File permissions in Linux

Project description

Examine existing permissions on the file system. Determine if permissions match authorization that should be given. If not, modify permissions to authorize appropriate users and remove any unauthorized access.

Check file and directory details

Use `ls -la` to list all files in the current directory along with permissions.

```
researcher2@03999401d155:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-rw--w---- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$ 
```

Describe the permissions string

- Permissions string is a set of 10 characters indicating the type of file as well as the permissions granted to the different types of owners; user, group, and others.
    - First character indicates file type.
        - **d**rwxr-xr-x
    - Next 3 characters indicate read, write, and execute permissions for **Users**
        - d**rwx**r-xr-x
    - Next 3 characters indicate read, write, and execute permissions for **Group**
        - drwx**r-x**r-x
    - Next 3 characters indicate read, write, and execute permissions for **Others**
        - drwxr-x**r-x**

Change file permissions

Organization does not allow **Others** to have write permissions to files. Removed permissions from "project_k.txt" using `chmod o-w project_k.txt`

```
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-rw--w---- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$ chmod o-w project_k.txt
researcher2@03999401d155:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-rw--w---- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$
```

Change file permissions on a hidden file

.project_x.txt, should not have write permissions for anyone but user and group should be able to read the file.

Used chmod u-w,g+r,g-w .project_x.txt to remove write permissions and add read permission.

```
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-rw--w---- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$ chmod u-w,g+r,g-w .project_x.txt
researcher2@03999401d155:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-r--r----- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$
```

Change directory permissions

Permission to the drafts directory should only be granted to the researcher2 user. Used chmod g-x drafts/ to remove unauthorized access to the drafts directory.

```
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-r--r----- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$ chmod g-x drafts/
researcher2@03999401d155:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:19 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 10 20:41 ..
-r--r----- 1 researcher2 research_team   46 Dec 10 20:19 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Dec 10 20:19 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 10 20:19 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 10 20:19 project_t.txt
researcher2@03999401d155:~/projects$ []
```

Summary

Overall goal was to grant authorized users correct permissions and remove any unauthorized access from files. Using the chmod command we limited the .project_x.txt file to read only for user and group, removed access to the drafts directory for group and others, and took away write permissions for others for all files.