

File permissions in Linux

Project description

In this lab, I was required to navigate through the Linux system using the Command-line interface i.e. terminal, and change multiple files and directory permissions.

Check file and directory details

```
researcher2@eea033a4f8d1:~$ pwd
/home/researcher2
```

I begin by printing my working directory using the `pwd` command, once I know where I am I then proceed to go to the desired directory which in this case was projects.

```
researcher2@eea033a4f8d1:~$ ls
projects
```

Then using the `ls` command I know what directories are in my current directory I find that “projects” is here so I `cd` in it.

Describe the permissions string

```
researcher2@eea033a4f8d1:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan  7 12:22 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Jan  7 12:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jan  7 12:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_t.txt
```

I then proceed to use `ls -l` the -l flag essentially presents all the data on the current files and directories.

The permissions consist of 10 characters separated into 1,3,3,3. Essentially this order has a meaning, Let's begin.

Firstly the first character which is either `d` or `-` in the case of a `d` means that the type is a directory, otherwise, if it's a `-` then it is a file.

Next up are the next 3 x 3 characters, essentially these are groups of permissions for different types of users, groups, and others.

The first 3 are the permissions of user which are `r` `w` `x` any one of them can be replaced with a `-` to mean that they don't have that permission. `r` is read access, `w` is write access, `x` is execute access. Apply the same for the next 6 characters.

Change file permissions

```
researcher2@eea033a4f8d1:~/projects$ chmod o-w project_k.txt
```

Next, I go ahead after locating the file “project_k.txt” which needs a change in permissions I use `chmod o-w project_k.txt` to change the permission `o-w` means remove the permission of write for others.

Change file permissions on a hidden file

```
researcher2@eea033a4f8d1:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan  7 12:22 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan  7 12:57 ..
-rw--w---- 1 researcher2 research_team  46 Jan  7 12:22 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan  7 12:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jan  7 12:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_t.txt
```

Next up I use the `ls -al` command to display all the details of hidden files as well which in this case is “.project_x.txt”. As you can see the file has been archived which means nobody should be able to write and only user and group can read so I use the following command:

```
researcher2@eea033a4f8d1:~/projects$ chmod u-w,g-w+r .project_x.txt
```

It doesn't return an error which indicates that it has been run successfully, I need to double check to make sure that no issues occurred and what is intended happened I run:

```
researcher2@eea033a4f8d1:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan  7 12:22 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan  7 12:57 ..
-r--r----- 1 researcher2 research_team  46 Jan  7 12:22 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan  7 12:22 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jan  7 12:22 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan  7 12:22 project_t.txt
```

All good now.

Change directory permissions

Lastly, we need to remove execute files for the drafts directory so only our user “researcher2” can go in, so I run the following command:

```
researcher2@eea033a4f8d1:~/projects$ chmod g-x drafts/
```

Voila, all good now with permissions.

Summary

We needed to adjust some permission for different files and directories, through the use of the Linux command line and multiple navigation and permission tools; ``cd`` ``chmod`` ``ls -al`` I was able to find the files and directories and change permissions to the right ones.