File permissions in Linux

Project description

In this lab I was tasked with configuring authorization using linux commands.

> ## Scenario
>
> In this scenario, you must examine and manage the permissions on the files in the `/home/researcher2/projects` directory for the `researcher2` user.
>
> The `researcher2` user is part of the `research_team` group.
>
> You must check the permissions for all files in the directory, including any hidden files, to make sure that permissions align with the authorization that should be given. When it doesn't, you must change the permissions.

Checking file and directory details

First I had to navigate to the projects directory and list any hidden files and its content/permissions using the commands shown below:

```
researcher2@f7f6e3e361f4:~$ cd projects
researcher2@f7f6e3e361f4:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:30 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:59 ..
-rw--w---- 1 researcher2 research_team   46 Mar 26 13:30 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$
```

Describe the permissions string

The permission string is displayed as User - Group - Other and the permissions themselves are labeled as Read(r), Write(w), or Execute(x). If you see a (-) this means that they lack this permission. An example of this you would see in Shell itself would look something like drw- r - - r - - . The (d) means it's a directory and in this example the user has r and write permissions but no execute permissions. The group and others only have read permissions.

Change file permissions

In this task I was asked to remove the write permissions from the other group of the project_k.txt file. Using the “chmod” command followed by “o-w” and the file name I was able to remove the write permission from this group as shown below:

```
researcher2@f7f6e3e361f4:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$ chmod o-w project_k.txt
researcher2@f7f6e3e361f4:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$
```

Change file permissions on a hidden file

In this task I was asked to change the permissions of a hidden file. Using the “ls -la” command to display the hidden files I was asked to change the permissions of “.project_x.txt” so that the users and group only had read permissions and not write. I used the “g+r” command and the “g-w” command to add the read permission to the group and remove its write permissions as shown below.

```
researcher2@f7f6e3e361f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:30 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:59 ..
-r---w---- 1 researcher2 research_team   46 Mar 26 13:30 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$ chmod g+r .project_x.txt
researcher2@f7f6e3e361f4:~/projects$ chmod g-w .project_x.txt
researcher2@f7f6e3e361f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:30 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:59 ..
-r--r----- 1 researcher2 research_team   46 Mar 26 13:30 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$
```

Change directory permissions

In this task I was asked to change the permissions of a directory by removing the group's ability to execute. I used the “chmod g-x drafts” command to remove the execute permissions from the group in the draft directory:

```
researcher2@f7f6e3e361f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:30 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar 26 13:59 ..
-r--r----- 1 researcher2 research_team   46 Mar 26 13:30 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$ chmod g-x drafts
researcher2@f7f6e3e361f4:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Mar 26 13:30 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_k.txt
-rw------- 1 researcher2 research_team   46 Mar 26 13:30 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 26 13:30 project_t.txt
researcher2@f7f6e3e361f4:~/projects$
```

Summary

Overall changing the permissions using shell commands is actually pretty simple once you learn how to read it. There are many commands you need to know in order to change permissions in linux but it is an important aspect of becoming a cybersecurity analyst. I am excited to put these new skills into practice in my future.