File permissions in Linux

Project description

In this project, I practiced how to change permissions for file and directory using command `[chmod]`, and how to show hidden file and check its permission using `[ls -la].`

Check file and directory details

check the permissions set for files and subdirectories in the `projects` directory

```
researcher2@88743e892625:~$ pwd
/home/researcher2
researcher2@88743e892625:~$ ls
projects
researcher2@88743e892625:~$ cd projects/
researcher2@88743e892625:~/projects$ ls
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@88743e892625:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Feb 28 04:50 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb 28 04:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_t.txt
researcher2@88743e892625:~/projects$
```

I used the `ls-la` to display file contents including hidden files. The output of my command indicates that there is one directory named `drafts`, one hidden file `.project_x.txt`, and five other files. The 10-character string in the first column represents the current permissions on each file and directory.

Describe the permissions string

`-rw-rw-rw- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt`

The 10-character string indicates that for the file project_k.txt. The user, group and other all have read and write permissions, but they don't have execute permission.

Change file permissions

Since the organization does not allow other to have write access to any files. Based on the permissions established in Step 3, identify which file needs to have its permissions modified.

project_k.txt needs to have its permissions modified since other has write permission but organization does not allow that.
Using command `[chmod o-w project_k.txt]` could accomplish what we want.

```
researcher2@88743e892625:~/projects$ chmod o-w project_k.txt
researcher2@88743e892625:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Feb 28 04:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb 28 04:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_t.txt
researcher2@88743e892625:~/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.

Use a Linux command to assign .project_x.txt the appropriate authorization:

Using `[ls -la]` check current file permissions for hidden files.
Using [`chmod u-w .project_x.txt], [chmod g-w .project_x.txt], [chmod g+r .project_x.txt]` to modify permissions to what we want.

```
researcher2@88743e892625:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 04:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 05:52 ..
-rw--w---- 1 researcher2 research_team   46 Feb 28 04:50 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Feb 28 04:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb 28 04:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_t.txt
researcher2@88743e892625:~/projects$ chmod u-w .project_x.txt
researcher2@88743e892625:~/projects$ chmod g-w .project_x.txt
researcher2@88743e892625:~/projects$ chmod g+r .project_x.txt
researcher2@88743e892625:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 04:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 05:52 ..
-r--r----- 1 researcher2 research_team   46 Feb 28 04:50 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Feb 28 04:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb 28 04:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 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. Use a Linux command to modify the permissions accordingly.
Using command `[ls -l]` to check current permissions and based on criteria mentioned, modify permission for directory draft using `[chmod g-x drafts/]`

```
researcher2@88743e892625:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 04:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 05:52 ..
-r--r----- 1 researcher2 research_team   46 Feb 28 04:50 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Feb 28 04:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb 28 04:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_t.txt
researcher2@88743e892625:~/projects$ chmod g-x drafts/
researcher2@88743e892625:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 04:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb 28 05:52 ..
-r--r----- 1 researcher2 research_team   46 Feb 28 04:50 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Feb 28 04:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb 28 04:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb 28 04:50 project_t.txt
```

Summary

As a security analyst, assigning the correct permissions to different users, groups, and others according to the level of authorization required by my organization is important. This practice helped me to understand and utilize `chmod` and `ls-la` command.