Setup and Howto for running an X11 program on a UNIX host and display it on your PC

To do this you need two pieces of software:

(1) An **X server** running on your PC, and
(2) A **secure shell** for making a network connection to a UNIX host.

There's a variety of software that can be used, but the approach described here uses freely available **Cygwin** software:

(1) Cygwin/X
(2) Cygwin/openssh

Cygwin has many other tools and utilities, but we only need the X server and the secure shell. Note that these directions apply only to a PC – you're on your own if you have a Mac!

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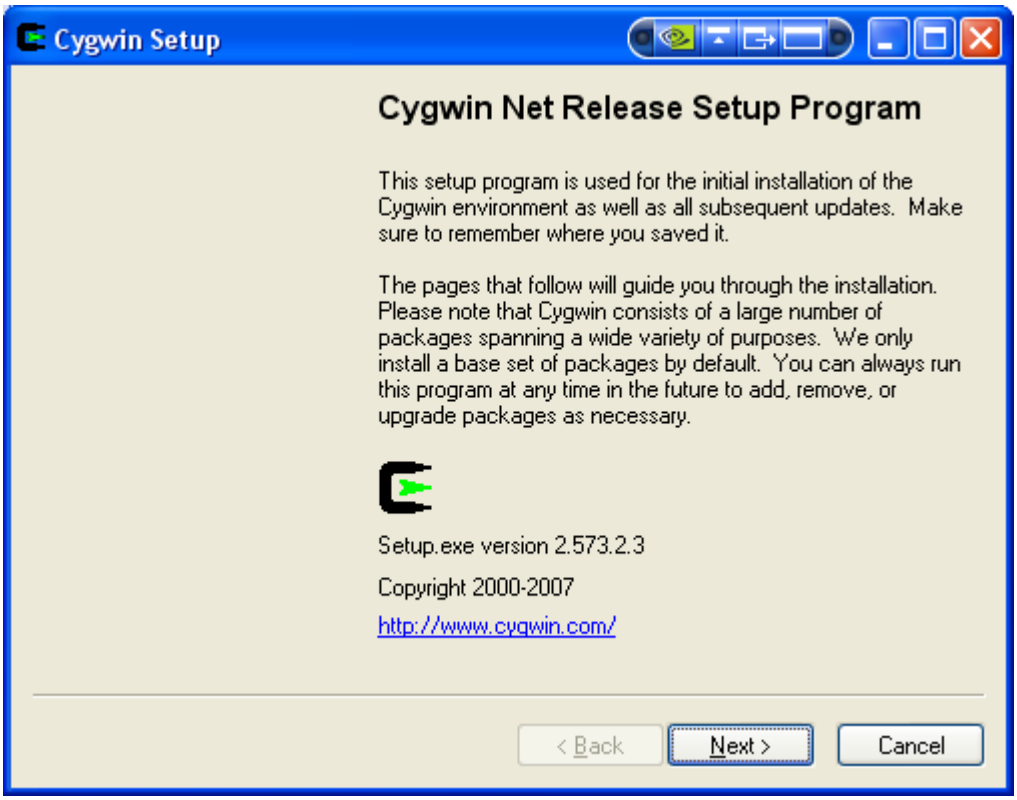
1. Install software:

1a. Create these folders:

C:\cygwin
C:\cygwin\install

1b. Download http://cygwin.com/setup.exe to **C:\cygwin**

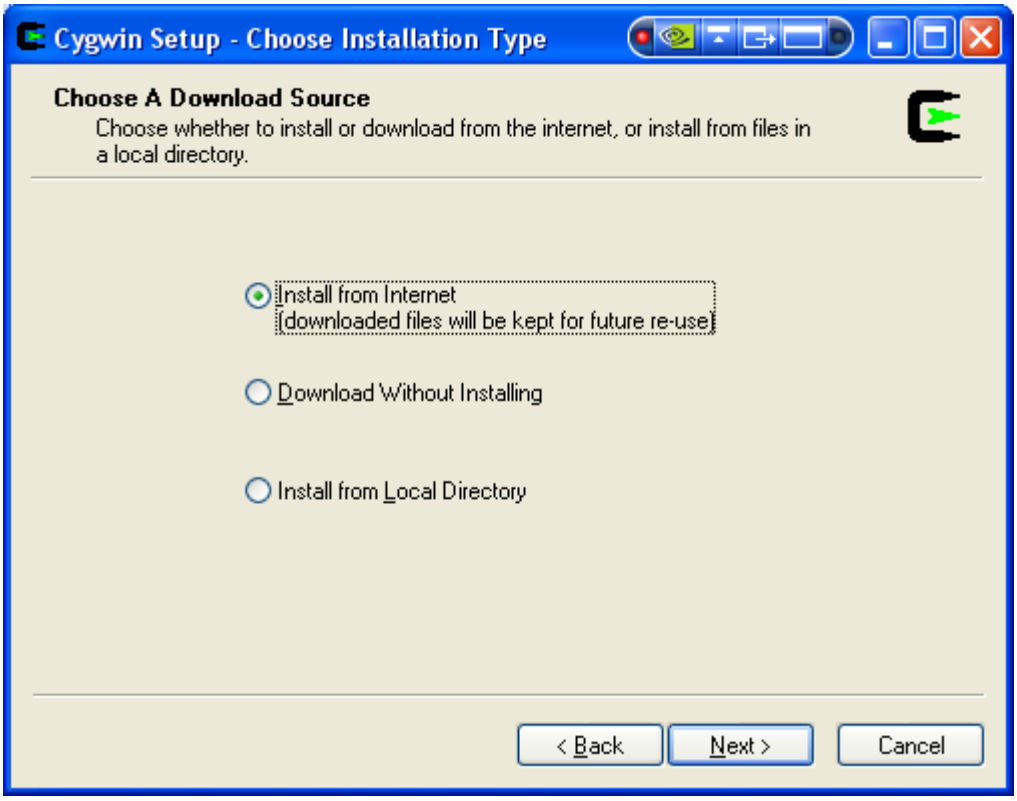
1c. Run the Cygwin setup program: **C:\cygwin\setup.exe**



