

File permissions in Linux

Project description

As a security analyst in my organization, I need to ensure that users on my team have authorization with appropriate permissions. This project is to explore the use of common commands to check file details and permissions to make sure team members have the correct level of authorization.

Check file and directory details

```
researcher2@52250a8cc5c2:~$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 22:25 .
drwxr-xr-x 1 root          root        4096 Feb  4 21:47 ..
-rw----- 1 researcher2 research_team   6 Feb  4 22:25 .bash_history
-rw-r--r-- 1 researcher2 research_team  220 Apr 18  2019 .bash_logout
-rw-r--r-- 1 researcher2 research_team 3574 Feb  4 21:47 .bashrc
-rw-r--r-- 1 researcher2 research_team 3574 Feb  4 21:47 .profile
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 21:47 projects
researcher2@52250a8cc5c2:~$
```

Describe the permissions string

Taking a look at the 10 character permissions string for the projects directory will give insight on authorizations in this folder for users, groups, and others.

The current permissions are : `drwxr-xr-x`

- The (1) character “d” means that we are looking at a directory
- Characters 2-4 show permissions for the user, who can read, write, and execute files in the directory
- Characters 5-7 show permissions for groups. The group can read and execute files in the directory
- Characters 8-10 show permissions for others. Others can read and execute files in the directory.

Change file permissions

Here I removed write permissions to `project_k.txt` using `chmod`. The organization did not want other to have write access to their files.

```
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 21:47 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 22:25 ..
-rw--w---- 1 researcher2 research_team  46 Feb  4 21:47 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Feb  4 21:47 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Feb  4 21:47 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Feb  4 21:47 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Feb  4 21:47 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Feb  4 21:47 project_t.txt
researcher2@52250a8cc5c2:~/projects$ chmod o-w project_k.txt
researcher2@52250a8cc5c2:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 21:47 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 22:25 ..
-rw--w---- 1 researcher2 research_team  46 Feb  4 21:47 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Feb  4 21:47 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Feb  4 21:47 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Feb  4 21:47 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Feb  4 21:47 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Feb  4 21:47 project_t.txt
researcher2@52250a8cc5c2:~/projects$
```

The first few lines show files and their permissions before the change. The focus here is on `project_k.txt`. I then used the command `chmod o-w project_k.txt` to remove write permissions from other.

Change file permissions on a hidden file

I used `ls -la` to show hidden files, and `chmod u-w,g-w,g+r` to remove write permissions for user and group, while adding read permission to group in the file `.project_x.txt`

```
researcher2@52250a8cc5c2:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@52250a8cc5c2:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 21:47 .
drwxr-xr-x 3 researcher2 research_team 4096 Feb  4 22:25 ..
-r--r----- 1 researcher2 research_team  46 Feb  4 21:47 .project_x.txt
```

Change directory permissions

Removed execute permissions for groups in the draft directory using `chmod g-x drafts`

```
drwx--x--- 2 researcher2 research_team 4096 Feb  4 21:47 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Feb  4 21:47 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Feb  4 21:47 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb  4 21:47 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Feb  4 21:47 project_t.txt
researcher2@52250a8cc5c2:~/projects$ chmod g-x drafts
researcher2@52250a8cc5c2:~/projects$ ls -l
total 20
drwx----- 2 researcher2 research_team 4096 Feb  4 21:47 drafts
```

Summary

Through these tasks I have changed many permissions to match the level of authorization required by my organization for files and directories in the `projects` directory. I first used `ls -la` to check permissions of files and directories. Next, I used `chmod` multiple times to change the permissions on files and directories.