File permissions in Linux

Project description

The instructions were to list the permissions to the files and directories in the project directory. I was then required to modify certain permissions to reflect the organization's policies of who can have access to do what, and where it should be removed.

Check file and directory details

```
researcher2@d3c8872a1fbf:~$ cd projects
researcher2@d3c8872a1fbf:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Dec 20 11:51 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Dec 20 11:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 20 11:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_t.txt
```

Describe the permissions string

The permissions string shows who has access to the file and what they can do with it. The original string for a directory with full access to all is drwxrwxrwx. R- read W-write X-execute. For project_k.txt the permissions are as follows: User can read and write; Group can read and write; Others can read and write. The string shows this -rw-rw-rw- where the first hyphen refers to the file itself (instead of a d for directory), the three characters following refer to the User's permissions, the three following refer to the Group's permissions, and the final three refer to Others permissions.

Change file permissions

```
researcher2@d3c8872a1fbf:~/projects$ chmod o-w project_k.txt
researcher2@d3c8872a1fbf:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Dec 20 11:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 20 11:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_t.txt
```

Since the organization does not want others to have write access to any file, I used this

command to remove their write access to project_k.txt and listed the current access permissions to check that it was removed.

Change file permissions on a hidden file

```
researcher2@d3c8872a1fbf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 20 11:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 20 12:42 ..
-rw--w---- 1 researcher2 research_team   46 Dec 20 11:51 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 20 11:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 20 11:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_t.txt
researcher2@d3c8872a1fbf:~/projects$ chmod u-w,g+r,g-w .project_x.txt
researcher2@d3c8872a1fbf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 20 11:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 20 12:42 ..
-r--r----- 1 researcher2 research_team   46 Dec 20 11:51 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Dec 20 11:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 20 11:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_t.txt
```

To check for hidden files and reveal the permissions I used this code `ls -la`. Since .project_x.txt is a hidden file, no one should have write access and the user and group should have read access. I changed the permissions to reflect this. I then listed the permissions to ensure it was correct

Change directory permissions

```
researcher2@d3c8872a1fbf:~/projects$ chmod g-x drafts
researcher2@d3c8872a1fbf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 20 11:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 20 12:42 ..
-r--r----- 1 researcher2 research_team   46 Dec 20 11:51 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Dec 20 11:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Dec 20 11:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Dec 20 11:51 project_t.txt
```

To ensure that only the user can access the drafts directory, I removed the execute permission from the group. I then listed the permissions to ensure it was changed correctly.

Summary

I changed the permissions for others to ensure they do not have write access to any files. I then listed all the files and modified the permissions of the hidden file to restrict write access for everyone and to allow the group to read it. Finally, I changed the permissions of the directory to ensure that only the user can access its content and restricted it from the group.