Notes by Pietro Terna, september 2003, `pietro.terna@unito.it` (revised 27.9.2003)
Many thanks to Guido Fioretti, fioretti@cs.unibo.it, for translating this file.

If you have Swarm-2.1.1 installed on your computer

Before any other operation, open the *Swarm* terminal and enter the following commands:

```
umount /bin
umount /
```

If this is not done, *Cygwin* damages *Swarm*-2.1.1

If you have a previous development snapshot of Swarm-2.2 on your computer

Simply delete the directory Swarm-2.2 and all of its contents.

If you already have JDK (or J2SDK) on your computer

If you do not have the version mentioned below, and even if you have, if the directory j2sdk is not in c:\ (eg. `j2dk1.4.2`), please uninstall both JDK and JRE.

If your version of Windows has autoexec.bat in c:

Purge `autoexec.bat` of any reference to *Swarm*, e.g. `SWARMDIR`, `SWARMHOME`, or even `HOME`. Before changing `autoexec.bat`, it is advisable to make a copy (e.g. `autoexec.old`).

If you already have Cygwin on your computer

Open the *Cygwin* window and enter the following command:

```
umount -A
```

Delete the directory cygwin and all of its contents.

Furthermore, anything that Cygwin wrote on the Windows registers must be deleted as well. Click on “Start”, then on “Execute” (the lowest box): A window will appear, where you can write “regedit” and launch it. Follow the instructions below (from http://cygwin.com:

[delete] `The registry tree `Software\Cygnus Solutions' under HKEY_LOCAL_MACHINE and/or HKEY_CURRENT_USER.`

If you encounter difficulties, log in as system administrator.

Here begins the installation. First Cygwin, then Swarm

Installing Cygwin

The CD entails the version `1.5.4-1 of` cygwin1.dll. After the installation it is possible to launch setup and update Cygwin from the web. No update of *Cygwin* is necessary for the version of *Swarm* here attached[1].

Create on your hard disk – henceforth called `c:` - a directory **`compr`** (i.e. in **`c:`**\).

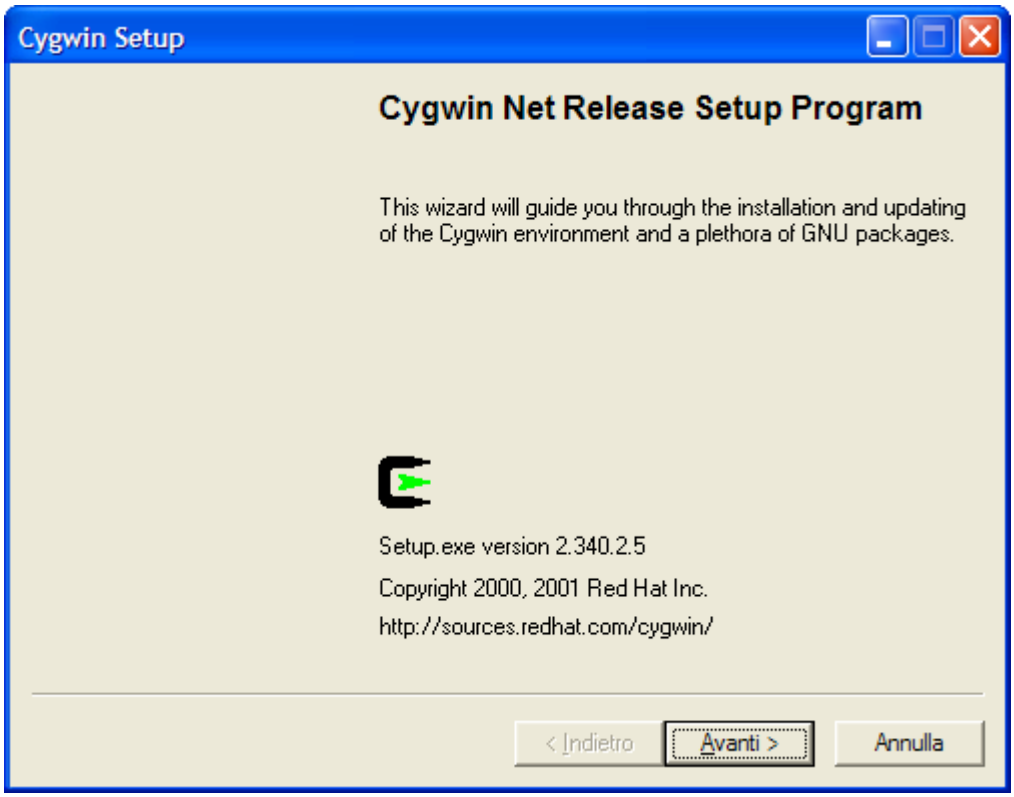
Move to this directory the file `cygwin-20030921-1.5.4-1.zip` that you find in the CD. Unzip it. (You may wish to do it with *winzip*. The CD entails the version 8.1 of *winzip*. *Winzip* is not free software and it is necessary to purchase it in order to use it beyond the evaluation period. See instructions in *winzip* after installation.).

