File permissions in Linux

Project description

This project demonstrates the effective use of Linux commands to update file permissions within the `projects` directory. By implementing proper file access controls, the project ensures the security of organizational data, contributing to a robust and protected data environment.

Check file and directory details

The following line of commands are use to check the directory and to enter the project directory

```
researcher2@a01bca703675:~$ ls
projects
researcher2@a01bca703675:~$ cd projects
researcher2@a01bca703675:~/projects$
```

The first line of command `ls` is used list the file and folders of the directory.
Next step `cd projects` is used to enter the project folder.

Describe the permissions string

The owner of the file is classified as user(u), group(g) and other(o).

```
researcher2@a01bca703675:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 22 09:35 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 22 09:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 22 09:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_t.txt
```

In the above snip the command `ls -l` is used display the access permission of each file and folder in that current directory. For an example the `project_k.txt` has the following permission `_rw_rw_rw_` the first character indicate the type if "_" means a file or if "d" means a folder .The next 3 character will indicate access the owner type of user (u) ,the next 3 will be for group(g) and the last 3 is for other(o).

In our case :

User(u)- can read and write
Group(g)- can read and write
Other(0)- can read and write

Change file permissions

The example taken in the above `project_k.txt` has access of write to other. In our case we don't want the access of other to write.

```
researcher2@a01bca703675:~/projects$ chmod o-w project_k.txt
researcher2@a01bca703675:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 22 09:35 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 22 09:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_t.txt
researcher2@a01bca703675:~/projects$
```

To update(remove access of write of other) `chmod o-w project_k.txt` command is used. In o-w "o" represent other and "w" represent access type write in order to remove the access of write "-" is used .In case of adding access "+" is used.

After changing the access to recheck `ls -l` is used to display the access.

Change file permissions on a hidden file

[Add content here.]

```
researcher2@a01bca703675:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 22 09:35 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 22 10:11 ..
-rw--w---- 1 researcher2 research_team   46 Jan 22 09:35 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 22 09:35 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 22 09:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 09:35 project_t.txt
researcher2@a01bca703675:~/projects$
```

To view the permission of hidden files `ls -la` command will be used .In the above `.project_x.txt` is the hidden file.

```
researcher2@1a208d583743:~/projects$ chmod u-w .project_x.txt
researcher2@1a208d583743:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 22 14:15 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 22 14:39 ..
-r---w---- 1 researcher2 research_team   46 Jan 22 14:15 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 22 14:15 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 22 14:15 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 22 14:15 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 14:15 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 14:15 project_t.txt
researcher2@1a208d583743:~/projects$
```

Changing the access permission of hidden file is similar to non-hidden file just we need include a dot”.” Before the file name

`chmod u-w .project_x.txt`

Change directory permissions

First, we will check the group permissions of the `/home/researcher2/projects/drafts` directory and then modify the permissions as required.

```
researcher2@1a208d583743:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 22 14:15 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 22 14:15 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 22 14:15 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 14:15 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 14:15 project_t.txt
researcher2@1a208d583743:~/projects$ chmod g-x drafts
researcher2@1a208d583743:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Jan 22 14:15 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 22 14:15 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 22 14:15 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 14:15 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 22 14:15 project_t.txt
researcher2@1a208d583743:~/projects$
```

In the above we remove the executable file access to draft `chmod g-x drafts`

Summary

I have changed the access permission of different owner according to the security need. In general the first step is to list the permission using `ls -l` ,then we can modify or update the access permission by using `chmod` command according to need.