FILE PERMISSION

ls → listing for current location

ls -l → long listing of current location

ls -l <filename/path> → long listing of specified file

ls -ld <directory name> → long listing of specified directory

stat <file/directory> → status

[root@servera ~]# **touch sample.txt**

[root@servera ~]# **ls -l sample.txt**

- rw- r-- r-- . 1 root root 0 Jul 16 18:40 sample.txt

[root@servera ~]# **mkdir /data**

[root@servera ~]# **ls -ld /data**

d rwx r-x r-x . 2 root root 6 Jul 16 18:41 /data
1 2 3 4 5 6 7 8 9 10 11

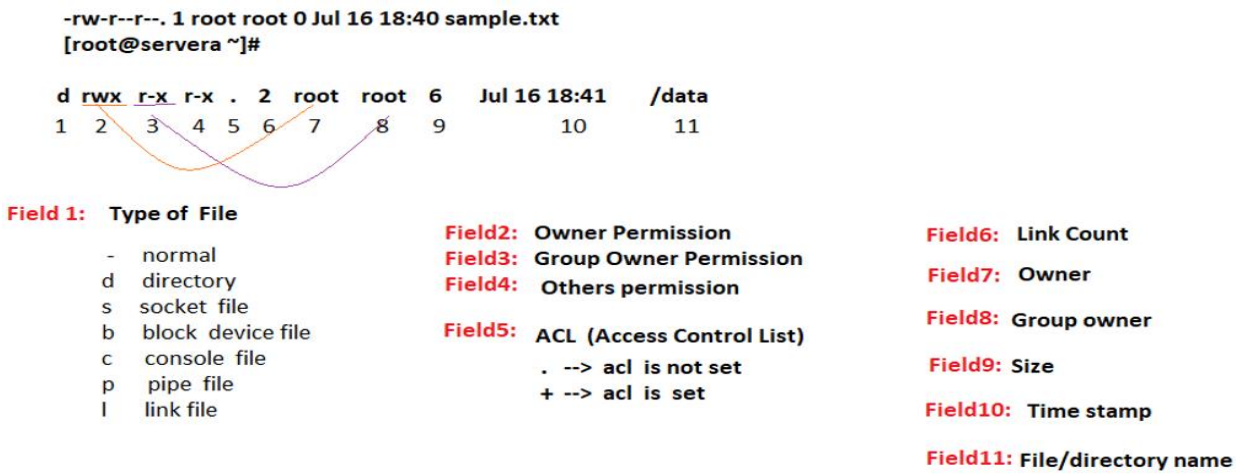
1. **File type**

   There are 7 file types in Linux:

Representation	File Type
-	Regular files
d	Directory
b	Block device files
c	Character device file
p	Pipe files
s	Socket files
l	Link file

2. **User permission (file owner permission)**
3. **Group permission**
4. **Other permission**
5. **ACL permission**
   - **. → No ACL permission**
   - **+ → ACL permission is set**

6. **Link count**
7. **File ownership**
8. **Group ownership**
9. **File size**
10. **Time stamp**
11. **File name**



[root@servera ~]# **ls -a /data/**

. ..

[root@servera ~]# mkdir /data/abc

[root@servera ~]# touch /data/test

[root@servera ~]# ls -a /data/

. .. abc test

[root@servera ~]# **ls -ld /data**

drwxr-xr-x. **3** root root 29 Jul 16 19:10 /data → *3 is link count (no. of directories present in /data)*

[root@servera ~]# mkdir /data/abc/test{1..3}

[root@servera ~]# ls -ld /data

drwxr-xr-x. 3 root root 29 Jul 16 19:10 /data

[root@servera ~]# ls -a /data/

. .. **abc** test

[root@servera ~]# ls -ls /data/abc/

total 0

0 drwxr-xr-x. 2 root root 6 Jul 16 19:11 test1

0 drwxr-xr-x. 2 root root 6 Jul 16 19:11 test2

0 drwxr-xr-x. 2 root root 6 Jul 16 19:11 test3

[root@servera ~]# ls -ls /data/abc/

[root@servera ~]# ls -ld /data/abc/

drwxr-xr-x. 5 root root 45 Jul 16 19:11 /data/abc/

Permission	File	Directory
r(read)	can read the file cat head tail	can list the dir eg. ls cmd
w(write)	can edit the file vi, vim , cat > , echo >	can create new file/dir, can delete the file/dir, can move copy the file from other location
x(execute)	Use to run by default not applied on file. apply manually to run the script	can jump into the dir cd cmd

CHANGE FILE PERMISSION

"chmod" is used to change File permissions.

Symbolic Method

Syntax:

#chmod { **u** **g** **o** **a** } { **+** **–** **=** } { **r** **w** **x** **–** } **<File Name>**

u → User (file owner permission)
g → Group permission
o → Other Permission
a → All permission (user, group, other)

+ → Add permission
- → Remove permission
= → Assign permission

r → Read permission
w → Write permission
x → Execute permission
- → Null permission

E.G.