Execute setup.exe, which is now in `c:\compr\cygwin\`

The installation may be either carried out from your account as system administrator, or from a user account. By following the instructions below, *Swarm* will only be available to the account that installed it (I deem this is the best arrangement).

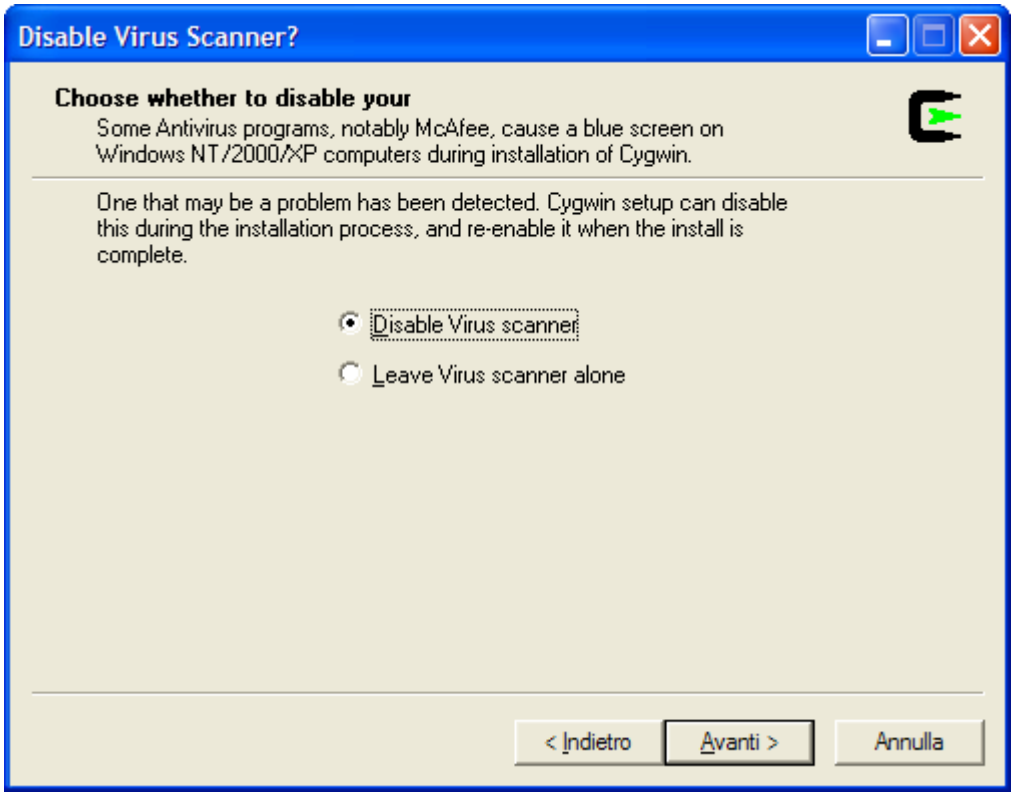
Please follow the following steps:

In \compr\cygwin, click on setup.exe.

