

File permissions in Linux

Project description

[Describe what you accomplish through Linux commands.]

Check file and directory details

The following displays the current permissions set for this specific directory

```
researcher2@603b9a234982:~/projects$ pwd
/home/researcher2/projects
researcher2@603b9a234982:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 25 06:59 .
drwxr-xr-x 3 researcher2 research_team 4096 May 25 07:10 ..
-rw--w---- 1 researcher2 research_team  46 May 25 06:59 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 25 06:59 drafts
-rw-rw-rw- 1 researcher2 research_team  46 May 25 06:59 project_k.txt
-rw-r----- 1 researcher2 research_team  46 May 25 06:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 May 25 06:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 May 25 06:59 project_t.txt
researcher2@603b9a234982:~/projects$
```

The first line in the screenshot states `pwd` (Print Working Directory) this prints the current directory in which we are currently working. It's immediately followed by `ls -la` which contains all content within the directory including hidden files. There is crucial information provided by this command including permissions based on user, groups and other users. What is discovered in this directory is a folder `drafts` and a hidden file `.project_x.txt`

Describe the permissions string

The 10-character string can be used to determine permission status. The characters and what they represent are as follows:

- 1st character: This character is either a `d` or hyphen (`-`) and indicates the file type. If it's a `d`, it's a directory. If it's a hyphen (`-`), it's a regular file.
- 2nd-4th characters: These characters indicate the read (`r`), write (`w`), and execute (`x`) permissions for the user. When one of these characters is a hyphen (`-`) instead, it indicates that this permission is not granted to the user.
- 5th-7th characters: These characters indicate the read (`r`), write (`w`), and execute (`x`)

permissions for the group. When one of these characters is a hyphen (-) instead, it indicates that this permission is not granted for the group.

- 8th-10th characters: These characters indicate the read (r), write (w), and execute (x)

Change file permissions

The organization has decided to remove read and write permissions for all groups on `project_m.txt`

```
researcher2@32887b51924d:~/projects$ chmod g-rw project_m.txt
researcher2@32887b51924d:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 25 15:21 .
drwxr-xr-x 3 researcher2 research_team 4096 May 25 15:45 ..
-rw--w---- 1 researcher2 research_team  46 May 25 15:21 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 25 15:21 drafts
-rw-rw-rw- 1 researcher2 research_team  46 May 25 15:21 project_k.txt
-rw----- 1 researcher2 research_team  46 May 25 15:21 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 May 25 15:21 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 May 25 15:21 project_t.txt
researcher2@32887b51924d:~/projects$
```

As shown in the first line `chmod g-rw project_m.txt` changes the permissions of the group read and write capabilities. `chmod` allows for the change of files and directories. After my change I ran `ls -la` to verify my change is correct

Change file permissions on a hidden file

The organization has decided to have the hidden file `.project_x.txt` to have read only access and no modification allowed by users or groups. See image below to see how those changes occurred.

```
researcher2@32887b51924d:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@32887b51924d:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 25 15:21 .
drwxr-xr-x 3 researcher2 research_team 4096 May 25 15:45 ..
-r--r----- 1 researcher2 research_team  46 May 25 15:21 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 25 15:21 drafts
-rw-rw-rw- 1 researcher2 research_team  46 May 25 15:21 project_k.txt
-rw----- 1 researcher2 research_team  46 May 25 15:21 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 May 25 15:21 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 May 25 15:21 project_t.txt
researcher2@32887b51924d:~/projects$
```

I determined `.project_x.txt` was a hidden file due to the `.` found before the filename. In the first line `chmod` is ran to make changes followed by the changes to permissions. `u-w` changes user

permission to remove ability to write to file. `g-w` removes group permission for writing to file. `g+r` adds group read permission to file.

Change directory permissions

The organization has decided to change directory permissions. See image below

```
researcher2@5d738f0f927b:~/projects$ chmod g-x drafts
researcher2@5d738f0f927b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec  2 15:27 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec  2 15:27 ..
-r--r----- 1 researcher2 research_team  46 Dec  2 15:27 .project_x.txt
drwx----- 2 researcher2 research_team 4096 Dec  2 15:27 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Dec  2 15:27 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Dec  2 15:27 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec  2 15:27 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Dec  2 15:27 project_t.txt
researcher2@5d738f0f927b:~/projects$
```

The organization wanted to specifically adjust group permission on executing the drafts directory. The change `g-x` removes the executing ability from the group leaving only the user the ability to execute.

Summary

To summarize, I have made many permissions changes to the project directory using the `chmod` command to make changes to permission and verifying using `ls -la`.