



Tutorial: File Permissions

1 Background

For the background information you need to answer these questions, please refer to Module 5, *Basic Filesystems*, in the *Linux Training* workshop notes.

2 Questions

1. A system administrator lists information about files in the current directory:

```
$ ls -l
-rw-rw-rw-  1 jimmy   students    5185 Feb 17 08:18 file1.txt
-rw-rw-r--  1 jenny   staff       5191 Oct  7 17:21 file2.txt
-rw-r--r--  1 jasmine  jasmine    2785 Oct 15 11:58 file3.txt
-rw-r----- 1 jacob   students   25920 Oct 15 11:58 file4.txt
-rw-----  1 julian  staff      13465 Oct 15 11:58 file5.txt
-r-----  1 jacky   students    736 Oct 15 11:58 file6.txt
-----  1 jill    students  179665 Oct 15 11:58 file7.txt
----r----- 1 juliet  students   13840 Feb 17 08:18 file8.txt
-----r--  1 jeremy  students    8418 Oct 12  2001 file9.txt
```

For each file, say which user(s) has(have):

- (a) read access?
 - (b) write access?
 - (c) no access?
2. For each of the permissions (i.e., the first column only) in question 1, write a umask value that will result in all files created by the user having the default permission shown.
 3. For each of the permissions in question 1, write a `chmod` command to change the permission using a:
 - (a) numeric mode,
 - (b) symbolic mode.

Your answer should work regardless of the permissions that existed previously.

Questions are continued on the next page...

4. A directory has the following permissions:

```
$ ls -ld directory
drwxrwxr-x    1 jimmy    students    376 Feb 17 08:18 file1.txt
```

The following users are members of the following groups:

user	primary group	secondary groups
jimmy	jimmy	project year2 csa
nicku	nicku	staff laboratory
andy	andy	students year2 csa
jenny	jenny	students year3 csa

For each of the four users,

- (a) Can he/she create a file in the directory?
 - (b) If the user can create a file,
 - i. who is the owner of the file?
 - ii. which group owns the file?
 - iii. If the `umask` is 002, what are the file permissions on a file created in that directory?
 - iv. Which of the other users above can:
 - A. read the file?
 - B. write to the file?
 - C. delete the file?
5. Now the SGID (set group ID) permission is added to the directory shown in question 4.
- (a) Write a command to add this permission, leaving other permissions unchanged.
 - (b) Write the permissions on the directory as they would be shown as the first field of the output of `ls -ld directory`
 - (c) Answer the questions from question 4 for each user again, but write “unchanged” where the result is the same, but where the result is different, explain how.
6. Now the *restricted deletion flag* (or “sticky bit”) permission is added to the directory shown in question 4, *as well as* the SGID permission.
- (a) Write a command to add this permission, leaving other permissions unchanged.
 - (b) Write the permissions on the directory as they would be shown as the first field of the output of `ls -ld directory`
 - (c) Answer the questions from question 4 for each user again, but write “unchanged” where the result is the same, but where the result is different, explain how.