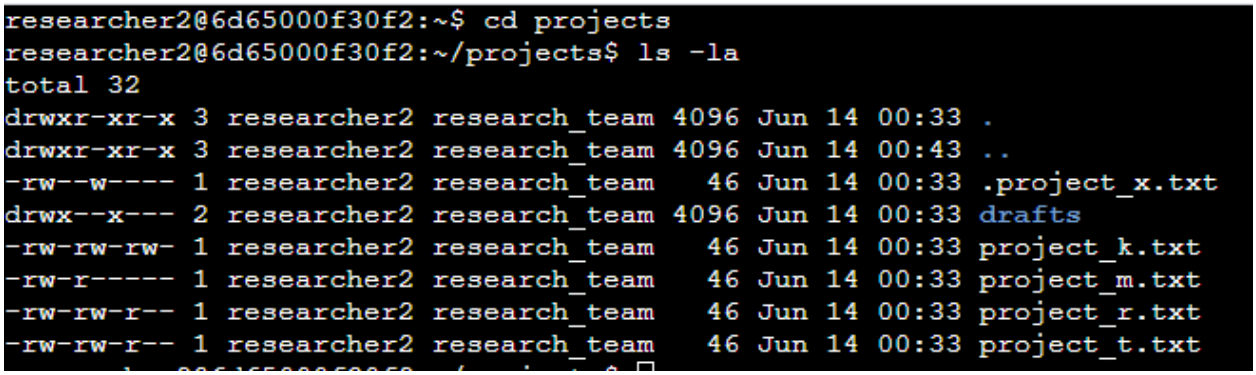
File Permissions in Linux

Project description

Our organization's research team needs to update the file permissions for specific files and directories within the projects directory. The permissions they have now are not accurate to the file's purposes and they must be modified to successfully fulfill their goal. Checking and updating these permissions will help keep our system secure, but to complete this task we first have to complete the following changes:

Check file and directory details

We first checked the files and directories we have inside the projects file ("cd projects") along with any other hidden files by applying the Linux command "ls -la." After that, we can identify the .project_x.txt and drafts files with their established permissions.



Describe the permissions string

The 10-character string can be deconstructed to determine who is authorized to access the file and their specific permissions. The characters and what they represent are as follows:

- 1st character: This character is either a d or a 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.

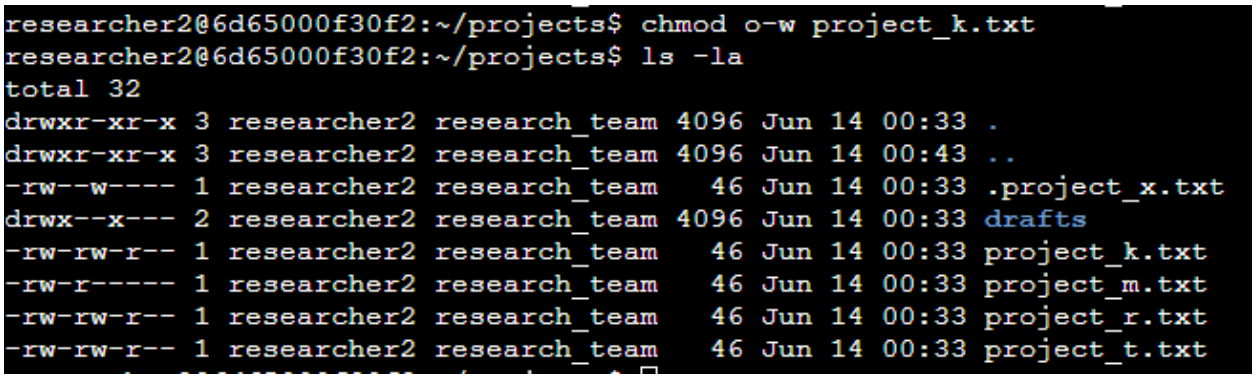
● 5th-7th characters: These characters indicate the read (r), write (w), and execute (x) permissions for the group. When one of these characters is a hyphen (-) instead, it indicates that this permission is not granted to the group.

● 8th-10th characters: These characters indicate the read (r), write (w), and execute (x) permissions for other. This owner type consists of all other users on the system apart from the user and the group. When one of these characters is a hyphen (-) instead, that indicates that this permission is not granted for other.

For example, the file permissions for project_t.txt are -rw-rw-r--. Since the first character is a hyphen (-), this indicates that project_t.txt is a file, not a directory. The second, fifth, and eighth characters are all r, which indicates that user, group, and other all have read permissions. The third and sixth characters are w, which indicates that only the user and group have write permissions. No one has execute permissions for project_t.txt.

Change file permissions

In this step, we had to make sure to change the permissions of the "`project_k.txt`" file so that the owner type of other doesn't have write permissions. For that to happen, we use the following command: "chmod o-w project_k.txt" and then the "ls -la" command to verify all changes.



Change file permissions on a hidden file

The next step in this project is to delete any access but read access to the .project_x.txt hidden file. To do this, we are going to use the following command: chmod u-w,g-w,g+r .project_x.txt

```
researcher2@6d65000f30f2:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@6d65000f30f2:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 14 00:33 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 14 00:43 ..
-r--r----- 1 researcher2 research_team   46 Jun 14 00:33 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 14 00:33 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 14 00:33 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 14 00:33 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 14 00:33 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 14 00:33 project_t.txt
```

Change directory permissions

The final step of this challenge is to change the directory permissions so just the researcher2 user has access to the drafts directory and its contents. The next Linux command that will help us accomplish this task is “chmod g-x drafts.”

```
researcher2@6d65000f30f2:~/projects$ chmod g-x drafts
researcher2@6d65000f30f2:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 14 00:33 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 14 00:43 ..
-r--r----- 1 researcher2 research_team   46 Jun 14 00:33 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Jun 14 00:33 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 14 00:33 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 14 00:33 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 14 00:33 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 14 00:33 project_t.txt
```

Summary

During this project, we were able to use a great variety of Linux commands to change multiple permissions to match the level of authorization the organization wanted for files and directories in the projects directory. Even though we used commands such as ls, -l, -a, -la, ls -la, and chmod, there are even more Linux commands to explore that will be of great help in the future to accomplish any task in a time record just like now.