Berkeley
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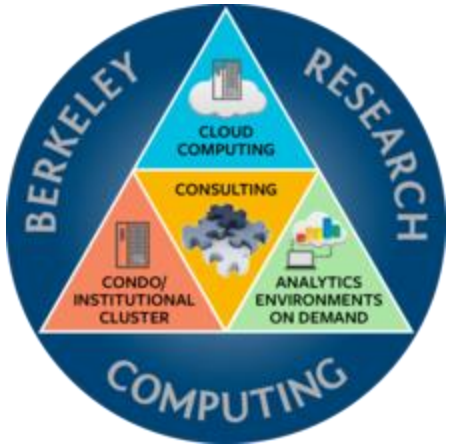


http://research-it.berkeley.edu

http://research-it.berkeley.edu/services/high-performance-computing/using-matlab-savio

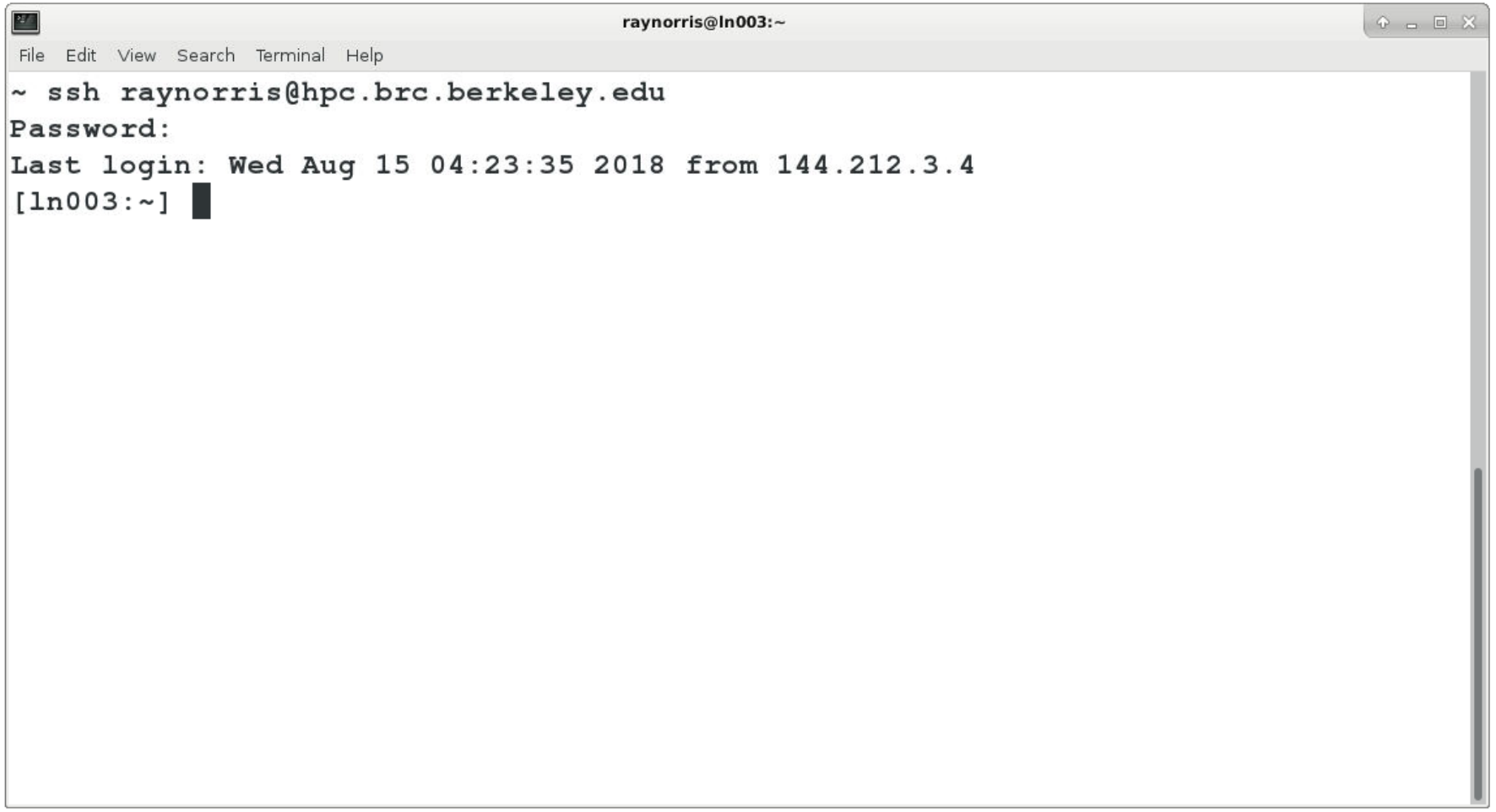
What Do You Want to Run?

