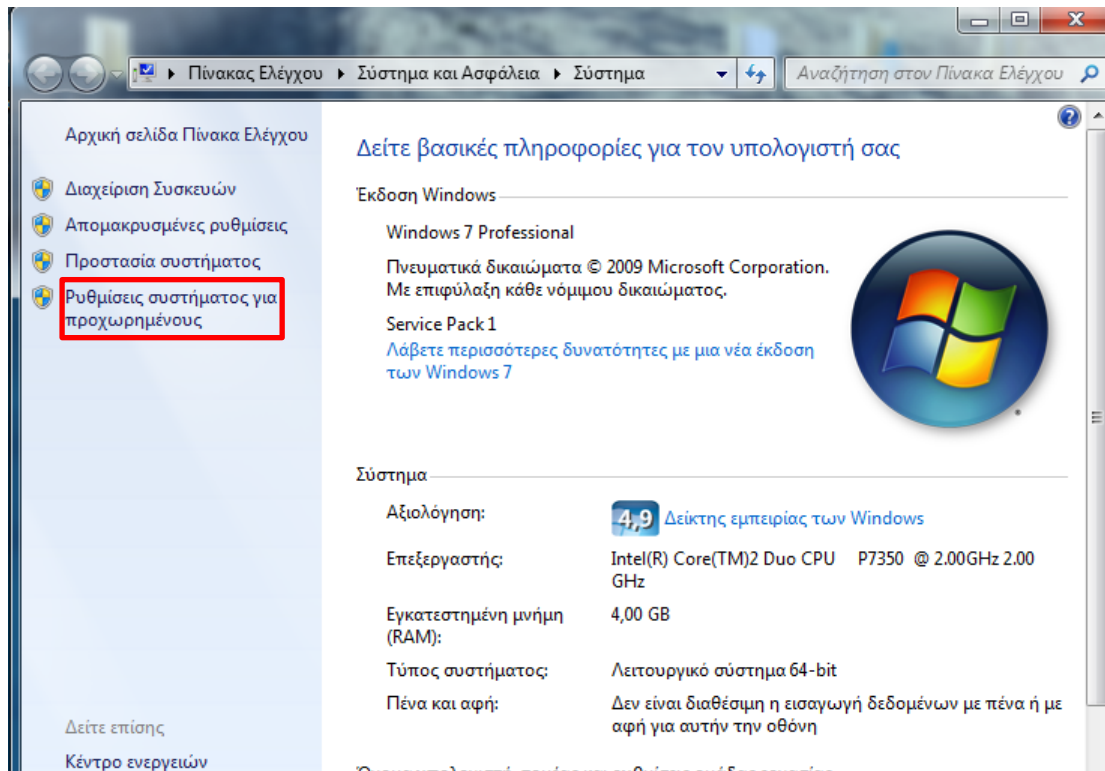
```
$ ndk-build
-bash: ndk-build: command not found
```


7. Create Enviroment Variables: PATH, ANT_HOME, JAVA_HOME.

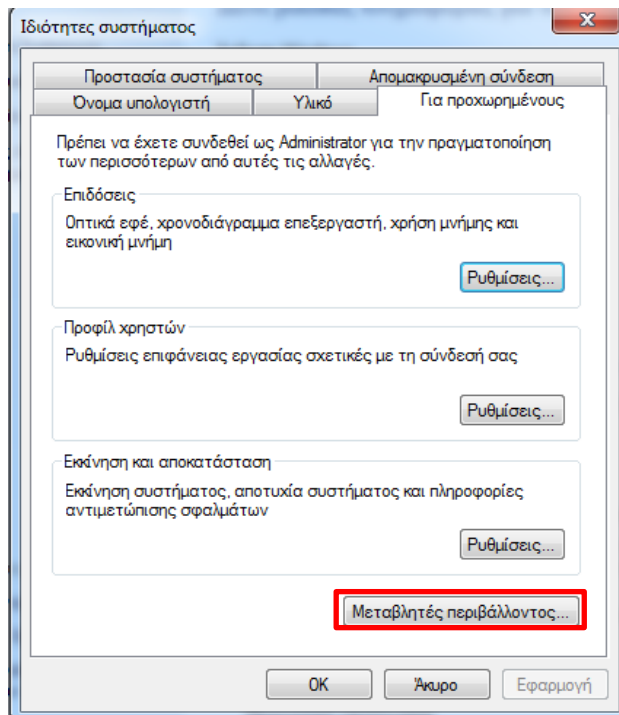
To Set/Create Enviroment Variable:

7.1 Right click on the Computer icon on your Desktop and choose **Properties** option.

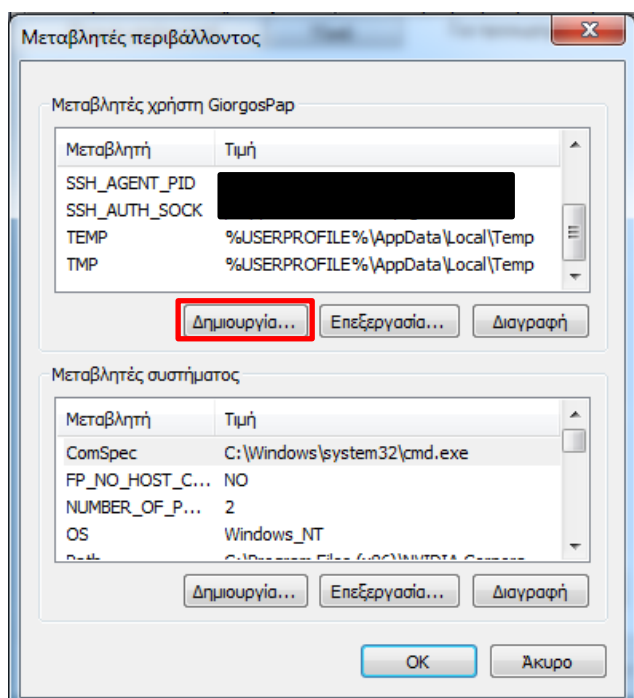
7.2 Next click **Advanced system settings** on left section.



