

# File (1A)

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- File System Command

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# ls

# of hard links

permissions

owner

group

size

date

filename

drwxrwxr-x	4	young	young	4096	Sep 29 11:20	.
drwxrwxr-x	7	young	young	4096	Sep 12 15:20	..
-rw-rw-r--	2	young	young	20	Sep 28 06:32	a.txt.hard.link
lrwxrwxrwx	1	young	young	20	Sep 28 08:27	a.txt.soft.link -> d1/d1_1/d1_1_1/a.txt


chmod

chown

chgrp

# Unix File Types

## File types



```
drwxrwxr-x 4 young young 4096 Sep 29 11:20 .
drwxrwxr-x 7 young young 4096 Sep 12 15:20 ..
-rw-rw-r-- 2 young young 20 Sep 28 06:32 a.txt.hard.link
lrwxrwxrwx 1 young young 20 Sep 28 08:27 a.txt.soft.link -> d1/d1_1/d1_1_1/a.txt
```

-rw-r--r--	...	/etc/passwd	Regular File
drwxr-xr-x	...	/	Directory File
lrwxrwxrwx	...	termc-> ..	Symbolic Link
prw-rw----	...	mypipe	Named Pipe
srwxrwxrwx	...	/tmp/X0	Socket
crw-----	...	/dev/null	Character Device File
brw-rw----	...	/dev/sda	Block Device File

## chmod

```

drwxrwxr-x 4 young young 4096 Sep 29 11:20 .
drwxrwxr-x 7 young young 4096 Sep 12 15:20 ..
-rw-rw-r-- 2 young young 20 Sep 28 06:32 a.txt.hard.link
lrwxrwxrwx 1 young young 20 Sep 28 08:27 a.txt.soft.link -> d1/d1_1/d1_1_1/a.txt
drwxrwxr-x 3 young young 4096 Sep 28 06:28 d1
-rw-rw-r-- 1 young young 942 Sep 14 17:15 gcc.txt
-rw-rw-r-- 1 young young 594 Sep 12 15:34 gcc.txt~
drwxrwxr-x 3 young young 4096 Sep 13 10:39 one
lrwxrwxrwx 1 young young 15 Sep 28 06:32 softln -> d1/d1_1/d1_1_1/
-rw-r--r-- 1 young young 24806 Sep 28 06:40 SysP.1.A.File.20120928.odp
-rw-rw---- 1 young young 86 Sep 13 09:33 t.c
-rwxrwxr-x 1 young young 8373 Sep 13 09:40 t.exe
-rw-rw-r-- 1 young young 1496 Sep 13 09:39 t.o
-rw-rw-r-- 1 young young 323 Sep 13 09:30 tt.c
lrwxrwxrwx 1 young young 47 Sep 13 10:44 two-2 ->
/home/young/Documents/Work/Work.SysProg/one/two

```

chmod

chown

chgrp

# Softlink

---

```
lrwxrwxrwx 1 young young    20 Sep 28 08:27 a.txt.soft.link -> d1/d1_1/d1_1_1/a.txt
lrwxrwxrwx 1 young young    15 Sep 28 06:32 softln -> d1/d1_1/d1_1_1/
lrwxrwxrwx 1 young young    47 Sep 13 10:44 two-2 ->
/home/young/Documents/Work/Work.SysProg/one/two
```

# Hardlink

---

```
-rw-rw-r-- 2 young young    20 Sep 28 06:32 a.txt.hard.link
lrwxrwxrwx 1 young young    20 Sep 28 08:27 a.txt.soft.link -> d1/d1_1/d1_1_1/a.txt
```

# User

---

```
useradd -d  
useradd -m mat
```

```
useradd -u 1000 -g 2000 mat  
useradd -g grp1, grp2 mat
```

```
userdel mat  
userdel -r mat
```

```
passwd mat
```

```
groups mat  
groupadd grp3  
groupadd -g 1701 grp3  
so groupadd
```

```
groupmod -g 491 grp3  
groupmod -n grp4 grp3
```

```
groupdel grp3
```



# SetUID Example

```
young/SysP$ vi fprn.c
young/SysP$ gcc fprn.c -o fprn
young/SysP$ chmod 4755 fprn
young/SysP$ ls -l fprn
```

```
mat$ /home/young/SysP/fprn
```

```
young/SysP$ chmod 755 fprn
young/SysP$ ls -l fprn
```

```
mat$ /home/young/SysP/fprn
```

```
#include <stdio.h>

void main()
{
    FILE *fp;

    // fp = fopen("/home/young/SysP/fprn.out", "w");
    fp = fopen("fprn.out", "w");

    if (fp != NULL) {
        printf("Hello, world!\n");
        fprintf(fp, "Hello, world!\n");
        fclose(fp);
    }
    else {
        error("Cannot open /home/young/SysP/fprn.out \n");
    }
}
```

# Sticky Bit

```
young/SysP$ sudo useradd -m bob
young/SysP$ sudo useradd -m mat
young/SysP$ sudo addgroup sysp
young/SysP$ cat /etc/group
young/SysP$ id
young/SysP$ sudo usermod -g (gid of sysp) bob
young/SysP$ sudo usermod -g (gid of sysp) mat
young/SysP$ sudo cd /home/mat
young/SysP$ sudo mkdir SharedDir
young/SysP$ sudo chmod 1775 SharedDir

young/SysP$ sudo chown root:sysp SharedDir
```

```
bob$ cd /home/mat/SharedDir
bob$ vi bob.file
bob$ ls -al .
```

```
bob$ rm mat.file
```

```
mat$ cd SharedDir
mat$ vi mat.file
mat$ ls -al .
```

```
mat$ rm bob.file
```

# Reference

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## References

- [1] <http://en.wikipedia.org/>
- [2] S.S. Park, Linux Practical Command Bible (in Korean)
- [3] S.S. Park, Linux Server Practical Administration Bible (in Korean)