File permissions in Linux

Project description

With the manage lab I was able to access certain files, be able to display hidden files and display the permissions of each file authorization it has. It includes the user, groups and owner permissions associated with the files.

Check file and directory details

```
researcher2@d669afbfdcba:~$ cd /home/researcher2/projects/
researcher2@d669afbfdcba:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr 22 16:09 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr 22 16:09 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 22 16:09 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_t.txt
```

The screenshot shows the change in directory to projects file. Which it contains files thats inside the directory itself.

Describe the permissions string

```
drwx--x--- 2 researcher2 research_team 4096 Apr 22 16:09 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr 22 16:09 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 22 16:09 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_t.txt
```

Drafts

drwx- -x- - -

This permission looks different to the others. The ‘d’ tells one that this is a directory within the directory itself. For the researcher2 users have read, write and execution of this directory while the research_team group have execute permission only to this directory.

For project_k.txt

-rw-rw-rw-

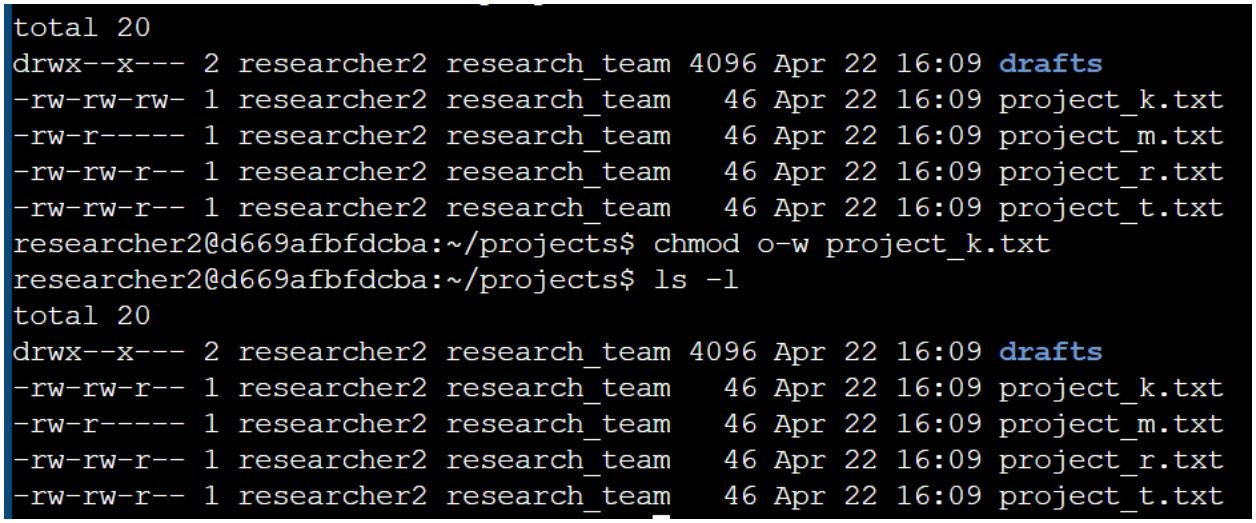
The permission for this file describes the permission for the researcher2 user, research_team group and other. For all categories they have permissions to Read and Write to the project_k.txt file and nothing else.

Project _m.txt
-rw-r- - - - -
For this file,researcher2 user have read and write permissions to the file. The research_team group has read only permissions authorization to the file and other has no access to the file

Project_r.txt
-rw-rw-r- -
The researcher2 user and research_team group have read and write access to the file and other have read only permission to the file

Project_t.txt
-rw-rw-r- -
For the project_t file, the researcher2 user and research_team group have the same permissions as the project_r file. The user and research_team group have read and write permissions and read only for others.

Change file permissions



This screenshot shows that the project_k.txt file permissions have been changed by using the ***chmod*** command where other category was removed from write access to the file using the minus sign(-). As you can see the second listing of the files shows the permissions went from **-rw-rw-rw-** to **-rw-rw-r- -** . The '**w**' was removed from the last cluster of the permissions representing the other category permission.

Change file permissions on a hidden file

```
researcher2@d669afbfdcba:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 22 16:09 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 22 16:27 ..
-rw--w---- 1 researcher2 research_team   46 Apr 22 16:09 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr 22 16:09 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 22 16:09 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_t.txt
```

Using ***ls -la*** command allows one to see hidden files in the directory one is in. One is able to the two directories that are hidden and a file called .projects_x.txt file that is also hidden.

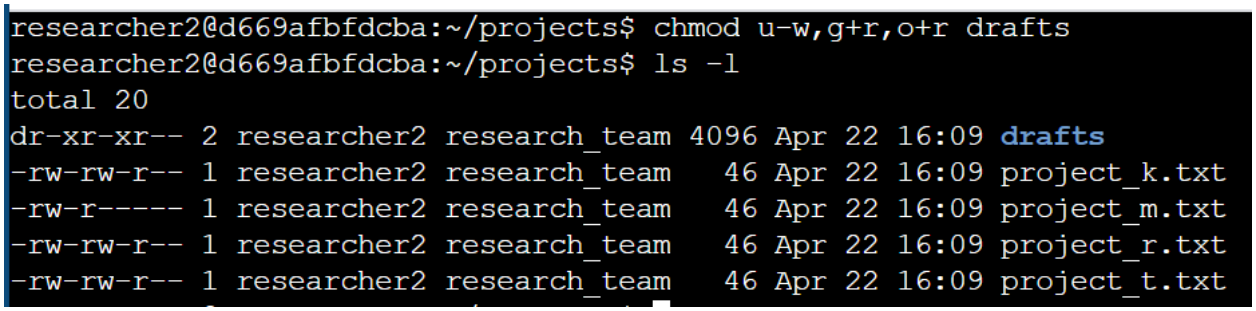
The permission for the .projects_x.txt, researcher2 users have read and write access to the file while research_team group have write permissions to the file.

```
researcher2@d669afbfdcba:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 22 16:09 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 22 16:27 ..
-rw--w---- 1 researcher2 research_team   46 Apr 22 16:09 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr 22 16:09 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 22 16:09 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_t.txt
researcher2@d669afbfdcba:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@d669afbfdcba:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 22 16:09 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 22 16:27 ..
-r--r----- 1 researcher2 research_team   46 Apr 22 16:09 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr 22 16:09 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 22 16:09 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 22 16:09 project_t.txt
researcher2@d669afbfdcba:~/projects$
```

Changed permissions for the hidden file, .project_x.txt where user and group was stripped off of write access to the file. Also the group was added to read writes to the file by making use of the ***chmod*** command. As you can see on the below list of files and directories, the

.project_x.txt has changed from **-rw--w- - - - to -r- -r - - - -** where write access for user was removed and additional **'r'** was added for the group access.

Change directory permissions



In this screenshot, one changed directory called drafts permissions from **drwx- -x- - -** to **dr-xr-xr- -** where researcher2 users were stripped off their writes access using the **chmod** to be able to read the directory only. The group and other read rights were added to the directory where they are able to execute and read the directory and its contents.

Summary

Using Linux commands have opened a new world of multitasking and doing things like permission/access changes to users, groups and other to directories and files. Whether hidden or visible, there are commands to see the difference between the two using the ls -l, to see files and directories that aren't hidden, and ls -la shows everything including the hidden files. This allows organisations to be able to control flow of access of who can enter and do what with the files and directories. This way I am able to protect data and defend the data from potential attackers who want access.