7.3 Under Advanced tab, click on **Environment Variables ...**



7.4 In the next window, in *Users variables* click *New...*



7.5 Then add:

Variable name: <VARIABLE_NAME>

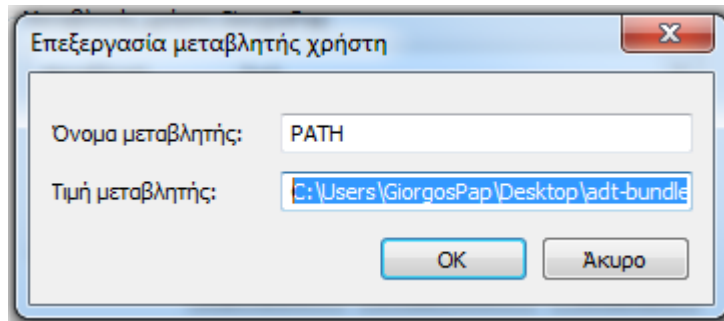
Variable value: <program-directory>

Note:

Make sure you separate the value with “;”

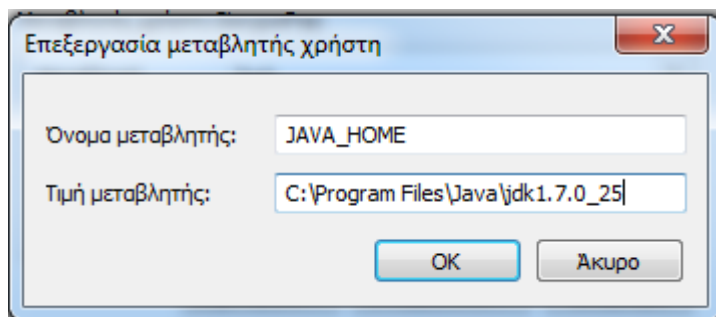
7.6 Variable name: **PATH**

Variable value: **C:\Users\GiorgosPap\Desktop\adt-bundle-windows-x86_64-20130729\sdk\tools;C:\ndk-r9**



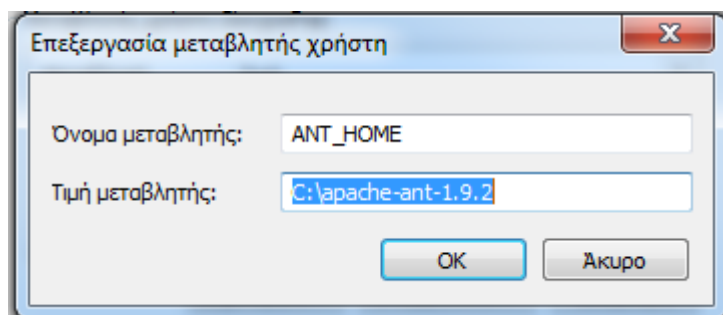
7.7 Variable name: **JAVA_HOME**

Variable value: **C:\Program Files\Java\jdk1.7.0_25**



7.8 Variable name: **ANT_HOME**

Variable value: **C:\apache-ant-1.9.2**



Note:

The “.” after --path must be included in the command.

8. Execute the following command to update the path:

```
/cygdrive/c/users/GiorgosPap/Desktop/adt-bundle-windows-x86_64-20130729/sdk/tools/android.bat update project --path .
```

```
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ /cygdrive/c/users/GiorgosPap/Desktop/adt-bundle-windows-x86_64-20130729/sdk/tools/android.bat update project --path .
Error: The project either has no target set or the target is invalid.
Please provide a --target to the 'android.bat update' command.
It seems that there are sub-projects. If you want to update them
please use the --subprojects parameter.
```

If shown the above error, then you should specify a target, adding **-t <android_id>** after project as shown below:

```
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ /cygdrive/c/users/GiorgosPap/Desktop/adt-bundle-windows-x86_64-20130729/sdk/tools/android.bat update project -t 2 --path .
Error: Target id '2' is not valid. Use 'android.bat list targets' to get the target ids.
```

Now if the above error occurred, you should get the android target ids. To get them execute:

```
/cygdrive/c/users/GiorgosPap/Desktop/adt-bundle-windows-x86_64-20130729/sdk/tools/android.bat list targets
```

```
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/tess-two
$ /cygdrive/c/users/GiorgosPap/Desktop/adt-bundle-windows-x86_64-20130729/sdk/tools/android.bat list targets
Available Android targets:
-----
id: 1 or "android-18"
    Name: Android 4.3
    Type: Platform
    API level: 18
    Revision: 1
    Skins: HVGA, QVGA, WQVGA400, WQVGA432, WSVGA, WVGA800 (default), WVGA854, WXGA720, WXGA800, WXGA800-7in
    ABIs : armeabi-v7a
```

