File permissions in Linux

Project description

To keep the system secure we will ensure users on this team are authorized with the appropriate permissions. We will examine existing permissions on the file system and determine if the permissions match the authorization that should be given. We'll need to modify the permissions to authorize the appropriate users and remove any unauthorized access. The following tasks were performed:

Check file and directory details

We want to show detailed listings of the file contents and show any hidden files. This shows the current permissions in the projects directory. ls-la shows a detailed list including hidden files

```
researcher2@a8001727789b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:16 ..
-rw--w---- 1 researcher2 research_team   46 Oct 15 17:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 15 17:03 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct 15 17:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 15 17:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_t.txt
researcher2@a8001727789b:~/projects$
```

Describe the permissions string

10 characters on the left show the read, write, and execute permissions
The d means its a directory.
The - means its a regular file.
Characters 2-4 refer to the read(r), write(w), and execute(x) permissions for the user
Characters 5-7 refer to the read(r), write(w), and execute(x) permissions for the group
Characters 8-10 refer to the read(r), write(w), and execute(x) permissions for other.

Example
.project_x.txt the user has read(r) and write(w) permissions. The group only has write(w) permissions. The other has no permissions indicated by the - - -

Change file permissions

The organization does not allow others to have write access to any files. The following command will change permissions within the project_k.txt file.

```
researcher2@a8001727789b:~/projects$ chmod o-w project_k.txt
researcher2@a8001727789b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:16 ..
-rw--w---- 1 researcher2 research_team   46 Oct 15 17:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 15 17:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 15 17:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_t.txt
researcher2@a8001727789b:~/projects$
```

The chmod command changes permissions
The o-w removes the write permission from other from project_k.txt

Change file permissions on a hidden file

The research team has archived .project_x.txt, which is why it's a hidden file. This file should not have write permissions for anyone, but the user and group should be able to read the file.

```
researcher2@a8001727789b:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@a8001727789b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:16 ..
-r--r----- 1 researcher2 research_team   46 Oct 15 17:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 15 17:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 15 17:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_t.txt
researcher2@a8001727789b:~/projects$
```

We know .project_x.txt is hidden because it starts with a period(.)
The chmod changes permissions
The u-w removes write permission from the user
The g-w removes write permission from the group
The g+r adds read permission to the group

Change directory permissions

The files and directories in the projects directory belong to the researcher2 user. Only researcher2 should be allowed to access the drafts directory and its contents. We want to remove execute permissions from the group so only the user has execute permissions.

```
researcher2@a8001727789b:~/projects$ chmod g-x drafts
researcher2@a8001727789b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 15 17:16 ..
-r--r----- 1 researcher2 research_team   46 Oct 15 17:03 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Oct 15 17:03 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 15 17:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 15 17:03 project_t.txt
researcher2@a8001727789b:~/projects$
```

The chmod changes permissions.
The g-x removes execute from the drafts directory.

Summary

We changed several permissions to match the level of authority the organization wanted in the projects directory.
We checked permissions with the `ls -la` command
We changed permissions with the `chmod` command