- MATLAB
  - Single node, multi-threaded (across all cores)
  - Interactively? Batch?
- Local Pool
  - Single node, single thread, multi-processing
  - Interactively? Batch?
- Multi-node
  - M cores, N nodes
  - --licenses=mdcs:M*N

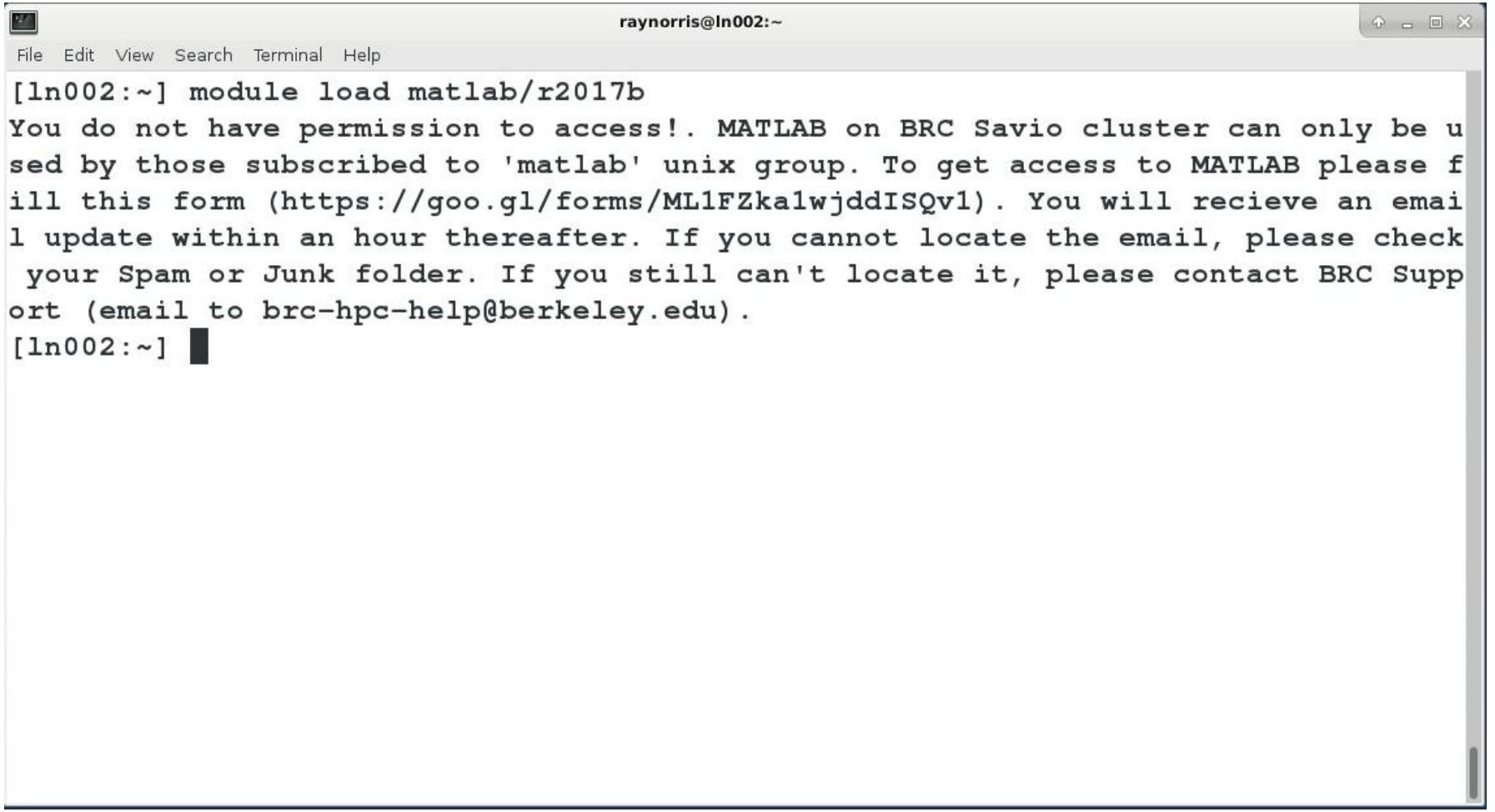
Connecting to Savio

- http://research-it.berkeley.edu/services/high-performance-computing/logging-brc-clusters
  - Requires Google Authenticator

ssh to Savio


raynorris@ln003:~
File Edit View Search Terminal Help
~ ssh raynorris@hpc.brc.berkeley.edu
Password:
Last login: Wed Aug 15 04:23:35 2018 from 144.212.3.4
[ln003:~]