Select **Next >** …

1. Install software: (continued)

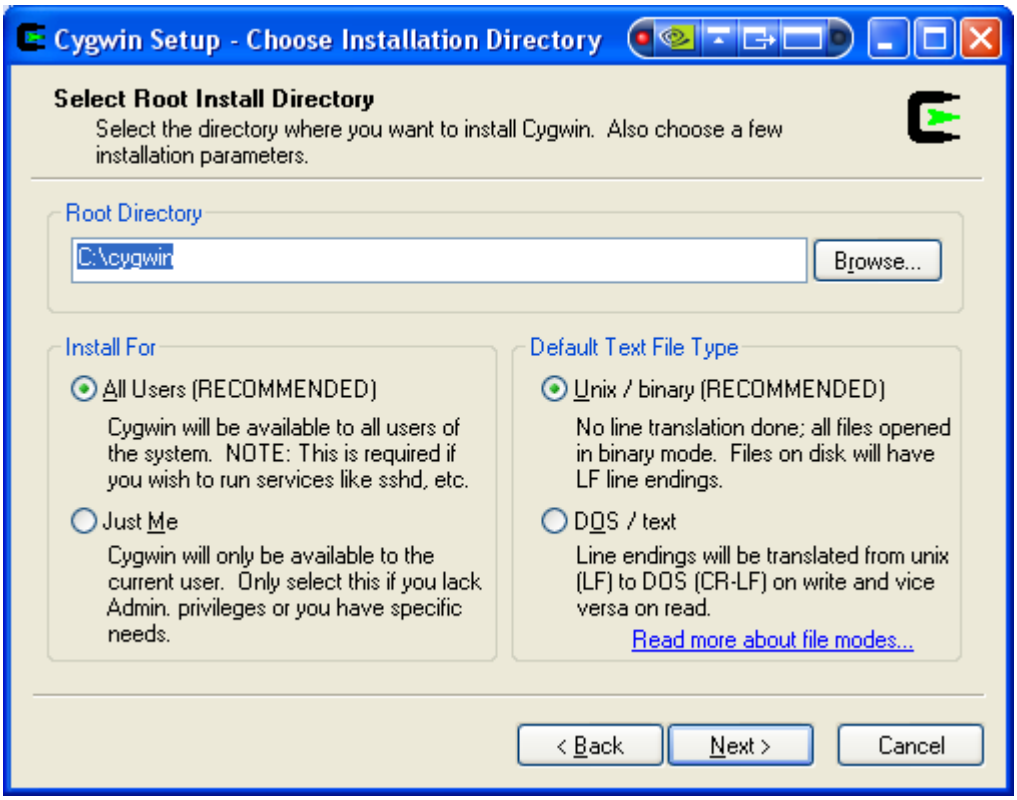
Select ⦿ **Install from Internet**



Select **Next >** …

1. Install software: (continued)

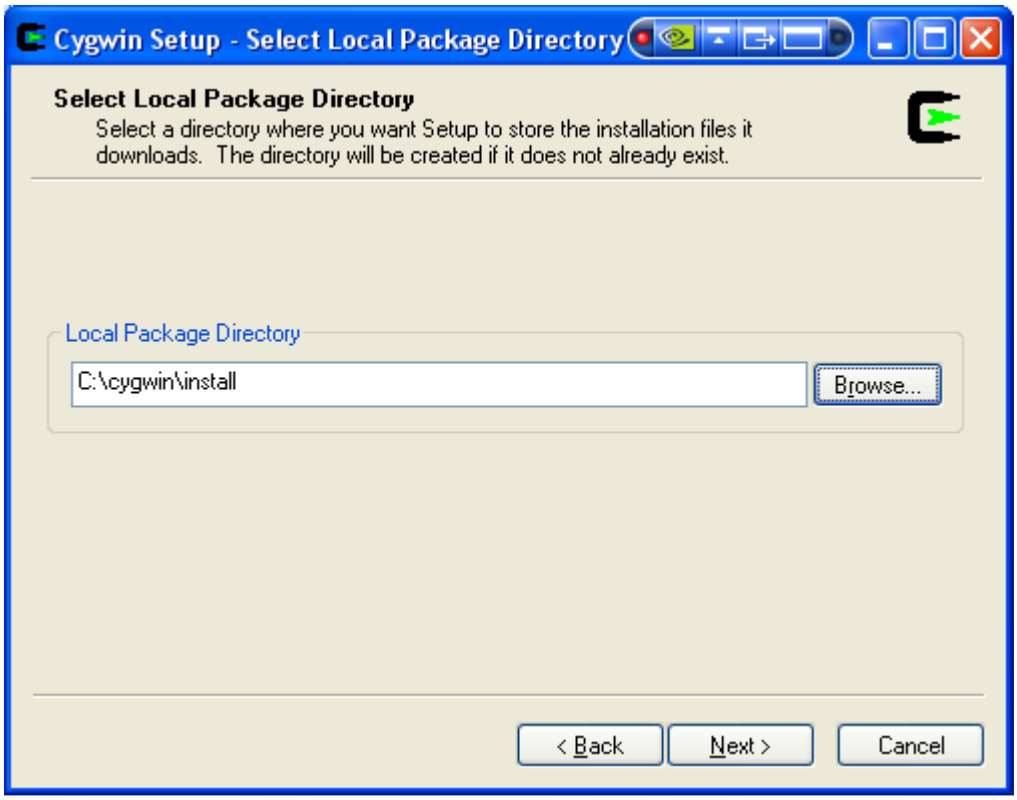
Ensure **C:\cygwin** is listed as the **Root Directory**, then select ⦿ **All Users**, ⦿ **Unix** …



Select **Next >** …

1. Install software: (continued)

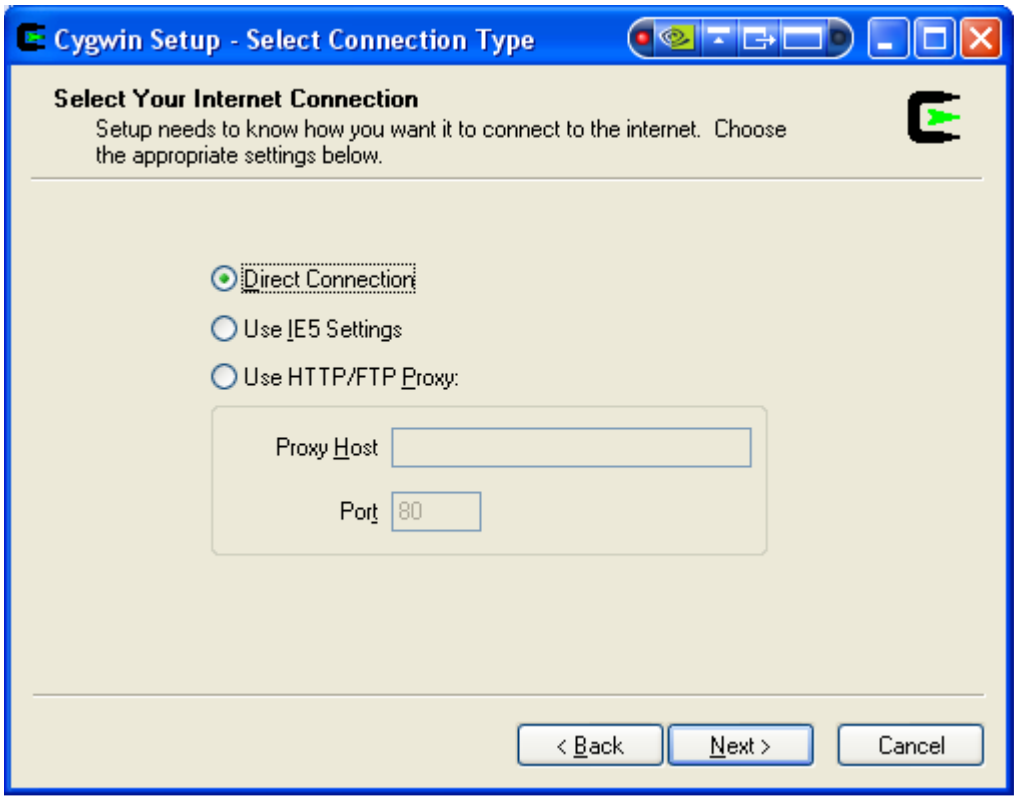
Enter **C:\cygwin\install** as the **Local Package Directory**



