File permissions in Linux

Project description

In this project, I had to use Linux in order to complete certain tasks pertaining to permissions in the projects directory. I had to use different commands to check files and directory details as well as change and set permissions in each file and directory.

Check file and directory details

- Below is a screenshot of the command I used to check permissions on all files including the ones that are hidden. (ls -la)
- The output displayed the permissions for users, groups, and others for each file and directory.

← Activity: Manage authorization

```
researcher2@cecd246b5706:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:27 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:44 ..
-rw--w---- 1 researcher2 research_team   46 Aug  3 04:27 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug  3 04:27 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug  3 04:27 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug  3 04:27 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_t.txt
researcher2@cecd246b5706:~/projects$
```

Describe the permissions string

Below is a screenshot of the permissions for the first directory in the projects directory. The permissions are as follows:

- The first character, “d”, is showing that the file type is a directory. The next three characters, “rwx”, are showing that the Users have read, write, and executable permissions. The next three characters, “r-x”, are showing the permissions of a Group in which they only have read and executable permissions. The last three characters, “r-x”, are showing the permissions for Others in which they only have read and executable permissions as well.

```
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:27
```

Change file permissions

The organization does not allow others to have write access to any files. To remove others' write permission, I first identified the file they have write permissions for which is project_k.txt. I then used the following command which can be seen in the screenshot below:
chmod o-w project_k.txt

This command removed the write permissions from others in the project_k.txt file.

```
researcher2@cecd246b5706:~/projects$ chmod o-w project_k.txt
researcher2@cecd246b5706:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:27 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:44 ..
-rw--w---- 1 researcher2 research_team   46 Aug  3 04:27 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug  3 04:27 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug  3 04:27 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_t.txt
researcher2@cecd246b5706:~/projects$
```

Change file permissions on a hidden file

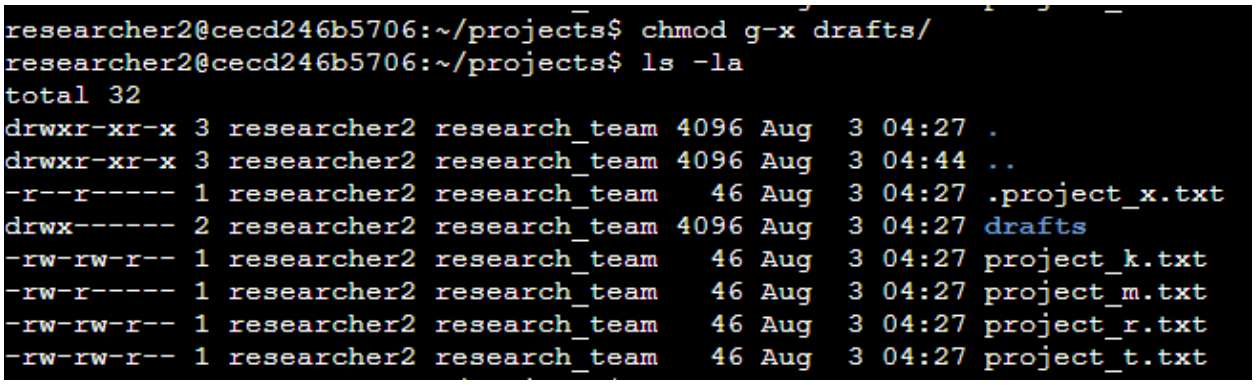
The research team has archived .project_x.txt, which is why it's a hidden file. This file should not have write permissions for anyone, but the user and group should be able to read the file. To change the file permissions I used the following command which can be see in the screenshot below: chmod u=r,g=r .project_x.txt

As you can see in the screenshot, the permissions were overridden for the users and group to only have read permissions.

```
researcher2@cecd246b5706:~/projects$ chmod u=r,g=r .project_x.txt
researcher2@cecd246b5706:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:27 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug  3 04:44 ..
-r--r----- 1 researcher2 research_team   46 Aug  3 04:27 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug  3 04:27 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug  3 04:27 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug  3 04:27 project_t.txt
```

Change directory permissions

The files and directories in the projects directory belong to the researcher2 user. Only researcher2 should be allowed to access the drafts directory and its contents. It shows that the group has access to the drafts directory as well with having the executable permission. To change the permission, I used the following command which is seen in the screenshot below:
chmod g-x drafts/



Summary

By using the command line, I was able to examine existing permissions on the file system. I was able to determine if the permissions match the authorization that should be given. For the permissions that did not match, I used certain commands to modify the permissions to authorize the appropriate users and remove any unauthorized access. I was able to keep the file system secured.