

TANMAY BUNDIWAL

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File permissions in Linux

Skills Summary

Efficiently managed file permissions in Linux, using commands such as **chmod** and **ls -la** to ensure secure access. Demonstrated ability to interpret and modify permission strings in a multi-user environment, aligning with organizational security standards.

Project description

Utilized Linux commands to manage file permissions within the **/home/researcher2/projects** directory. Ensured security compliance by correctly authorizing user and group access, and modifying permissions where necessary.

chmod Command and Permission Groups

In Linux, the **chmod** (change mode) command is used to set or modify the access permissions of files and directories. Permissions are categorized into three groups:

1. **User (u)**: The owner of the file.
2. **Group (g)**: Members of the file's assigned group.
3. **Others (o)**: All other users not in the first two categories.

Each group can have permissions set for reading (r), writing (w), and executing (x).

Example: For a file **example.txt** with initial permissions **-rw-r-----**, it implies: User has read/write, Group has read-only, and Others have no access.

Check file and directory details

Executed **ls -la** to list all files in the projects directory, including hidden files, and to view their current permissions.

```
researcher2@3e552a941a85:~$ cd projects
researcher2@3e552a941a85:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  4 11:56 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_k.txt
-rw-r----- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_t.txt
researcher2@3e552a941a85:~/projects$ ls -a
.      .project_x.txt  project_k.txt  project_r.txt
..     drafts      project_m.txt  project_t.txt
researcher2@3e552a941a85:~/projects$ ls
drafts      project_m.txt  project_t.txt
project_k.txt  project_r.txt
```

Describe the Permissions String

Analyzed the permissions string **-rw-rw-r--**, indicating a file where the user and group have read and write permissions, and others have read-only access.

Change File Permissions

Modified permissions of **project_k.txt** using **chmod o-w**. Removed write permissions for others to align with organizational security policies.

```
researcher2@3e552a941a85:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  4 11:56 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_k.txt
-rw-r----- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_t.txt
researcher2@3e552a941a85:~/projects$ chmod o-w project_k.txt
researcher2@3e552a941a85:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Apr  4 11:56 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_k.txt
-rw-r----- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_t.txt
```

Change File Permissions on a Hidden File

Adjusted permissions for the hidden file **.project_x.txt** using **chmod go-w**. Set the file to be readable by user and group, without write permissions.

```
researcher2@3e552a941a85:~/projects$ ls -a -l
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  4 11:56 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  4 13:05 ..
-rw--w---- 1 researcher2 research_team  46 Apr  4 11:56 .proje
ct_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr  4 11:56 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_k.txt
-rw----- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_t.txt
researcher2@3e552a941a85:~/projects$ chmod u-w g+r-w .project_x
.txt
chmod: cannot access 'g+r-w': No such file or directory
researcher2@3e552a941a85:~/projects$ chmod u-w g+r g-w .project
_x.txt
chmod: cannot access 'g+r': No such file or directory
chmod: cannot access 'g-w': No such file or directory
researcher2@3e552a941a85:~/projects$ chmod u-w .project_x.txt
researcher2@3e552a941a85:~/projects$ chmod g-w .project_x.txt
researcher2@3e552a941a85:~/projects$ chmod g+r .project_x.txt
researcher2@3e552a941a85:~/projects$ ls -a -l
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  4 11:56 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  4 13:05 ..
-r--r----- 1 researcher2 research_team  46 Apr  4 11:56 .proje
ct_x.txt
```

Change Directory Permissions

Updated the drafts directory permissions for exclusive access by **researcher2** using **chmod g-x drafts**. Restricted group and others from accessing the directory.

```
researcher2@3e552a941a85:~/projects$ ls -a -l
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr  4 11:56 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr  4 13:05 ..
-r--r----- 1 researcher2 research_team  46 Apr  4 11:56 .proje
ct_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr  4 11:56 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_k.txt
-rw----- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_t.txt
researcher2@3e552a941a85:~/projects$ ls
drafts      project_m.txt project_t.txt
project_k.txt project_r.txt
researcher2@3e552a941a85:~/projects$ chmod g-x drafts
researcher2@3e552a941a85:~/projects$ ls -l
total 20
drwx----- 2 researcher2 research_team 4096 Apr  4 11:56 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_k.txt
-rw----- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Apr  4 11:56 projec
t_t.txt
researcher2@3e552a941a85:~/projects$
```

Summary

Effectively managed file and directory permissions, enhancing system security. Aligned access rights with organizational standards and roles, demonstrating proficiency in Linux command line tools and security best practices.