As we see above, the available **id** is **1**. So we execute:

```
/cygdrive/c/users/GiorgosPap/Desktop/adt-bundle-windows-x86_64-20130729/sdk/tools/android.bat update project -t 1 --path .
```

9. The final command that we have to execute is:

ant release

```
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/te
ss-two
$ ant release
-bash: ant: command not found
```

If the above error occurred, you should execute the 2 next commands:

export ANT_HOME=/cygdrive/c/apache-ant-1.9.2

(which assumes you've unzipped Ant into C:\apache-ant-1.9.2.) Then:

export PATH=\$ANT_HOME/bin:\$PATH

To see if all went well execute:

ant -version

It should display the version:

Apache Ant version 1.9.2 compiled on July 8 2013

```
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/te
ss-two
$ export ANT_HOME=/cygdrive/c/apache-ant-1.9.2

GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/te
ss-two
$ export PATH=$ANT_HOME/bin:$PATH

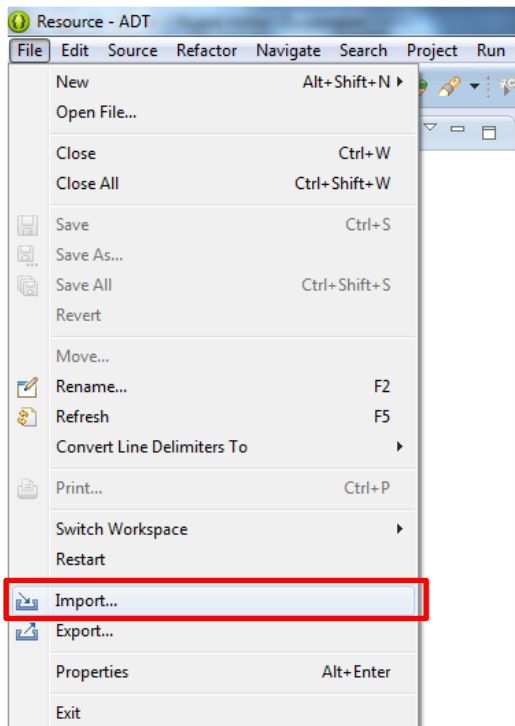
GiorgosPap@GiorgosPap-PC /cygdrive/c/users/GiorgosPap/Desktop/tess-two-master/te
ss-two
$ ant -version
Apache Ant(TM) version 1.9.2 compiled on July 8 2013
```

After all above type:

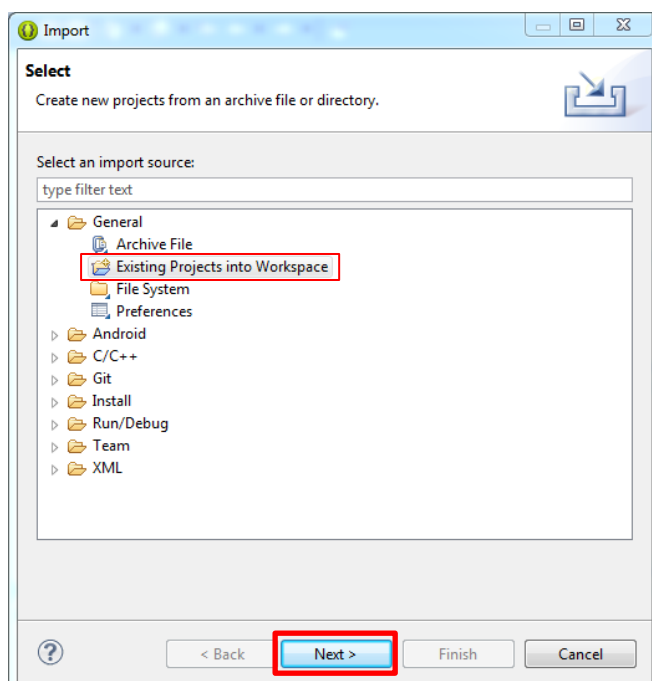
ant release

Import Tesseract library and a Simple OCR example in ADT

1. Go to Desktop >> adt-bundle-windows-x86_64-20130729 >> eclipse and run **eclipse.exe**
2. Go File >> Import...

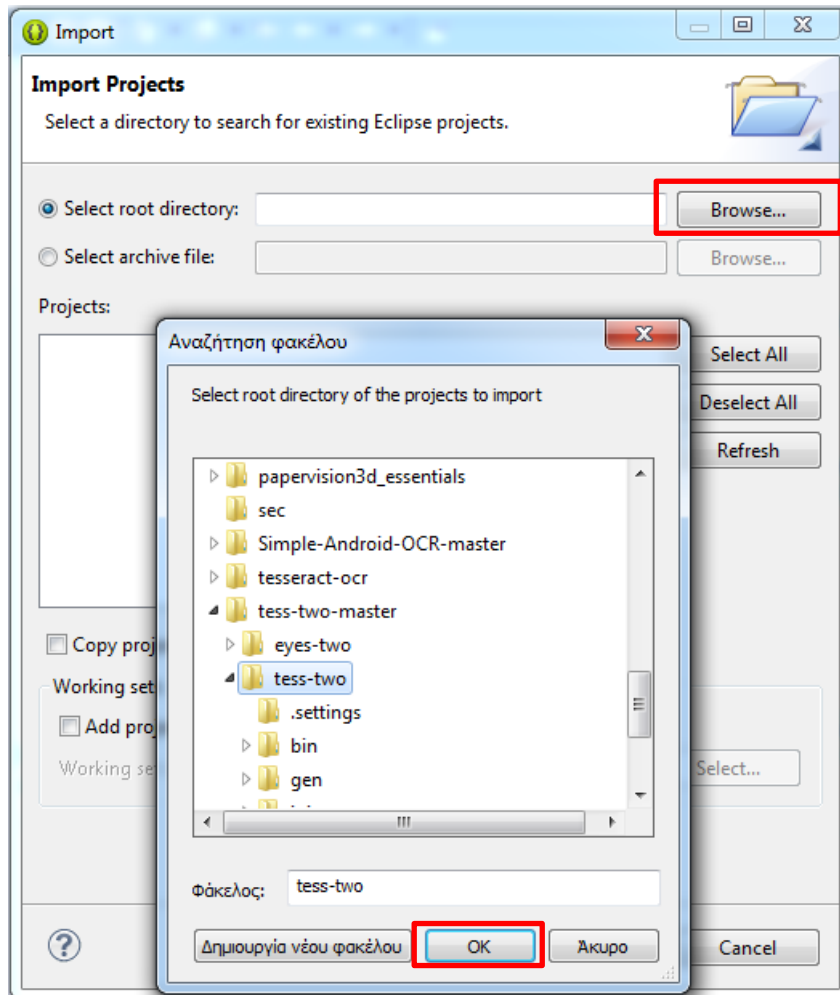


3. From file General select **Existing Project into Workspace** and click **Next**

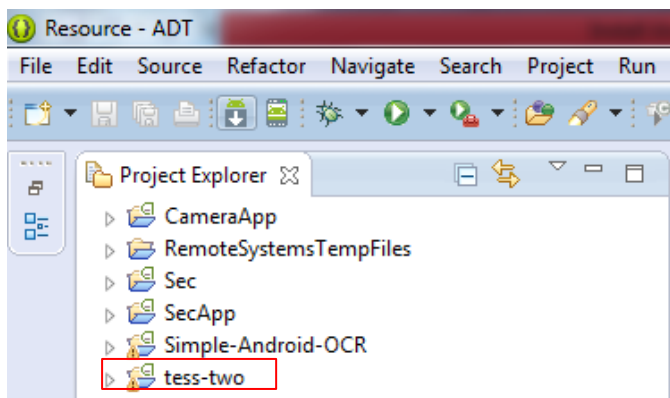


4. In the next window click **Browse...** in *Select root directory*, and then find **tess-two** file and click **OK**.

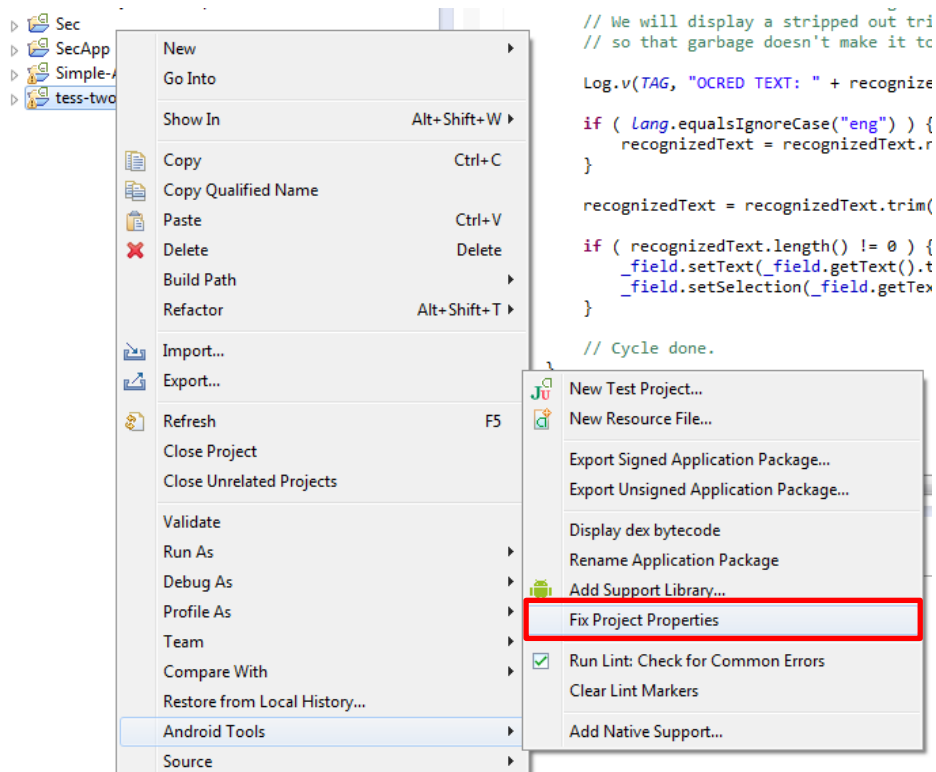
(Mine is in C:\Users\GiorgosPap\Desktop\tess-two-master\tess-two)