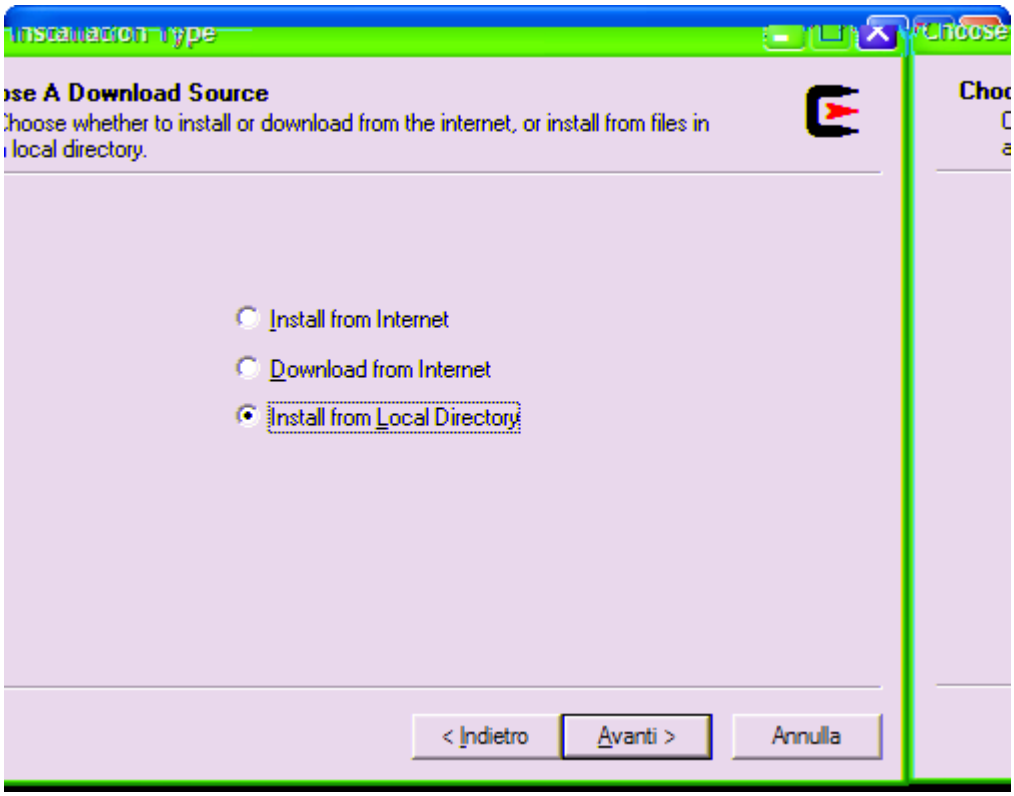


Click on "Next" (*Avanti* in the picture).

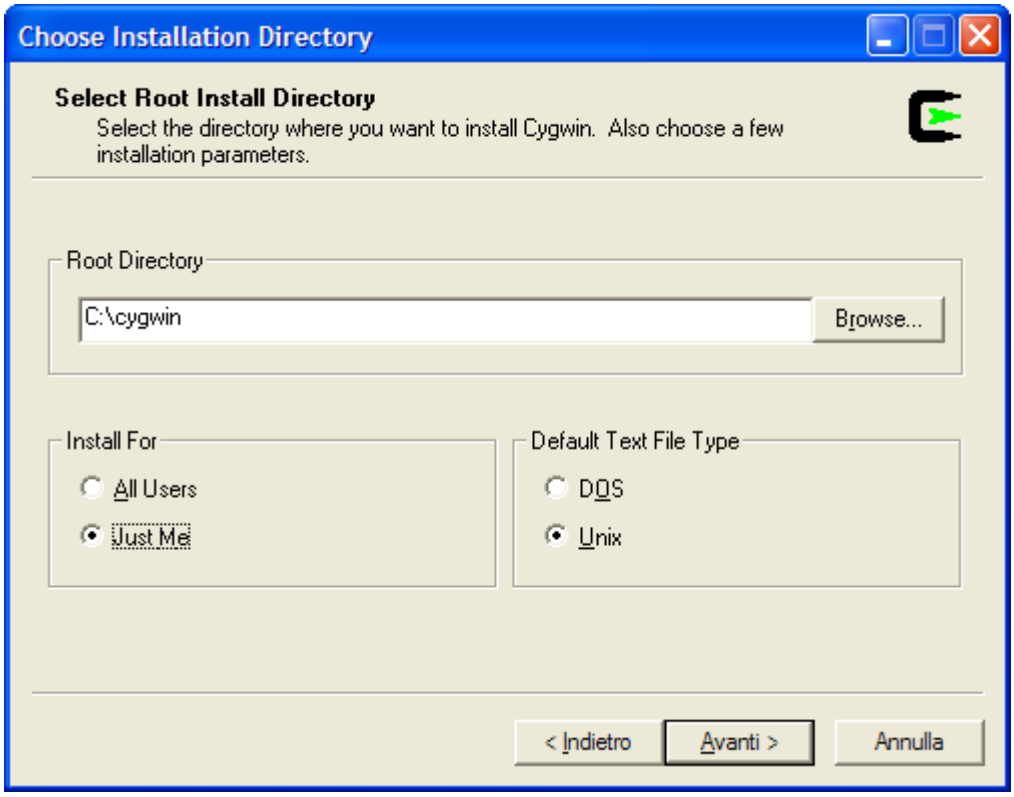
[1] Future releases of *Swarm* may require a more recent version of *Cygwin*.



