Heavily adapted from How To: X11 Forwarding by Nate Book
(http://www.cs.rochester.edu/~brown/173/resources/xforwarding.pdf)
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Cygwin, Xemacs, and Windows

Installing Cygwin/X

Unlike Mac or Linux, if you're running Windows and want to use X11 forwarding (which allows us to open separate GUI windows like we do in class with xemacs), you'll need to install some additional programs. One way to do this is to get Cygwin, because among its packages are OpenSSH and "Cygwin/X", a fairly good X Windows port. All you need to do is download and run Cygwin's setup executable: choose the correct download for your system from http://www.cygwin.com. If you already have Cygwin, you'll need to run the setup executable again to add additional packages.

Windows may complain that you downloaded the file from the Internet. Windows Firewall (for the people who have it enabled) may complain the file wants to access the Internet. Windows Vista/7 may complain that it wants to modify your computer. Click yes, yes, yes...

Now, click Next; Install from Internet, Next; Choose root (I recommend leaving it "C:\cygwin"), All Users, Next; (leave local package directory, that's just temp files), Next; Direct Connection, Next; Choose any mirror, Next. Now you should finally be at the important screen.: the one where you select which packages to install.

To navigate this screen, type in the field on the top left to filter the results below by what you type. Don't press enter. Just type "openssh" so that you get a resulting tree like:

```
-All
  -Net
    Skip   n/a   n/a   823k   openssh: The OpenSSH server and client programs
```

Click on 'Skip' **once** so that it instead displays a number/letter combo (something like 6.4p1-1). Clicking more than once will let you cycle through various older versions (like 6.3p1-1), which you don't want.

We also need to select a few more packages. Change the field to filter for the following packages, and include each one:

- xorg-server — REQUIRED; the X Windows Server of course
- xinit — REQUIRED; necessary to start X11
- xterm — REQUIRED; the X terminal
- xorg-docs — OPTIONAL; X.Org documentation (man pages)
- x-start-menu-icons — OPTIONAL; start menu icons; you can also start it using the command line

You don't really need any other packages, but you can always rerun the setup executable and get more if you like. Click Next to install, and it will download and install the OpenSSH package for you. Then when it is done, choose to make shortcuts and click Finish.

Using Cygwin/X

Now to use Cygwin/X:

1. Start the Cygwin Terminal (it should be on your Start Menu or Desktop).
2. Start the X server with: `startxwin`

   You may get warnings, but as long as you get an X icon in your system tray that has the tooltip "Cygwin/X Server:0.0" or something similar, then it works (you can right click the icon to open another X based app at any time, like another terminal).
3. In the terminal that opens, type `ssh -Y name@host`

   For example, I would type `ssh -Y gibsonk@eniac.seas.upenn.edu`
4. When connected, you can type `xemacs &` and xemacs will open up in a separate window. If you leave off the ampersand, the terminal will appear to freeze, because it is waiting for xemacs to complete (i.e., close) before allowing you to type more commands. On the other hand, if you close the terminal with your xemacs window still open, it will automatically close as well – meaning you would lose any unsaved progress!

Syntax Highlighting and Indentation Style in xemacs

The first time you open up xemacs, especially if you've never used it (or emacs) before, you may notice that there is no syntax highlighting (i.e., the text is all black, instead of different colors based on the category of terms.

To fix the syntax highlighting:

1. From the top menu, select '*Options*', then '*Syntax Highlighting*', then choose '*In This Buffer*' from the available options.
2. You could do this every time you open an xemacs window, but you can also choose to save this setting to a custom file (which will be used every time you open xemacs from now on) by again selecting '*Options*', and then choosing '*Save Options to Custom File*'.

You may also notice that the indentation xemacs uses by default does not follow either of the coding indentations that are acceptable. For example, it may look like:

```
for (i = 0; i < 15; i++)
  {
    printf("%d ", I);
  }
```

To fix incorrect indentation:

1. In your terminal (not xemacs) type '`cd .xemacs`' which will move you into the hidden folder .xemacs
2. Use an editor (xemacs works) to open the file `custom.el`
3. Add the following two lines to your custom.el file; the "2" can be changed to a "4" if you'd rather indent 4 spaces.

```
(setq c-default-style "linux"
      c-basic-offset 2)
```

NOTE: If the .xemacs folder or the custom.el file don't exist, just create them.
This should fix the indentation in .c, .h, and .cpp files.