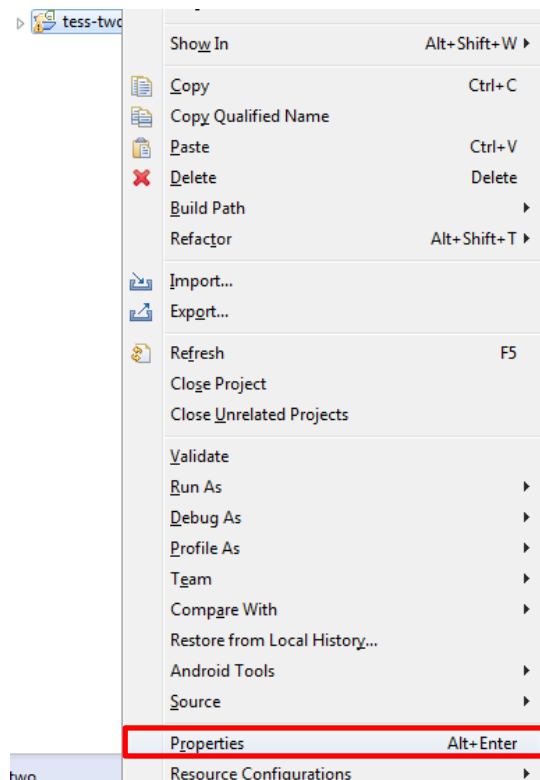
5. Click **Finish** and now you can see it on Project Explorer



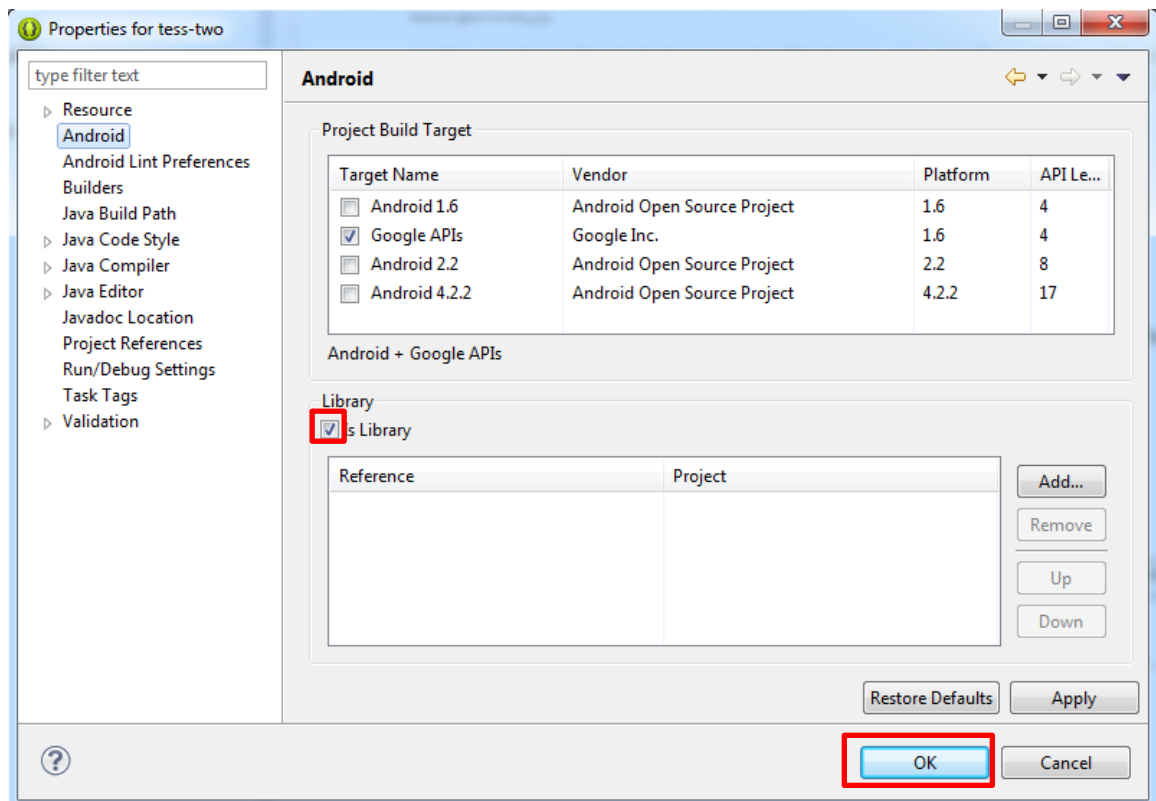
6. Right click on the **tess-two** project >> Android Tools >> Fix Project Properties.



