

# File permissions in Linux

## Project description

Managing Authorizations in Linux Environment

In this scenario I will be examining and managing the permissions on the files in the `/home/researcher2/projects` directory for the `researcher2` user.

## Check file and directory details

```
researcher2@7e685c6ce17a:~$ ls
projects
researcher2@7e685c6ce17a:~$ cd projects
researcher2@7e685c6ce17a:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  2 11:11 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug  2 12:02 ..
-rw--w---- 1 researcher2 research_team  46 Aug  2 11:11 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug  2 11:11 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Aug  2 11:11 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Aug  2 11:11 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:11 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:11 project_t.txt
researcher2@7e685c6ce17a:~/projects$
```

## Describe the permissions string

Starting from top to bottom, the description of current permissions are below.

- Hidden file `.project_x.txt` has read/write permissions for the user and write permissions for the group.
- The `drafts` directory has read/write/execute permissions for the user, and execute permissions for the group.
- `project_k.txt` has read/write permissions for the user, group, and other.
- `project_m.txt` has read/write permissions for the user and read only permission for group.
- `project_r.txt` has read/write permissions for both user and group and read only for other.
- `project_t.txt` has read/write permissions for user and group and read only for other.

## Change file permissions

```
researcher2@e73ddfe82dd3:~/projects$ chmod o-w project_k.txt
researcher2@e73ddfe82dd3:~/projects$ chmod g-r project_m.txt
researcher2@e73ddfe82dd3:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug  2 11:37 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_k.txt
-rw----- 1 researcher2 research_team  46 Aug  2 11:37 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_t.txt
researcher2@e73ddfe82dd3:~/projects$
```

## Change file permissions on a hidden file

```
researcher2@e73ddfe82dd3:~/projects$ chmod u-w,g-w .project_x.txt
researcher2@e73ddfe82dd3:~/projects$ chmod g+r .project_x.txt
researcher2@e73ddfe82dd3:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  2 11:37 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug  2 12:33 ..
-r--r----- 1 researcher2 research_team  46 Aug  2 11:37 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug  2 11:37 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_k.txt
-rw----- 1 researcher2 research_team  46 Aug  2 11:37 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_t.txt
researcher2@e73ddfe82dd3:~/projects$
```

## Change directory permissions

```
researcher2@e73ddfe82dd3:~/projects$ chmod g-x drafts
researcher2@e73ddfe82dd3:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug  2 11:37 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug  2 12:33 ..
-r--r----- 1 researcher2 research_team  46 Aug  2 11:37 .project_x.txt
drwx----- 2 researcher2 research_team 4096 Aug  2 11:37 drafts
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_k.txt
-rw----- 1 researcher2 research_team  46 Aug  2 11:37 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Aug  2 11:37 project_t.txt
researcher2@e73ddfe82dd3:~/projects$
```

## Summary

- None of the files should allow other users to write to files. `project_k.txt` currently has write permissions which need to be removed.
- The file `project_m.txt` is a restricted file and should not be readable or writable by the group or other. Only the user should have these permissions.
- The file `.project_x.txt` is a hidden file that has been archived and should not be written to by anyone. (The user and the group should still be able to read this file.)
- Only the `researcher2` user should be allowed to access the drafts directory and its contents. This means only `researcher2` should have execute privileges.