Accounts have been setup for each of you on the different types of parallel machines we will be discussing in the course. Specifically, you will have access to the following three machines:

**Solaris SMPs at CIMS**

{bionum1, bionum2, bionum3, bionum4}.cims.nyu.edu are quad-processor Solaris Ultra80 SMPs scattered around various locations in Warren Weaver Hall.

To access these machines you need to use the same login/password as on the other department machines. In case you do not have an account on any of the departmental machines (both MS and PhD students are entitled to these), please contact comment@cs.nyu.edu immediately.

**Linux Beowulf Cluster**

This cluster currently consists of a 1.4 GHz Athlon (256 MB) master node, and 14 200 MHz Pentium Pro (64 MB) slave nodes on a 100 Mbps switched ethernet. We will also be adding 4-6 dual-processor PCs to this cluster in the next few days. The master node runs a modified version of the complete Linux kernel and serves as the program development and job-submission machine. The slave nodes run an extremely trimmed-down version of Linux and do not support independent access (i.e., they are accessible only from the master node). Each slave node has its own /tmp and /scratch (which you can use to store temporary files while your program is running) and the /home partition from the master is NFS-mounted.

Additional details about the dual-processor nodes will be provided on the web page and via the mailing list over the next few days.

The master node is accessible as bm.scs.cs.nyu.edu. Most of you (with one exception) have been given your first choice of login name (from the information you filled out in the first lecture) on this machine. The default password in each case has been set to the first four letters of your login name concatenated with the last four digits of your SSN/student ID number. Please come talk to me during the break or after class in case there is any ambiguity.

To help you run your programs on the cluster without treading on each others’ toes (otherwise it is difficult to get any meaningful measurements), I have put together a bunch of Perl scripts to implement a relatively straightforward first-come, first-served batch scheduler. These scripts allocate some subset of the cluster nodes exclusively to your job for its duration. Note that the scripts are not very sophisticated, so I am relying on each of you to not try and bypass them. The following is a brief description of the scripts:

1. `/usr/local/bin/run_seq <program name> <args>`
   runs a sequential program on one of the nodes. Note that because of the trimmed-down kernel, this program cannot be a shell-script and is restricted to using a subset of UNIX system calls. Specifically, fork/exec calls are not permitted and the socket calls have slightly different semantics. All of the calls you will be using for the class assignments (pthreads, MPI, and various shared-memory emulation layers) are of course, all supported.

2. `/usr/local/bin/run_smp <program name> <args>`
   exclusively allocates one of the dual-processor nodes for your job. Unlike the uniprocessor nodes, these nodes run a full version of Linux, so there are no restrictions on what you can run there.
3. 
/usr/local/bin/run_mpi <num nodes> <program name> <args>
runs MPI programs on the number of nodes given by the \( \text{num nodes} \) argument.

4. 
/usr/local/bin/run_hlrc <num nodes> <program name>
runs shared memory programs written using the ANL parmacs macros.

5. 
/usr/local/bin/run_via <num nodes> <program name>
runs VIA programs.

SGI/Cray Origin 2000 at NCSA

Each of you will receive a detailed information packet about these accounts as soon as I get them in my mail. They were apparently mailed out on September 21st, so we should receive them soon enough. You will not need to access the Origin before October 10th, when the MPI assignment will be handed out.

Note that the accounts on the Origin have a class-wide usage quota, so please restrict your usage to only short timing runs. The local Beowulf cluster should be used as the primary development and measurement platform.

General Usage Guidelines

You will need to use a ssh client to access all the machines. On the Beowulf cluster, \textit{ftp} is disabled. You will need to use \textit{scp} to copy files between your home/office machine and these hosts. \textit{Note that we will not be backing up your files/data, so please ensure that you have a backup someplace} of all your work.

All of the machines should allow X forwarding over ssh. However, using X is probably not a feasible option except when you are accessing these machines from the NYU network. You should try and do most of your editing on your local machine, using the course machines only to run and debug programs.

I probably do not need to state this, but the course accounts are intended only for course use. Please do not try to find out what you can get away with: you are likely to lose not only your own access but jeopardize that of all of your classmates as well.

Finally, although the Sun SMPs and the Origin machine have full-time system administrators, I am the sole administrator for the Beowulf cluster. So, while you should not hesitate to send me e-mail when you run into any system problems, please be patient while I get around to fixing whatever is wrong.