

Installing Linux/UNIX utils on MACs and PCs

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• For MACs:

– The gcc compiler:

- * If you have Mac OS X 10.4 (aka Tiger) install Xcode 2.0 off of the installation DVD.
- * If you have Mac OS X 10.3 (aka Panther) or higher you just need to install the software from the Xcode Tools CD (which is CD number 4). This is only true if you bought Panther.
- * If your computer came with pre-installed version of OS X, look into /Applications/Installers. Recent installations feature "Xcode Tools" folder containing the necessary installer. If neither of the above works for you, download Xcode from Apple Developer Connection site in the download section, look for Xcode Tools v 1.1 or above (the most recent version of Xcode tools available for Panther is version 1.5). During the installation, don't forget to select X11 SDK if you plan to use X11.
- * If you are using Mac OS X 10.2 (aka Jaguar) then you should download and install the Apple Developers Tools Dec 2002 including the latest updates which dates August 2003. Either it comes on a separate CD with your Mac or you can download these from the Apple Developer Connection site.
- * In any case, be sure you have gcc version 3.3 or later - you can check the version by typing the following in a Terminal window:

```
gcc --version
```

– Other Linux/UNIX tools (you may not need these now):

- * Go to <http://www.people.fas.harvard.edu/~goswami/howto.html>
- * Read the answer to the question: "I use OS X (MAC). I have installed the application X11 but simple programs like xdvi is not there. Where do I get it from and how to install it?"

• For PCs:

– The gcc compiler and other Linux/UNIX tools:

- * Go to <http://www.cygwin.com/> and click on install Install cygwin now icon, save the setup.exe file.
- * Note the following (taken directly from the FAQ section at <http://cygwin.com/faq.html>):
Is Cygwin Setup, or one of the packages, infected with a virus?

Unlikely. Unless you can confirm it, please don't report it to the mailing list. Anti-virus products have been known to detect false positives when extracting compressed tar archives. If this causes problems for you, consider disabling your anti-virus software when running setup. Read the next entry for a fairly safe way to do this.

My computer hangs when I run Cygwin Setup!

Both Network Associates (formerly McAfee) and Norton anti-virus products have been reported to "hang" when extracting Cygwin tar archives. If this happens to you, consider disabling your anti-virus software when running Cygwin Setup. The following procedure should be a fairly safe way to do that:

1. Download setup.exe and scan it explicitly.
2. Turn off the anti-virus software.
3. Run setup to download and extract all the tar files.
4. Re-activate your anti-virus software and scan everything in C:\cygwin (or wherever you chose to install), or your entire hard disk if you are paranoid.

This should be safe, but only if Cygwin Setup is not substituted by something malicious, and no mirror has been compromised.

- * So, disabling any anti-virus software while installing cygwin is highly recommended. But then it would leave your machine vulnerable for a little while. Since, Harvard network is notoriously bad with respect to viruses please try and install cygwin while you are in a safer network, probably your home!
- * If you did disable your anti-virus software and caught some virus in the process, THE AUTHOR OF THIS DOCUMENT HOLDS NO RESPONSIBILITY FOR SUCH A MISHAP. However, if you got lucky and no virus made friends with your computer you might just want to re-enable your virus scan (after cygwin is installed) and scan your machine just to be on the safe side.
- * Now, its time to install, so double click on the setup.exe file to install from it and follow the directions below:

Step 1 Click Next (see figure 1):

Step 2 Select Install from Internet, and click Next (see figure 2):

Step 3 Select the default root directory, C:/cygwin, All Users and Unix, and click Next (see figure 3):

Step 4 Select the local package directory (choose whatever you like) where you would like to save the installation files, and click Next (see figure 4):

Step 5 Select Direct Connection, and click Next ((see figure 5)):

Step 6 Choose the Download Site that you would like to download Cygwin from. Preferably choose either the `ftp.sunsite.utk.edu` or `ftp://uiarchive.uiuc.edu` mirror (see figure 6):

Note, if either of these mirrors do not work for you please choose one which is "near you" from the geographical list on: <http://cygwin.com/mirrors.html>

Step 7 Now you would end up in the package selection box. You want to install all of cygwin (for various reasons) and heres how you do it. The default screen looks like (see figure 7):

Step 8 Click the word Default of the All package, so that the options after all pack-ages become Install. After the selection, the window looks like (see figure 8):

Note, the figures 7 and 8 are not the same! One has the word "Default" all over and the other has "All" all over!

- * Read the relevant section on the FAQ at <http://cygwin.com/faq.html> if you are stuck in the installation process.

- * Now, once you are done, check be sure you have gcc version 3.3 or later - you can check the version by typing the following in a cygwin window: `gcc --version`

• How do I know things are working?