Select **Next >** …

1. Install software: (continued)

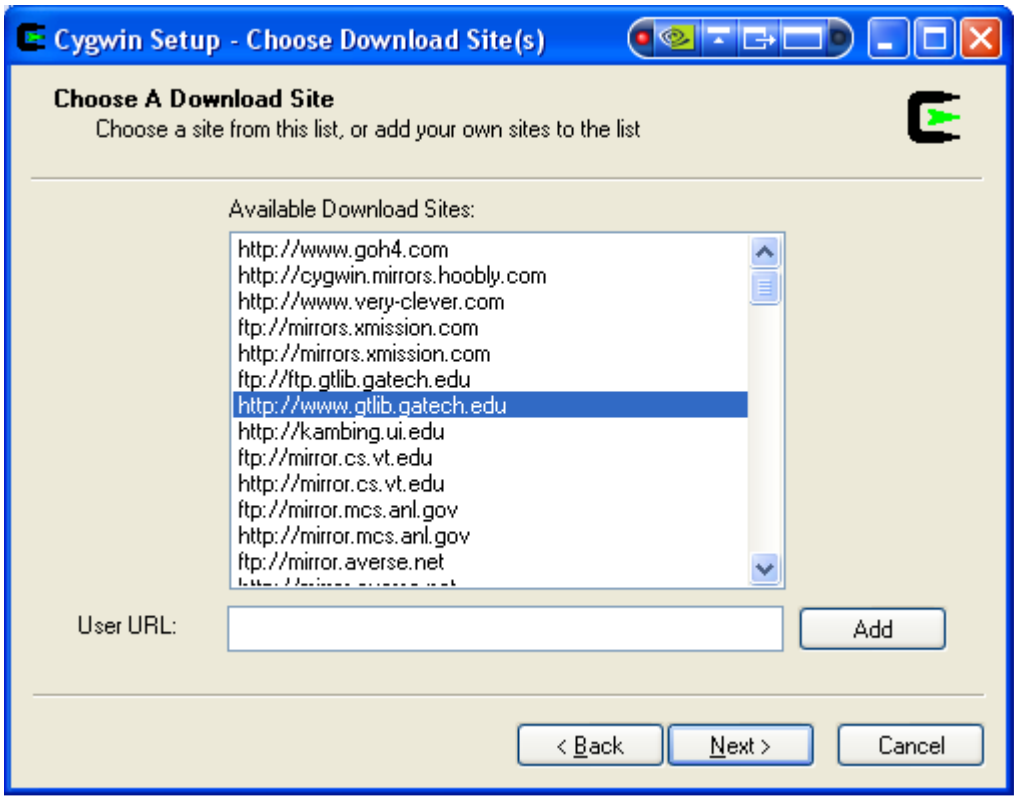
Select ⦿ **Direct Connection**



Select **Next >** …

1. Install software: (continued)

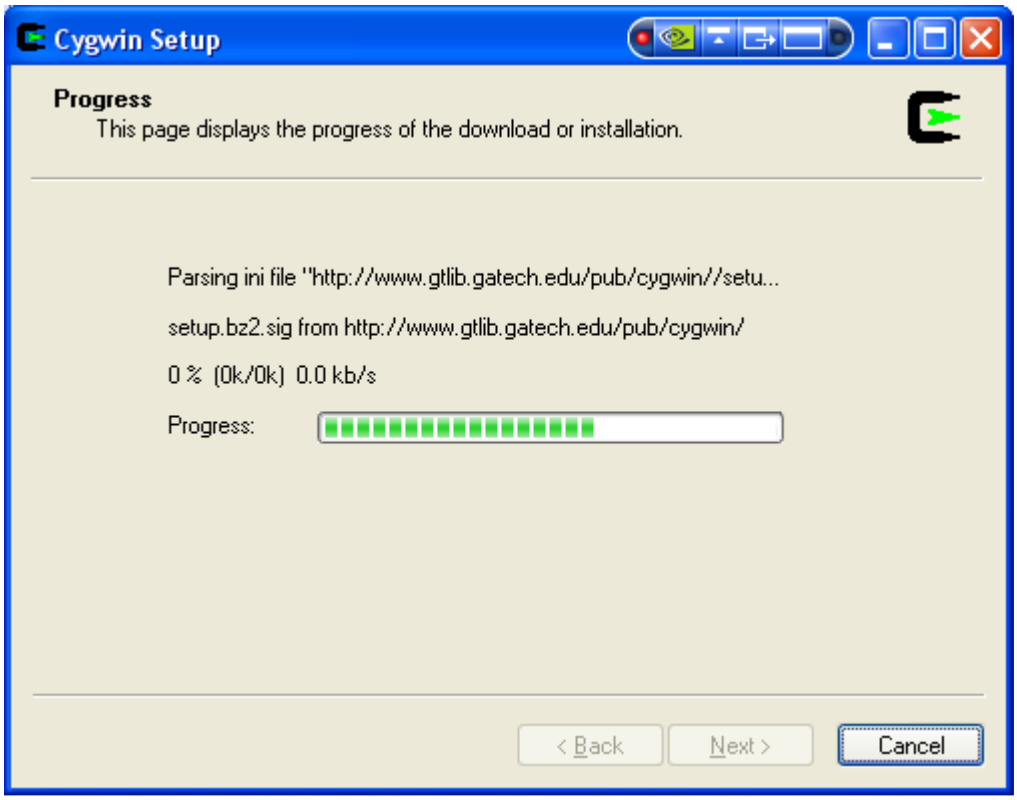
Select a download site:



Select **Next >** …

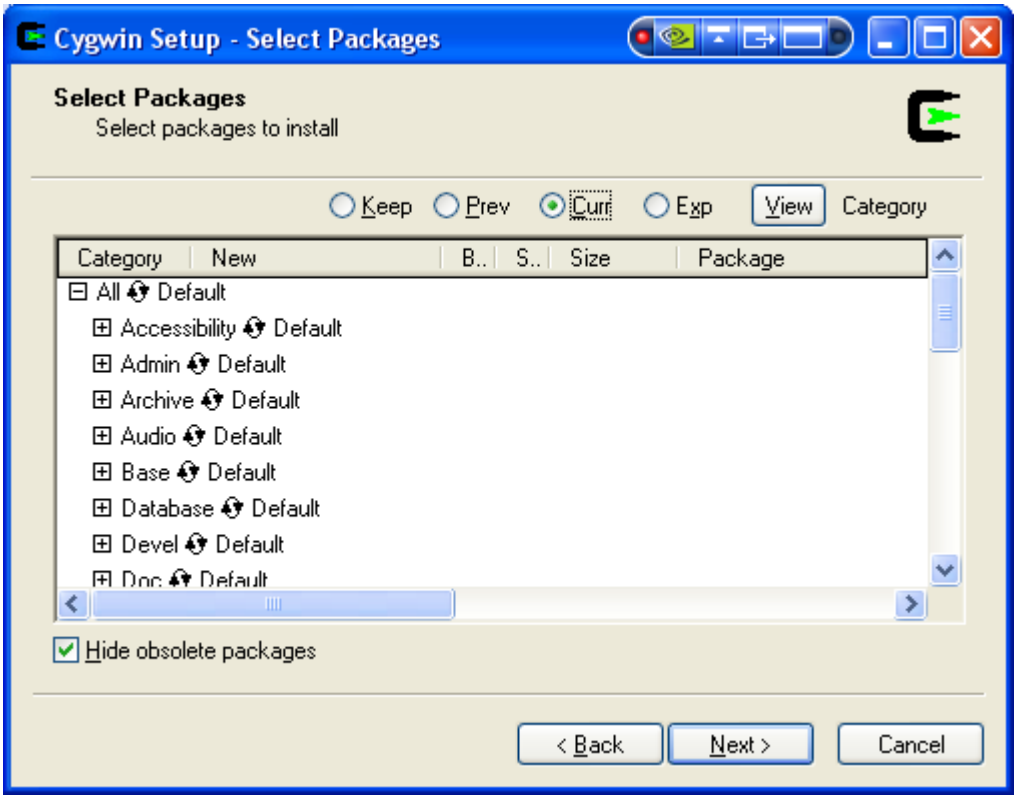
1. Install software: (continued)

