

File permissions in Linux

Scenario

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.

Project description

I accomplished modifying permissions to provide restrictions or access to certain files as well as hidden files using the ***chmod*** command.

Check file and directory details

```
researcher2@2990ac4dcalf:~$ cd projects
researcher2@2990ac4dcalf:~/projects$ dir
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@2990ac4dcalf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:05 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-rw--w---- 1 researcher2 research_team  46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Dec 22 21:05 project_k.t
xt
-rw-r----- 1 researcher2 research_team  46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ chmod o-w project_k.txt
```

Describe the permissions string

every user had the ability to Read and Write onto the file, but I had changed their permissions by restricting access to other users by only allowing them to read not write.

Change file permissions

```
researcher2@2990ac4dcalf:~$ cd projects
researcher2@2990ac4dcalf:~/projects$ dir
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@2990ac4dcalf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:05 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-rw--w---- 1 researcher2 research_team  46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Dec 22 21:05 project_k.t
xt
-rw-r----- 1 researcher2 research_team  46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ chmod o-w project_k.txt
```

Change file permissions on a hidden file

I changed the permission on a hidden to restrict the ability to write from both the user and groups.

```

xt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ chmod g-r,g-w project_m.txt
researcher2@2990ac4dcalf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:05 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-rw--w---- 1 researcher2 research_team 46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-r-- 1 researcher2 research_team 46 Dec 22 21:05 project_k.t
xt
-rw----- 1 researcher2 research_team 46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team 46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ chmod u-w,g-w .project_x.txt
researcher2@2990ac4dcalf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:05 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-r----- 1 researcher2 research_team 46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-r-- 1 researcher2 research_team 46 Dec 22 21:05 project_k.t
xt

```

I then only granted the user and groups to read the hidden file but I restricted access to every other permission.

```

drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-r----- 1 researcher2 research_team  46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_k.t
xt
-rw----- 1 researcher2 research_team  46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ chmod u+r,g+r .project_x.txt
researcher2@2990ac4dcalf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:05 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-r--r----- 1 researcher2 research_team  46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_k.t
xt
-rw----- 1 researcher2 research_team  46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ 

```

Change directory permissions

I then changed permissions to the draft directory to deny groups access to execute.

```

drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-r--r----- 1 researcher2 research_team  46 Dec 22 21:05 .project_x.
txt
drwx--x--- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_k.t
xt
-rw----- 1 researcher2 research_team  46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$ chmod g-x drafts
researcher2@2990ac4dcalf:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:05 .
drwxr-xr-x 3 researcher2 research_team 4096 Dec 22 21:46 ..
-r--r----- 1 researcher2 research_team  46 Dec 22 21:05 .project_x.
txt
drwx----- 2 researcher2 research_team 4096 Dec 22 21:05 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_k.t
xt
-rw----- 1 researcher2 research_team  46 Dec 22 21:05 project_m.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_r.t
xt
-rw-rw-r-- 1 researcher2 research_team  46 Dec 22 21:05 project_t.t
xt
researcher2@2990ac4dcalf:~/projects$

```

Summary

Within Linux I have granted access and permissions to authorized owners to help maintain security. I also restricted access to different owners who did not have authorization to manage files. Lastly, I changed all permissions using the **chmod** command as well identifying the types of owners and that should and should be granted permissions to read, write, or execute.