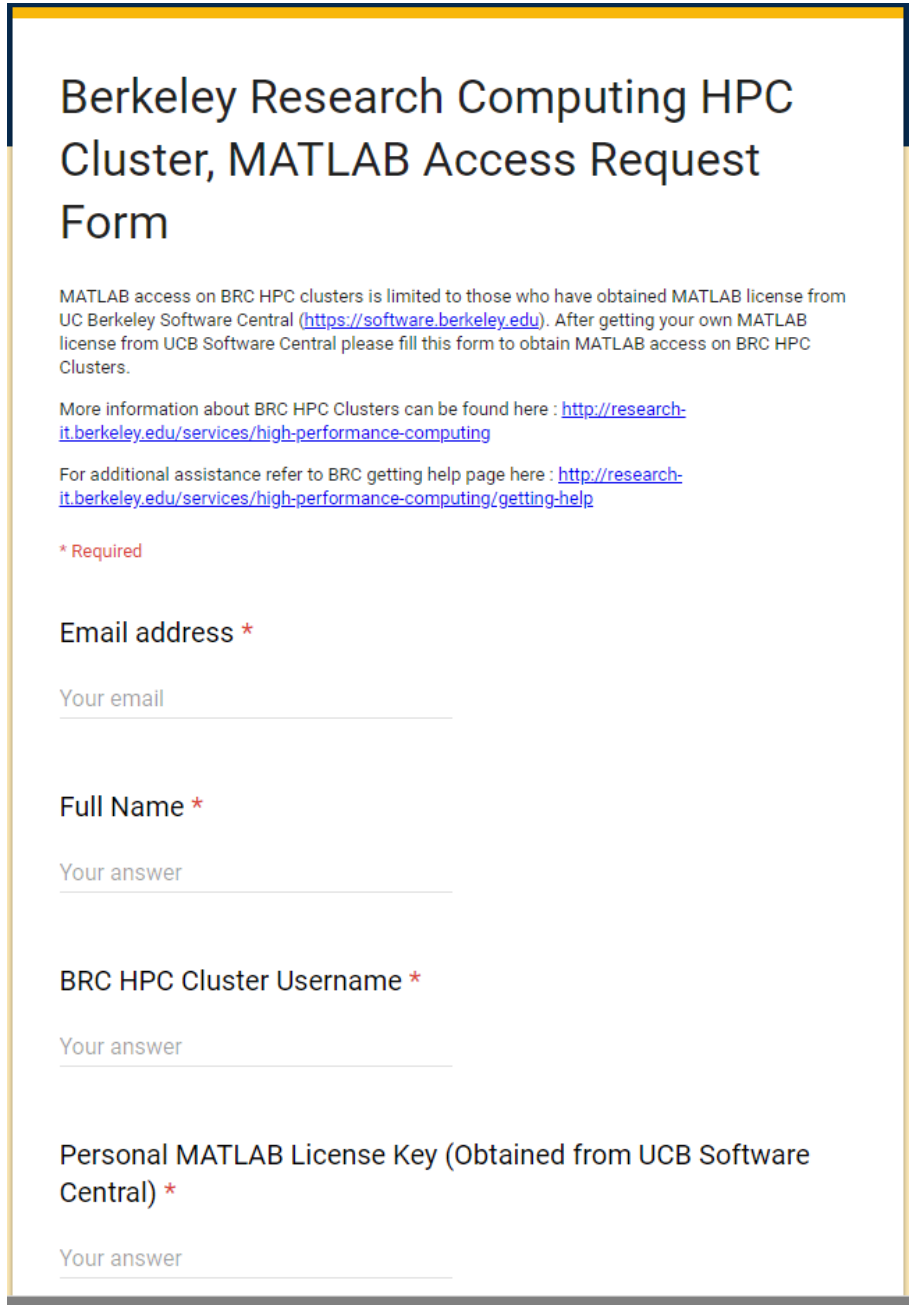
Load MATLAB on System Path



Submit MATLAB Form

If you are a non-Berkeley cluster user who needs MATLAB access, you can fill out the form using the same license key your project PI has obtained from Software Central, but all Berkeley users should submit their own key.

https://goo.gl/forms/ML1FZka1wjddISQv1



Berkeley Research Computing HPC Cluster, MATLAB Access Request Form

MATLAB access on BRC HPC clusters is limited to those who have obtained MATLAB license from UC Berkeley Software Central (https://software.berkeley.edu). After getting your own MATLAB license from UCB Software Central please fill this form to obtain MATLAB access on BRC HPC Clusters.

More information about BRC HPC Clusters can be found here : http://research-it.berkeley.edu/services/high-performance-computing

For additional assistance refer to BRC getting help page here : http://research-it.berkeley.edu/services/high-performance-computing/getting-help

