



HPC Educational Cluster information

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For some projects or assignments, you may need more substantial resources (memory, CPU, GPU) than usual. For those who do not have access to a powerful computer, one option (besides Google Colab) is to use the educational cluster, which is available for everyone in this class via `ssh <username>@hpc-student.charlotte.edu` from a Terminal (command line) window.

If you encounter issues with running your code, we expect that you follow these steps, **in this order**:

1. **Read the documentation.** Make sure the Slurm script file has correct options. Monitor your job's progress. Have patience, depending on the required resources and how many students are using the cluster at one time, the job scheduler may delay starting your job.
2. **Read the error messages** that are recorded in the output file.
3. Attend office hours, **talk to the TA** or me.

Galaxy Cluster / Centaurus Partition

The educational (EDU) HPC cluster is named "**Galaxy**", and the partition that you submit to is called "**Centaurus**". Centaurus is a Slurm partition on RHEL 9.6. For information concerning the educational cluster, please consult the online documentation:

<https://oneit.charlotte.edu/urc/educational-clusters>.

<https://oneit.charlotte.edu/urc/educational-clusters/centaurus-user-notes>.

Accessing Centaurus

Centaurus is available via: hpc-student.charlotte.edu.

hpc-student.uncc.edu is both the INTERACTIVE and SUBMIT host for the cluster. If off campus, the VPN is required for access.

In addition, Centaurus utilizes **DUO for SSH logins**. Please ensure you have set up your DUO account:

<https://spaces.charlotte.edu/pages/viewpage.action?pageId=35651686>

Centaurus Storage Information

Each user directory has a quota of 150GB and is located at `/users/<username>`. This volume is BACKED UP nightly with a seven day window. Never modify the permissions on `/users/<username>`. Please track space usage via the `urcquota` utility.

Please note that student data is **not** retained between semesters.

Class Share Directories

Instructors and TAs have write access to class shares, whereas students have read-only access. **The class share is located in `/projects/class/itcs<id>_091`**, where `<id>` stands for 6101 or 8101.

Connecting, creating the homework folder, submitting the job:

- Connect to the Centaurus server through `ssh`:
 - Open a Terminal (command line) window and type the command below, using your Charlotte user name:
`ssh <username>@hpc-student.charlotte.edu`
 - This will ask for your password, and dual factor authentication.
- Edit the source code file on your computer and save as Python file.
- Using an `sftp` tool, transfer the homework folder `hw<0x>` in your home directory `/users/<username>` on the educational cluster.
- Change current directory to the homework folder `cd ~/hw<0x>`
- You can also edit the Python file directly on the educational cluster using `vi` or `emacs` in the terminal window.
- Copy our Slurm script template to your homework folder, or create your own script:
`cp /projects/class/itcs<id>_091/slurm_script.sh ~/hw<0x>`
- Use `vi` or `emacs` to edit the `<job_name>` and `<file_name>` in the Slurm script, and specify additional Python modules to load, if any.
- Submit the batch job that will run your code `sbatch slurm_script.sh`
 - This will print a message showing the job number, such as “Submitted batch job `<job_name>`”.
 - When the job is done, the output is saved into a text file with extension `.out`.

Centaurus Support

Students should work any issues through the TAs and instructors. This helps weed out issues that are not system related, but are instead students incorrectly performing their assignments. *If an issue is reported by a student, please confirm the issue with the instructor or TA before escalating to URC HPC Support.*

If you have any questions or encounter issues, please contact URC HPC Support <urc-support@charlotte.edu>