- On a MAC you might expect to see the following:

```
goswami-2:~/sandbox/C-C++-R/lect-1 gopi$ gcc --version
powerpc-apple-darwin8-gcc-4.0.0 (GCC) 4.0.0 20041026
(Apple Computer, Inc. build 4061)
Copyright (C) 2004 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

```
goswami-2:~/sandbox/C-C++-R/lect-1 gopi$
```

- On a PC you might expect to see the following:

```
gopi@holmes ~
$ gcc --version
gcc (GCC) 3.3.3 (cygwin special)
Copyright (C) 2003 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

```
gopi@holmes ~
$
```

- Now type up the following code in your favorite text editor and name the file `prog1.c`: (below the indentation does not matter, just make sure you don't get the lines mixed up)

```
int
main (int argc, char **argv)
{
    int ivall = 1;

    /* This is a simple comment */
    // This is another simple comment
    printf("ivall:value = %d\n", ivall);
    printf("ivall:address = %p\n", &ivall);

    return 0;
}
```

- Now issue the following at the prompt:

- * `gcc prog1.c`
- * `./a.out` (Linux/UNIX/OSX) or `./a.exe` (Cygwin on Windows)
- * You may expect to see something like the following (which is on a MAC):

```
goswami-2:~/sandbox/C-C++-R/lect-1 gopi$ gcc prog1.c
goswami-2:~/sandbox/C-C++-R/lect-1 gopi$ ./a.out
ivall:value = 1
ivall:address = 0xbffff7c4
goswami-2:~/sandbox/C-C++-R/lect-1 gopi$
```

Note, you may have a different combination of letters instead of `0xbffff7c4` in the output above, and thats perfectly all right!

- * It looks like, you are all set for C/C++!



