

File permissions in Linux

Project description

The research team at my organization needs to update the file permissions for certain files and directories within the projects directory. The permissions do not currently reflect the level of authorization that should be given. Checking and updating these permissions will help keep their system secure. To complete this task, I performed the following tasks:

Check file and directory details

```
researcher2@daafd7023b32:~$ pwd
/home/researcher2
researcher2@daafd7023b32:~$ ls
projects
researcher2@daafd7023b32:~$ cd projects
researcher2@daafd7023b32:~/projects$ ls
drafts project_k.txt project_m.txt project_r.txt project_t.txt
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-rw--w---- 1 researcher2 research_team  46 Dec 16 10:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$
```

You may use the `ls -la` command to display all files including hidden and permissions

Describe the permissions string

Looking at file `project_k.txt` we can see the permission string displayed as `'-rw-rw-rw-'`. The format of a permission string is `"drwxrwxrwx"`. The initial `'-'` represents that this is the current directory. The first instance of `'rw-'` shows the permissions for the User which has read and write permissions but not execute due to their being a `'-'` instead of an `'x'`. This is the same for all different types of owners including group and other. In conclusion, all types of owners only have read and write permissions for this file.

Change file permissions

The organization doesn't allow others to have write access to this file hence we need to change it's permissions

```
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-rw--w---- 1 researcher2 research_team 46 Dec 16 10:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw-rw- 1 researcher2 research_team 46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team 46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$ chmod o-r project_k.txt
researcher2@daafd7023b32:~/projects$ -ls -la
-bash: -ls: command not found
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-rw--w---- 1 researcher2 research_team 46 Dec 16 10:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw--w- 1 researcher2 research_team 46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team 46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$
```

We use the command `chmod o-r project_k.txt` to remove others permission

Change file permissions on a hidden file

The hidden file `.project_x.txt` should have only read for users and groups

```
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-rw--w---- 1 researcher2 research_team 46 Dec 16 10:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw-rw- 1 researcher2 research_team 46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team 46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-r--r----- 1 researcher2 research_team 46 Dec 16 10:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw-rw- 1 researcher2 research_team 46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team 46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$
```

Change directory permissions

In this task we change the directory permissions for only allowing users from researcher to access the drafts folder. The command `chmod g-x drafts` was used.

```
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-r--r----- 1 researcher2 research_team  46 Dec 16 10:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw--w- 1 researcher2 research_team  46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$ chmod g-x drafts
researcher2@daafd7023b32:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 10:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 16 11:24 ..
-r--r----- 1 researcher2 research_team  46 Dec 16 10:58 .project_x.txt
drwx----- 2 researcher2 research_team 4096 Dec 16 10:58 drafts
-rw-rw--w- 1 researcher2 research_team  46 Dec 16 10:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Dec 16 10:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 16 10:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 16 10:58 project_t.txt
researcher2@daafd7023b32:~/projects$
```

Summary

I changed multiple permissions to match the level of authorization my organization wanted for files and directories in the projects directory. The first step in this was using `ls -la` to check the permissions for the directory. This informed my decisions in the following steps. I then used the `chmod` command multiple times to change the permissions on files and directories.