Linux Operating System and Programming
TOPIC# 5. Handling Ordinary Files

cat: displaying and creating files

It is used to display the contents of a small file on the terminal. Cat also accepts more than one filename as arguments.
$ cat file01 file02

cat options
-v : it is used to display nonprinting characters.
-n : it is used to show the line numbers.

Using cat to create file
$ cat file123
Hello World
[ctrl + d]
$

cp : coping a file

It is used to copy a file or a group of files.
$ cp src01 dest01
if the destination file (dest01) does not exist, it will first be created before copying. Else it will be simply overwritten without any warning from the system.

If there is only one file to be copied, the destination can be either an ordinary or directory file.
If the destination is a directory then it is copied with the same name.

cp is often used with . (dot) to signify the current directory as the destination.
$ cp /home/user1/hello.txt .

cp can also be used to copy more than one file with a single invocation of the command. Here, the destination must be a directory.
$ cp file1 file2 file3 prgm also, $ cp file* prgm

cp options
-i interactive copying
This option warns the user before overwriting the destination file, if the destination file already exists.

-R coping directory structure
It recursively copies an entire directory structure.

$ cp –R prgm prgm1
Now, prgm1 must not exist otherwise prgm will be created as a subdirectory of prgm1 and then recursive copy will take place.

rm : deleting files

This command deletes one or more files.

Options:
-i interactive deletion
The command asks for confirmation before removing each file.
-r or –R recursive deletion
This works like rmdir
-f forcing removal
This forces the removal of a write- protected file.

mv: renaming file

It renames files (or directory). It can also be used to move a group of files to a different directory.

If destination file doesn't exist, it will be created.
$ mv file1 file2

A group of files can be moved to a directory
$ mv ch1 ch2 ch3 prgm

It can also be used to rename a directory.
$ mv ch11 ch101

For mv also, -i and –R options are available.

cp, mv and rm work by modifying the directory entries of the files they access. **cp** adds an entry to the directory with the name of the destination file and inode number that is allotted by the kernel. **mv** replaces the name of an existing directory entry without disturbing its inode number. **rm** removes an entry from the directory.

more: PAGING OUTPUT

Along with more, there is less. Less is standard pager of LINUX.
To view a file chap01,
$ more chap01
This will display contents of chap01 on the screen, one page at a time. At the bottom of the screen, filename appears and percentage of the file that has been viewed.

q is internal command used to exit more.
f or spacebar to move forward one page.

b to move back one page.

Repeat factor
E.g. **10f** to scroll forward 10 pages. **30b** to scroll back 30 pages.
. (dot) will repeat the last command used.
Searching a pattern can be done with / command followed by the string.
More can also be used with pipeline.

All commands except (.) dot can be used with less.

lp : printing a file

line printing command lp provides spooling facility. Spooling ensures the orderly printing of jobs and relieves the user from the necessity of administering the print resources.

The file is not actually printed at the time the command is invoked. It is printed later depending on the number of jobs already lined up in the queue.

Options:
-d if there are more than one printers in the system, this option is used with the printer's name.
-t this option prints the title on the first page.
-m this option will notify the user by mail option
-n this option will print multiple copies

lpstat: the print queue can be viewed by this command.
cancel: this cancels any jobs submitted by user. Request-id or printer name is used along with this command.

file

this command is used to determine the type of file. File correctly identifies the basic file types (regular, directory or device).

wc: counting lines, words and characters

A line is any group of characters not containing a newline.
A word is a group of characters not containing a space, tab or newline.

```
$ wc hello1
        3  15  75  hello1
$wc –l hello1
       3 hello1
$wc –w hello1
```

15 hello1
$wc –c hello1
75 hello1

This command can also be used with multiple filenames.

cmp: comparing two files

$ cmp file1 file2

The two files are compared byte by byte and the location of the first mismatch is echoed to the screen. If the two files are identical, cmp displays no message, but simply returns the prompt.

comm:

It requires two **sorted** files and lists the differing entries in different columns.
Output is in 3 columns
1st column contains lines unique to the first file.
2nd column shows lines unique to the 2nd file.
3rd column shows lines common to both files.

diff:

It is used to display file differences. It also tells which lines in one file have to be changed to make the two files identical.
a = append
d =delete
c =change

$ diff file1 file2
0a1,2 //append after line 0 of 1st file
2c4 //change line 2 of 1st file
4d5 //delete line 4 of 1st file containing this line

dos2unix and unix2dos utilities

The format of Windows and Unix text files differs slightly. In Windows, lines end with both the line feed and carriage return ASCII characters, but Unix uses only a line feed. As a consequence, some Windows applications will not show the line breaks in Unix-format files. Likewise, Unix programs may display the carriage returns in Windows text files with `Ctrl-m` (`^M`) characters at the end of each line.

Following command will replace content of myfile.txt as per unix requierment.

dos2unix myfile.txt

Run levels / Init scripts

Runlevels define what tasks can be accomplished in the current state (or runlevel).

For example (This differs in different linux distributions. See documentation):

0 Shut down (or halt) the system

1 Single-user mode; usually aliased as *s* or *S*

2 Multiuser mode without networking

3 Multiuser mode with networking

5 Multiuser mode with networking and the X Window System

6 Reboot the system

Default runlevel in /etc/inittab

```
[root@host ~]# grep "^id:" /etc/inittab
id:5:initdefault:
```

To change the runlevel

[root@host ~]# **telinit 5**

For example: Following restarts the computer:

[root@host ~]# init 6

Ctrl-Alt-Delete is trapped to restart the system using inittab.

Trap CTRL-ALT-DELETE

ca::ctrlaltdel:/sbin/shutdown -t3 -r now

With each runlevel there are scripts associated

[root@host ~]$ ll /etc/rc*.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc0.d -> rc.d/rc0.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc1.d -> rc.d/rc1.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc2.d -> rc.d/rc2.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc3.d -> rc.d/rc3.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc4.d -> rc.d/rc4.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc5.d -> rc.d/rc5.d

lrwxrwxrwx 1 root root   10 Jul 27 2012 /etc/rc6.d -> rc.d/rc6.d

Compression and Archives

'C' for compress

tar cvzf mybackup.tar.gz mybackup/

'X' for exract

tar xvzf mybackup.tar.gz

tar xvzf mybackup.tar.gz --directory=/home/user1/someotherlocation

Other formats like zip, bz2, etc are also supported by other utilities like unzip, etc.

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