File permissions in Linux

Project description

Using shell commands to change file and directory permissions

Check file and directory details

```
researcher2@ab50eeafaa02:~$ cd projects
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-rw--w---- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ []
```

Describe the permissions string

Permission are displayed as a 10-character string that denotes whether the file is a standard file or a directory, as well as whether the user, group and other are permitted to read, write and/or execute. The string takes the format drwxrwxrwx, with the three rwx groups d denoting 'directory' or dash for file, and r denoting 'read', w denoting 'write' x denoting 'execute' and dash for none for each of the three user types. Dashes in the permissions string indicate none.

Change file permissions

```
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-rw--w---- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ chmod o-w project_k.txt
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-rw--w---- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-r--r-- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ 
```

Change file permissions on a hidden file

```
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-rw--w---- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ chmod u-w,g-w .project_x.txt
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-r-------- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-r--r-- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r--r-- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-r--r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ 
```

Change directory permissions

```
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-r-------- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ chmod g-x drafts
researcher2@ab50eeafaa02:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 10:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 21 11:46 ..
-r-------- 1 researcher2 research_team   46 Sep 21 10:53 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Sep 21 10:53 drafts
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 21 10:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 21 10:53 project_t.txt
researcher2@ab50eeafaa02:~/projects$ []
```

Summary

Changing file and directory permissions is an important step in enforcing the principle of least privileges.