Introduction to GACRC Teaching Cluster
LING6570 Part II

Georgia Advanced Computing Resource Center (GACRC)
EITS/University of Georgia
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Please note:
You need to connect to the UGA VPN when accessing from outside of the UGA main campus.

Node: Computer for a specific function on cluster, e.g., login node
Queue: Collection of compute nodes for specific computing need
Cluster: Nodes + Drives, all connected by network
Computing Resources

- Two Nodes:
  1. Login node (MyID@teach.gacrc.uga.edu): for submitting computational jobs
  2. Transfer node (MyID@txfer.gacrc.uga.edu): for transferring data files

- Three Directories:
  1. /home/MyID: working space for computational jobs
  2. /work/CourseID/MyID: data parking for individual user in the class (e.g., /work/binf8940/MyID)
  3. /work/CourseID/instructor_data: data shared with class by the instructors

- Three Queues:
  1. batch: for running regular computational jobs
  2. highmem: for running high-memory jobs
  3. gpu: for running GPU jobs
Submit Batch Job

1. Log on to Login node using MyID and password, and two-factor authentication with Archpass Duo:
   
   \[ \text{ssh MyID@teach.gacrc.uga.edu} \]

2. Create a working subdirectory for a job: \texttt{mkdir workDir}

3. Change directory to \texttt{workDir}: \texttt{cd workDir}

4. Copy a sample job script to \texttt{workDir}: \texttt{cp /work/ling6570/instructor_data/tryme.bash .}
   
   Use nano command to edit if you want: \texttt{nano tryme.bash}

5. Copy your python script from local computer to \texttt{workDir}: use \texttt{scp} or \texttt{SSH File Transfer} (via Transfer node)

6. Submit a job from \texttt{workDir}: \texttt{sbatch tryme.bash}

7. Check job status: \texttt{squeue} or Cancel a job: \texttt{scancel JobID}
Step 4: Copy a sample job script to workDir

Commands:  
\[ \text{cp} \ /	ext{work/ling6570/instructor\_data/tryme.bash} \ . \]
\[ \text{cat} \ \text{tryme.sh} \]

```bash
#!/bin/bash
#SBATCH --partition=batch # submit job to batch partition/queue
#SBATCH --job-name=jobname # the name of your job (jobname should be replaced by an actual job name)
#SBATCH --ntasks=1 # single task job
#SBATCH --mem=5gb # total memory for job
#SBATCH --time=2:00:00 # time limit hrs:min:sec

cd $SLURM_SUBMIT_DIR # change dir to the folder where you submit job
. ${HOME}/ling6570_config.sh # configure your working env
time python ./yourScript.py # run your python script (yourScript.py should be replaced by your actual script name)
```
Step 4: Use nano command to edit if you want

Commands: nano tryme.bash

nano is a small friendly text editor on Linux.

Ctrl-x to save file and quit from nano
Step5: Copy your python script from local computer to workDir

1. Connect to Transfer node (MyID@txfer.gacrc.uga.edu) in Terminal on local computer
2. For Windows: Use SSH File Transfer
3. For Mac/Linux: Use scp command
   https://wiki.gacrc.uga.edu/wiki/Transferring_Files#Using_scp_2

Example: use scp on local computer, from Local ➔ workDir on cluster

```bash
scp ./evalbigram.py zhuofei@txfer.gacrc.uga.edu:/home/zhuofei/workDir
```
Step6: Submit a job from workDir using sbatch

```bash
$ sbatch tryme.bash
Submitted batch job 139
```

**Tips:** tryme.bash is a job submission script for

1. specifying computing resources
2. configuring your working env
3. running any Linux commands you want to run
4. running the python script
Step7: Check job status using squeue

$ squeue -l
Wed Aug  8 13:40:02 2018

<table>
<thead>
<tr>
<th>JOBID</th>
<th>PARTITION</th>
<th>NAME</th>
<th>USER</th>
<th>STATE</th>
<th>TIME</th>
<th>TIME_LIMI</th>
<th>NODES</th>
<th>NODELIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>162</td>
<td>batch</td>
<td>testBLAS</td>
<td>zhuofei</td>
<td>PENDING</td>
<td>0:00</td>
<td>2:00:00</td>
<td>1</td>
<td>(None)</td>
</tr>
<tr>
<td>160</td>
<td>batch</td>
<td>testBLAS</td>
<td>zhuofei</td>
<td>RUNNING</td>
<td>0:02</td>
<td>2:00:00</td>
<td>1</td>
<td>c2-11</td>
</tr>
<tr>
<td>161</td>
<td>batch</td>
<td>testBLAS</td>
<td>zhuofei</td>
<td>RUNNING</td>
<td>0:02</td>
<td>2:00:00</td>
<td>1</td>
<td>c2-11</td>
</tr>
</tbody>
</table>

