File permissions (Linux)

Project description

I'm a security professional working with the research team at a large organization. My responsibility is to ensure team members have the correct file system permissions. I review current permissions, confirm if they align with authorized access, and update them to grant or remove access as needed to maintain system security. In the bash shell in Linux I will be using the:

`pwd` to print the working directories

`cd` to navigate between directories

`ls -l` to display permission on directory and files

`ls -la` to display permissions to files and directories that includes hidden files

`chmod` to change permission files and directories

Check file and directory details

First I started by knowing my working directories with the command `pwd` and the output gave `/home/researcher2`

Then I navigate to the Project directories using the command `cd project` then the output gave me `researcher2@cec66d7bc3b1:~/projects$`

Then I used the command `ls -la` to display permissions to files and directories. Then the output:came out as

```
researcher2@cec66d7bc3b1:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  5 00:25 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr  5 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_t.txt
```

Describe the permissions string

File permission are represented with 10 character strings: "**drwxrwxrwx**"
d: stands for directory
r: stands for read

w: stands for write
X: stands for execute
The first **rwx**: stands for **user** named researcher 2
The second **rwx** stands for **group** named researcher_team
The third **rwx** stands for **others**

Change file permissions

The research organization doesn't want others to have access to write. Looking at the files **project_k.txt** has a write permission. So am going to change it using command `chmod o-w project_k.txt` to remove the write permission, this is the current output

```
researcher2@cec66d7bc3b1:~/projects$ chmod o-w project_k.txt
researcher2@cec66d7bc3b1:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  5 00:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_t.txt
```

Change file permissions on a hidden file

I used the `ls-la` command to display permissions in files and directories including hidden files, so the output of the command is:

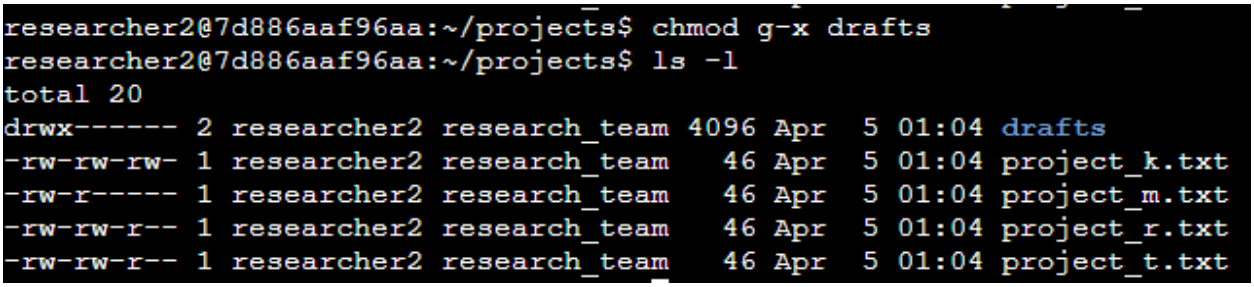
```
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 00:59 ..
-rw--w---- 1 researcher2 research_team   46 Apr  5 00:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr  5 00:25 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr  5 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr  5 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr  5 00:25 project_t.txt
```

The file **.project_x.txt** is a hidden file achieved by the researchers, so the organization requested that the hidden file should be permitted for "read only" for both the user and the group, but it shows that the user has the read and write permission and the group has the write permission, so I then used the command `chmod u-w,g-w,g+r .project_x.txt` to remove the user and group write permission and then gave the group a read permission. So this is the current output:

```
researcher2@cec66d7bc3b1:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@cec66d7bc3b1:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  5 00:59 ..
-r--r----- 1 researcher2 research_team   46 Apr  5 00:25 .project_x.txt
```

Change directory permissions

The file and the directories in this project belong to researcher 2 only, researcher 2 users will be allowed to access the directories, so I used the `chmod g-x drafts` to remove the group from having access to execute any task and next I used the command `ls -l` and the current output is



Summary

In this research organization, file system permissions are structured based on the principle of least privilege ensuring that users only have access to resources necessary for their roles. This enhances operational security and data confidentiality across departments particularly within the research team.