File permissions in Linux

Project description

Linux commands are used to ensure users are authorized with the appropriate permissions. I can also check for which Users, Groups, or Other have read, write, or execute permissions in a directory. Linux can also be used to check for hidden files in a directory. The following screenshots are from a Lab activity that I completed which shows the corresponding Linux commands needed to complete the lab.

Check file and directory details

The following command was used to open the projects directory: cd projects
The ls -l command displays the directory details and what files it contains


```
researcher2@1dcc07cde178:~$ cd projects

researcher2@1dcc07cde178:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  5 22:16 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr  5 22:16 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 22:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_t.txt
```

Describe the permissions string

The 10 character permission string is used to show whether the users, group, or Other have authorization to read, write, and execute permissions. The 1st character is for the directory file type. 2nd-4th characters give the r/w/e permissions for USER, 5th-7th characters give the r/w/e permissions for GROUP, and characters 8th-10th show give the r/w/e permissions to OTHER.

Change file permissions

The highlighted portion in the first screenshot from the Lab I completed highlights the file that has write permissions for the owner type of Other. In the second screenshot, I change the permissions of file *project_k.txt* so that the owner type of Other does not have write permissions anymore inputting the following command: chmod o-w project_k.txt


```
researcher2@1dcc07cde178:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:39 ..
-rw--w---- 1 researcher2 research_team   46 Apr  5 22:16 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr  5 22:16 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr  5 22:16 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 22:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_t.txt
researcher2@1dcc07cde178:~/projects$
```



```
researcher2@1dcc07cde178:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:39 ..
-rw--w---- 1 researcher2 research_team   46 Apr  5 22:16 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr  5 22:16 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr  5 22:16 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 22:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_t.txt
researcher2@1dcc07cde178:~/projects$ chmod o-w project_k.txt
researcher2@1dcc07cde178:~/projects$
```

I was then instructed to change the file permissions on *project_m.txt* so that the Group does not have read or write permissions.

```
drwx--x--- 2 researcher2 research_team 4096 Apr  5 22:16 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 22:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_t.txt
researcher2@1dcc07cde178:~/projects$ 
```

To do this I input the following command: chmod g-r project_m.txt

```
-rw-r----- 1 researcher2 research_team   46 Apr  5 22:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_t.txt
researcher2@1dcc07cde178:~/projects$ chmod g-r project_m.txt
researcher2@1dcc07cde178:~/projects$
```

Change file permissions on a hidden file

The next instructions were to change the permissions on the hidden file, *project_x.txt* so that both the User and Group can read, but not write to the file. To do this, I input the following command: chmod u-w, g-w, g+r .project_x.txt

```
researcher2@1dcc07cde178:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:39 ..
-rw--w---- 1 researcher2 research_team   46 Apr  5 22:16 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr  5 22:16 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 22:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 22:16 project_t.txt
researcher2@1dcc07cde178:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@1dcc07cde178:~/projects$
```

Change directory permissions

In the next step, I was instructed to change the permissions of the */home/researcher2/projects/drafts* directory. Only researcher2 user should have access to the

drafts directory and its contents. It should only have execute permissions. To do this, I input the following command: chmod g-x drafts

```
researcher2@1dcc07cde178:~/projects$ ls -la /home/researcher2/projects/drafts
total 8
drwx--x--- 2 researcher2 research_team 4096 Apr  5 22:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 22:16 ..
researcher2@1dcc07cde178:~/projects$ chmod g-x drafts
researcher2@1dcc07cde178:~/projects$
```

Summary

```
researcher2@2664f470df73:~$ cd projects
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
researcher2@2664f470df73:~/projects$ cd projects
-bash: cd: projects: No such file or directory
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_t.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 20:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 21:50 ..
-r--r----- 1 researcher2 research_team   46 Apr  5 20:50 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_t.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ chmod o-w project_k.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_t.txt
researcher2@2664f470df73:~/projects$
```

```
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 20:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 21:50 ..
-r--r----- 1 researcher2 research_team   46 Apr  5 20:50 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_t.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ chmod o-w project_k.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_t.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ chmod g-r project_m.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 20:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 21:50 ..
-r--r----- 1 researcher2 research_team   46 Apr  5 20:50 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Apr  5 20:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 20:50 project_t.txt
researcher2@2664f470df73:~/projects$
researcher2@2664f470df73:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@2664f470df73:~/projects$ ls -la /home/researcher2/projects/drafts
total 8
drwx------ 2 researcher2 research_team 4096 Apr  5 20:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 20:50 ..
researcher2@2664f470df73:~/projects$ chmod g-x drafts
researcher2@2664f470df73:~/projects$
```