File permissions in Linux

Project description

As a security analyst at a large organization, working with the research team, part of my job is to ensure users on this team are authorized with the appropriate permissions. This helps keep the system secure.

I will examine existing permissions on the file systems and determine if the permissions match the authorization that should be given. If they do not match, I will need to modify the permissions to authorize the appropriate users and remove any unauthorized access.

Check file and directory details

Navigated to the projects directory using cd command.
Used ls -la to list permissions to files and directories, including hidden files.

```
researcher2@238bb2a997f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 01:01 ..
-rw--w---- 1 researcher2 research_team   46 Sep 15 00:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$
```

Describe the permissions string

For the 'drafts' subdirectory, the user has has these permissions:
d = access to the directory, r = read access, w = write access, x = execute access
For the 'drafts' subdirectory, the group has has these permissions:
Only x = execute access
For the 'drafts' subdirectory, other has no permissions hence the hyphens.

Change file permissions

Remove write permission on file project_k.txt for other using the command
chmod o=r project_k.txt

```
researcher2@238bb2a997f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 01:01 ..
-rw--w---- 1 researcher2 research_team   46 Sep 15 00:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$ chmod o=r project_k.txt
researcher2@238bb2a997f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 01:01 ..
-rw--w---- 1 researcher2 research_team   46 Sep 15 00:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$
```

Change file permissions on a hidden file

Used command ls -la to list ermissions to files and directories, including hidden files.
Used command chmod u=r,g=r .project_x.txt to only allow user and group to read this hidden file.

```
researcher2@238bb2a997f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 01:01 ..
-rw--w---- 1 researcher2 research_team   46 Sep 15 00:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$ chmod u=r,g=r .project_x.txt
researcher2@238bb2a997f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 00:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 15 01:01 ..
-r--r----- 1 researcher2 research_team   46 Sep 15 00:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$
```

Change directory permissions

Removed execute permission on drafts directory from group.
Used the command chmod g-x drafts.

```
researcher2@238bb2a997f4:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$ chmod g-x drafts
researcher2@238bb2a997f4:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Sep 15 00:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 15 00:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 15 00:25 project_t.txt
researcher2@238bb2a997f4:~/projects$
```

Summary

I have successfully made the necessary permission changes to files and directories as requested, using the necessary commands from the shell. This ensures users on this team are authorized with the appropriate permissions, which in turn, helps keep the system secure.