

File permissions in Linux

Project description

The research team at my organization must update the file permission for specific files and directories within the project's directory, as the current settings do not align with the required authorization levels. Reviewing and adjusting these permissions will enhance systems security. To accomplish this, I carried out the following tasks:

displays the file structure of the `/home/researcher2/projects` directory and the permissions of the files and subdirectory it contains.

Check file and directory details

```
researcher2@60d8ca417542:~/projects$ pwd
/home/researcher2/projects
researcher2@60d8ca417542:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 14:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 15:24 ..
-rw--w---- 1 researcher2 research_team  46 Mar  4 14:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar  4 14:58 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Mar  4 14:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Mar  4 14:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_t.txt
researcher2@60d8ca417542:~/projects$
```

`pwd`: is presenting the current directory I am in which is the projects directory.

The `ls` command as well as the `-la` presents the files/hidden files within the directory. There is one directory within the projects that is labeled "`drafts`", one hidden file named `.project_x.txt` which is indicated with a period in front of the name of the `.txt` file. There are also 5 other project files. The 10-Char string in the first column represents the permissions set of each file/directory.

Describe the permissions string

The 10-Character string determines who has access to the particular file within the directory.

1st char: either a `d` or a hyphen (`-`) will be present indicating the file type. `d` is for directory and hyphen (`-`) is for a regular file.

2nd-4th char: Indicates the permission for the owner/user. **r** represents read, **w** represents write, and **x** represents execute. Missing letter which is represented by a **-** indicates that the user is not granted that permission.

5th-7th char: Indicates the same representation but only for the group type.

8th-10th char: Indicates the same representation but only for the other type (consist of all other users on the system).

Change file permissions

The Organization has determined that “**other**” should not have write access to any of their files. To comply, we change the file permissions. From the initial overview in the Projects directory the only file that needs this change is `project_k.txt` since the 8th-10th character shows that “**other**” has write permissions.

```
researcher2@60d8ca417542:~/projects$ chmod o-w project_k.txt
researcher2@60d8ca417542:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 14:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 15:24 ..
-rw--w--- 1 researcher2 research_team  46 Mar  4 14:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar  4 14:58 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Mar  4 14:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_t.txt
researcher2@60d8ca417542:~/projects$
```

First line: `chmod o-w project_k.txt` has changed the **other** permission to remove the write permission. `chmod` command changes the permissions on files and directories. After I displayed the change using the command `ls -la`.

Change file permissions on a hidden file

Research team has archived `.project_x.txt` and does not want anyone to have write access to this project. The user and group should have read access only.

```
researcher2@60d8ca417542:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@60d8ca417542:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 14:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 15:24 ..
-r--r----- 1 researcher2 research_team  46 Mar  4 14:58 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar  4 14:58 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Mar  4 14:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_t.txt
researcher2@60d8ca417542:~/projects$
```

Removed write permission from the user and group. Added read permissions to the group.

Command `u-w` removed the write perms from the user.

Command `g-w` removed the write perms from the group.

Command `g+r` added read perms to the group.

Change directory permissions

My organization only wants the researcher2 directory user to have access to the drafts directory and its contents. No one other than `researcher2` should have execute perms.

```
researcher2@60d8ca417542:~/projects$ chmod g-x drafts
researcher2@60d8ca417542:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 14:58 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar  4 15:24 ..
-r--r----- 1 researcher2 research_team  46 Mar  4 14:58 .project_x.txt
drwx----- 2 researcher2 research_team 4096 Mar  4 14:58 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Mar  4 14:58 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Mar  4 14:58 project_t.txt
researcher2@60d8ca417542:~/projects$
```

Command `g-x` removed the execute perms from the group. Allowing only the user to be the only one to have access to the drafts directory.

Summary

Multiple perm changes implemented to meet my organizations wants. Explanation of display commands, perm commands, and an explanation of what permissions have for each file displayed.