Setup will begin downloading …



1. Install software: (continued)

Select ⦿ **Curr**



1. Install software: (continued)

Note: the numbers below are the package revision and size. The current package at the time of your installation may be different (newer) than these.

Select these packages:

X11	**Default**			
	1.1.0-3	☒	☐ **32k**	**xinit: X.Org X server initializer**
Net	**Default**			
	5.1p1-10	☒	☐ **580k**	**openssh: The OpenSSH server and …**

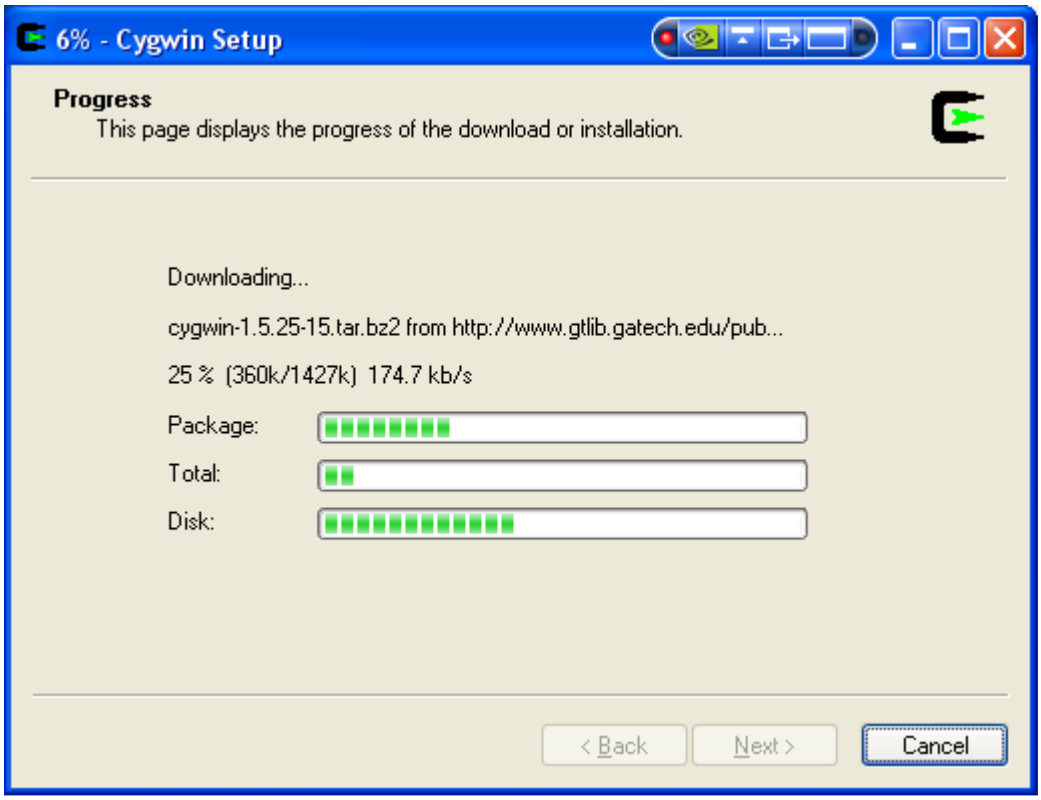
If you want to use the same text editor on your PC that we'll be using in class, select these packages:

Editors	**Default**			
	21.4.21-1	☒	☐ **6,637k**	**xemacs: A powerful, highly …**
	2007-04-27-1	☒	☐ **24,63409k**	**xemacs-sumo: Xemacs standard …**

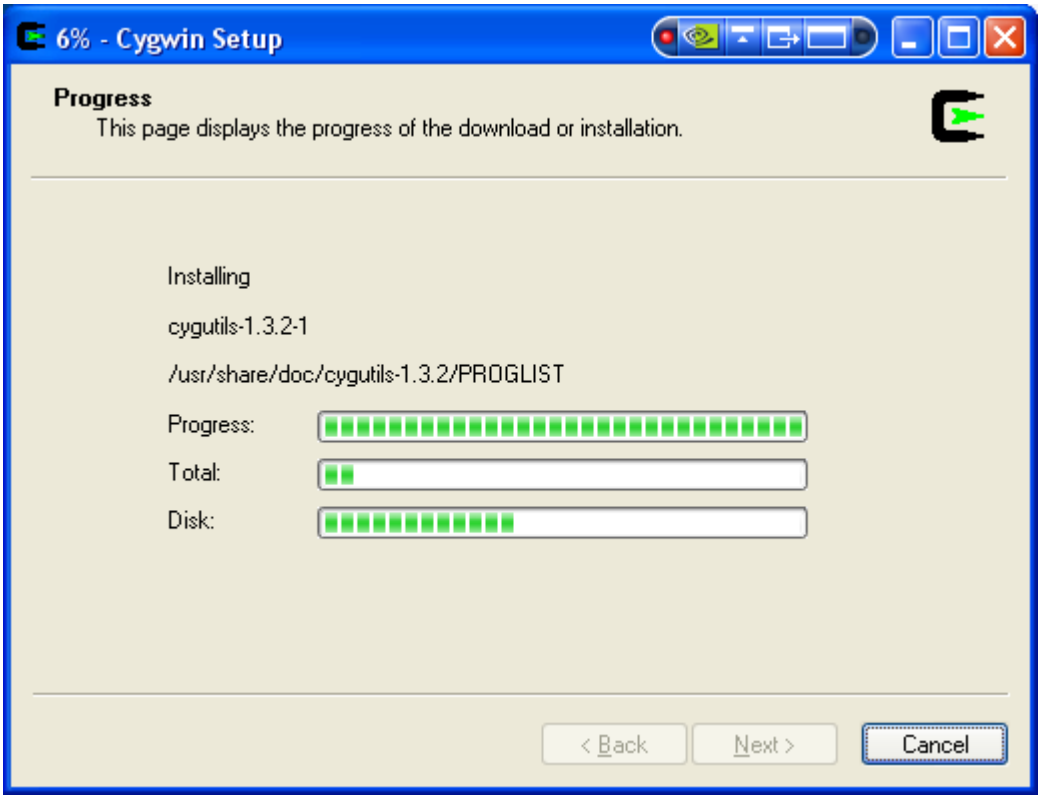
… then select **Next >** …

1. Install software: (continued)

The selected packages and any required support packages will be downloaded:

