LINUX COMMANDS, NIT HPC ARCHITECTURE & PBS SCHEDULER

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What's a command?

It's a binary file kept under specific directory (/bin)

Eg:

$ls | more

$ls > dir_listing.txt

$cat < file.sh

Linux Commands

- Getting Help
  - man [command] - manual pages
  - apropos [keyword] - Searches the manual pages for the keyword
    It is particularly useful when searching for commands without knowing their exact names.
- Directory Movement
  - mkdir – make directory
  - cd - change directory
  - rmdir – remove directory
  - ls – list directory contents

Linux Commands

- File/Directory Control
  - cp - copy
  - mv - move/rename
  - rm - remove
  - rmdir - remove directory
  - ln - create pseudonym (link)
  - chmod - change permissions
  - touch - update access time (or create blank file)

Linux Commands

- ls

ls -a	list all files including hidden file starting with '.'
ls -i	list file's inode index number
ls -l	list with long format - show permissions
ls -la	list long format including hidden files
ls -lh	list long format with readable file size
ls -ls	list with long format with file size
ls -r	list in reverse order
ls -s	list file size
ls -S	sort by file size
ls -t	sort by time & date
ls -X	sort by extension name

Linux Commands

- wall — Send a message to everybody's terminal
- who — Display the users logged in.
- whoami — Print effective user id.
- pwd — Present working directory.
- date — Display date and time.
- cal — Display current month’s Calendar.

Linux Commands

- Which - shows the full path of (shell) commands.
  - $ which ls
- Whereis - locate the binary, source, and manual page files for a command
  - $ whereis ls
- Locate - find files by name
  - $ locate stdio.h
  - $ locate iostream

Linux Commands

- Echo - display a line of text
  - $ echo “Hello World”
  - $ echo -n “Hello World”
- cat - concatenate files and print on the standard output
  - $ cat /etc/passwd
  - $ cat /proc/cpuinfo
- cp - copy files and directories
  - $ cp foo bar
  - $ cp -a foo bar
- mv - move (rename) files
  - $ mv foo bar

Linux Commands

- rm - remove files or directories
  - $ rm foo
  - $ rm -rf foo
  - $ rm -i foo
- clear - clear screen
- tar – tape archive. To rip a collection of files and directories into highly compressed archive file commonly called tarball
  - $ tar cvfz lab1.tar lab1
- zip - package and compress (archive) files

Linux Commands

- Unzip - list, test and extract compressed files in a ZIP archive
  - $ unzip -cd lab1.tar.gz
  - $ tar -xvfz lab1.tar.gz
- df - report file system disk space usage
  - $ df -h /
- du - estimate file space usage
  - $ du -sxh ~/
- touch - change file timestamps
  - $ touch foo

Linux Commands

- Searching

  - locate - list files in filename database

    $ locate gian.txt (locates gian.txt)

    $ locate -i *gian.txt* (ignore case sensitive and locates)

  - grep - search file (also see "egrep" & "fgrep")

    $ grep global *.cu

    $ grep -r linux /etc/ (search the pattern recursively)

Linux Commands

- find - recursive file search

  $ find / -name gian.txt (searches gian.txt in /)

  $ find / -empty (Search for empty files and directories)

Move files older than 1 day to TMP directory

- $mkdir TMP
- $find . -mtime +1 type f -exec mv {} TMP \;

- Text Editors
  - vi
  - Pico
  - emacs
  - nano

Linux Commands

- ftp - Simple File Transfer Protocol client

  $ ftp abc.edu

  connects with ftp server and asks you to login.

  $ ftp user@abc.edu

- Scp - secure copy (remote file copy program)

  $scp source_file_name username@destination_host

- ssh - Secure Shell login

  $ssh user1@192.168.5.2

  which will asks for password to login

- telnet – remote login

Linux Commands

- To copy a file from remote machine to your system:

  scp user1@192.168.5.2:/home/user1/small.txt .
- To copy file from your machine to remote:

  scp newsmall.txt user1@192.168.5.2:/home/user1
- To remote login:

  ssh 192.168.5.2

- top The top program provides a dynamic real-time view of a running system.

- ps Get the status of one or more processes.

Linux Commands

- User Information
  - passwd - change user password
  - who - display user(s) data
  - w - Show who is logged on and what they are doing

- System Usage
  - ps - show processes
  - kill - kill process
  - top - display Linux tasks
  - uptime - Tell how long the system has been running

File Ownership and Permissions

Permissions are associated with every file & directory

$ls –lg

List files (-l long) and groups (-g) with permissions

Ownership – three types

owner, group, others

u=user (owner), **g**=group, **o**=others (also a=all)

Permissions – three types

read, write, execute

r=read, **w**=write, **x**=execute

File Ownership and Permissions

chmod file	Change file permission
chmod a+w file	Add write permissions for all users
chmod 750 file	Set rwx permission for user, r-x permission for group and no permission for others

rwx can each be set to 0 or 1,
so range is 000-111 (binary) and 0-7 (decimal)
i.e., r=100 (4), w=010 (2), x=001 (1)

111 101 000 => rwx r-x ---

7 5 0 => u g o

Linux Commands

- su - run a shell with substitute user and group IDs
  su - username

- useradd Create a new user or update default new user information.

  useradd –g <group> -s <shell> -c <comment> –d <home directory> <username>

- userdel Delete a user account and related files.
  userdel <user name>

- usermod Modify a user account.
  usermod –g groupname username

Thank You

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