Linux File System Permission

Type of File Permission

- Basic Permission
- Special Permission

For check file permission

 #ls -l /notes.txt

- Permission
- Link
- Owner
- Group owner
- Size of file
- Date & time of file creation
- Name of file

For check directory permission

#ls -ld/dev

Permission in details

Type of File Permission

- Basic Permission
- Special Permission
- Access Control List (ACL) Permission

```
drwxrwxrwx

d = Directory
r = Read
w = Write
x = Execute


chmod 777
```

7	rwx	111
6	rw-	110
5	r-x	101
4	r--	100
3	-wx	011
2	-w-	010
1	--x	001
0	---	000

```
rwx | rwx | rwx
Owner | Group | Others
```

Permission Group

Permission Description

- Owner (u) → Permissions used for the owner of the file
- Group (g) → Permissions used by members of the group
- Other (o) → Permissions used by all other users

For change permission

For add read permission to owner

#chmod u+r /notes.txt

For add read write permission to group

#chmod g+rw /notes.txt

For remove read permission to others

#chmod o-r /notes.txt

For change ownership

Syntax:

#chown <user name> <file/directory name>

For change group ownership

Syntax:

#chgrp <group name> <file/directory name>

Set permission with a numeric value

- r (read) = 4
- w (write) = 2
- x (execute) = 1

For set permission with a numeric value

#chmod 751 /Mayank

Find

- The Linux Find Command is one of the most important and much used command in Linux systems.
- Find command used to search and locate the list of files and directories based on conditions you specify for files that match the arguments.
- Find can be used in a variety of conditions like you can find files by permissions, users, groups, file type, date, size, and other possible criteria
- Find files under Home directory

  #find /home -name Mayank.txt

- Using Find command based on groups

  #find / - group shubgrp

- Search the file with less than 10MB in a folder

  #find /tmp -size -10M

- Search the file with more than 10MB in a folder
  #find /tmp -size +10M

WC (Word Count)

- The wc command is use for the count word and line numbers.

- Count number of lines

  #wc -l /etc/passwd

- Count number of words
  #wc -w /etc/passwd

Head
- Head command is used for to display top line of the file.

- Display top 10 line of the file

  #head /etc/passwd

- Display top specific no line of the file
  #head /etc/passwd

tail
- Tail command is used for to display the bottom line of the file.
- Display bottom 10 line of the file
  #tail /etc/passwd
  Default is 10

- Display bottom specific line of the file
  #tail -n 5 /etc/passwd

Archive File in Linux

- Archiving is the process of combining multiple files and directories (same or different sizes) into one file. Archive process is very useful for backup and compression size of data in Linux.

What is Tar

- Archiving is the process of combining multiple files and directories (same or different sizes) into one file. Archive process is very useful for backup and compression size of data in Linux. The Linux "tar" stands for tape archive, which is used by large number of Linux/Unix system administrators to compress size or drives backup. For create archive tar used some compression algorithms Such as gzip,bz2 and xz

Tar command syntax

#tar <options> <files>

Commonly used options

- c -for create
- x -for extract
- v -for verbose
- f -for forcefully
- t -for test
- z -for gzip

- To create a tar archive file

  #tar -cvf /mnt/backup.tar /var

- To show file size in human-readable format
  #du -sh /var
  #du -sh /mnt/backup.tar

- To extract a tar archive file on the default location
  #tar -xvf /mnt/backup.tar

- To extract a tar archive file on the specific location
  #tar -xvf /mnt/backup.tar -C /root/Desktop/

- To create a tar archive file with compress in size (gzip)
  #tar -cvzf /mngt/backup.tar.gz /var

- To extract a tar archive file with compress in size (gzip)
  #tar -xzvf /mnt/backup.tar.gz

Job Automation

- Job automation allows us to perform tasks automatically in OS by using tools.
- This feature is very useful for the administrator to assign tasks to OS whenever he is not present or performing daily basis work.

- Two type of job automation

  1. at — command is used to execute a job only one time.
  2. crontab — Crontab command is used to execute a job multiple times.

- To a set job with at command
  #date
  #at 8.10 AM
  at>useradd Mayank
  at>
  ctrl+d (write & quit)
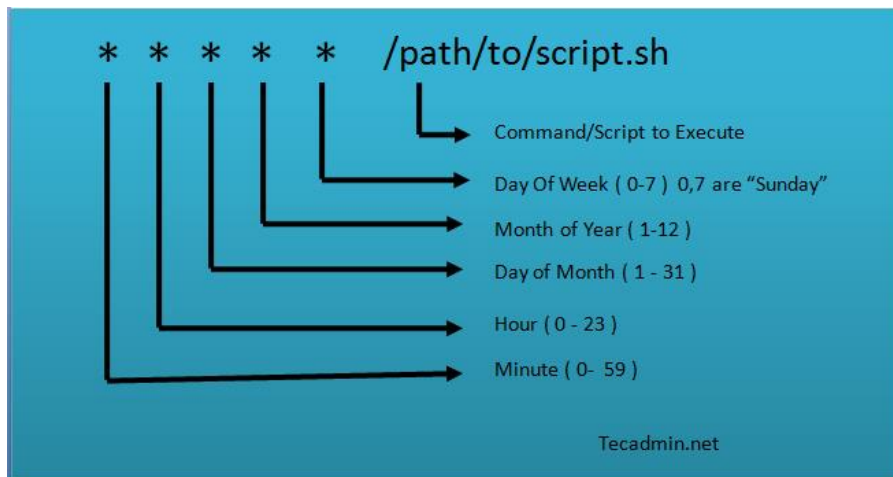
- To show pending a job
  #atq

- To remove a job
  #atrm 2

- To restrict user from accessing at
  #vim /etc./at.deny
  Mayank (add here username)
  :wq (write & quit)

- To start crond service
  #Systemctl start crond

- To enable crond service (Permanent on)
  #systemctl enable crond

- For set cron jobs
  #crontab -e

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- To show cron jobs of the current user
  #crontab -l

- To remove cron jobs
  #crontab -r

- Or, Go to the crontab file and remove the job line
  #crontab -e

- To the set cron job to other users
  #crontab -u Mayank -e

- To show cron job, other user
  #crontab -u Mayank -l

- To restrict user from crond service
  #vim /etc/cron.deny

Sudo Command

What is sudo ?
- Sudo ("superuser do", or "switch user do") allows a user with proper permissions to execute a command as another user, such as the superuser.
- sudo allows a permitted user to execute a command as another user, according to specifications in the /etc/sudoers file.

Provide sudo privilege to the user

For edit configuration file:

vim /etc/sudoers

root ALL=(ALL) ALL

amir ALL=(ALL) ALL (add this line appro. 101 lines)

 :wq

Provide sudo privilege to the group

For edit configuration file:

vim /etc/sudoers

%punegrp ALL=(ALL) ALL (line number 108)

 :wq

By default, all members of punegrp group got sudo privileges

Wheel group

- Wheel is a system group that by default has sudo privileges, if we add any member to that group then that user got sudo privilege
- #grep wheel /etc/group
  #useradd shub
  #passwd shub
  #gpasswd –a shub wheel
   By default, all members of the wheel group got sudo privileges

Sudo without password

- For edit configuration file:
  # vim /etc/sudoers
  amir ALL=(ALL) NOPASSWD: ALL
  %punegrp ALL=(ALL) NOPASSWD: ALL
  :wq

  ## Managing Networking
- To show Ip address
  #ifconfig
  Or #ip addr