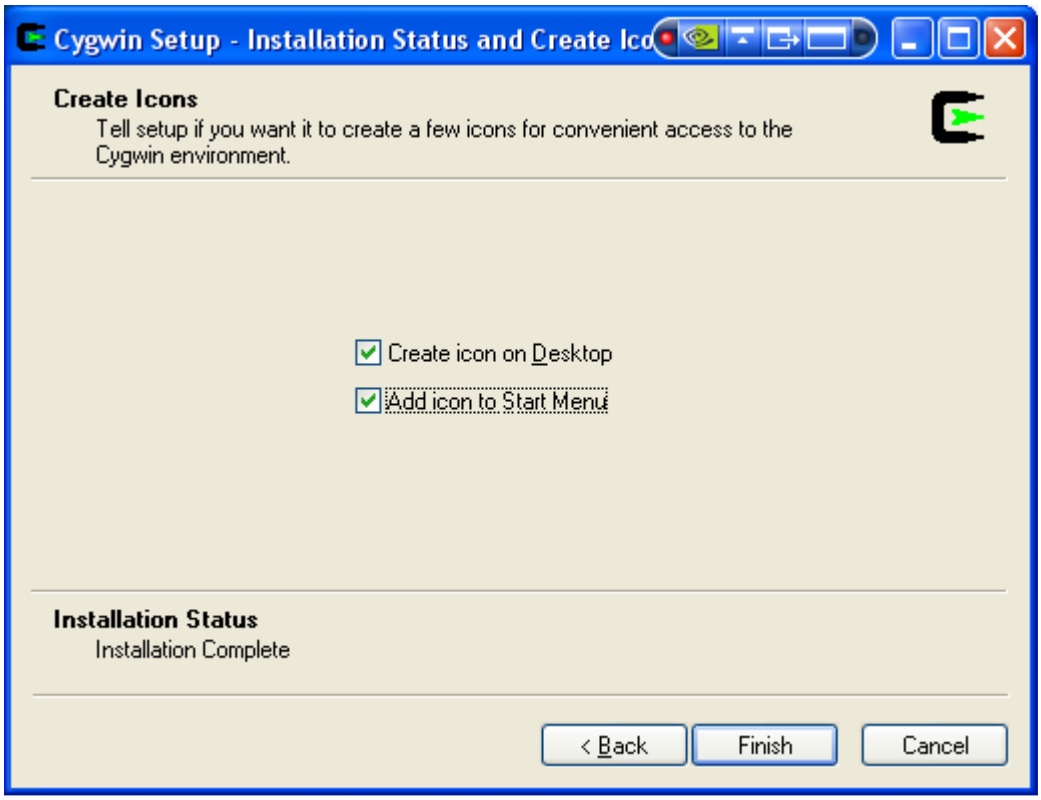


… then they will be installed (this will take some time):



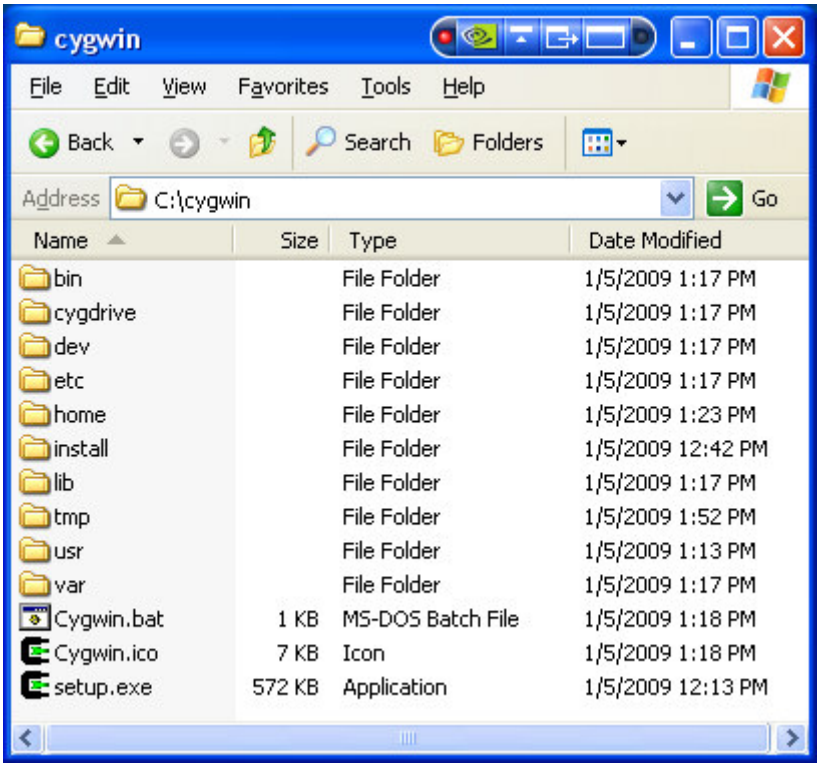
1. Install software: (continued)

When the installation is complete, select both checkboxes:



Select **Finish** …

The **C:\cygwin** folder will have these entries:



1. Install software: (continued)

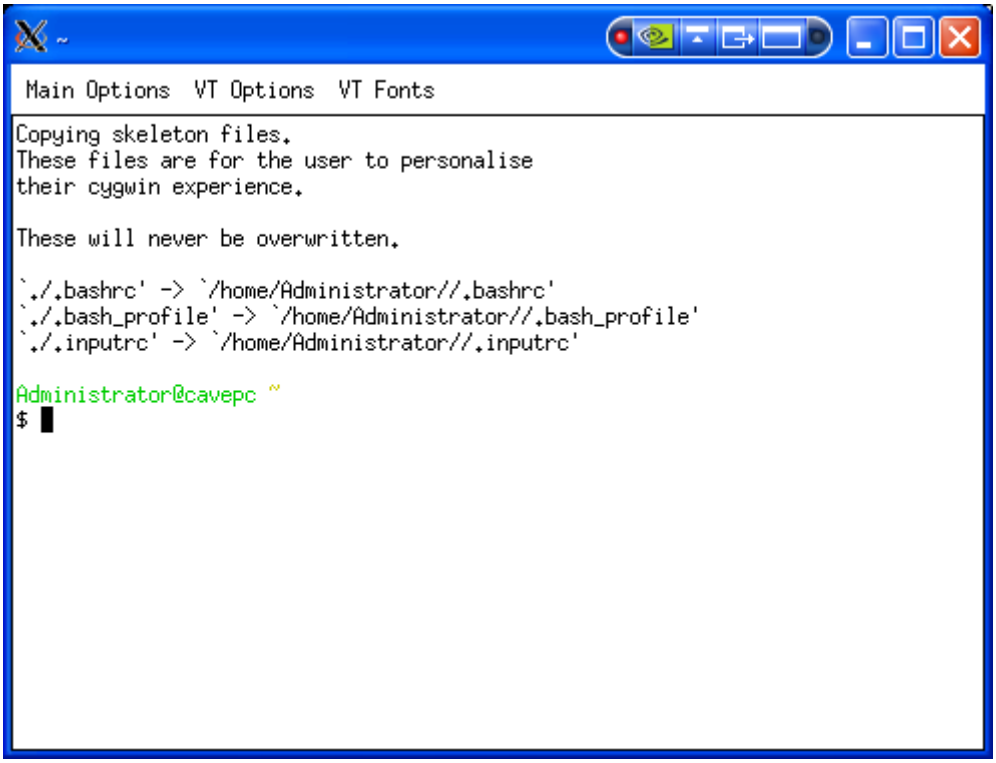
To add software packages later to an existing Cygwin installation, run **C:\cygwin\setup.exe** again and follow these same steps, choosing the additional packages you wish to install.

