File permissions in Linux

Project description

Change the permissions of the projects directory and the files it contains. The permissions aren't up to date for what the company wants, so change the authorization/permissions for those files in the project directory.

Check file and directory details

To check the files that the directory held I used the command ls -la. The -l displays the permission to files and directories while the a displays the hidden files.

```
researcher2@e76cefa6493a:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 19:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 20:00 ..
-rw--w---- 1 researcher2 research_team   46 Oct  4 19:16 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  4 19:16 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct  4 19:16 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  4 19:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_t.txt
```

As shown, there is 1 hidden file called .project_x.txt and a directory called drafts, with 5 other project files that aren't hidden.

Describe the permissions string

Drwrxrwxrwx -> is what a full permission string would look like
Hypen instead if it's a regular file instead of a directory
Hyphen instead of letter if permissions are missing for files

- D -> Directory, 1st character, - for file
- Rwx -> permissions for user, 2nd-4th character.
- Next rwx(5-7) is for the next owners, the group. Rwx -> permissions for group
- Last rwx(8-10) is for other last owner, other. Rwx -> permissions for other

For example, -rw-rw-rw- 1 researcher2 research_team   46 Oct 4 19:16 project_k.txt. Since the first character is a hyphen then it must not be a directory but a file, and since there are only read/write(r/w) permissions for user, group, and other those are the only permissions that can be utilized for this file.

Change file permissions

The company wants some permissions to be removed or added. These are the ones that were changed. For changing permissions we use the Linux command known as chmod, stands for change mode.
First file change is to project_k.txt, the company wants to get rid write permissions for other in the projects directory. The command used to change the permission was chmod o-w project_k.txt. The first argument, o-w meaning o(other) - (remove) w(write), saying to remove write permission from other user. And the last argument project_k.txt is the file that you want to change permissions. Also chmod was used (chmod g-r project_m.txt) to change permissions of the project_m.txt file so that the group doesn't have read or write permissions.

```
researcher2@e76cefa6493a:~/projects$ chmod o-w project_k.txt
researcher2@e76cefa6493a:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 19:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 20:00 ..
-rw--w---- 1 researcher2 research_team   46 Oct  4 19:16 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  4 19:16 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_k.txt
-rw------ 1 researcher2 research_team   46 Oct  4 19:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_t.txt
```

Change file permissions on a hidden file

Determined if a hidden file has incorrect permissions and then change the permissions as needed. This action will further remove unauthorized access and strengthen security on the system. There's only 1 file that is hidden and that is the .project_x.txt file. We use the command ls -a to display also the hidden files. The ones who have incorrect permissions here is the user and the group, they must be changed so they can't write in the file. Both user and group should only be able to read the file. To accomplish that the permissions commands changed were u-w, g-w, these removed the writing permissions from both users and added g+r which let the other user be able to read the file.

```
researcher2@e76cefa6493a:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@e76cefa6493a:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 19:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 20:00 ..
```

```
-r--r----- 1 researcher2 research_team   46 Oct  4 19:16 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  4 19:16 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  4 19:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_t.txt
```

Change directory permissions

Only the researcher2 user should be allowed to access the drafts directory and its contents. Need to also remove the execute permission for the group from the drafts directory.Checked the group permissions of the /home/researcher2/projects/drafts directory and then we modified the permissions as required. We used ls to check the contents of the projects to make sure the drafts directory was there. After we used the command chmod g-x drafts to remove the execute permission for group in the drafts directory.

```
researcher2@e76cefa6493a:~/projects$ ls
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@e76cefa6493a:~/projects$ chmod g-x drafts
researcher2@e76cefa6493a:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 19:16 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  4 20:00 ..
-r--r----- 1 researcher2 research_team   46 Oct  4 19:16 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Oct  4 19:16 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  4 19:16 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  4 19:16 project_t.txt
```

Summary

I changed multiple permissions as asked by the company, ranging from permissions of directories, files, and hidden files. Removed some permissions and added other permissions to their appropriate destination. Used the chmod Linux command to accomplish this objective.