[root@servera ~]# **ls -ld /data/**

drwxr-xr-x. 3 root root 29 Jul 16 19:10 /data/

[root@servera ~]# **chmod g+w /data**

[root@servera ~]# **ls -ld /data/**

drwxrwxr-x. 3 root root 29 Jul 16 19:10 /data/

[root@servera ~]# **chmod o+w /data/**

[root@servera ~]# **ls -ld /data/**

drwxrwxrwx. 3 root root 29 Jul 16 19:10 /data/

remove 'w' from group and other

[root@servera ~]# **chmod go-w /data/**

[root@servera ~]# **ls -ld /data/**

drwxr-xr-x. 3 root root 29 Jul 16 19:10 /data/

add 'w' to group and remove ' rx' from other

[root@servera ~]# **chmod g+w /data/**

[root@servera ~]# **chmod o-rx /data/**

OR

[root@servera ~]# **chmod g+w,o-rx /data/**

[root@servera ~]# **ls -ld /data/**

drwxrwx---. 3 root root 29 Jul 16 19:10 /data/

keep the permission as 'rx' for user group and others

r-x r-x r-x

[root@servera ~]# # **chmod u-w,g-w,o+rx /data/**

OR

[root@servera ~]# **chmod ugo=rx /data/**

[root@servera ~]# ls -ld /data/

dr-xr-xr-x. 3 root root 29 Jul 16 19:10 /data/

OR

[root@servera ~]# **chmod a=rx /data/**

[root@servera ~]# ls -ld /data/

dr-xr-xr-x. 3 root root 29 Jul 16 19:10 /data/

keep perm as rwx r-x ---

[root@servera ~]# **chmod u+w,o-rx /data/**

[root@servera ~]# ls -ld /data/

drwxr-x---. 3 root root 29 Jul 16 19:10 /data/

OR

[root@servera ~]# **chmod u=rwx,g=rx,o=- /data/**

[root@servera ~]# ls -ld /data/

drwxr-x---. 3 root root 29 Jul 16 19:10 /data/

[root@servera ~]# **ls /data/ -l**

total 0

drwxr-xr-x. 5 root root 45 Jul 16 19:11 abc

-rw-r--r--. 1 root root 0 Jul 16 19:10 test

-R → Recursive

rwx --- ---

[root@servera ~]# **chmod -R u=rwx,go=- /data/**

[root@servera ~]# **ls -ld /data/**

drwx------. 3 root root 29 Jul 16 19:10 /data/

[root@servera ~]# ls **/data/ -l**

total 0

d**rwx------**. 5 root root 45 Jul 16 19:11 abc

-**rwx------.** 1 root root 0 Jul 16 19:10 test

[root@servera ~]# **ls -l /data/abc/**

total 0

d**rwx------**. 2 root root 6 Jul 16 19:11 test1

d**rwx------**. 2 root root 6 Jul 16 19:11 test2

d**rwx------**. 2 root root 6 Jul 16 19:11 test3

Numeric Method

Syntax:

#chmod <Octal Numbers> <File Name>

Octal	Binary	permission
	r w x	r w x
0	0 0 0	- - -
1	0 0 1	- - x
2	0 1 0	- w -
3	0 1 1	- w x
4	1 0 0	r - -
5	1 0 1	r - x
6	1 1 0	r w -
7	1 1 1	r w x
	4 2 1	4 2 1

Special Permission	User Permission	Group Permission	Other permission
N	N	N	N
-	N	N	N
-	-	N	N
-	-	-	N

EG:

[root@servera ~]# ls -ld /data/

drwx------. 3 root root 29 Jul 16 19:10 /data/

[root@servera ~]# **chmod 754 /data/**

ugo

[root@servera ~]# **ls -ld /data/**

d**rwx r-x r--**. 3 root root 29 Jul 16 19:10 /data/

7 5 4

[root@servera ~]# **chmod 75 /data/**

go

[root@servera ~]# **ls -ld /data/**

d**--- rwx r-x**. 3 root root 29 Jul 16 19:10 /data/

7 5

[root@servera ~]# **chmod 7 /data/**

o

[root@servera ~]# **ls -ld /data/**

d**--- --- rwx.** 3 root root 29 Jul 16 19:10 /data/

7

[root@servera ~]# **chmod 707 /data/**

ugo

[root@servera ~]# **ls -ld /data/**

d rwx --- rwx. 3 root root 29 Jul 16 19:10 /data/

7 0 7

 # -R → Recursive

[root@servera ~]# **chmod -R 770 /data**

[root@servera ~]# **ls -ld /data/**

d **rwx rwx ---**. 3 root root 29 Jul 16 19:10 /data/

7 7 0

[root@servera ~]# **ls -l /data/**

total 0

d**rwxrwx---**. 5 root root 45 Jul 16 19:11 abc

-**rwxrwx---**. 1 root root 0 Jul 16 19:10 test