LINUX PROGRAMMING

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Presentation overview

- File Handling Utilites
- Security by File Permissions
- process Utilities
- Disk Utilities
- Networking Commands

File Handling Utilities

- cp (Copying Files)
  - To create an exact copy of a file you can use the “cp” command. The format of this command is:

```
cp [-option] source destination
```

Eg:

```
cp file1 file2
```

Here file1 is copied to file2 .

Eg:

```
cp file1 file2 dir
```

File1 file2 are copied to dir.

- Copying Files

  cp turns to interactive when –i option is used & destination file also exists.

```
$cp -i file1 file2
overwrite file2 (yes/no)?
```

Y at this prompt overwrites the file.

- mv (Moving and Renaming Files)

Used to rename the files/directories.

```
$mv test sample
```

Here test is renamed as sample.

- ln (link):

- Used to create links (both soft & hard links).
- It creates the alias & increase the link count by one.
- $ln file1 file2
- ln won’t work if the destination file also exists.

- rm (Deleting Files and Directories)
  - To delete or remove a file, you use the "`rm`" command. For example,

```
$rm my. listing
```

will delete "my.listing".

With –i option removes the files interactively.

```
$rm -i file1
```

With –r option recursively removes directories.

```
$rm -r dir1
```

- **mkdir:** used to create one or more directories.

- $mkdir book

  Creates the directory named book.

- $mkdir dbs doc dmc

  Creates three directories.

- **rmdir** (remove directories):

Removes empty directories.

- $rmdir book

removes directory named book if it is empty.

- $rmdir dbs doc dmc

Removes 3 directories.

- **find:** It recursively examines a directory tree to look for matching some criteria and then takes some action on the selected files.

Syntax:

- *find path_list selection_criteria action*
- To locate all files named a. out use

$find / -name a. out –print

- ‘/’ indicates search should start from root directory.

- To locate all c files in current directory

```
$find . -name “*.c” –print
```

- To find all files begin with an uppercase letter use

```
$find . –name ‘[A-Z]*’ –print
```

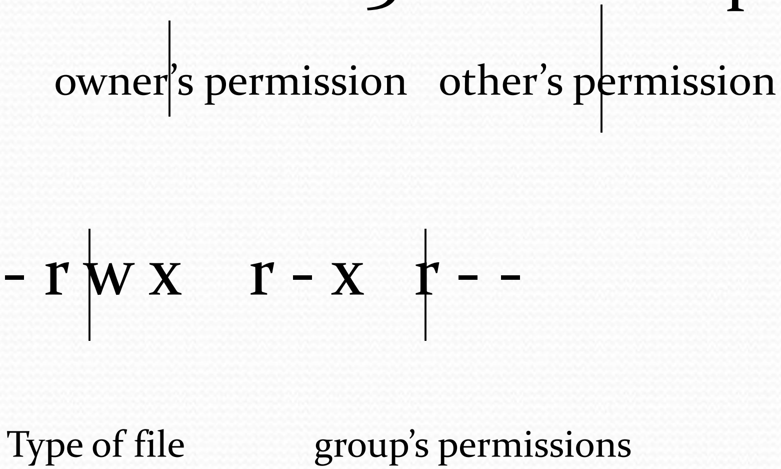
Find operators:

Find uses 3 operators

!,-a ,-o

Security by file permissions

Unix follows a 3-tiered file protection system.



owner's permission   other's permission

- r w x   r - x   r - -

Type of file   group's permissions

Each group represents a category. There are 3 categories- owner ,group ,others.

Security by file permissions

- Each category contains read ,write ,execute permissions .
- rwx->presence of all permissions.
- r-x->absence of write permission
- r-- -> absence of write ,execute permission
- Chmod: changing file permission

chmod sets a file’s permissions (read, write and execute) for all three categories of users (owner, group and others)

- Syntax:

chmod category operation permission file(s)

The command contains three components:

- category of a user (owner, group or others)
- operation to be performed (assign or remove a permission)
- Permission type (read, write or execute)

- Abbreviations used by chmod:

Category	operation
u-user	+-assign permission
g-group	--remove permission
o-others	=-assigns absolute permission
a-all	

permissions

r-read permission

w-write permission

x-execute permission

- Absolute assignment:

Absolute assignment by chmod is done with the = operator. Unlike the + or – operator s, it assigns only those permissions that are specified along with it and removes other permissions.

