

# Using Computing Resources

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## General Information

- NEVER give your password to anyone; NEVER reply to any emails requesting your password
- Contacting sysadmin: help@math.uh.edu
- Your Desktop: linux based machine
- Learn linux: the joy of the terminal window
- Editors: emacs (separate window editor) and vi (within terminal window)
- aliases: edit your .cshrc or .bashrc
- Command Line programs and utilities
- Each computer has a local disk
- Your home directory is located on the department server and all file changes are transferred over the network
- your home directory is automatically mounted  
compute01 136:/home/ilya>pwd  
/home/ilya

# Linux Commands

- List all files `>ls`
- Make Directory `>mkdir 'dir name'`
- Change Directory `>cd 'dir name'`
- Go to home directory `>cd`
- Go one directory up `>cd ..`
- Running in the background, use `&`: `>matlab &`

## Storage

- 5GB in the home volume (`/home/$USER` or `~`)
- 20GB in the storage volume (`/storage/$USER` or `~/servers/storage`)
- 2GB in the web volume (`/www/$USER` or `~/storage/www`)

## Linux Commands

- Local Machine: your desktop machine
- Remote Machine: you have access to other machines in the department

```
ssh2 139:/home/ilya> ssh ld65  
Last login: Wed Sep 26 11:25:11 2018
```

- Login to compute\*\* machine

```
[ilya@ld65 ~]$ ssh compute01  
Last login: Thu Sep 27 19:53:20 2018 from 172.21.86.73  
[ilya@compute01 ~]$ pwd  
/home/ilya  
[ilya@compute01 ~]$  
[ilya@compute01 ~]$ cd  
compute01 140:/home/ilya>
```

### Access from a Laptop

- Mac: you should have ssh already
- PC: you can emulate linux by installing cygwin

## ssh and sftp

- You can create alias  
`alias sshuh='ssh ilya@login.math.uh.edu'`
- you need another program to transfer files between UH account and your laptop
- sftp or putty can be used
- `alias sftpuh='sftp ilya@sftp.math.uh.edu'`
- sftp has its own command line interface
- You should **compress** files before transfer
- `>zip -r my.zip <dir name>`
- `>sftpuh`
- `sftp>get my.zip` or `sftp>put my.zip`
- `>unzip my.zip`

## Running jobs on compute\*\* machines

- compute-status

```
ld65 145:/home/ilya> compute-status
```

```
+-----+-----+-----+
| host      | cpus | load  |
+-----+-----+-----+
| compute00 | 56   | 18.07 |
| compute01 | 56   | 30.09 |
| compute02 | 56   | 27.09 |
| compute03 | 56   | 4.1   |
| compute04 | 80   | 0.07  |
| compute05 | 64   | 14.04 |
| compute06 | 64   | 30.19 |
| compute07 | 64   | 27.08 |
+-----+-----+-----+
+-----+-----+-----+
| total_cpus | free_cpus | utilization |
+-----+-----+-----+
|          704 |          515 |          26.8 |
+-----+-----+-----+
```

## Running jobs on compute\*\* machines

- You have to run your jobs on \scratch

```
ld65 146:/home/ilya>
```

```
ld65 146:/home/ilya> ssh compute02
```

```
[ilya@compute02 ~]$ cd /scratch
```

```
compute02 144:/scratch> ls
```

```
adrian/    cx/        mock/      schiu/     torok/
```

```
aguo/      jsa/       pan/       yushutin/
```

```
bhargav/   jsalcala/  pxzfile/
```

```
compute02 145:/scratch> mkdir ilya
```

```
compute02 146:/scratch> cd ilya
```

```
compute02 147:/scratch/ilya>
```

- Transfer your data into your home directory when you're done
- zip your files before copying

## Running jobs on compute\*\* machines

- To see all jobs running `>top`
- Nice your jobs `>nice +15 <pid>`
- Run your jobs in the background, redirect output, no figures in matlab or python

### Running Matlab

- `>nohup matlab -nodisplay -nodesktop -nojvm -nosplash  
< my.m > out.txt &`
- `alias runmatlab 'nohup matlab -nodisplay -nodesktop -nojvm`
- `>runmatlab < my.m > out.txt &`
- save your data in matlab `save('mydata.mat');`
- Put `exit;` at the end
- No Figures



## Running python on compute\*\* machines

- Write python program
- Background running - use nohup, redirect output, renice your program, no plotting

```
compute01 186:/scratch/ilya/run1> nohup python3 < oumc2.py >  
out.txt &
```

```
[1] 42046
```

```
compute01 187:/scratch/ilya/run1> ps
```

PID	TTY	TIME	CMD
41730	pts/5	00:00:00	tcsh
42046	pts/5	00:00:14	python3
42159	pts/5	00:00:00	ps

```
compute01 188:/scratch/ilya/run1> renice +15 42046
```

```
42046 (process ID) old priority 0, new priority 15
```

```
compute01 189:/scratch/ilya/run1>
```

## Killing programs

```
compute01 190:/scratch/ilya/run1> kill -9 42046
compute01 191:/scratch/ilya/run1>
[1] Killed python3 < oumc2.py > out.tx
compute01 191:/scratch/ilya/run1>
```