# File permissions in Linux

## Project description

In this scenario, you must examine and manage the permissions on the files in the `/home/researcher2/projects` directory for the `researcher2` user.

The `researcher2` user is part of the `research_team` group.

You must check the permissions for all files in the directory, including any hidden files, to make sure that permissions align with the authorization that should be given. When it doesn't, you must change the permissions.

Here's how you'll do this task: **First**, you'll check the user and group permissions for all files in the `projects` directory. **Next**, you'll check whether any files have incorrect permissions and change the permissions as needed. **Finally**, you'll check the permissions of the `/home/researcher2/projects/drafts` directory and modify these permissions to remove any unauthorized access.

# Check file and directory details

```
researcher2@41c1609edfbd:~$ cd projects
researcher2@41c1609edfbd:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_t.txt
researcher2@41c1609edfbd:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 25 17:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 25 18:32 ..
-rw--w---- 1 researcher2 research_team   46 Jan 25 17:50 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_t.txt
researcher2@41c1609edfbd:~/projects$ 
```

# Describe the permissions string

```
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
```

The drafts directory at the user level has read, write, and execute permission. At the group level they only have execute permission and there are no permissions for anyone else. For the file project_k.txt the user,group and others all have read and write permission. For project_m.txt the user has read and write permissions while at the group level there is only read permissions. All other permissions are removed.

# Change file permissions

```
researcher2@41c1609edfbd:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_t.txt
researcher2@41c1609edfbd:~/projects$ chmod o-w project_k.txt
researcher2@41c1609edfbd:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_t.txt
researcher2@41c1609edfbd:~/projects$ chmod g-r project_m.txt
researcher2@41c1609edfbd:~/projects$ []
```

# Change file permissions on a hidden file

```
researcher2@41c1609edfbd:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 25 17:50 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 25 18:32 ..
-rw--w---- 1 researcher2 research_team   46 Jan 25 17:50 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_t.txt
researcher2@41c1609edfbd:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@41c1609edfbd:~/projects$
```

# Change directory permissions

```
researcher2@41c1609edfbd:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jan 25 17:50 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_k.txt
-rw------- 1 researcher2 research_team   46 Jan 25 17:50 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 25 17:50 project_t.txt
researcher2@41c1609edfbd:~/projects$ chmod g-x drafts
researcher2@41c1609edfbd:~/projects$
```

## Summary

The tasks that were completed in this project were to check file and directory details both for visible files and hidden files and change permissions so only the authorized users had access.