Lab 1 – Connecting to Apini Cluster + Running a simple MPI program

Initial Steps

1. Create a new folder on your desktop.
2. Download the 2 program files posted on moodle (hello.cpp, helloWorld.c) into the new folder you created.

We will use the Apini cluster of the university to run MPI programs. The Apini cluster already has compilers, mpi libraries and other packages installed for you to run your programs.

If you are enrolled in this course, you should or will soon have access to the Apini cluster.

3. Open 2 terminals on Linux: one will be used for local commands; the other for remote commands on the Apini cluster.
4. On the local terminal, navigate to the new folder you just created. This will be our working directory for today locally. (Use the 'cd' command.)

Connect to Apini Cluster

On Remote Terminal:

Command: **ssh <encsUsername>@apini.encs.concordia.ca** followed by your Encs Password.

Transfer files from Local to Remote cluster

On Local Terminal:

Command: **scp <fileName1> <fileName2> <uname>@apini.encs.concordia.ca:/<remotePath>/**

***You should be in the same directory as the files you want to transfer. Else you have to specify the full paths of the files.

Transfer files from Remote cluster to Local

Again, On Local Terminal (Not Remote):

Command: **scp <uname>@apini.encs.concordia.ca:/<filepath> <localPath>**

***Trick for multiple file transfer having same extension:

scp …..**:/<directoryPath/{fileName1,fileName2,…filenameN}.extension <localPath>**

Compiling your C/C++ Program on your remote cluster

C: **mpicc <fileName.c> -o <programName>**

C++: **mpicxx <fileName.cpp> -o <programName>**

Running the executable that you compiled

Both C & C++: **mpirun -np <numProcesses> <programName>**

Some helpful Linux commands

- To create a file on the remote cluster, use vi/vim editor on the remote terminal. -

    vi <filename>

    - Type anything

    - Save & Exit - Esc followed by :wq

    - (quit file) - Esc followed by :q

- Change directory: cd <directoryPath>
- Go one directory up: cd ..
- Previous directory: cd –
- Print current/working directory: pwd
- List contents of directory: ls
- Clear terminal: clear
- Create new directory: mkdir <directoryName>
- Delete directory: rmdir <directoryName>
- Delete file: rm <fileName/directoryName>
- Stop & Terminate Command: ctrl + C
- Pause Command: ctrl+ Z
- Beginning of line: ctrl + A
- End of line: ctrl + E

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