File permissions in Linux

Project description

- Check files and directory details
- Change file permissions
- Change file permissions on a hidden files
- Change directory permissions

Check file and directory details

- **ls** - to list contents in directory
- **cd projects/** - to change directory from home to the projects directory
- **ls -l** - to list all contents and permissions of the project directory
- **ls -la** - to list all contents and permissions of the project directory including all hidden files

```
researcher2@3a544b3df1d3:~$ ls
projects
researcher2@3a544b3df1d3:~$ cd projects/
researcher2@3a544b3df1d3:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Oct  8 00:08
drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct  8 00:08
project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  8 00:08
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_t.txt
researcher2@3a544b3df1d3:~/projects$ []
```

```
researcher2@3a544b3df1d3:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  8 00:08
.
drwxr-xr-x 3 researcher2 research_team 4096 Oct  8 00:38
..
-rw--w---- 1 researcher2 research_team   46 Oct  8 00:08
.project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  8 00:08
drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct  8 00:08
project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  8 00:08
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_t.txt
researcher2@3a544b3df1d3:~/projects$ []
```

Describe the permissions string

The permission strings are as follows:
- **-rwx** (file ("-") = read, write, and execute)
- **drwx** (directory ("d") = read, write, execute)
- **u** - users
- **g** - group
- **o** - others

The **"-"** infront of **"-rwx"** indicates that it is a file whereas the **"d"** in **"drwx"** stands for "directory."

Change file permissions

None of the files in the "project" directory should allow the other users to write to files.

Found that **project_k.txt** allows other users write permissions and **removed write** permissions to correct the error by:

- Checking file permissions using command **ls -l**
- Changed permissions using **chmod o-w project_k.txt (chmod** = change mode and **"o-w"** = other minus write (essentially taking the writes permissions from the "other" users.)

- Changed permissions on **project_m.txt** and **removed group read** permissions (g-r)

```
researcher2@3a544b3df1d3:~/projects$ chmod o-w project_k.
txt
researcher2@3a544b3df1d3:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Oct  8 00:08
drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  8 00:08
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 00:08
project_t.txt
researcher2@3a544b3df1d3:~/projects$ 
```

```
researcher2@16536f77dac8:~/projects$ chmod g-r project_m.
txt
researcher2@16536f77dac8:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Oct  8 01:00
drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  8 01:00
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_t.txt
researcher2@16536f77dac8:~/projects$ 
```

Change file permissions on a hidden file

- Checked file permissions on a hidden file using **ls -la** command
- Changed permissions on hidden file **.project_x.txt** (should not be written by anyone but only read by users and groups)

```
researcher2@16536f77dac8:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  8 01:00
.
drwxr-xr-x 3 researcher2 research_team 4096 Oct  8 01:36
..
-rw--w---- 1 researcher2 research_team   46 Oct  8 01:00
.project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  8 01:00
drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  8 01:00
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_t.txt
researcher2@16536f77dac8:~/projects$ chmod u-w .project_x
.txt
researcher2@16536f77dac8:~/projects$ chmod g-w .project_x
.txt
```

```
researcher2@16536f77dac8:~/projects$ chmod g=r .project_x
.txt
researcher2@16536f77dac8:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  8 01:00
.
drwxr-xr-x 3 researcher2 research_team 4096 Oct  8 01:36
..
-r--r----- 1 researcher2 research_team   46 Oct  8 01:00
.project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  8 01:00
drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  8 01:00
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_t.txt
researcher2@16536f77dac8:~/projects$ ▯
```

Change directory permissions

- Only **"researcher2"** should be allowed to access this directory

- Changed directory permissions for the **"drafts"** folder and **removed execute** permissions.

```
researcher2@16536f77dac8:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Oct  8 01:00
drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  8 01:00
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_t.txt
researcher2@16536f77dac8:~/projects$ chmod g-x drafts
researcher2@16536f77dac8:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Oct  8 01:00
drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_k.txt
-rw------- 1 researcher2 research_team   46 Oct  8 01:00
project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  8 01:00
project_t.txt
researcher2@16536f77dac8:~/projects$ 
```

Summary

This project involved managing file and directory permissions in a Linux environment. Tasks included checking and listing file details using commands like **ls -l** and **ls -la**, and modifying permissions with **chmod**. For example, write permissions were removed from files such as **project_k.txt** and group read permissions from **project_m.txt.** Hidden file **.project_x.txt** was set to read-only for users and groups. Directory permissions were adjusted to restrict access to specific users, ensuring only "researcher2" could access the "drafts" folder.