

CS 697AM: How to work with the HiPeCC Computing Cluster

Logging into HiPeCC cronus using Linux or Mac

1. Open a terminal window and type
`ssh <myWSU ID>@cronus.hipecc.wichita.edu`
where <myWSU ID> is your own myWSU ID.
2. Enter your myWSU password when prompted to do so.
3. Once logged into cronus, to change to your shared group directory type
`cd /user/cs697/cs697gp1<#>`
where <#> is the number of your CS 697AM group.
4. If you wish to list the files located in that directory type
`ls`

NOTE: If you need to use X-Forwarding for displaying GUI-based applications running on cronus, then add the option `-X` to the above ssh command.

Logging into HiPeCC cronus using Windows

1. Download and run PuTTY (PuTTY can be found here:
<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>)
2. In the PuTTY configuration window, enter into the Host Name field:
`cronus.hipecc.wichita.edu`
3. When you click “Open”, PuTTY will open a new terminal window.
4. Enter your myWSU ID as username and your myWSU password when prompted to do so.
(If you wish to have PuTTY automatically fill in your username during each connection, then enter it in the Connection | Data category and save this custom session in the session category within the configuration window.)
5. Once logged into cronus, to change to your shared group directory type
`cd /user/cs697/cs697gp1<#>`
where <#> is the number of your CS 697AM group.
6. If you wish to list the files located in that directory type
`ls`

NOTE: If you need to use X-Forwarding for displaying GUI-based applications running on cronus, then you will need to install and configure Xming (a how-to can be found here:
http://www.geo.mtu.edu/geoschem/docs/putty_install.html)

NOTE 1: If you wish to access cronus from off-campus, then you will need to either use the WSU VPN tunnel (found on the myWSU web-portal under “mytools”), or create an ssh connection to one of the EECS Linux servers before accessing cronus, i.e. log into kira, kirk, mccoys, riker, sisko, or spock first and then follow the Linux instructions above to log into cronus).

NOTE 2: NEVER SHARE YOUR MYWSU ID or PASSWORD!

You do not need to share login IDs or passwords to share files on cronus with the rest of your CS 697AM group. So long as you save the files to your `cs697gp<#>` directory, the rest of your group will be able to access those files.

For those of you new to the Linux Command Line Interface (CLI), here are a few helpful links:

FOSSwire.com Cheat Sheet: <https://ubuntudanmark.dk/filer/fwunixref.pdf>

The Linux Command Line (under a CC License with No Starch Press): <http://linuxcommand.org/>

Linux Tutorial: <http://ryanstutorials.net/linuxtutorial/>

Compiling and test running a CUDA C parallel program on the HiPeCC cluster

NOTE: All of the example CUDA C source files discussed in <http://www.howtogeek.com/howto/42980/the-beginners-guide-to-nano-the-linux-command-line-text-editor/> he Sanders and Kandrot textbook, *CUDA by Example*, can be found on cronus in the directory: `/user/cs697/cuda_by_example`

1. Log into cronus as per the instructions on the previous page.
2. To copy one of the example CUDA C source files i.e. `enum_gpu.cu` (which displays the CUDA device properties), to the current directory type
`cp /user/cs697/cuda_by_example/chapter03/enum_gpu.cu .`
(do not forget the `<space>` `<period>` at the end of the line)
3. To create an interactive session on the cluster compute node which contains the Nvidia Tesla K40 GPU card (node 7-38), type
`qsub -q stdin -V -I -l select=1:ncpus=1:host=compute-7-38`
4. Once connected to the compute-7-28 node, you will need to change back into your shared group directory by typing
`cd /user/cs697/cs697gp1<#>`
where `<#>` is the number of your CS 697AM group.
5. To compile your CUDA C source file, i.e. `enum_gpu.cu`, into an executable file, i.e. `run`, type
`nvcc -o run enum_gpu.cu`
NOTE: The filename `run` is the compiled output executable file and can be called whatever filename you want (but do not call it the same filename as your source file, else you will overwrite your source code!).
6. To run your compiled executable file type `<dot>/<executable filename>`, i.e.
`./run`
7. If you need to edit your source code within either cronus or the compute-7-38 node, you can use `nano` or `vi` (if you are new to Linux, then `nano` is the easier text editor to start working with, see here for a short `nano` tutorial: <http://www.howtogeek.com/howto/42980/the-beginners-guide-to-nano-the-linux-command-line-text-editor/>).

NOTE: If you need to copy source files from another computer system to cronus, then you can use the GUI-based file transfer software FileZilla with FTPS protocol on port 22 (<https://filezilla-project.org/>) or directly from the Linux command line on another computer using Secure Copy (`scp`), i.e.

```
scp <my_cuda_code>.cu <myWSU ID>@cronus.hipecc.wichita.edu:/user/cs697/cs697gp1<#>
```

where `<my_cuda_code>.cu` is the file you wish to copy, `<MyWSU ID>` is your myWSU ID, and `<#>` is the number of your CS 697AM group.