7. Again Right click on the **tess-two** project >> Properties

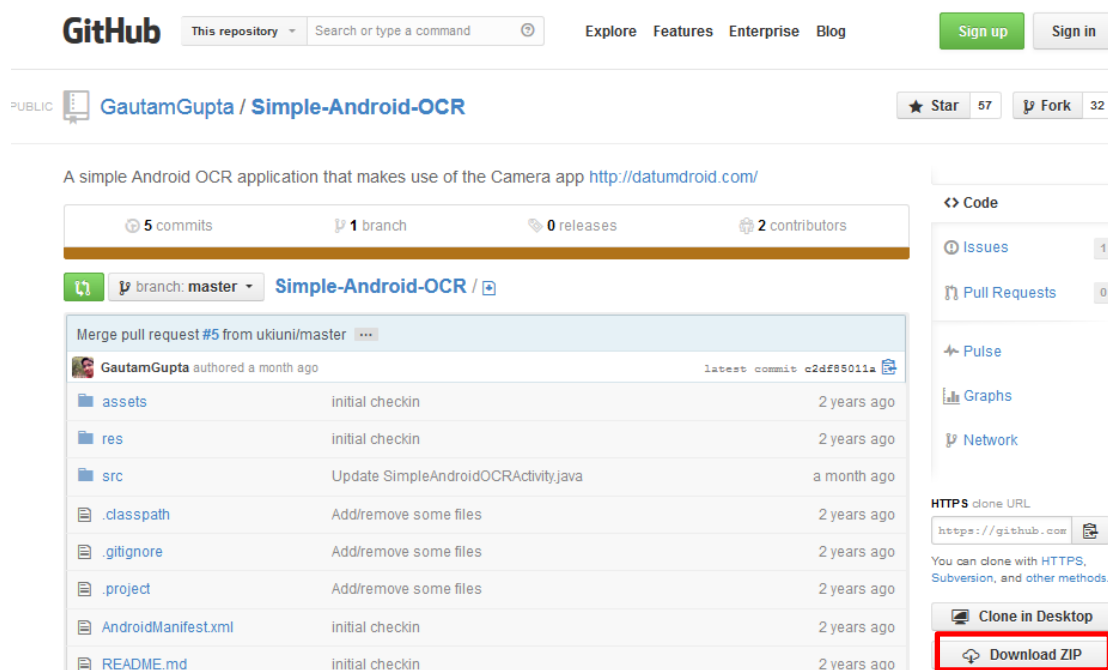


8. Select Android >> Check Is Library and click **OK**



9. Download the simple OCR android app from :

<https://github.com/GautamGupta/Simple-Android-OCR>



10. Extract it on desktop (Mine is in
C:\Users\GiorgosPap\Desktop\Simple-Android-OCR-master)

11. Once extracted on desktop and you have closed ADT:

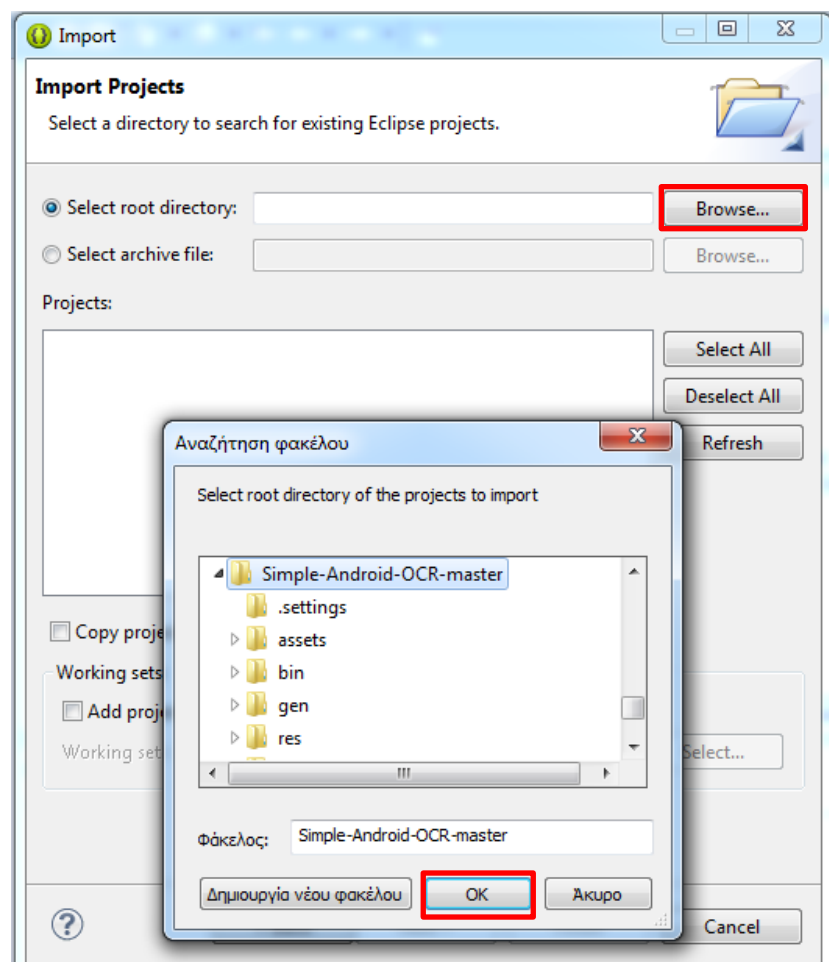
Go again to Desktop >> adt-bundle-windows-x86_64-20130729
>> eclipse and run **eclipse.exe**

Go File >> Import...

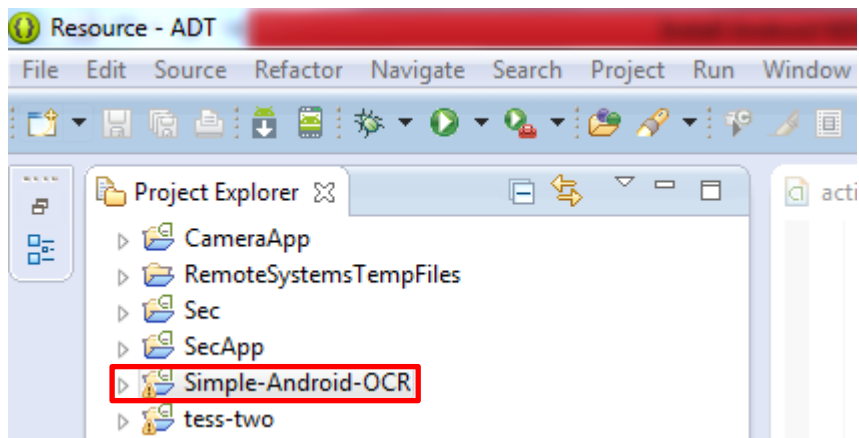
From file General select **Existing Project into Workspace** and
click **Next**

12. In the next window click **Browse...** in *Select root directory*, and
then find **Simple-Android-OCR-master** file and click **OK**.

