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File permissions in Linux

Project description

In this lab activity, I used Linux commands to configure authorization by examining and managing file and directory permissions in the /home/researcher2/projects directory for the researcher2 user. I ensured permissions aligned with proper authorization and strengthened security by adjusting permissions as needed.

Check file and directory details

- Explored the permissions of the project's directory and its files.
- Verified the ownership and permissions of each file.
- Checked for hidden files within the directory.

Describe the permissions string

- The permissions string consists of a 10-character string for each file entry.
- The characters indicate read (r), write (w), and execute (x) permissions for the user, group, and other users, respectively.
- A hyphen (-) indicates a lack of permission for a specific user type.

Change file permissions

- Identified files with incorrect permissions, mainly write permissions for other users.
- Adjusted permissions using the chmod command to remove unauthorized write access.

Change file permissions on a hidden file

- Identified a hidden file (.project_x.txt) with incorrect write permissions for the user and the group.
- Modified permissions using chmod to allow read access but disallow write access for both user and group.

Change directory permissions

- Checked the group permissions of the drafts directory.
- Modified permissions to restrict access, ensuring only the researcher2 user has execute privileges.

Summary

Through Linux commands, I successfully managed file and directory permissions, ensuring proper authorization and enhancing system security. By examining permissions, identifying discrepancies, and making necessary adjustments, I strengthened access control mechanisms, mitigating potential security risks.
Shell copy:

```
researcher2@74a9d2d0973f:~$ cd projects
researcher2@74a9d2d0973f:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 25 05:49 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Mar 25 05:49 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 25 05:49 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_t.txt
researcher2@74a9d2d0973f:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar 25 05:49 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar 25 07:03 ..
-rw--w---- 1 researcher2 research_team   46 Mar 25 05:49 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar 25 05:49 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Mar 25 05:49 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 25 05:49 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_t.txt
researcher2@74a9d2d0973f:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 25 05:49 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Mar 25 05:49 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 25 05:49 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_t.txt
researcher2@74a9d2d0973f:~/projects$ chmod o-w project_k.txt
researcher2@74a9d2d0973f:~/projects$ ls -l
```

```
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 25 05:49 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Mar 25 05:49 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_t.txt
researcher2@74a9d2d0973f:~/projects$ chmod g-r project_m.txt
researcher2@74a9d2d0973f:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Mar 25 05:49 .
drwxr-xr-x 3 researcher2 research_team 4096 Mar 25 07:03 ..
-rw--w---- 1 researcher2 research_team   46 Mar 25 05:49 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Mar 25 05:49 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_k.txt
-rw------- 1 researcher2 research_team   46 Mar 25 05:49 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_t.txt
researcher2@74a9d2d0973f:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@74a9d2d0973f:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Mar 25 05:49 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_k.txt
-rw------- 1 researcher2 research_team   46 Mar 25 05:49 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Mar 25 05:49 project_t.txt
researcher2@74a9d2d0973f:~/projects$ chmod g-x
```