2. To run an X11 program on a UNIX host, displaying it on your PC:

Start the X server and open an xterm command interpreter ("shell") window:

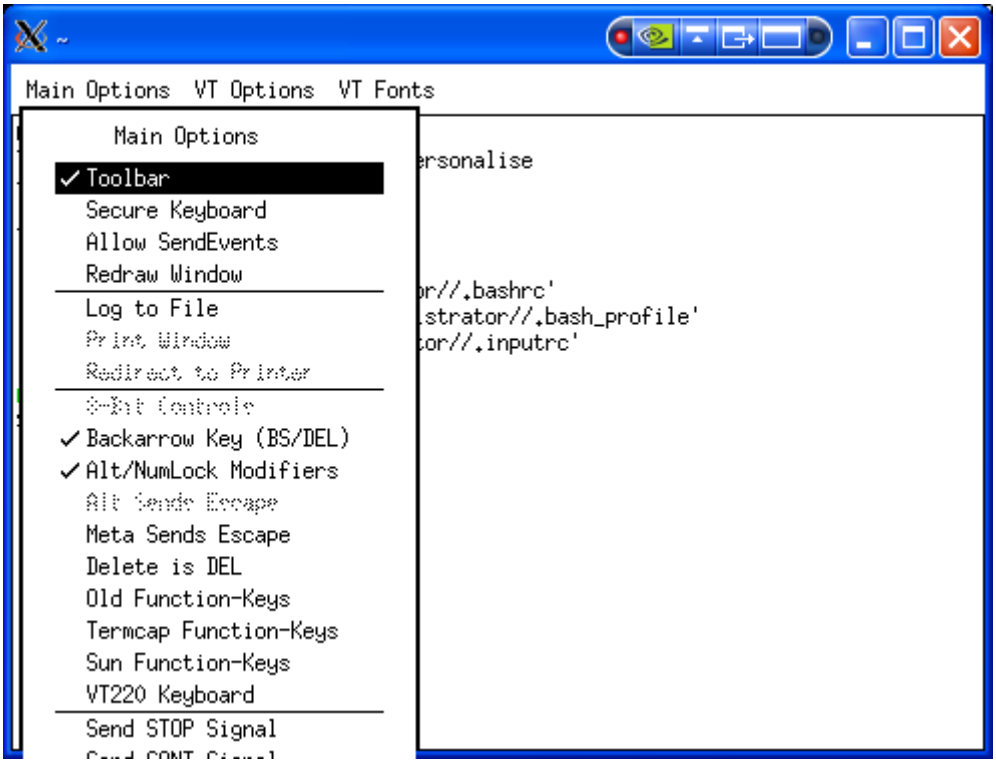
Start → All programs → Cygwin/X → Xwin server

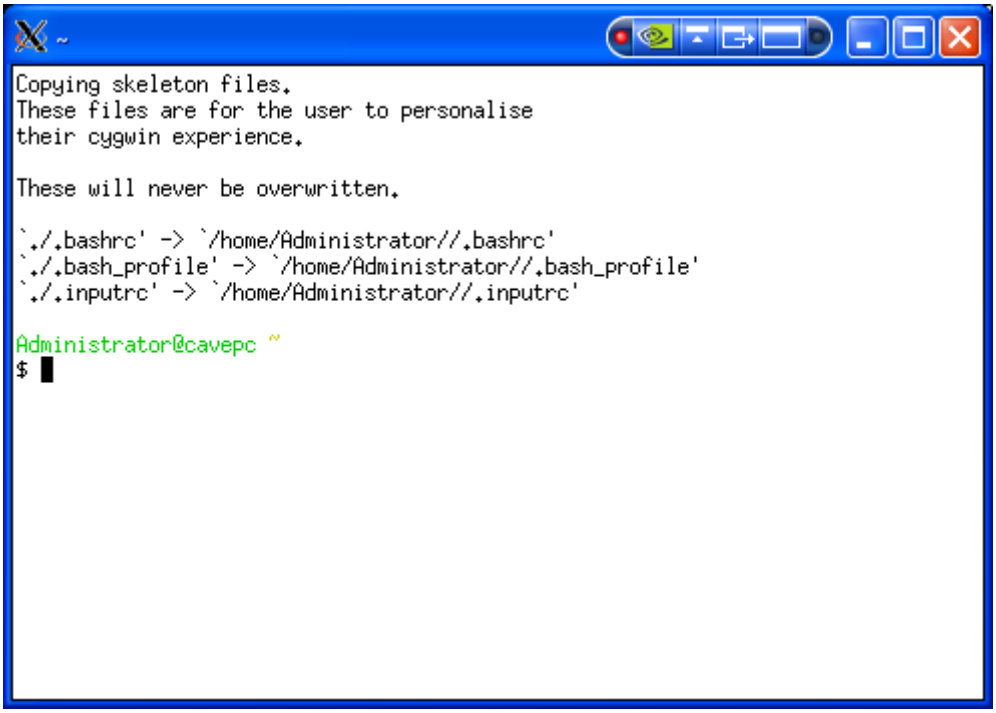
The first time you do this, some "resource files" will be created (and inform Windows that yes, you wish to unblock this program). You will be presented with a BASH shell window:



2. To run an X11 program on a UNIX host, displaying it on your PC: (continued)

You can remove the menubar by unchecking **Main Options → Toolbar**:



