File permissions in Linux

Project description

Using Linux permission commands, I will ensure that users on the team are authorized with the appropriate permissions for their roles according to the principle of least privilege.

Check file and directory details

`cd /home/researcher2/projects`
`ls -al`

```
researcher2@aa776069c1c0:~$ cd /home/researcher2/projects
researcher2@aa776069c1c0:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 20 22:43 .
drwxr-xr-x 3 researcher2 research_team 4096 May 20 23:18 ..
-rw--w---- 1 researcher2 research_team   46 May 20 22:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 20 22:43 drafts
-rw-rw-rw- 1 researcher2 research_team   46 May 20 22:43 project_k.txt
-rw-r----- 1 researcher2 research_team   46 May 20 22:43 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_t.txt
```

Describe the permissions string

Observing the above output, we can see that, for example, the file `project_k.txt` has the permissions string `-rw-rw-rw-`
This permissions string shows that the file has user, group, and other read and write access.

Change file permissions

To prevent any “other” accounts from writing to files, the `project_k.txt` permissions have to be modified as follows:

`chmod o-w project_k.txt`

```
researcher2@aa776069c1c0:~/projects$ chmod o-w project_k.txt
researcher2@aa776069c1c0:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 20 22:43 .
drwxr-xr-x 3 researcher2 research_team 4096 May 20 23:18 ..
-rw--w---- 1 researcher2 research_team   46 May 20 22:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 20 22:43 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_k.txt
-rw-r----- 1 researcher2 research_team   46 May 20 22:43 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_t.txt
```

Change file permissions on a hidden file

The `.project_x.txt` file currently has write permissions for both the user and group, but it should only have read permissions for user and group.

To change this:

`chmod u=r,g=r .project_x.txt`

```
researcher2@aa776069c1c0:~/projects$ chmod u=r,g=r .project_x.txt
researcher2@aa776069c1c0:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 20 22:43 .
drwxr-xr-x 3 researcher2 research_team 4096 May 20 23:18 ..
-r--r----- 1 researcher2 research_team   46 May 20 22:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 20 22:43 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_k.txt
-rw-r----- 1 researcher2 research_team   46 May 20 22:43 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_t.txt
```

Change directory permissions

Only the user *researcher2* should be able to access the drafts directory. To modify this:

`chmod g-x drafts`

```
researcher2@aa776069c1c0:~/projects$ chmod g-x drafts
researcher2@aa776069c1c0:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 20 22:43 .
drwxr-xr-x 3 researcher2 research_team 4096 May 20 23:18 ..
-r--r----- 1 researcher2 research_team   46 May 20 22:43 .project_x.txt
drwx------ 2 researcher2 research_team 4096 May 20 22:43 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_k.txt
-rw-r----- 1 researcher2 research_team   46 May 20 22:43 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 20 22:43 project_t.txt
```

Summary

This document demonstrates the use of Linux permission commands to correctly establish user permissions in accordance with the principle of least privilege.