Figure 1: Step 1

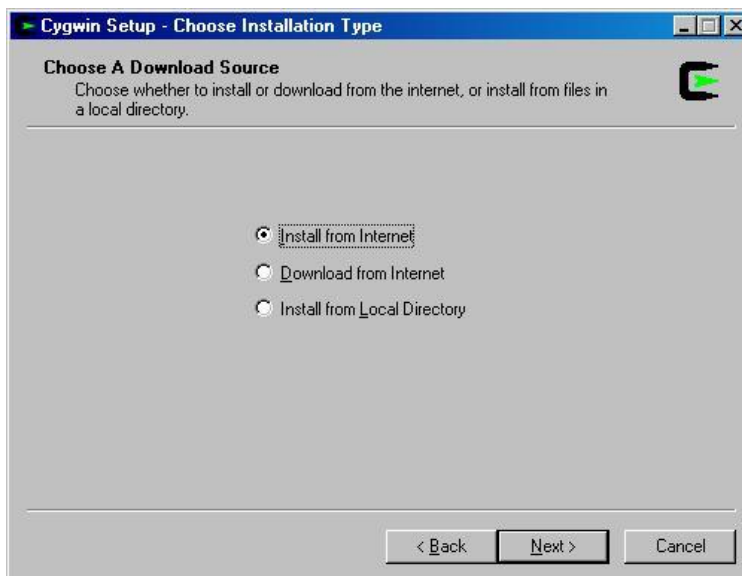


Figure 2: Step 2

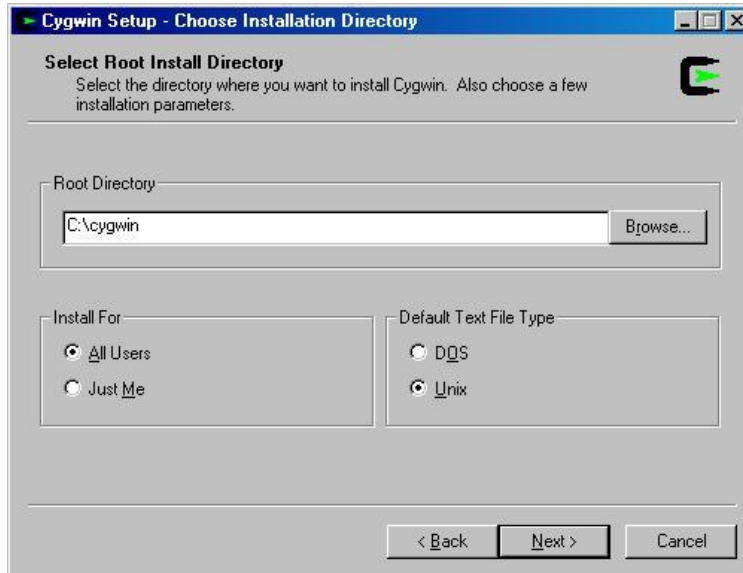


Figure 3: Step 3



Figure 4: Step 4

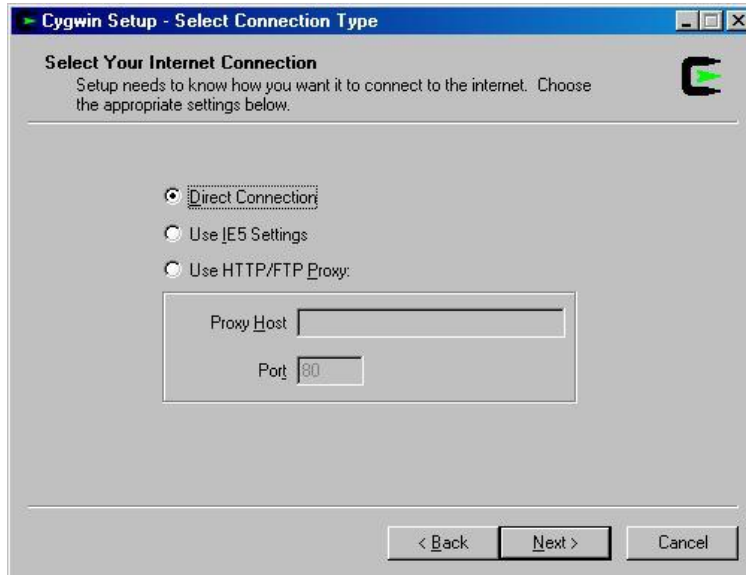


Figure 5: Step 5

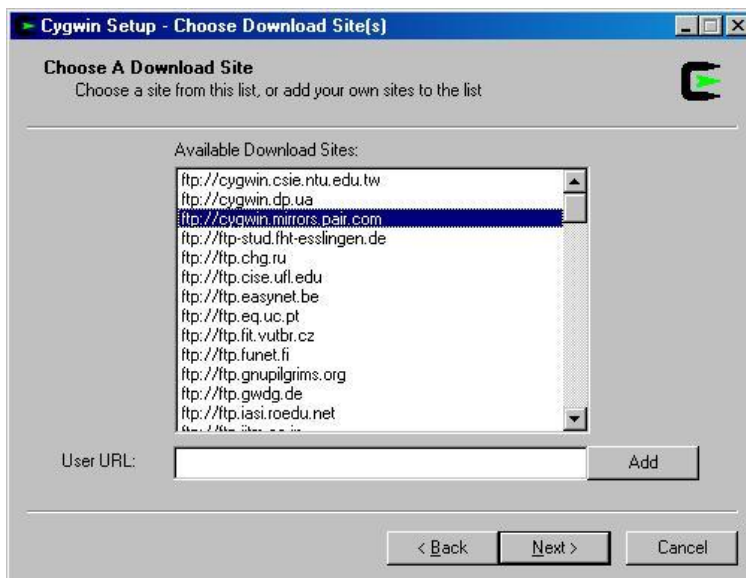


Figure 6: Step 6

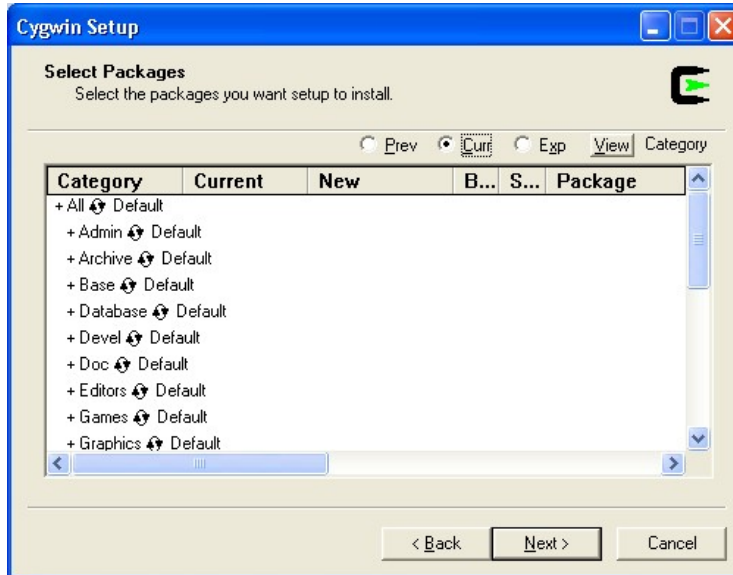


Figure 7: Step 7

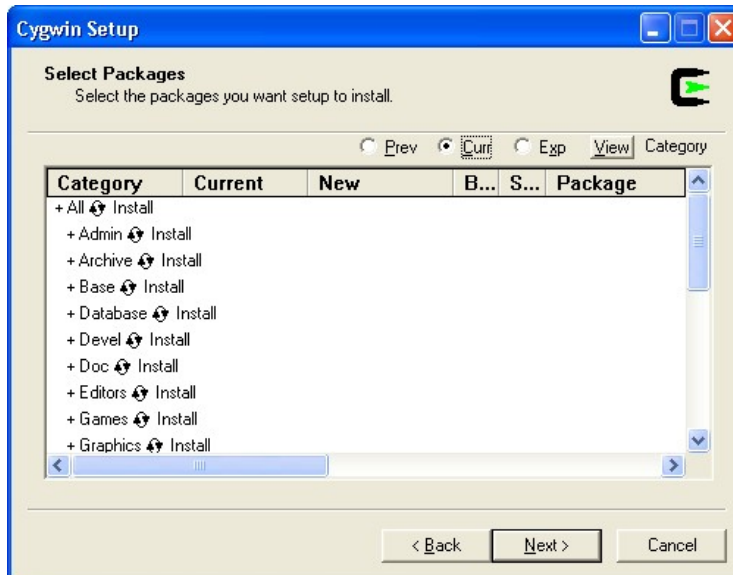


Figure 8: Step 8