

File permissions in Linux

Project description

Using the `ls -l` command allows me to check permissions for files and directories; `ls -la` allows me to check permissions for hidden content along with normal files and directories. Using the `chmod` command allows me to change permissions as needed for users, groups, and others in files and directories.

Check file and directory details

Steps taken to file and directory details:

1. `cd projects`
2. `ls -l`

```
researcher2@04706f356396:~$ cd projects
researcher2@04706f356396:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r--  1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r--  1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/projects$
```

Describe the permissions string

For the first permissions string for the `drafts` directory, the letters and hyphens detail the exact permissions users/groups have. “D” indicates the permissions apply to a directory. If it were “-” it would be for a file. Characters 2-4 indicate the permissions for the User. User has **r**ead, **w**rite and **e**xecutable permissions. Characters 5-7 indicate permissions for the Group, `research_team`. Group has only executable permissions for the directory. Finally, characters 8-10 are for the other permissions. The other permissions all have “-”, meaning Other has no permissions for the `drafts` directory.

Change file permissions

Steps taken to change file permissions:

```
ls -l
```

```
chmod o-w project_k.txt
```

ls -l (to ensure changes were properly made)

```
researcher2@04706f356396:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/projects$ chmod o-w project_k.txt
researcher2@04706f356396:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/projects$
```

Change file permissions on a hidden file

Steps taken to change hidden file permissions::

```
ls -la
```

```
chmod u-w,g=r .project_x.txt
```

ls -la (to ensure changes were made properly)

```

researcher2@04706f356396:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 18 18:22 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 18 18:36 ..
-rw--w---- 1 researcher2 research_team  46 Jun 18 18:22 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/pr
researcher2@04706f356396:~/projects$ chmod u-w,g=r .project_x.txt
researcher2@04706f356396:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 18 18:22 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 18 18:36 ..
-r--r----- 1 researcher2 research_team  46 Jun 18 18:22 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/projects$ █

```

Change directory permissions

Steps taken to change directory permissions:

```
ls -l
```

```
chmod g-x drafts
```

```
ls -l (to ensure changes went through properly)
```

```

researcher2@04706f356396:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/projects$ chmod g-x drafts
researcher2@04706f356396:~/projects$ ls -l
total 20
drwx----- 2 researcher2 research_team 4096 Jun 18 18:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jun 18 18:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jun 18 18:22 project_t.txt
researcher2@04706f356396:~/projects$

```

Summary

For the first step, I used `cd` and `ls -l` to see the output of permissions for files and directories under the `projects` directory. For the second step, I changed the permissions based on a scenario of removing any write permissions for all files and directories for Other. Only `project_k.txt` needed mode modifications. For the third step, I changed permission based on a scenario where only the User and Group need read permissions only for a hidden file, `.project_x.txt`. In the last step I changed permissions based on a scenario that only the User should have executable permissions to the `drafts` directory.