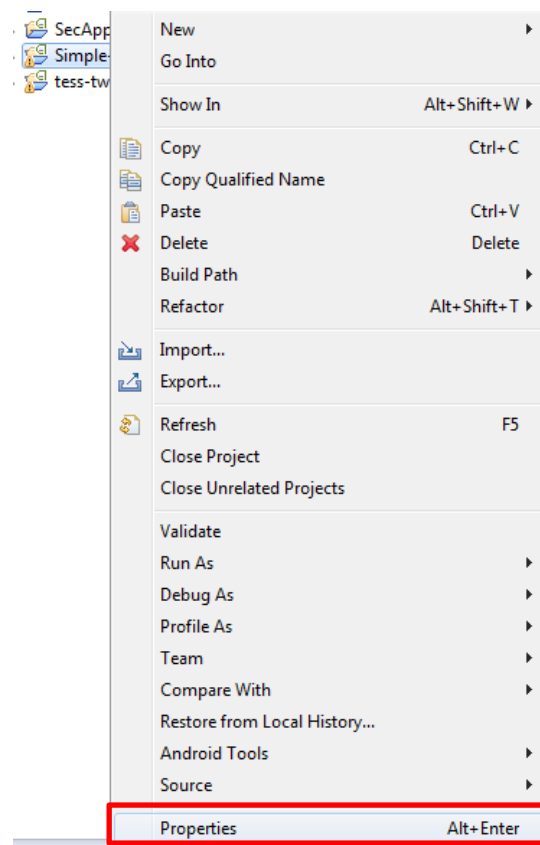
(Mine is in C:\Users\GiorgosPap\Desktop\Simple-Android-OCR-master)



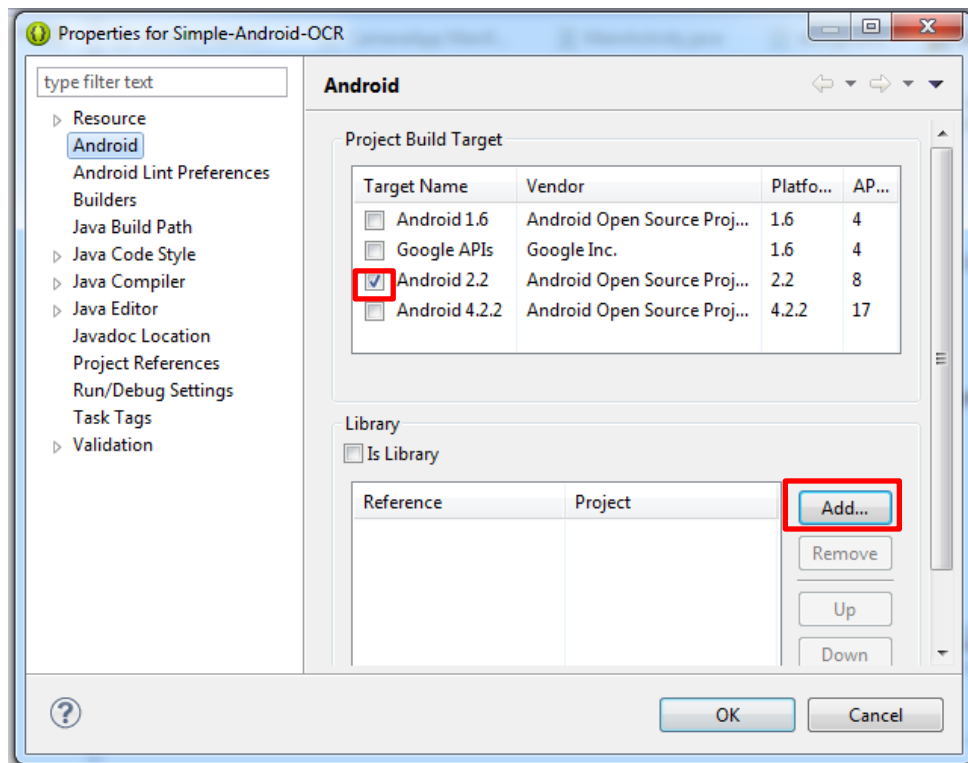
13. Click **Finish** and now you can see it on Project Explorer



