Short Read Sequencing Analysis Workshop

Day 2

Learning the Linux Compute Environment





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Review of Day 2 Videos

Video 1 – Introduction to linux

- Linux is a command-based OS; we connect and communicate with the server via typed/written commands
- ssh command (Mac) and MobaXterm(Windows)
- Video 2 Working on a linux system
 - Navigate the linux file system; full and relative path designations
 - Commands and tricks for navigating linux file system
- Video 3 Linux Commands for File Manipulation
 - Learn to use additional linux commands aimed at manipulating file and directory content





Review of Day 2 Videos

- Video 4 Remote RSYNC, reading files
 - Access command manuals, use options to customize command functions
 - Command line I/O, capture STDOUT and STDERR, piping
- Video 5 More file manipulation
 - Access command manuals, use options to customize command functions
 - Command line I/O, capture STDOUT and STDERR, piping

• Video 6 - Permissions

- Exploring Unix Permissions
- Video 7
 - VIM Tutorial





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Find a unix/linux cheat sheet

File Commands	erence FOSSwire
ls - directory listing	date - show the current date and time
Ls - al - formatted listing with hidden files	cal - show this month's calendar
cd dir - change directory to dir	uptime - show current uptime
cd - change to home	w - display who is online
pwd - show current directory	whoani - who you are logged in as
nkdir dir – create a directory dir	finger user - display information about user
rm file - delete file	unane - a - show kernel information
rm - r dir - delete directory dir rm - f file - force remove file	cat /proc/cpuinfo - cpu information cat /proc/meninfo - memory information
m -rf dir - force remove directory dir *	nan connand - show the manual for command
cp file1 file2 - copy file1 to file2	df - show disk usage
cp -r dirl dir2 - copy dirl to dir2; create dir2 if it	du - show directory space usage
doesn't exist	free - show memory and swap usage
mv file1 file2 - rename or move file1 to file2	whereis app - show possible locations of app
if file2 is an existing directory, moves file1 into	which app - show which app will be run by defa
directory file 2	Compression
In -s file link - create symbolic link link to file touch file - create or update file	tar cf file.tar files - create a tar named
cat > file - places standard input into file	file.tar containing files
nore file - output the contents of file	tar xf file.tar - extract the files from file.tan
head file - output the first 10 lines of file	tar czf file.tar.gz files - create a tar with
tail file - output the last 10 lines of file	Gzip compression
tail -f file - output the contents of file as it	tar xzf file.tar.gz - extract a tar using Gzip
grows, starting with the last 10 lines	tar cjf file.tar.bz2 - create a tar with Bzip compression
Process Management	tar xif file.tar.bz2 - extract a tar using Bzi
ps - display your currently active processes	gzip file - compresses file and renames it to
top - display all running processes	file.gz
kill pid - kill process id pid	gzip -d file.gz - decompresses file.gz back b
killall proc - kill all processes named proc *	file
bg - lists stopped or background jobs; resume a stopped job in the background	Network
fg - brings the most recent job to foreground	ping host - ping host and output results
fg n - brings job n to the foreground	whois domain - get whois information for doma
File Permissions	dig domain - get DNS information for domain
chnod octal file - change the permissions of file	dig -x host - reverse lookup host
to octal, which can be found separately for user.	wget file - download file
group, and world by adding:	wget -c file - continue a stopped download
 4 - read (r) 	Installation
 2 - write (w) 	Install from source:
 1 - execute (x) 	./configure
Examples:	nake
chnod 777 - read, write, execute for all chnod 755 - rwx for owner, rx for group and world	make install
For more options, see nan chnod.	dpkg -i pkg.deb - install a package (Debian)
	rpm -Uvh pkg.rpm - install a package (RPM)
SSH ssh user@host - connect to host as user	Shortcuts
<pre>ssh usergnost - connect to host as user ssh •p port user@host - connect to host on port</pre>	Ctrl+C - halts the current command
port as user	Ctrl+Z - stops the current command, resume w
ssh-copy-id user@host - add your key to host for	fg in the foreground or bg in the background
user to enable a keyed or passwordless login	Ctrl+D - log out of current session, similar to en
Searching	Ctrl+W - erases one word in the current line Ctrl+U - erases the whole line
grep pattern files - search for pattern in files	!! - repeats the last command
grep -r pattern dir - search recursively for	exit - log out of current session
pattern in dir	ever - sold one of content session
command grep pattern - search for pattern in the	
output of command	

