Homework #1 (Due Sept. 19)

Frank account

1. An account has been created for you on Frank, which is the central High Performance Computing cluster at the University of Pittsburgh.

2. Frank is behind the University firewall, and can only be accessed from computers on the campus network, excluding Wireless PittNET. If you want to access from outside of campus, you have to first connect to Virtual Private Networking (VPN) (See this link for instructions: http://core.sam.pitt.edu/offcampusaccess).

3. Open a terminal with ssh capabilities and log into Frank using your Pitt ID and password. Execute the following command in the terminal:

   $ ssh pittID@frank.sam.pitt.edu

   Your username is your PittID and your password is the same as your campus-wide Pitt password.

Git Repository

We will use a software versioning and revision control system called Git throughout the semester. Supporting code in programming assignments will be posted on the repository.

1. Download the code for computing pi in parallel from the repository:

   $ git clone https://github.com/Michael870/hpc_course.git

2. This should create a new directory in your home directory called hpc_course. It should have hw2 as a subfolder. Make sure a directory hw2 was created and that it contains files README, Makefile, pi.c, and submit.batch.

3. Change directory (cd) into hw2.

4. There is a README file in that directory which details how the program works, if you are really curious look at pi.c.

5. First compile the program by typing:

   $ make

   Confirm that you now have an executable program in that directory called pi.

6. DO NOT EXECUTE THIS PROGRAM HERE. You are currently on a login node and these nodes are a shared resource, many other folks might be logged into this same box. Running a parallel program on this machine could cause everyones processes to slow down. You should only run parallel program using the sbatch command, which properly allocates resources to you.

7. Run your program properly by executing:

   $ qsub submit.batch

   The script will request 24 processors and will schedule your job to ran on Frank cluster.

8. If you want to check on the status of your job you can see it in the job queue:

   $ showq -w user=<PittID>

9. After your job has successfully ran you will have a file in the same directory called: pi_mpi.o<job_id>. Less that file and you will see the value of pi that was calculated.

10. Lastly, lets submit this assignment to the TA for grading. We will be verifying that you have a calculation of pi.

11. Please, compress your hw2 subfolder in a single tarball (.tar) file, and name it as follows: "PittID_hw##.tar". For example, if your pitt ID is pit11, and you are submitting the 8th homework, then, the tar file should be named: "pit11_hw08.tar" .

12. You should be able to submit your homework by copying your compressed file to the dropbox directory under the AFS system with the following absolute path:

    "/afs/pitt.edu/home/r/a/raa88/hpc-2016" on the UNIX timesharing machine at PITT. Here is a quick example on how to copy your compressed file to the dropbox from stampede:

    $ scp pit11_hw2.tar PittID@unix.cssd.pitt.edu:/afs/pitt.edu/home/r/a/raa88/hpc-2016