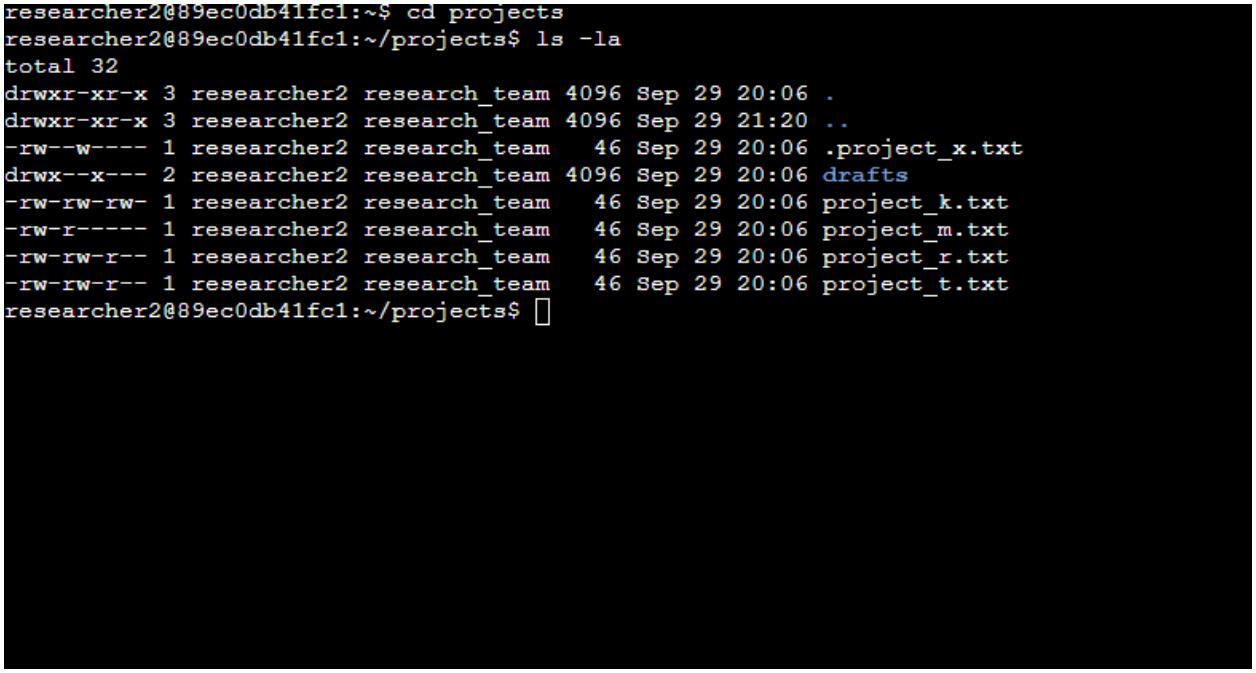
File permissions in Linux

Project description

The research team at my organization needs to update the file permissions for certain files and directories within the projects directory. The permissions do not currently reflect the level of authorization that should be given. Checking and updating these permissions will help keep their system secure. To complete this task, I performed the following tasks:

Check file and directory details

This image displays the code representation of permissions within the projects directory.



I began by accessing the projects directory and inputting the “ls -la”. The output from my command reveals the presence of a single directory called 'drafts,' a hidden file labeled '.project_x.txt,' and an additional five project-related files. In the first column of the output, you'll find a 10-character string representing the permissions assigned to each file or directory.

Describe the permissions string

The 10-character string helps identify who can access the file and what they can do. Here's what each part means:

- The 1st character is 'd' for a directory or '-' for a regular file.
- The 2nd to 4th characters (e.g., 'rwx') show user permissions (read, write, execute).
- The 5th to 7th characters (e.g., 'r--') represent group permissions.

- The 8th to 10th characters (e.g., '---') stand for permissions for others, who are users not in the user or group.

Change file permissions

The organization decided that 'other' should not be granted write access to any of their files. To adhere to this policy, I reviewed the previously obtained file permissions and concluded that 'project_k.txt' required the removal of write access for 'other'. This was completed using command “chmod o-w project_k.txt”, followed by “ls -la” for review.

```
researcher2@89ec0db41fc1:~/projects$ chmod o-w project_k.txt
researcher2@89ec0db41fc1:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 29 20:06 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 29 21:20 ..
-rw--w---- 1 researcher2 research_team   46 Sep 29 20:06 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 29 20:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 29 20:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_t.txt
researcher2@89ec0db41fc1:~/projects$
```

Change file permissions on a hidden file

My organization's research team recently archived 'project_x.txt.' They aim to restrict write access to this project while allowing the user and group to retain read access. Project_x.txt was prefixed with a period (.) which means that it is a hidden file. Permissions were changed using command “chmod u-w,g-w,g+r .project_x.txt”

```
researcher2@89ec0db41fc1:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@89ec0db41fc1:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 29 20:06 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 29 21:20 ..
-r--r----- 1 researcher2 research_team   46 Sep 29 20:06 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 29 20:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 29 20:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_t.txt
researcher2@89ec0db41fc1:~/projects$
```

Change directory permissions

The goal in these lines of code is to grant exclusive access to the 'drafts' directory and its contents to the 'researcher2' user. This entails ensuring that no one except 'researcher2' possesses execute permissions for these items. This was completed by entering command “chmod g-x drafts”, followed by “ls -la” to verify the changes.

```
researcher2@89ec0db41fc1:~/projects$ chmod g-x drafts
researcher2@89ec0db41fc1:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 29 20:06 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 29 21:20 ..
-r--r----- 1 researcher2 research_team   46 Sep 29 20:06 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Sep 29 20:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 29 20:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 29 20:06 project_t.txt
researcher2@89ec0db41fc1:~/projects$
```

Summary

In conclusion, permissions were updated to match the authorization requests of our company. The ‘Projects’ directory as well as many files within have been altered to permit authorized use only using the ‘chmod’ command.