

# File permissions in Linux

## Project description

This project is a part of the Google Cybersecurity Professional Certifications.

“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

First, we list all the files in the directory. I used `ls -la` for this.

```
researcher2@dd555637b316:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 14:46 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 15:24 ..
-rw--w---- 1 researcher2 research_team  46 Jul  3 14:46 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jul  3 14:46 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Jul  3 14:46 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jul  3 14:46 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jul  3 14:46 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jul  3 14:46 project_t.txt
```

## Describe the permissions string

We will be analyzing two files: `project_k.txt` and `project_m.txt`.

Our user "researcher2", the group "research\_team", and others can read and write the `project_k.txt` file. Regarding `project_m.txt`, "researcher2" can read and write the file, and the group "research\_team" can also read this file.

`project_m.txt` is a restricted file and should only be readable by the owner. Furthermore, others should not be able to write to the `project_k.txt` file.

## Change file permissions

Since I detected misconfigurations in the two files, I proceeded to change the file permissions:

```
chmod o-x project_k.txt
```

```
chmod g-r project_m.txt
```

```
researcher2@dd555637b316:~/projects$ chmod o-w project_k.txt
researcher2@dd555637b316:~/projects$ chmod g-r project_m.txt
researcher2@dd555637b316:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 14:46 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 15:24 ..
-rw--w---- 1 researcher2 research_team   46 Jul  3 14:46 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jul  3 14:46 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jul  3 14:46 project_k.txt
-rw----- 1 researcher2 research_team   46 Jul  3 14:46 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul  3 14:46 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul  3 14:46 project_t.txt
```

## Change file permissions on a hidden file

The hidden file `project_x.txt` should not be writable by anyone. As seen in the previous screen, the configuration is incorrect. The group should be able to read it. Let's correct it:

```
chmod g+r-w,u-w .project_x.txt
```

```
researcher2@dd555637b316:~/projects$ chmod g+r-w,u-w .project_x.txt
researcher2@dd555637b316:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 14:46 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 15:24 ..
-r--r----- 1 researcher2 research_team   46 Jul  3 14:46 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jul  3 14:46 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jul  3 14:46 project_k.txt
-rw----- 1 researcher2 research_team   46 Jul  3 14:46 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul  3 14:46 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul  3 14:46 project_t.txt
```

## Change directory permissions

Only the user "researcher2" should be allowed to access the drafts directory and its contents. The permissions on the directory are incorrect.

```
researcher2@dd555637b316:~/projects$ chmod g-x drafts/
researcher2@dd555637b316:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 14:46 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul  3 15:24 ..
-r--r----- 1 researcher2 research_team  46 Jul  3 14:46 .project_x.txt
drwx----- 2 researcher2 research_team 4096 Jul  3 14:46 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Jul  3 14:46 project_k.txt
-rw----- 1 researcher2 research_team  46 Jul  3 14:46 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jul  3 14:46 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jul  3 14:46 project_t.txt
```

## Summary

I changed multiple permissions on files, a hidden file, and a directory to match the level of authorization required by my company. First, I listed all the content of the projects directory and reviewed the permissions. This helped me determine which files' permissions needed to be changed.