

File permissions in Linux

Project description

The organization needs me to review permissions of the files and subdirectories within the `projects` directory. Some of the current permissions do not match the authorization that they should be given. To update this, I completed the following tasks:

Check file and directory details

To check for permissions of all files and subdirectories, including hidden files, I used the `ls -la` command, as highlighted in the screenshot below.

```
researcher2@368a3dbad905:~$ pwd
/home/researcher2
researcher2@368a3dbad905:~$ ls
projects
researcher2@368a3dbad905:~$ cd projects/
researcher2@368a3dbad905:~/projects$ ls -la
```

Describe the permissions string

The following screenshot displays the output of the command I input, showing all current permissions set for each specific file and subdirectory on the 10-character string on the first column.

```
researcher2@368a3dbad905:~$ pwd
/home/researcher2
researcher2@368a3dbad905:~$ ls
projects
researcher2@368a3dbad905:~$ cd projects/
researcher2@368a3dbad905:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:12 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:40 ..
-rw--w---- 1 researcher2 research_team  46 Nov 21 05:12 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Nov 21 05:12 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Nov 21 05:12 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Nov 21 05:12 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_t.txt
```

The 10-character string is the way to represent permissions on files and directories individually for the user, group, and other.

- **1st character:** denotes whether this is a file with a hyphen (-), or a directory with a `d`

- **2nd - 4th characters:** denotes permission to read (r), write (w), and execute (x), for the user. If a permission is denied, the corresponding character will be instead replaced with a hyphen (-)
- **5th - 7th characters:** denotes permission to read (r), write (w), and execute (x), for the group. If a permission is denied, the corresponding character will be instead replaced with a hyphen (-)
- **8th - 10th characters:** denotes permission to read (r), write (w), and execute (x), for other. If a permission is denied, the corresponding character will be instead replaced with a hyphen (-)

Change file permissions

The company does not want other to have write permission on any of these files, but they did have write permission granted for the file `project_k.txt`, so I used the command `chmod o-w project_k.txt` to revoke write access, as shown in the screenshot below.

```
researcher2@368a3dbad905:~$ pwd
/home/researcher2
researcher2@368a3dbad905:~$ ls
projects
researcher2@368a3dbad905:~$ cd projects/
researcher2@368a3dbad905:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:12 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:40 ..
-rw--w---- 1 researcher2 research_team  46 Nov 21 05:12 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Nov 21 05:12 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Nov 21 05:12 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Nov 21 05:12 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_t.txt
researcher2@368a3dbad905:~/projects$ chmod o-w project_k.txt
```

Change file permissions on a hidden file

The organization has one file currently archived, `.project_x.txt`, and they don't want anybody with write access to it, but they want user and group to have read access. I updated this with the command `chmod u-w,g-w+r .project_x.txt`.

```
researcher2@368a3dbad905:~$ pwd
/home/researcher2
researcher2@368a3dbad905:~$ ls
projects
researcher2@368a3dbad905:~$ cd projects/
researcher2@368a3dbad905:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:12 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:40 ..
-rw--w---- 1 researcher2 research_team  46 Nov 21 05:12 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Nov 21 05:12 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Nov 21 05:12 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Nov 21 05:12 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_t.txt
researcher2@368a3dbad905:~/projects$ chmod o-w project_k.txt
researcher2@368a3dbad905:~/projects$ chmod u-w,g-w+r .project_x.txt
```

Change directory permissions

Finally, the organization only wants the user `researcher2` to have access to the `drafts` directory, so I removed execute access to group with the `chmod g-x drafts/` command as shown in the following screenshot.

```
researcher2@368a3dbad905:~$ pwd
/home/researcher2
researcher2@368a3dbad905:~$ ls
projects
researcher2@368a3dbad905:~$ cd projects/
researcher2@368a3dbad905:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:12 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 21 05:40 ..
-rw--w---- 1 researcher2 research_team  46 Nov 21 05:12 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Nov 21 05:12 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Nov 21 05:12 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Nov 21 05:12 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Nov 21 05:12 project_t.txt
researcher2@368a3dbad905:~/projects$ chmod o-w project_k.txt
researcher2@368a3dbad905:~/projects$ chmod u-w,g-w+r .project_x.txt
researcher2@368a3dbad905:~/projects$ chmod g-x drafts/
```

Summary

I updated several permissions to match the requested level of access by the company in the `projects` directory. I used the command `ls -la` to display all files and directories, including hidden ones, and then used the `chmod` command to update the necessary permissions on the pertinent files and directories.