CS 221 – Lab #5

So far, you have set a good foundation for doing the programming of the course. You have assembled a computer cluster, installed all the necessary software, learned how to communicate with the Linux operating system, and you have practiced writing programs in the C language. Now we are ready to write our first real parallel programs using the Message Passing Interface (MPI).

Remember that in order for our parallel programs to work, it's necessary for you to copy your completed program (executable file) onto every machine. And to invoke your parallel program, you need to type in a command similar to this: mpiexec –f machinefile –n 8 ./program_name . The "./" is necessary.

As mentioned in class, here is what you need to do in lab today:

1. Work out steps 33 through 37 in the Southampton handout. This will verify that parallel programs will work correctly on your system.

2. Write the complete C programs pertaining to the examples given in sections 3.1 and 3.2 in your textbook. *Getting these programs to work is the major goal for today.*
    a. Section 3.1 contains the program mpi_hello.c.

    b. Section 3.2 contains the integral program given on pages 98 and 99. In this program, I recommend that the function f be real function equal to x^2. Experiment with various large values of n.

3. If you have time remaining, I recommend doing exercises 1-3 at the end of chapter 3. These are discussion questions rather than programs that you need to write from scratch. Show me your answers.