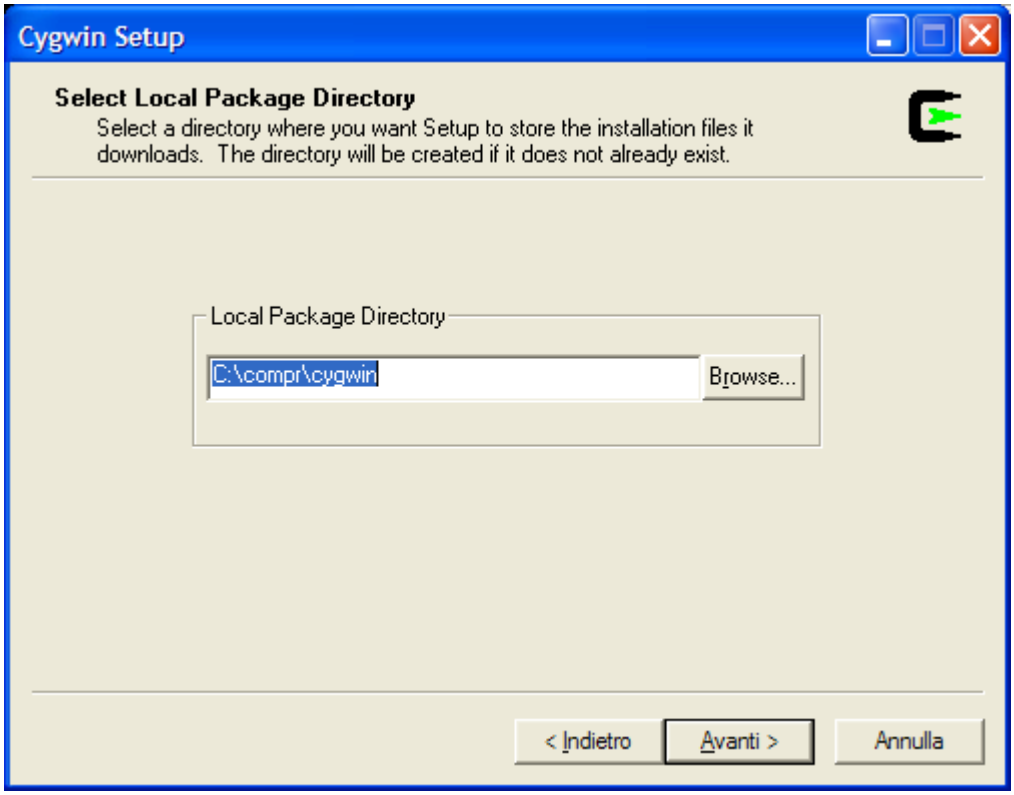
Select the option indicated in the above picture.