* Required

Email address *

Your email

Full Name *

Your answer

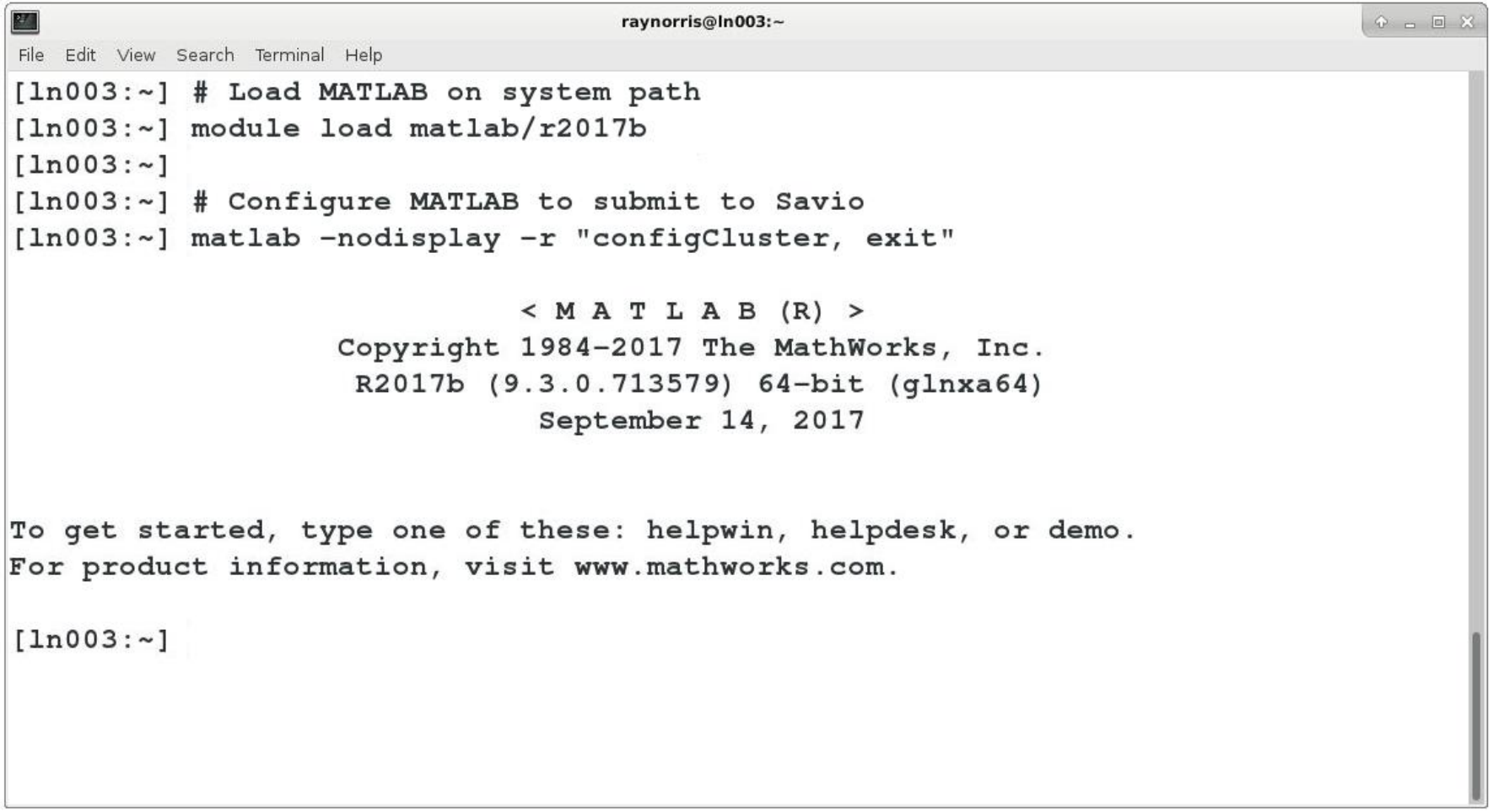
BRC HPC Cluster Username *

Your answer