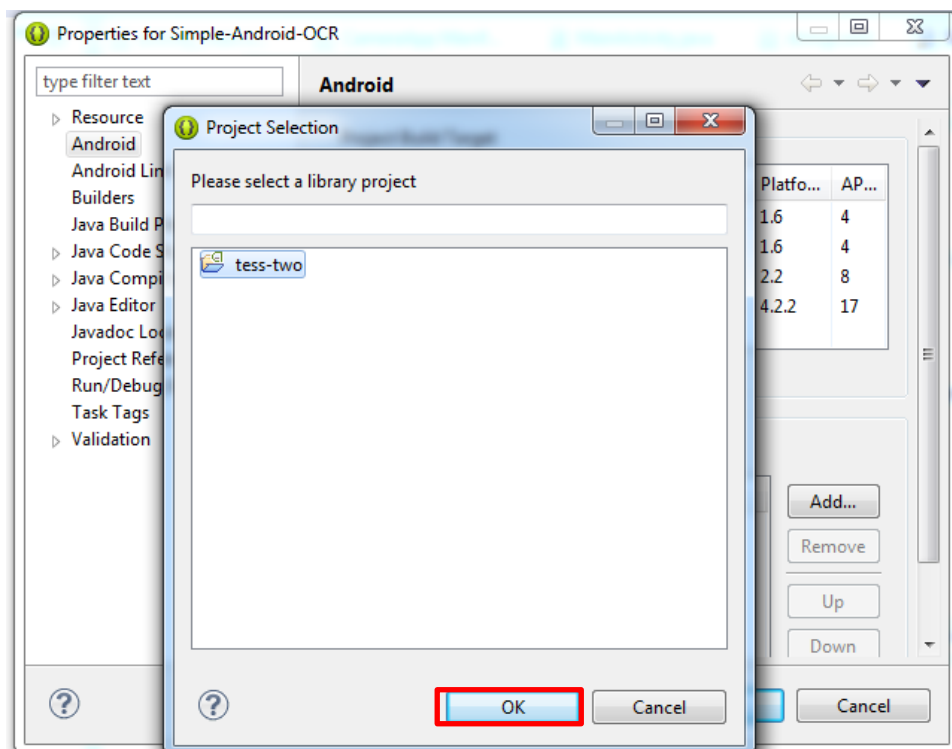
14. Right click on the **Simple-Android-OCR** project >> Properties



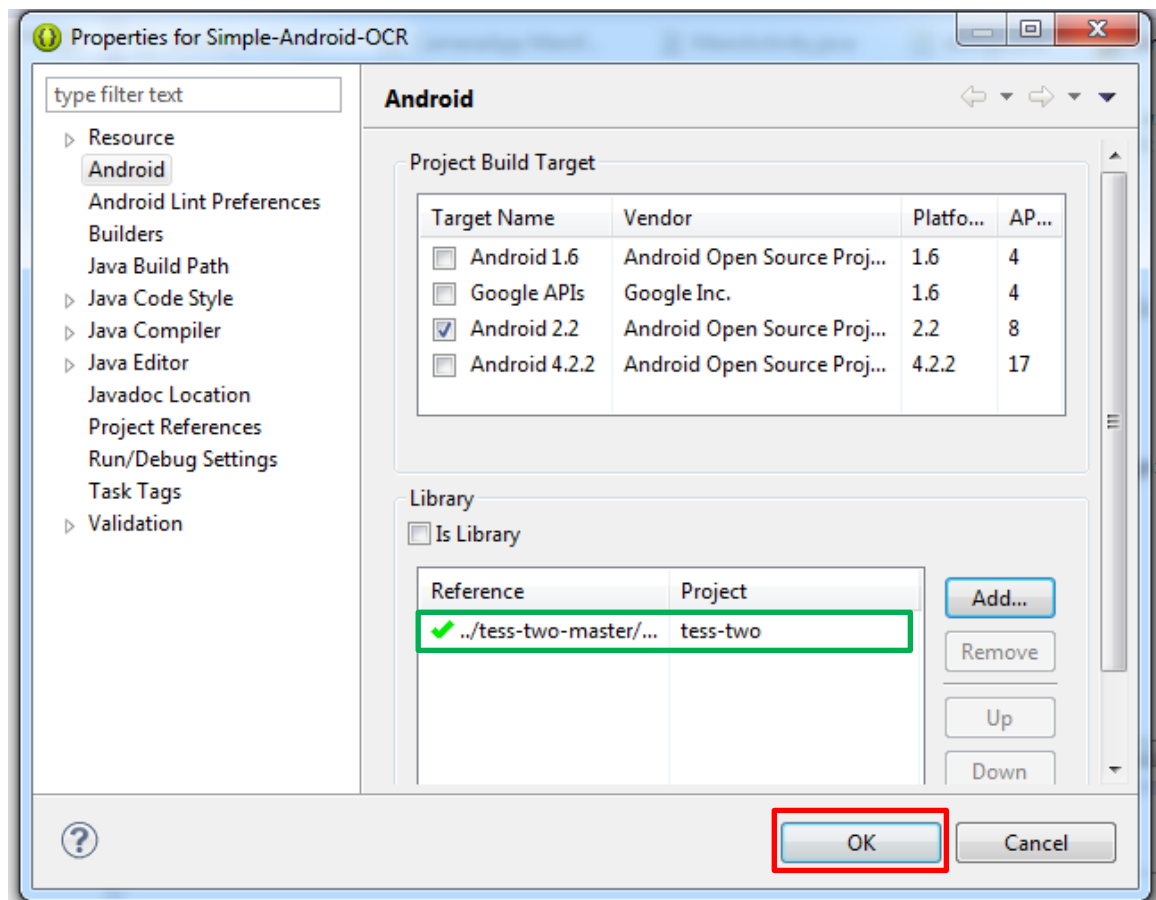
15. Select Android, check Project Build Target (I chosed Android 2.2, because i tested on an Android 2.2 smart-phone) and click **Add...**



16. In the *Project Selection* window select **tess-two** library and click **OK**



17. Now you can see the **imported library**. Click **OK**



18. Finally you can run the App that uses the **Tesseract** library for the OCR operation.

References

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<http://www.cygwin.com/>

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