Parallel Machine Learning and Artificial Intelligence

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Linux Fundamentals on Discovery Cluster



Documentation

- Almost all utilities have the --help option which shows what the options are
- man utility shows the manual page for the utility, or a system call or any concept.
 - o h 2 help
 - o q 🛭 quit



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Filesystem navigation: viewing

- •ls list files
 - o Options: Is -[lart1d] most common options
 - -1: long listing
 - -a: all files (including hidden files, (ones that begin with a .))
 - -r: show in reverse order (default sorting order is alphanumeric)
 - -t: sort by time modified
 - -1: show all in 1 column
 - -d: show directory names but not their content
 - Is --help



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Directory

Create a directory: \$ mkdir

Switch Directories: \$ cd



File and Directory Manipulation

copy:\$cp

- Copy files: \$ cp file1 file2

- Copy directories: \$ cp -r dir1 dir2

move/rename: \$ mv oldpath/oldname newpath/newname

Remove: \$ rm / rmdir

- Files: \$ rm file1 file2 file3 filek filen

- Directories: \$ rmdir dir1 dir2 dir3 ... dirk dirn



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Files Creation and Manipulation

Create and Edit files: \$ vi/vim/gedit



Viewing file content

cat: print content of file to the stdout (more on streams later)

more: print content of file to the screen but pause between pages

less: like more but with more options



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Find a file in your directory tree

I want to find all the files which end with .err:

```
find . -type f -name "*.c"
```

• Using find --help or man find to get more information



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Check Disk Usuage

- Check file system disk space usage: \$ df
- Check files and directories disk usage: \$ du



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Download

- Download command: \$ wget
- The wget is a free utility for non-interactive (i.e., can work in background) download of files from the Web.
- It supports HTTP, HTTPS, FTP protocols and HTTP proxies.



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Archives

Sometimes it may be necessary to pack up an entire directory into a single file, for archiving, reducing the number of files in the filesystem, or easy transfer.

Create an archive from directory foo:

```
$tar cvf foo.tar ./foo
c: create, f: name of file to create
Unpack an archive:
$tar xvf foo.tar
x: xtract, v: verbose, f: filename of the archive
```



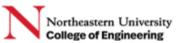
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Archives

Often tar archives are compressed to form what is known in the Unix/Linux world as a "tarball"

To create or unpack a tarball, use the z option

\$tar czvf foo.tgz ./foo
\$tar zxvf foo.tgz
zip creates archives compatible with windows
archives



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File Permissions

- In Linux, each file is associated with an owner and a group and assigned with permission access rights for three different classes of users:
 - o The file owner.
 - o The group members.
 - o Others (everybody else).
- There are three file permissions types that apply to each class:
 - The read permission.
 - o The write permission.
 - The execute permission.



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Using chmod

Symbolic Method

- o u The file owner.
- \circ g The users who are members of the group.
- o o All other users.
- o a All users, identical to ugo.

• Numeric Method:

- or (read) = 4
- o w (write) = 2
- o x (execute) = 1
- o no permissions = 0



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Other Useful Commands

- 1. \$ uname
- 2. \$ history
- 3. \$ date
- 4. \$ whereis
- 5. \$ which
- 6. \$ alias
- 7. \$ echo
- 8. \$ top



- •Stay safe!
- •See you next class!

Next Lecture will Continue:

Slurm job management on Discovery



