File Permissions in Linux

Project description

In this project, we will be exploring how to view and modify file permissions in Linux, particularly within the /home/researcher2/projects directory. By using Linux commands, we can ascertain details about files and directories, interpret the permissions string, and update permissions as required.

Check File and Directory Details

ls -la
This command will list all files, including hidden ones, in the specified directory, showing their permissions, owners, and other details.

Describe the Permissions String

The permissions string consists of 10 characters:
- The 1st character indicates the type: - for files, d for directories.
- Characters 2-4 represent user permissions.
- Characters 5-7 are for group permissions.
- Characters 8-10 are for others.

Each set (user, group, other) can contain the characters r (read), w (write), and x (execute). For instance, -rwxr-xr-- would mean:
- The file's user can read, write, and execute it.
- The group can read and execute it.
- Others can only read it.

Change File Permissions

chmod o-w project_k.txt
This command takes away the write permissions for others (o) on the project_k.txt file.

Change File Permissions on a Hidden File

chmod u-w,g=r .project_x.txt
This command takes away the write permissions from the user and sets the group permissions to read only.

Change Directory Permissions

chmod g-x drafts
This command takes away the execute permissions from the group.

Summary

Understanding and managing file and directory permissions is crucial for system security and organization. In this project, we have explored how to view and modify these permissions within the /home/researcher2/projects directory. Using ls -la and chmod, we can easily check and adjust permissions for various files, ensuring appropriate access levels for different users and groups.

```
researcher2@efad32bb521b:~$ pwd
/home/researcher2
researcher2@efad32bb521b:~$ ls
projects
researcher2@efad32bb521b:~$ cd projects
researcher2@efad32bb521b:~/projects$ ls
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@efad32bb521b:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Oct 23 04:03 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct 23 04:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 23 04:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_t.txt
researcher2@efad32bb521b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 23 04:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 23 04:26 ..
-rw--w---- 1 researcher2 research_team   46 Oct 23 04:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 23 04:03 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct 23 04:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 23 04:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_t.txt
researcher2@efad32bb521b:~/projects$ chmod o-w project_k.txt
researcher2@efad32bb521b:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Oct 23 04:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 23 04:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_t.txt
researcher2@efad32bb521b:~/projects$ chmod g-r project_m.txt
researcher2@efad32bb521b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 23 04:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 23 04:26 ..
-rw--w---- 1 researcher2 research_team   46 Oct 23 04:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 23 04:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_k.txt
-rw------- 1 researcher2 research_team   46 Oct 23 04:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_t.txt
researcher2@efad32bb521b:~/projects$ chmod u-w,g=r .project_x.txt
researcher2@efad32bb521b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 23 04:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 23 04:26 ..
-r--r----- 1 researcher2 research_team   46 Oct 23 04:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 23 04:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_k.txt
-rw------- 1 researcher2 research_team   46 Oct 23 04:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_t.txt
researcher2@efad32bb521b:~/projects$ chmod g-x drafts
researcher2@efad32bb521b:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Oct 23 04:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_k.txt
-rw------- 1 researcher2 research_team   46 Oct 23 04:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 23 04:03 project_t.txt
researcher2@efad32bb521b:~/projects$
```