$ squeue

<table>
<thead>
<tr>
<th>JOBID</th>
<th>PARTITION</th>
<th>NAME</th>
<th>USER</th>
<th>ST</th>
<th>TIME</th>
<th>NODES</th>
<th>NODELIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>162</td>
<td>batch</td>
<td>testBLAS</td>
<td>zhuofei</td>
<td>PD</td>
<td>0:15</td>
<td>1</td>
<td>(None)</td>
</tr>
<tr>
<td>160</td>
<td>batch</td>
<td>testBLAS</td>
<td>zhuofei</td>
<td>R</td>
<td>0:17</td>
<td>1</td>
<td>c2-11</td>
</tr>
<tr>
<td>161</td>
<td>batch</td>
<td>testBLAS</td>
<td>zhuofei</td>
<td>R</td>
<td>0:17</td>
<td>1</td>
<td>c2-11</td>
</tr>
</tbody>
</table>

Common STATE: R for Running; PD for PenDing; TO for TimedOut; S for Suspended; F for FAILED
TIME: the elapsed time used by the job, not remaining time, not CPU time.
Step7 (Cont.): Cancel job using scancel

```
$ squeue -l
Wed Aug  8 14:03:47 2018
JOBID PARTITION   NAME   USER    STATE  TIME   TIME_LIMI  NODES NODELIST
169 batch testBLAS zhuofei RUNNING  2:07   2:00:00   1 c1-38
168 batch testBLAS zhuofei RUNNING  3:14   2:00:00   1 c1-39

$ scancel 169

[zhuofei@teach workDir]$ squeue -l
Wed Aug  8 14:03:47 2018
JOBID PARTITION   NAME   USER    STATE  TIME   TIME_LIMI  NODES NODELIST
169 batch testBLAS zhuofei COMPLETED 2:25   2:00:00   1 c1-39
168 batch testBLAS zhuofei RUNNING  3:32   2:00:00   1 c1-38

$ squeue -l
Wed Aug  8 14:04:08 2018
JOBID PARTITION   NAME   USER    STATE  TIME   TIME_LIMI  NODES NODELIST
168 batch testBLAS zhuofei RUNNING  3:35   2:00:00   1 c1-38
```
GACRC Wiki  [http://wiki.gacrc.uga.edu](http://wiki.gacrc.uga.edu)

Running Jobs:  [https://wiki.gacrc.uga.edu/wiki/Running_Jobs_on_Sapelo2](https://wiki.gacrc.uga.edu/wiki/Running_Jobs_on_Sapelo2)

Monitoring Jobs:  [https://wiki.gacrc.uga.edu/wiki/Monitoring_Jobs_on_Sapelo2](https://wiki.gacrc.uga.edu/wiki/Monitoring_Jobs_on_Sapelo2)

Job Submission Queue:  [https://wiki.gacrc.uga.edu/wiki/Job_Submission_Queues](https://wiki.gacrc.uga.edu/wiki/Job_Submission_Queues)

Software:  [https://wiki.gacrc.uga.edu/wiki/Software](https://wiki.gacrc.uga.edu/wiki/Software)

Transfer File:  [https://wiki.gacrc.uga.edu/wiki/Transferring_Files](https://wiki.gacrc.uga.edu/wiki/Transferring_Files)

Linux Command:  [https://wiki.gacrc.uga.edu/wiki/Command_List](https://wiki.gacrc.uga.edu/wiki/Command_List)

Training:  [https://wiki.gacrc.uga.edu/wiki/Training](https://wiki.gacrc.uga.edu/wiki/Training)
GACRC Support
https://uga.teamdynamix.com/TDClient/Requests/ServiceCatalog?CategoryID=11593

- **Job Troubleshooting:**

  Please tell us details of your question or problem, including but not limited to:
  - Your user name
  - Your job ID
  - Your working directory
  - The queue name and command you used to submit the job

- **Software Installation:**

  - Specific name and version of the software
  - Download website
  - Supporting package information if have

Please note to make sure the correctness of datasets being used by your jobs!
GACRC Service Catalog

Services (11)

Account Creation
For a research group's PI to request user accounts for group members on the GACRC computing systems.

Class Account Creation
For an instructor to request user accounts for students attending a course that will need to use GACRC computing systems.

Class Account Modification
For instructors to request changes to be made in previously requested class account.

Computing Lab Modification/Deletion

General Internal

General Support
Report issues and request help with GACRC systems, except for software installation requests and account/lab creation requests.

Lab Creation
For a research group's PI to register a computing lab on the GACRC computing systems.

Modify/Delete Account
For PIs to request changes in or deletion of user accounts on GACRC computing systems.

Software Installation/Update
Request software and common application databases (e.g. NCBI blast databases) installation and upgrade.
Click to request
Thank You!

Telephone Support
EITS Help Desk: 706-542-3106
Monday – Thursday: 7:30 a.m. – 7:30 p.m.
Friday: 7:30 a.m. – 6 p.m.
Saturday – Sunday: 1 p.m. – 7 p.m.

**Georgia Advanced Computing Resource Center**

101-108 Computing Services building

*University of Georgia*

*Athens, GA 30602*

[https://gacrc.uga.edu/](https://gacrc.uga.edu/)