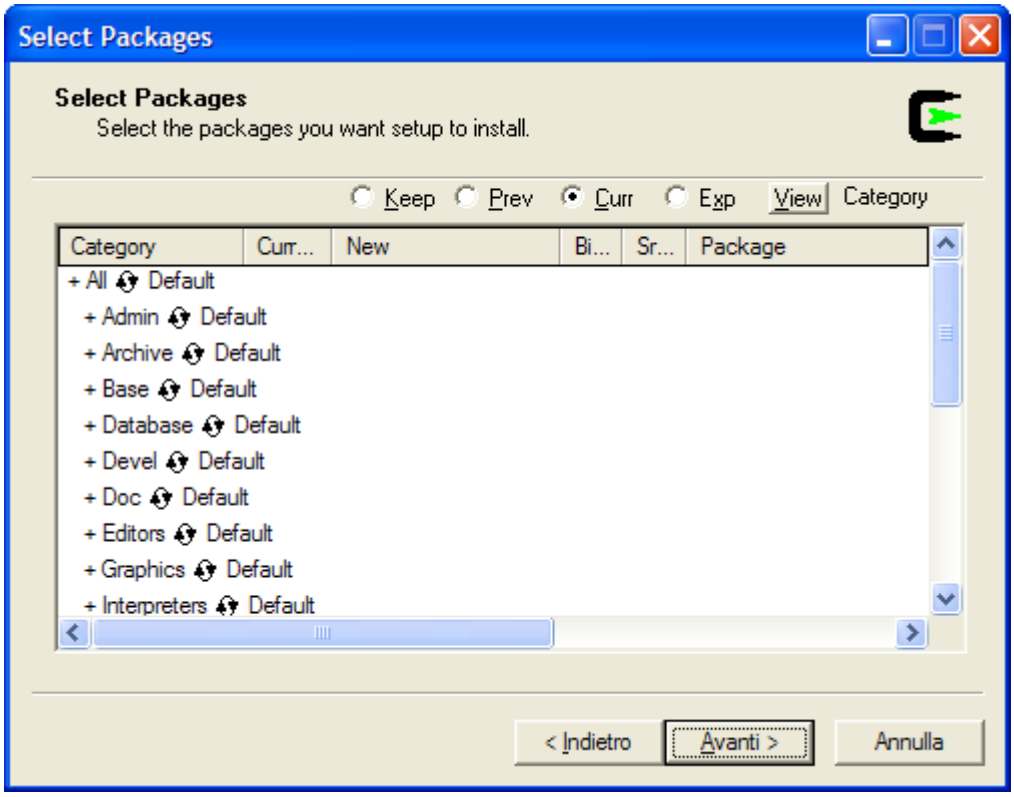
Select the option indicated in the above picture.



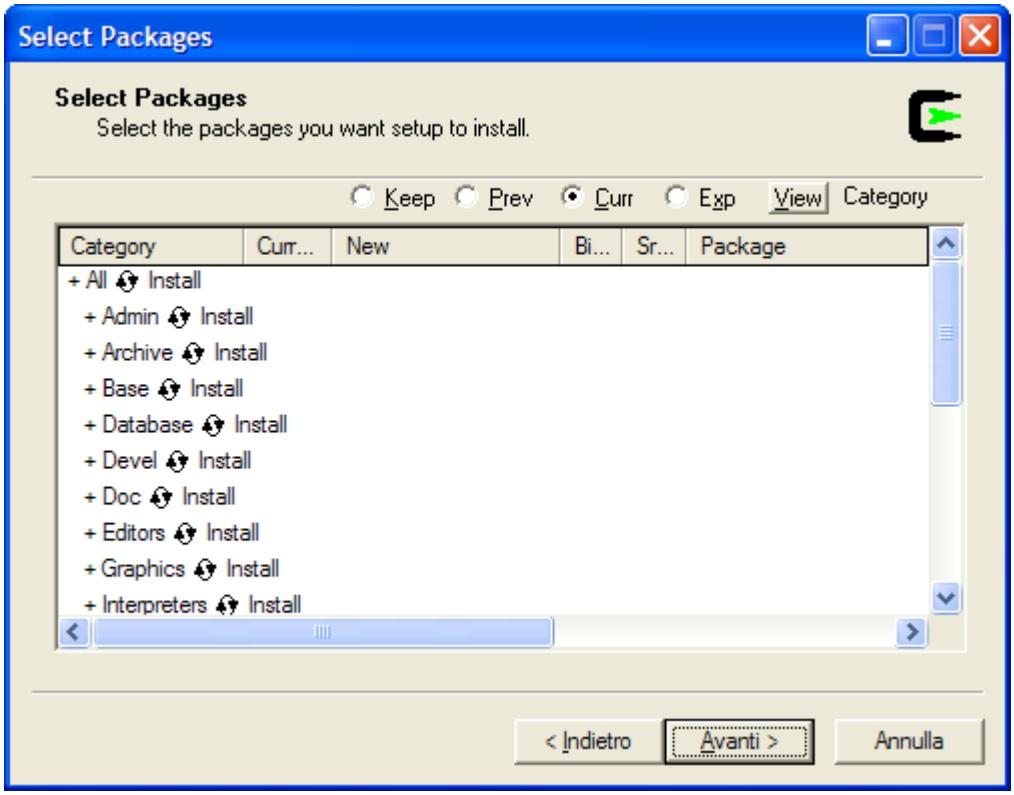
The destination c:\cygwin appears automatically. It is strongly suggested not to change it. As far as it regards the other options, "Just Me" and "Unix" are suggested.



