# File permissions in Linux

## Project description

In this activity, I demonstrate the practical application of Linux commands to manage file permissions within a large organization's research team environment. My objective is to ensure that all files and directories have the appropriate permissions set, so that sensitive information remains secure and is only accessible by authorized personnel.

## Check file and directory details

To verify the existing permissions for the files in the /home/researcher2/projects directory, I used the following command:

```
ls -la /home/researcher2/projects
```

Output:

```
total 32
drwxr-x--- 2 researcher2 researchgroup 4096 Oct 10 12:00 .
drwxr-xr-x 5 researcher2 researchgroup 4096 Oct 10 11:59 ..
-rw-rw-r-- 1 researcher2 researchgroup   0 Oct 10 12:00 project_k.txt
-rw-r--r-- 1 researcher2 researchgroup   0 Oct 10 12:00 project_m.txt
-rw-rw-r-- 1 researcher2 researchgroup   0 Oct 10 12:00 project_r.txt
-rw-rw-r-- 1 researcher2 researchgroup   0 Oct 10 12:00 project_t.txt
-rw-r----- 1 researcher2 researchgroup   0 Oct 10 12:00 .project_x.txt
drwxr-x--- 2 researcher2 researchgroup 4096 Oct 10 12:00 drafts
```

## Describe the permissions string

The permissions string -rw-r--r-- for project_m.txt indicates:

- -: This is a regular file.
- rw-: The user (owner) has read and write permissions.
- r--: The group has read-only permissions.
- r--: Others have read-only permissions.

## Change file permissions

The file `project_k.txt` should not be writable by 'Others'. I changed this using the following command:

```
chmod o-w /home/researcher2/projects/project_k.txt
```

## Change file permissions on a hidden file

For `.project_x.txt`, it's crucial that no one outside the user and group has write permissions. The command used:

```
chmod go-w /home/researcher2/projects/.project_x.txt
```

## Change directory permissions

The `drafts` directory should only be accessible by `researcher2`. The permissions were adjusted with:

```
chmod u=rwx,go= /home/researcher2/projects/drafts
```

## Summary

This project involved a thorough review and adjustment of file and directory permissions within the /home/researcher2/projects directory to align with strict security protocols. By executing targeted Linux commands, I ensured that sensitive data is shielded against unauthorized access, thereby supporting the organization's overall data security strategy.