File permissions in Linux

Project description

"You are a security professional at a large organization. You mainly work with their research team. Part of your job is to ensure users on this team are authorized with the appropriate permissions. This helps keep the system secure.
Your task is to examine existing permissions on the file system. You'll need to determine if the permissions match the authorization that should be given. If they do not match, you'll need to modify the permissions to authorize the appropriate users and remove any unauthorized access."

Check file and directory details

```
researcher2@c08c3d15eade:~$ pwd
/home/researcher2
researcher2@c08c3d15eade:~$ ls
projects
researcher2@c08c3d15eade:~$ cd projects
researcher2@c08c3d15eade:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 18:43 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 19:34 ..
-rw--w---- 1 researcher2 research_team   46 Oct 16 18:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 16 18:43 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct 16 18:43 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 16 18:43 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 16 18:43 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 16 18:43 project_t.txt
researcher2@c08c3d15eade:~/projects$ █
```

Change file permissions

```
researcher2@c08c3d15eade:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 18:43 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 19:34 ..
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 16 18:43 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct 16 18:43 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 16 18:43 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 16 18:43 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 16 18:43 project_t.txt
researcher2@c08c3d15eade:~/projects$ chmod u=r,g=r,o=r project_k.txt
researcher2@c08c3d15eade:~/projects$ chmod u=r,g=r,o=r project_m.txt
researcher2@c08c3d15eade:~/projects$ chmod a=r project_r.txt
researcher2@c08c3d15eade:~/projects$ chmod a=r project_t.txt
researcher2@c08c3d15eade:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 18:43 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 19:34 ..
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 16 18:43 drafts
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_k.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_m.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_r.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_t.txt
researcher2@c08c3d15eade:~/projects$ chmod o-r .project_x.txt
researcher2@c08c3d15eade:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 18:43 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 19:34 ..
-r--r----- 1 researcher2 research_team   46 Oct 16 18:43 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 16 18:43 drafts
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_k.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_m.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_r.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_t.txt
researcher2@c08c3d15eade:~/projects$ chmod g-x drafts
```

Change directory permissions

```
researcher2@c08c3d15eade:~/projects$ ls -al
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 18:43 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 16 19:34 ..
-r--r----- 1 researcher2 research_team   46 Oct 16 18:43 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Oct 16 18:43 drafts
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_k.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_m.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_r.txt
-r--r--r-- 1 researcher2 research_team   46 Oct 16 18:43 project_t.txt
researcher2@c08c3d15eade:~/projects$ []
```

Summary

As can be seen above, utilizing the chmod command I was able to access and modify multiple different files and the projects directory to align with company security clearance expectations. Utilizing the list command to show all hidden files and associated privileges I was able to inspect the symbolic permission string for each file in the projects folder. Within the chmod command I utilized the argument a=r to quickly modify all users to read permission on multiple files.