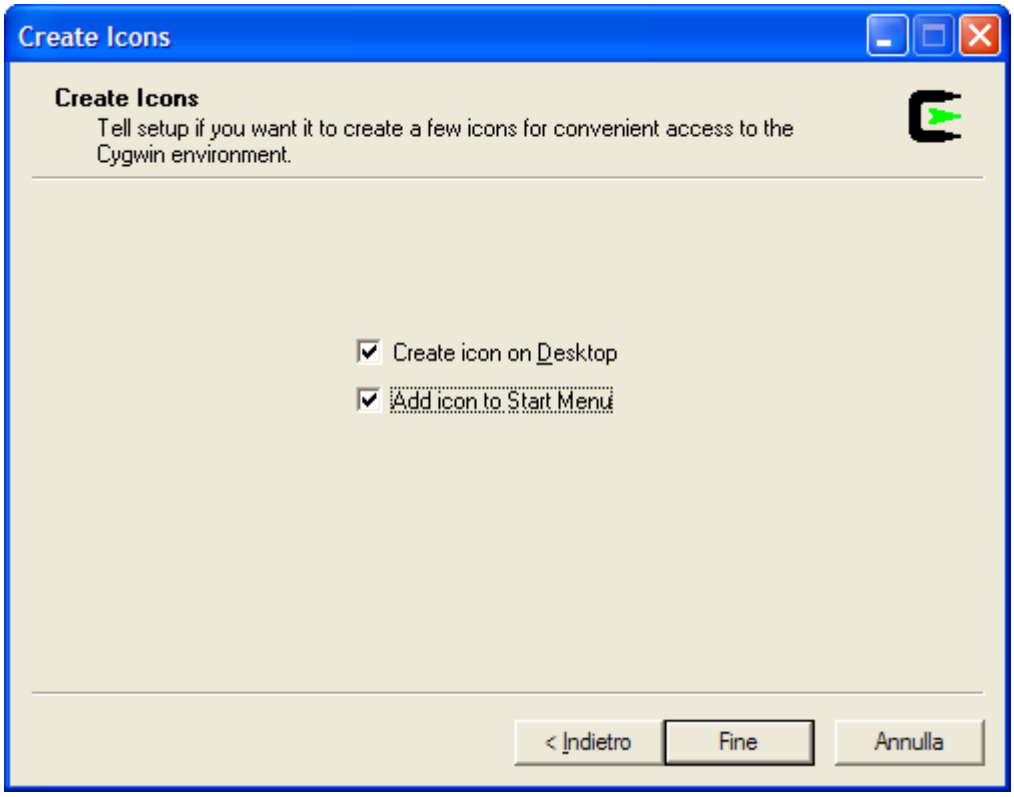
The above picture appears automatically. Click on "Next" (*Avanti* in the picture). A rather long waiting time may follow.



From the situation depicted in the picture above, by clicking on the symbol between “All” and “Default” one obtains the situation depicted in the picture below (NB: several minutes may elapse):



With the situation as in the picture above, click on “Next” (*Avanti*). One arrives at the options of the picture below, Accept.



Click on "The End" (*Fine*). Automatic procedures follow, at the end of which the installation is complete.

Installing jdk (Java)

In version `pretest 10` of *Swarm*-2.2, javacswarm and javaswarm seek jdk. Thus, one must install *Java* (free from *Sun*). Just execute `j2sdk-1_4_2-windows-i586.exe`, even directly from the CD. It is strongly recommended not to change the destination directory: `c:\j2skd1.4.2\`

Eventually, you may create in `c:\j2sdk1.4.2` a directory for documentation (e.g. `docs`). You may want to put here the documentation files of *jdk* to be found in the CD: `j2sdk-1_4_2-doc.zip` and `langspec-2.0.html.zip`.

Finally, the commands java and javac must be made executable either in the DOS window (for Windows 98 or ME), or at the commands prompt (for Windows XP or 2000).

With Windows98 or ME, just add the following line at the bottom of `c:\autoexec.bat`

```
set PATH=.;c:\j2sdk1.4.2\bin;%PATH%
```

With Windows XP or 2000, change the environment variables by adding `c:\j2sdk1.4.2\bin` to the `PATH`

The environment variables can be found in `Control Panel / Performance / System / Advanced / Environment Variables`

Installing Swarm

Create a directory `swarm` in `c:\compr.` Copy the file `Swarm-2.2-pretest-10.tar.gz` to `c:\compr\swarm`.

