File permissions in Linux

Project description

There are files and directories whose permissions need to be examined to determine if their privileges need to be changed in order to better secure the information.

Check file and directory details

This demonstrates how I would look up the permissions for a directory in a file system.

```
researcher2@5e36b2836380:~$ cd projects
researcher2@5e36b2836380:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Nov 22 12:23 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Nov 22 12:23 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Nov 22 12:23 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_t.txt
researcher2@5e36b2836380:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 22 12:23 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 22 14:02 ..
-rw--w---- 1 researcher2 research_team   46 Nov 22 12:23 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Nov 22 12:23 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Nov 22 12:23 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Nov 22 12:23 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_t.txt
researcher2@5e36b2836380:~/projects$ chmod o-w project_k.txt
```

I used the code cd to change to the directory I needed and used the codes ls -la or ls -l to look up the permissions of all files including hidden ones within the directory.

Describe the permissions string

The permission string is the letters drwxrwxrwx and each letter and its placing has a meaning. By removing or adding a letter you can change who has a specific permission for a certain file or directory.

Change file permissions

It was determined that a permission for the other users within this file needed their write permission removed for a certain file and that is demonstrated with the code chmod o-w project_k.txt

```
researcher2@5e36b2836380:~/projects$ chmod o-w project_k.txt
researcher2@5e36b2836380:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Nov 22 12:23 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Nov 22 12:23 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_t.txt
researcher2@5e36b2836380:~/projects$
```

Results using the code ls -l were verified that the other group can now only read the file and not write.

Change file permissions on a hidden file

There's an archived file that only the user and group should have read access to, so the code in the screenshot was used to remove any write access and give read access as needed.

```
researcher2@5e36b2836380:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@5e36b2836380:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 22 12:23 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 22 14:02 ..
-r--r----- 1 researcher2 research_team   46 Nov 22 12:23 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Nov 22 12:23 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_k.txt
-rw------- 1 researcher2 research_team   46 Nov 22 12:23 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_t.txt
```

Results were verified after using the code ls -la to see the permissions of the hidden file.

Change directory permissions

No one other than the user, researcher2, should have access to the drafts file. So the user will be the only one with execute privileges. The code g-x was used to remove execution capabilities from the group. Previously the group had execute authority, but it was decided to be removed which is why the permission was removed just now.

```
researcher2@5e36b2836380:~/projects$ chmod g-x drafts
researcher2@5e36b2836380:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Nov 22 12:23 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_k.txt
-rw------- 1 researcher2 research_team   46 Nov 22 12:23 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 22 12:23 project_t.txt
researcher2@5e36b2836380:~/projects$
```

Summary

To keep correct authorization inline with the company's needs I had to change and manage the authorization of files and directories. Using the correct codes to check the permissions of the specified files and directories is what lead to the outcome of using the codes to change authorization for certain groups or users.