• • •		👚 rutendos	igauke — ssh fiji — 146×47		
-bash-4.2\$ ls -l					
total 89					
lrwxrwxrwx 1 root	root	7 Nov 2 2017 bin -> usr/	/bin		
dr-xr-xr-x 5 root	root	4096 Oct 24 2018 boot			
drwxr-xr-x 20 root	root	3660 Nov 22 15:29 dev			
drwxr-xr-x 130 root	root	12288 May 16 20:10 etc			
drwxr-xr-x 3 root	root	4096 Nov 2 2017 home			
lrwxrwxrwx 1 root	root	7 Nov 2 2017 lib -> usr/			🏠 rutendosigauke — ssh fiji — 152×51
lrwxrwxrwx 1 root	root	9 Nov 2 2017 lib64 -> us	-bash-4.2\$ ls -l		
drwxr-xr-x 2 root	root	6 Nov 2 2017 localscrate			
drwx 2 root	root	16384 Nov 2 2017 lost+found	lrwxrwxrwx 1 root	root	7 Nov 2 2017 bin -> usr/bin
drwxr-xr-x 2 root	root	4096 Nov 5 2016 media	dr-xr-xr-x 5 root	root	4096 Oct 24 2018 boot
drwxr-xr-x 2 root	root	4096 Nov 5 2016 mnt	drwxr-xr-x 20 root	root	3660 Nov 22 15:29 dev
drwxr-xr-x 130 root	root	4096 Apr 15 10:10 opt	drwxr-xr-x 130 root	root	12288 May 16 20:10 etc
dr-xr-xr-x 561 root	root	0 Oct 24 2018 proc	drwxr-xr-x 3 root	root	4096 Nov 2 2017 home
drwxr-xr-x 8 root	root	4096 Feb 27 18:36 projects	lrwxrwxrwx 1 root	root	7 Nov 2 2017 lib -> usr/lib
drwxr-xr-x 3 root	rinnLab	4096 Mar 13 2018 rinnlab	lrwxrwxrwx 1 root	root	9 Nov 2 2017 lib64 -> usr/lib64
dr-xr-x 9 root	root	4096 May 16 08:55 root	drwxr-xr-x 2 root	root	6 Nov 2 2017 localscratch
drwxr-xr-x 35 root	root	1240 May 20 11:10 run	drwx 2 root	root	16384 Nov 2 2017 lost+found
lrwxrwxrwx 1 root	root	8 Nov 2 2017 sbin -> usi	drwxr-xr-x 2 root	root	4096 Nov 5 2016 media
drwxr-xr-x 4 root	root	2 Aug 2 2017 scratch	drwxr-xr-x 2 root	root	4096 Nov 5 2016 mnt
drwxrwxr-x 4 biof-sbsuser	SEQADMIN	4096 Oct 23 2018 sequencing	drwxr-xr-x 130 root	root	4096 Apr 15 10:10 opt
drwxr-xr-x 4 root	root	4096 Jan 7 09:43 spencerlab	dr-xr-xr-x 565 root	root	0 Oct 24 2018 proc
drwxr-xr-x 2 root	root	4096 Nov 5 2016 srv	drwxr-xr-x 8 root	root	4096 Feb 27 18:36 projects
dr-xr-xr-x 13 root	root	0 Nov 8 2018 sys	drwxr-xr-x 3 root	rinnLab	4096 Mar 13 2018 rinnlab
drwxrwxrwt 33 root	root	4096 May 20 11:38 tmp	dr-xr-x 9 root drwxr-xr-x 35 root	root	4096 May 16 08:55 root
drwxr-xr-x 19 root	root	0 May 20 11:38 Users	drwxr-xr-x 35 root lrwxrwxrwx 1 root	root	1240 May 20 11:10 run 8 Nov 2 2017 sbin -> usr/sbin
drwxr-xr-x 13 root	root	4096 Nov 2 2017 usr	drwxr-xr-x 4 root	root root	2 Aug 2 2017 scratch
drwxr-xr-x 23 root	root	4096 Nov 2 2017 var	drwxr-xr-x 4 root drwxrwxr-x 4 biof-sbsuse		
-bash-4.2\$			drwxrwxr-x 4 biol-sbsuse drwxr-xr-x 4 root	root	4096 Jan 7 09:43 spencerlab
			drwxr-xr-x 2 root	root	4096 Vov 5 2016 srv
			dr-xr-xr-x 13 root	root	0 Nov 8 2018 svs
			drwxrwxrwt 33 root	root	4096 May 20 11:49 tmp
			STARTING DD TOOC		tore they be been a superior to the superior t

root

root

root

drwxr-xr-x 19 root

drwxr-xr-x 13 root

drwxr-xr-x 23 root

-bash-4.2\$







Terminal

Make the terminal comfortable to work in:

• Make the windows large

0 May 20 11:45 Users

4096 Nov 2 2017 usr

4096 Nov 2 2017 var

- Open multiple windows and/or tabs
- Change font sizes etc. ((For Mac: Command +

Plus/Minus, For Windows, find Text size in Preferences)

What is Vim ?

- Vim is a free, open source terminal based text editor
 Edit content of human-readable files
- Several options exist for terminal text editors
 - -Emacs
 - -Nano
 - Sublime
 - -Visual Studio Code







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The End

Questions??

Don't forget the homework.

Help session in JSCBB A108 from 1-3pm

Watch videos for Day 3





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