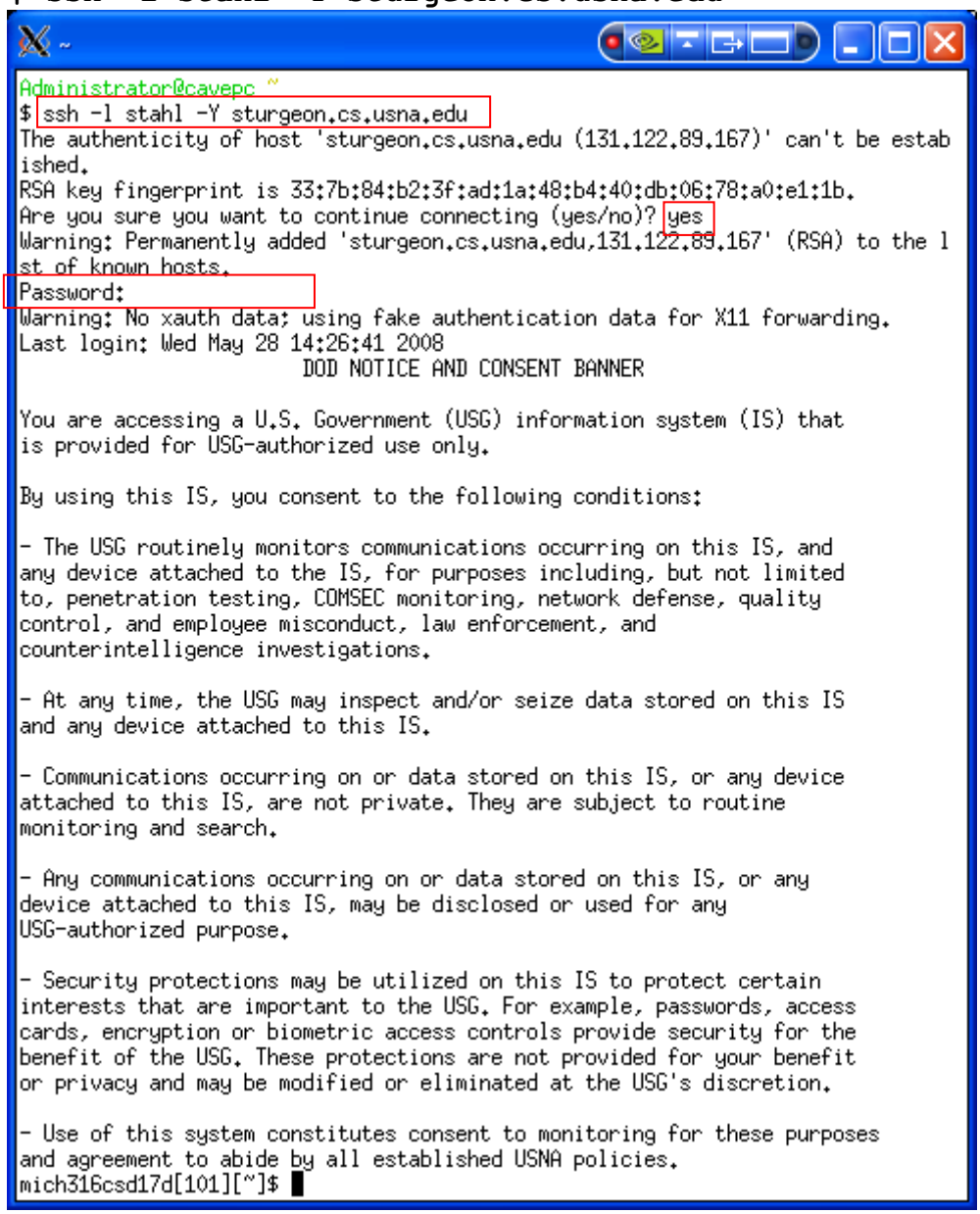


2. To run an X11 program on a UNIX host, displaying it on your PC: (continued)

Choose a CS Department UNIX Lab host you wish to connect to. Hosts are listed on this web page: http://www.cs.usna.edu/Restricted/ip.html (for example, the host named **sturgeon.cs.usna.edu** in MI302).

At the BASH prompt ($) in the command window on the *local host* (your PC), login to the *remote host* using **ssh** with **X11 forwarding** to your PC's display. Use your NADN login name, the remote hostname you chose, answer **yes** to the security question, and enter your NADN password:

$ ssh -l stahl -Y sturgeon.cs.usna.edu

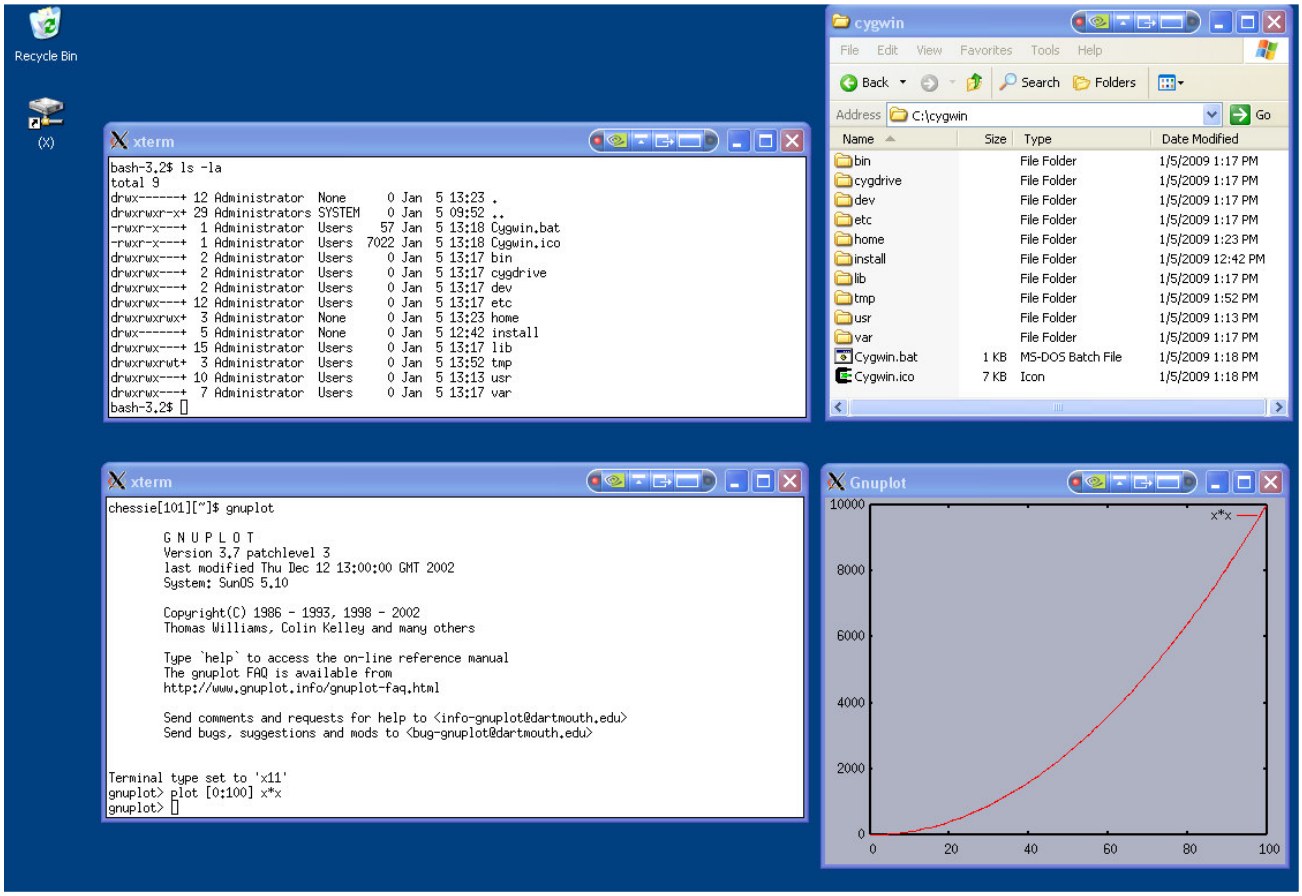


The usual login banner appears.

