Basic Linux Course

RCSS - mudoitrcss@missouri.edu
(contact us here for any cluster related help)

Ashkan Mirzaee
Asif Ahamed
Brian Marxkors
Christina Roberts
Predrag Lazić
# Basic Linux Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssh</td>
<td>wget</td>
<td>tree</td>
<td>cp</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>scp</td>
<td>rsync</td>
<td>more</td>
<td>rm</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pwd</td>
<td></td>
<td>less</td>
<td>mv</td>
<td>..</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ls</td>
<td>unzip</td>
<td>head</td>
<td>mv</td>
<td>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gunzip</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mkdir</td>
<td>tar –xf</td>
<td>tail</td>
<td></td>
<td>&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cd</td>
<td>vim</td>
<td>wc</td>
<td>history</td>
<td>&gt;&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>nano</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>man</td>
<td>emacs</td>
<td>grep</td>
<td>exit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Why learn Linux?

Not only is it a valuable job skill,

*It is the only way* to use a super computer!
Graphical User Interface (GUI) vs the Command Line

The learning curve in Linux is very steep, but you only have to climb it once!

“intuitive”

Reproducible, quick, efficient!
Command prompt

\[ \text{-> ssh \text{USERNAME}@lewis.rnet.missouri.edu} \]

\text{~ (tilde) = home directory}
-> pwd

Will show what directory you are working in. If you are not in home type-> cd ~

-> ls

Will list everything in the directory.

-> mkdir TUTORIAL
-> mkdir TUTORIAL/prac_w_arg

To make a subdirectory named “TUTORIAL”. And another subdirectory in that one.

-> cd TUTORIAL

To move into the TUTORIAL subdirectory.
-> wget http://tp2.irb.hr/WEB/ROCKS_7/data-shell.zip

Will retrieve this file from this url.

Other ways to get files:
-> scp
-> rsync

-> ls -l
-> ls -t
-> ls -lh

Will list everything in the directory with extra information.

-> man ls

Shows other options for the commands, such as ls.
-rw-r--r--. 1 plmx7 plmx7 21583 Aug 7 22:13 solar.pdf

drwxr-xr-x. 2 plmx7 plmx7 5 Aug 7 23:51 creatures

U  G  O

d/-

d – directory
- – file
U – user/owner permissions
G – group permissions
O – other users permissions
- `unzip data-shell.zip` Will unzip this file.
- Other ways to unzip files:
  - `gunzip`
  - `unrar`
  - `tar -xzf`

- `ls`
- `ls -l datashell/`
- `ls -l datashell/creatures` Will list everything in the directory with extra information.

- `tree datashell` Will list everything in the directory AND subdirectories.
-> cd data-shell/creatures  
Change to this directory instead of typing path in front of each command.

-> more unicorn.dat  
Will preview contents of file.  
Also try-> less
- `tail unicorn.dat`  
  - Will display the last 10/2 lines of the file.
  - Also try `head`.

- `tail -n 2 unicorn.dat`

- `wc unicorn.dat`  
  - To view the number of lines, words and bytes of a file.

- `wc -l unicorn.dat`
To search occurrences of patterns in a file.

- `grep AGA unicorn.dat`
- `grep AGA *`
- `grep COMMON NAME unicorn.dat`
- `grep COMMON\ NAME unicorn.dat`
  OR `grep "COMMON NAME" unicorn.dat`

- `grep AGA unicorn.dat > arganine_in_unicorns.txt`
- `grep AGG unicorn.dat > arganine_in_unicorns.txt`
- `grep AGA unicorns.dat >> arganine_in_unicorns.txt`

To REDIRECT output into a new files
-> cp arganine_in_unicorns.txt arginine_in_unicorns

To copy contents of a file to a new name.

-> rm arganine_in_unicorns.txt

To remove a file.

-> mv arginines_in_unicorns ./arginines_in_unicorns.txt
-> mv arginines_in_unicorns.txt ../..../prac_w_arg

To move content of a file to a new name and or directory.
-> cd ../../../prac_w_arg/

.. accesses the previous directory the sub directory is located in

-> grep AGA arginines_in_unicorns.txt | wc

| pipeline) allows for usage of multiple commands at once

-> touch arginine_todo.sh

Will create a file with the name in the field.

-> vim arginine_todo.sh

File editor of choice Also try: emacs

Also try: nano

visual studio
**IN VIM:**

- `i`
- (type lines)
- `ESC`
- `:wq`
- `ENTER`

Should see – INSERT – at bottom

-- INSERT – should disappear from bottom.

Should be this typing into bottom.
Other useful VIM commands:

- `dd` -> deletes a line
- `:w` -> writes/saves work to file without quitting
- `:q!` -> quits without writing to file
- `:/SEARCH/` -> searches file
- `:%s/SEARCH/REPLACE/g` -> searches and replaces lines
- `sh arginine_todo.sh`  
  Runs the shell script.

- `cp arginines_in_unicorns.txt arg_in_uni_2.txt`  
  `vim arg_in_uni2.sh`  
  `sh arginine_todo.sh`

- `cp arginine_todo.sh arginine_todo2.sh`  
  `vim arginine_todo2.sh`  
  `sh arginine_todo2.sh AGG`
IN NEW TERMINAL:

```bash
mkdir LINUX_TUTORIAL

rsync USERNAME@lewis.rnet.missouri.edu:/home/USERNAME/TUTORIAL/prac_w_arg/arginine/* .;/Desktop/LINUX_TUTORIAL/
```
IN LEWIS CONNECTED TERMINAL:

- -> history
Showed last 1000 entered commands.

- -> exit
Exits from server.
What next?

**USE THE MU CLUSTER!** (Lewis, Clark)

http://docs.rnet.missouri.edu/getting-started
http://docs.rnet.missouri.edu/linux/basic-commands/

**MobaXterm** is a simple linux machine

Make a Linux **virtual machine** – and play with it (virtualBox)

Follow this video:

https://www.youtube.com/watch?v=JgurvumloHk
Thank you!

Please send us a message with your username and email to.

mudoitrcss@missouri.edu

(with Subject: Linux Training)

Feel free to include any feedback or ask for a copy of these slides.