Personal MATLAB License Key (Obtained from UCB Software Central) *

Your answer

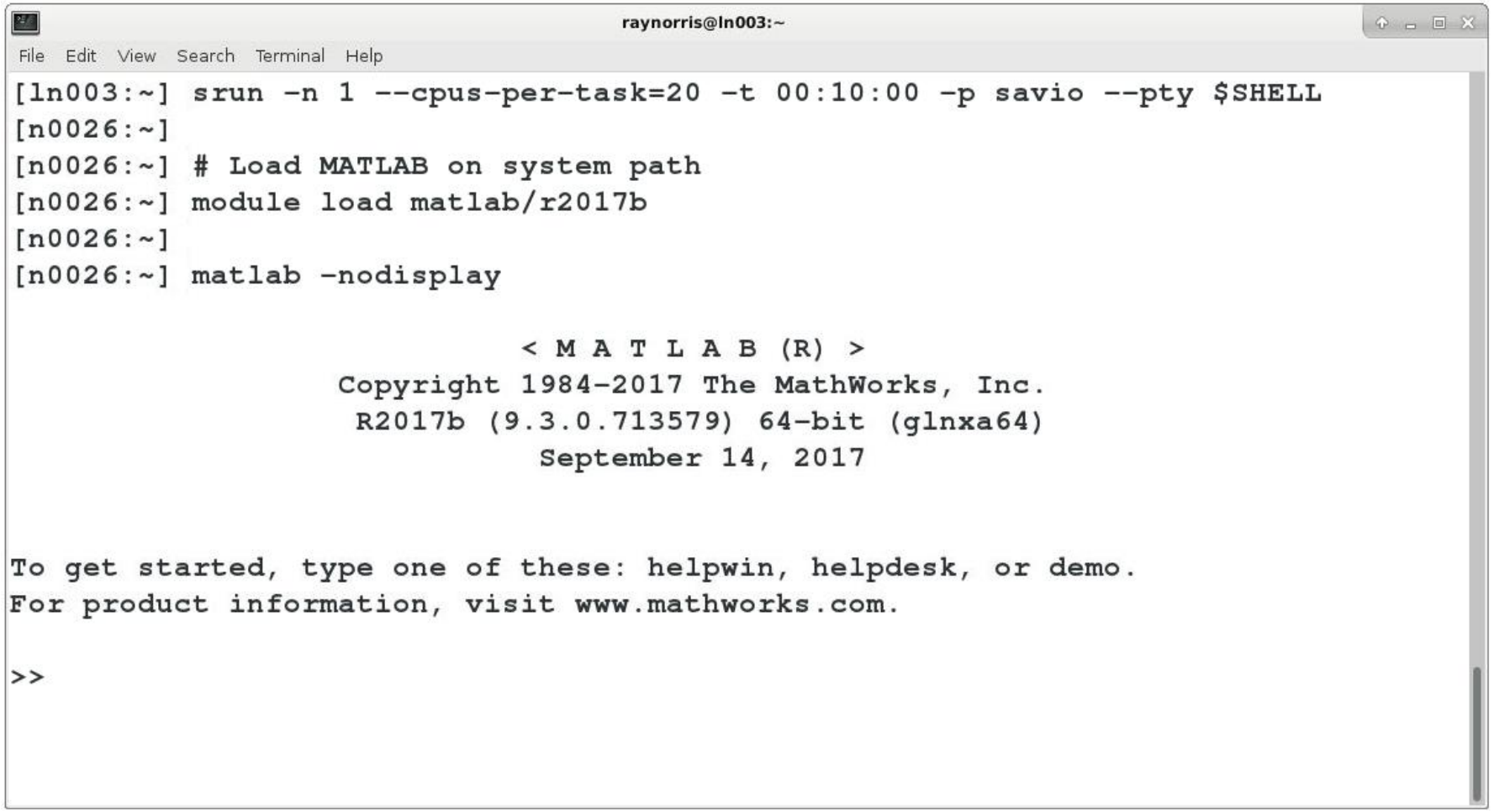
Configure MATLAB to submit Jobs to Savio



