Linux System Administration and Server Configuration

Lecture-2
Basic Linux Commands

- "ls" command: lists files in a specific directory

- $ls /home/shohrab/

- Lists all the files and folders under the directory /home/shohrab/

- If no argument is given, the *ls* lists the files in current working directory

List files/dir in a Dir: ls

- The –l option to ls gives more information, including the size of files and the date they were last modified:

$ ls –l
drwxrwxr-x 2 fred users 4096 Jan 21 10:57 Accounts
-rw-rw-r-- 1 fred users 345 Jan 21 10:57 notes.txt
-rw-r--r-- 1 fred users 3255 Jan 21 10:57 report.txt

```
$ ls -l
drwxr-xr-x    4 cliff    user         1024 Jun 18 09:40 WAITRON_EARNINGS
-rw-r--r--    1 cliff    user       767392 Jun  6 14:28 scanlib.tar.gz
^ ^  ^  ^       ^    ^           ^          ^       ^     ^       ^
| |  |  |       |    |           |          |       |     |       |
| |  |  |       | owner   group         size    date  time     name
| |  |  |          number of links to file or directory contents
| |  |  permissions for world
| |  permissions for members of group
| permissions for owner of file: r = read, w = write, x = execute -=no permission
type of file: - = normal file, d=directory, l = symbolic link, and others...
```

ls –l illustrated

- The shell has a current directory: the directory in which user is working.

- Usually after first login, the current directory should be the home directory of the user.

- Some commands like ls use the current directory if none is specified.

Viewing and Changing Current Directory

- We use "pwd" command to see what the current directory is :

```
$ pwd
/home/shohrab/
```

- We can change the current directory with the command cd :

```
$ cd   /mnt/cdrom
$ pwd
/mnt/cdrom
```

Viewing and Changing Current Directory

- The symbol tide (**~**) is an abbreviation for home directory. So for user "*shohrab*" the following are equivalent:

```
$ cd  /home/shohrab/test/
$ cd ~/test/
```

- The following are the same for user shohrab :

```
$ cd
$ cd ~
$ cd /home/shohrab
```

Home Directory

- Manual pages are extensive documentation of every Unix commands.

- The command to display manual pages is "man".
  - $ man <command_name>

- All the pages in this documentation are divided into sections
  - name(section)
  - $ man 3 *com1*

Observing Manuals

- The above example searches for command 1 in section 3 of this "man" doc.

- Mentioning the section with "man" command is optional

- After showing manuals, prompt does not come automatically.
- Press "q" or "Ctrl+c", "Ctrl + z" etc to go back to your prompt.

Observing Manuals

- "mkdir" command :
  - "-p" : create recursively the empty directories
  - "-v" : explanation

- "du(Disk Usage)" command :
  - Lists all the subdirectories.
  - "-h" : list all in human readable formats.
  - "-a" : list all subdirectories and files.
  - "-b" : list all subdirectories with size in bytes.
  - "-c" : gives grand total of size in K.
  - "S" : gives size of each subdirectories.
  - "s" : gives total size of the mentioned directory only.

Making Directories

- "rm" and "rmdir" commands :
  - Used to delete files.
  - Can also be used to delete directories with "-r" option.
  - Multiple files can be deleted : rm file1 file2 file3
  - To remove directory, it must be emptied first with "rmdir"
  - But "rm -r" can delete directories recursively.

  - For same file together : rm *.extension.
  - Option "-i" : prompt before removal.
  - Option "-v" : give explanation.

  - Option "-p" with rmdir removes directory and its ancestors.
  - Option "-v" in rmdir : give explanation.

Removing Files and Directories

- A "Wild Card"
  - is a single character which can be used as a substitute for a class of characters while searching, highly increasing the flexibility of searching.

- "*"

  - Represents zero characters, all single characters or any string.
  - Example :
    - File * : provides information about all filesystem components.
  - ls * can be combined with some other characters : *.txt, *.jpg
  - ls a* : represents everything that starts with a.
  - ls *a* : represents everything with a in the middle with anything in the start an end.

Wild Cards

- **"?"**
  - Used to represent a single character, any single character.
  - ?? : two single successive character.
  - file ??? : any file component with name of length 3.
  - file ? ?? ??? : any file component with name of length 1/2/3.
  - file a???? : any file component of length 5 starting with a.
  - ls *.??? : list everything having extension of length 3.

Wild Cards

- "[ ]"
  - Represents any of the character enclosed by [].
  - ls *[xyz]* : list any object with x/y/z and anything with starting and ending.
  - ls *.[xyz]*
  - ls [a-f]*
  - ls *[0-9]*
  - ls [a-cst]*
  - ls [a-cx-z]*
  - ls abc[0-9] [0-9] [0-9]

Wild Cards

- chmod command is used to change file permissions.

- To add execute permission of the owner:
  $ chmod u+x a1

- Use "g+r" or "o+r" to add read permissions for the group or others.

- To enable all the permission bits:
  chmod   777   a1

Changing permissions

- who
- whoami
- sort
- su – username
- su username
- ps
- pstree

More useful Commands

END