2. To run an X11 program on a UNIX host, displaying it on your PC: (continued)

You can now run programs on the remote Sun host, and display them on your local PC:

The BASH shell window at the upper left is running on the local host (PC). The bash shell command **`ls -la`** shows the contents of the directory. The XP window at the upper right shows this same directory. The **`xterm`** window on the lower left is running on the local host. We have logged in to a remote Sun UNIX host and have run a program named **`gnuplot`** on the remote host, displaying its output (a graph) on the local host.

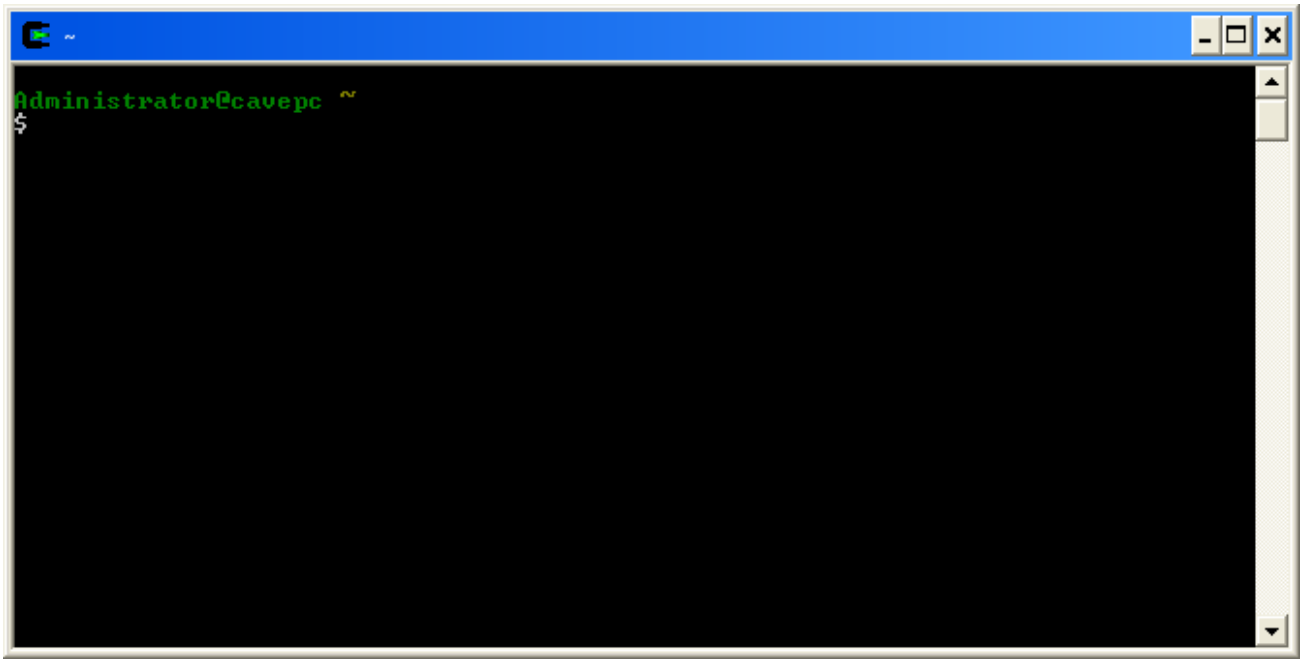


3. Other ways of starting the X server:

Doubleclick the Cygwin icon on the Windows desktop, or select

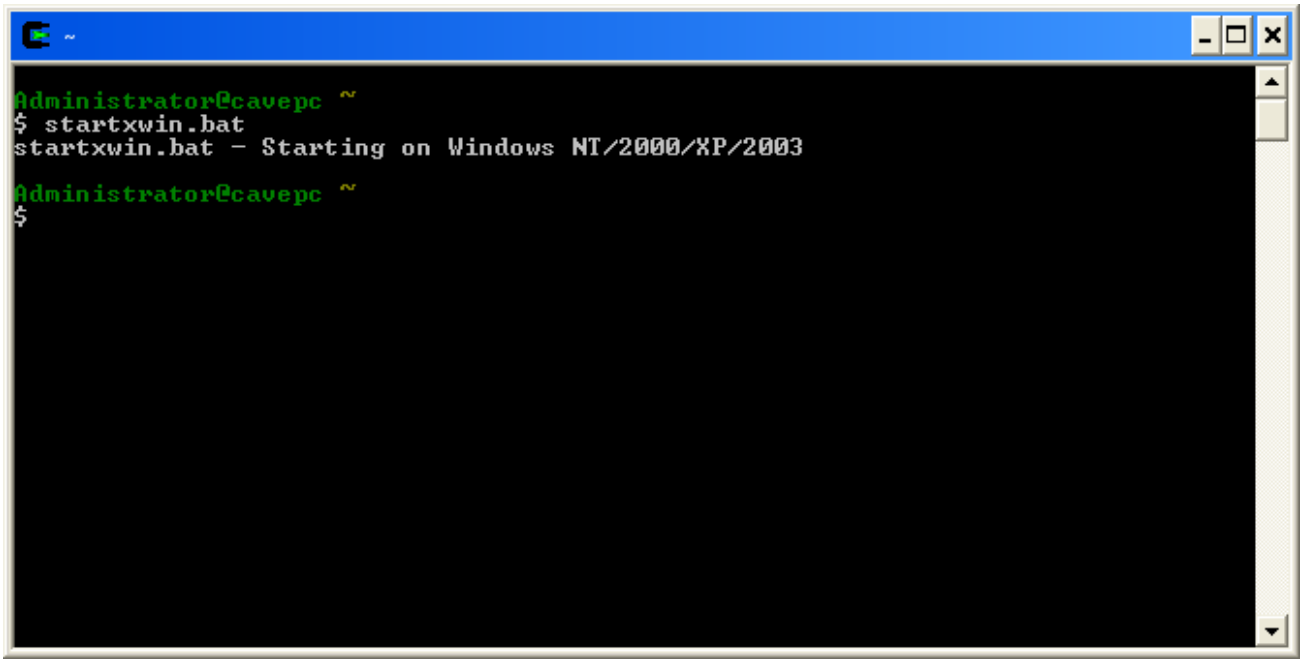
Start → All Programs → Cygwin → Cygwin bash shell

This will open a BASH command shell window:



Start the X server using either of these BASH shell commands:

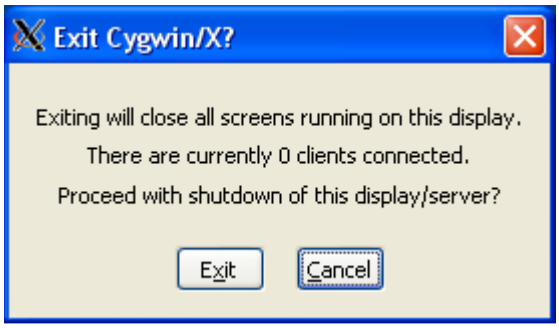
$ startxwin.bat or **$ startxwin.sh**



Note that an xterm window will be opened.

4. Shutting down the X server:

Right click the X server icon in the Windows toolbar tray and select Exit …



Select **Exit**.