Open the *Cygwin* window, either from `Programs` or by clicking on the icon.

Enter the following commands (NB: the one beginning with "`tar`" may take several minutes).

```
cd /cygdrive/c/
tar zxf compr/swarm/Swarm-2.2-pretest-10.tar.gz

mkdir /Swarm-2.2
mount 'c:\Swarm-2.2' /Swarm-2.2
```

Customizing Cygwin for Swarm

Copy `dot_bashrc` from the CD to `c:\cygwin\home\`accountName`\` where accountName is the account from which the installation was made (see above). The directory accountName is created in `c:\cygwin\home\` the first time *Cygwin*

```
make
javaswarm StartHeatbugs
```
(NB: without “java” or “class” extensions, without the final ’.’)

The Java version `heatbugs` should appear. Press `Start` and exit with `Quit`. With `Next` the simulation makes one step only. One may re-arrange the windows, save their position by clicking `Save` and then proceed with `Start`.

By writing in one single line:

```
CLASSPATH=/Swarm-2.2/share/swarm/swarm.jar gcj   -O2   -g   --main=StartHeatbugs
-L/Swarm-2.2/lib *.class /Swarm-2.2/lib/gcj{swarm,bytecode}.o -o jheatbugs
```

An executable file is generated by `gcj`

With

```
jheatbugs
```

it can be executed, with the same results as above.

With

```
cd

cd swarmapps-2.1.1/heatbugs/

make clean
make

heatbugs
```

the *Objective C* version of heatbugs should appear.

Installing Xemacs

This issue is independent of the installation of *Swarm*. The CD contains *Xemacs* in the executable file `xemacs-21.4.6.exe` (from www.xemacs.org)

In order to install, execute the above file. Standard options suffice.

Documentation on Swarm and Java

Besides the documentation on *jdk* cited above, the CD has a directory `Docs` that entails the following directories:

- `TIJ-3rd-edition` Thinking in Java (start from `TIJ3.htm`)

- `userbook` Swarm User Guide (start from `userbook.html`)
- `refbook-java` Swarm Reference 2.1.1 for *Java* (start from `index.html`)
- `set` Documentation Swarm 2.1.1 for *Objective C* (start from `set.html`)

Other programs

The CD includes OpenOffice 1.1, a free software similar to MS-Office (file `OOo_1.1rc2_Win32Intel_install.zip`). See www.openoffice.org.
Furthermore, it includes:

- The statistical software *R*, v.1.7.1 (file `rw1071.exe`). The installation presents no difficulty, except the following problem: When installing on Windows XP from an account that is not the system administrator's, an error message appear when the registers are accessed. Just ignore. R is available at `http://cran.r-project.org/`
- *Python*, an interpreter. The installation file is: `Python-2.2.1.exe`.
- *Octave* (file `octave-2.1.42-gnuplot-octaveforge-athlonatlas.tar.bz2`), a clone *Matlab*[2], here attached to `Econometrics.zip`[3]. This entails an excellent handbook of econometrics (`econometrics.pdf`), with examples in *Octave*[4].

[2] *Octave* is available at www.octave.org. The Windows version is a stand alone file that also installs a mini-Cygwin that in our case conflicts with the installed Cygwin would arise. It is also available without Cygwin, e.g. in the file `octave-2.1.42-gnuplot-octaveforge-noatlas.tar.bz2`.
Octave can be installed by means of the *Cygwin* setup (attention: the second window, denoted as LocalPackageDirectory, must be addressed to the directory where the package to be installed is.
Once installed, *Octave* can be launched by entering "Octave" in the *Cygwin* window

[3] From http://pareto.uab.es/mcreel/Econometrics/

[4] By decompressing e.g. in `c:\`, `c:\Econometrics` is obtained.
In order to access the examples of Econometrics from *Octave*, open *Cygwin* and, from `c:\cygwin\home\`accountName`\` (see above), create a local directory called "Econometrics" where the directory of Econometrics can be mounted:

```
mkdir Econometrics
mount 'c:\Econometrics' /home/pt/Econometrics
```

Subsequently, test:

```
octave
cd Econometrics
cd OctaveIntro
first
```