If u want to assign only read permission to all three categories and remove all other permissions from the file small use

```
chmod g-wx,o-x small
```

Or simply use = operator in any of the following ways.

chmod ugo=r small

chmod a=r small

Chmod =r small

<u>The octal notation:</u>

Chmod also takes a numeric argument that describes both the category and the permission. The notation uses octal numbers. Each permission is assigned a number like

read permission-4, write permission-2, execute permission-1

Process utilities

- Ps (process status):
- Display some process attributes.
- $ps

```
PID   TTY  TIME    CMD
1078  pts/2 0:00     bash
```

- Ps presents a snapshot of the process table.

Process utilities

- Ps with –f option displays a fuller listing that includes the PPID.
- Ps with –u option followed by user-id displays the processes owned by the user-id.
- Ps with –e option displays the system processes.

- **Who:** know the users
- Displays the users currently logged in the system.
- $who

- **Whoami:** Show you the owner of this account
- $whoami
- **W:** Tell you who is logging in and doing what!
- $w

- **Finger:** Displays the information about the users.

- $finger ***user***

  Find out the personal information of a user

- $finger ***name***

  Try to find the person’s info. by his/her name

- finger ***email-address***

  Try to find the person’s info across the network

Disk utilities

- **Du:** disk usage
- Du estimate the file space usage on the disk.
- It produces a list containing the usage of each subdirectory of its argument and finally produces a summary.

- $du /home/usr1

Disk utilities

- **Df:** displays the amount of free space available on the disk. The output displays for each file system separately.
- $df

- **Mount:**
- Used to mount the file systems.
- Takes 2 arguments-device name ,mount point.

Disk utilities

- Mount uses an option to specify the type of file system.
- To mount a file system on the /oracle directory on Linux system use

```
   $mount –t ext2 /dev/hda3 /oracle
 $mount –t iso9660 /dev/cdrom /mnt /cdrom
$mount –t vfat /dev/hda1 /msdos
$mount –t msdos /dev/fd0 /floppy
```

Disk utilities

- **Umount:** unmounting file systems
- Unmounting is achieved with the umount command. which requires either file system name or the mount point as argument.
- $umount /oracle
- $umount /dev/hda3
- Unmounting a file system is not possible if the file is opened.

- **ulimit**: user limit
- It contains a value which signifies the largest file that can be created by the user in the file system.
- When used by itself it displays the current setting.
- $ulimit

  unlimited

User can also set the ulimit value by using

$ulimit 10

unmask:

When u create files and directories, the default permissions that are assigned to them depend on the system's default setting. Actually this default is transformed

By subtracting the user mask from it to remove one or more permissions. This value is evaluated by umask without arguments.

```
$umask
022
```

Networking commands

- **ftp**: file transfer protocol
- ftp is used to transfer files. It can be used with host name.

```
$ftp Saturn
Connected to Saturn
220 Saturn ftp server
Name (Saturn: summit ): Henry
Password: ******
```

- To quit ftp use close and then bye or quit.
- ftp>close

221 good bye

- ftp>bye
- **Transferring files:**

Files can be of 2 types.

- Uploading(put & mput):
- To upload ur web pages & graphic files to website.

The put command sends a single file to the remote machine.

- ftp>binary

200 type set to I

- ftp>put penguin. gif

To copy multiple files use mput.

- ftp>mput t*.sql

- **Downloading files**: get & mget
- To download the files from remote machine use get & mget.
- ftp>get ls-lR.gz
- ftp>_

Networking commands

telnet: Remote login

If u have an account on the host in a local network (or on internet),u can use this with the host name or the ip address as argument.

```
$telnet Saturn
Trying to 192.168.0.1…
Connected to Saturn
```

- Login:----
- Password:-----
- U can quit telnet by using exit command.
- telnet prompt:

When telnet used without Ip address the system displays a telnet> prompt . U can invoke a login session from here with open.

```
telnet> open 192.168.0.8
Trying to 192.168.0.8…
Connected to 192.168.0.8
```

Networking commands

- rlogin: remote login without password
- rlogin is the Berkley's implementation of the remote login facility.
- U can log on to ur own identical remote account without using either the user name or password.
- $rlogin Jupiter
- Last login :....
- rlogin is terminated with ctrl+d or exit or logout.