Ways to Run MATLAB

- Interactively
- Batch Mode

Run MATLAB – Interactively



Sample MATLAB Parallel Code

```
function my_parallel_app

% Get a handle to the cluster
c = parcluster('savio');

% What the ideal pool size
mps = maxPoolSize();

% Open a pool of workers
t0 = tic;
p = c.parpool(mps);
t = toc(t0);
fprintf('Time to start parpool: %.2f\n',t);

% PARFOR
t0 = tic;
parfor idx = 1:mps*3
    pause(2)
end
t = toc(t0) %#ok<*NASGU,*NOPRT>

% SPMD
spmd
    o = gop(@plus,labindex);
end
o{end}
% Compare our results to a cumulative summation
o = cumsum(1:mps);
o(end)

% Close the pool
p.delete
```

Run MATLAB – Batch Mode

```
#!/bin/bash

#SBATCH --job-name=matlab
#SBATCH --account=
#SBATCH --partition=savio2              # REQUIRED
#SBATCH -N 2
#SBATCH --ntasks=8
#SBATCH --cpus-per-task=1
#SBATCH --time=00:10:00                 # REQUIRED
#SBATCH --licenses=mdcs:8
#SBATCH --reservation=matlabclass       # JUST FOR TODAY
# ================================================

# Load MATLAB on system path
module load matlab

# Required for MDCS jobs
export MDCE_OVERRIDE_EXTERNAL_HOSTNAME=`/bin/hostname -f`

# Run MATLAB
matlab -nodisplay -r my_parallel_app
```

Submit the Jobscript

- `sbatch matlab.parallel.jobscript`

```
Submitted batch job 3269288
```

- `squeue -j <job-id>`

- `cat slurm-<job-id>.out`

```
To get started, type one of these: helpwin, helpdesk, or demo.
For product information, visit www.mathworks.com.

Starting parallel pool (parpool) using the 'savio' profile ...
connected to 8 workers.
Time to start parpool: 105.88

t =

    8.5951


ans =

    36


ans =

    36

Parallel pool using the 'savio' profile is shutting down.
```