File permissions in Linux

Project description

Through this project I demonstrate the management of directory and file permissions in a Linux environment.

Check file and directory details

```
pwd
cd projects/
ls -l
```

```
researcher2@1a1e4df611d0:~$ pwd
/home/researcher2
researcher2@1a1e4df611d0:~$ cd projects/
researcher2@1a1e4df611d0:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug 12 20:07 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug 12 20:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 12 20:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_t.txt
researcher2@1a1e4df611d0:~/projects$
```

Describe the permissions string

The permissions string contains 10 characters.
Character 01 = File Type (d = directory)
Character 02 = User Read
Character 03 = User Write
Character 04 = User Execute
Character 05 = Group Read
Character 06 = Group Write
Character 07 = Group Execute
Character 08 = Other Read (not user, nor group)
Character 09 = Other Write
Character 10 = Other Execute

Change file permissions

```
ls -la
chmod o-w project_k.txt
ls -la
```

```
researcher2@1a1e4df611d0:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 12 20:07 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 12 21:01 ..
-rw--w---- 1 researcher2 research_team   46 Aug 12 20:07 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 12 20:07 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug 12 20:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 12 20:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_t.txt
researcher2@1a1e4df611d0:~/projects$ chmod o-w project_k.txt
researcher2@1a1e4df611d0:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 12 20:07 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 12 21:01 ..
-rw--w---- 1 researcher2 research_team   46 Aug 12 20:07 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 12 20:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 12 20:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_t.txt
```

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

```
researcher2@1a1e4df611d0:~/projects$ chmod g-r project_m.txt
researcher2@1a1e4df611d0:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 12 20:07 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 12 21:01 ..
-rw--w---- 1 researcher2 research_team   46 Aug 12 20:07 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 12 20:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_k.txt
-rw------- 1 researcher2 research_team   46 Aug 12 20:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 12 20:07 project_t.txt
```

Change file permissions on a hidden file

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

```
researcher2@1a1e4df611d0:~/projects$ ls .project_x.txt -l
-rw--w---- 1 researcher2 research_team 46 Aug 12 20:07 .project_x.txt
```

```
researcher2@1a1e4df611d0:~/projects$ chmod u-w,g-w .project_x.txt
researcher2@1a1e4df611d0:~/projects$ ls .project_x.txt -l
-r-------- 1 researcher2 research_team 46 Aug 12 20:07 .project_x.txt
researcher2@1a1e4df611d0:~/projects$ chmod g+r .project_x.txt
researcher2@1a1e4df611d0:~/projects$ ls .project_x.txt -l
-r--r----- 1 researcher2 research_team 46 Aug 12 20:07 .project_x.txt
```

Change directory permissions

```
ls -l
chmod g-x drafts
ls -l
```

```
researcher2@1a1e4df611d0:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug 12 20:07 drafts
```

```
researcher2@1a1e4df611d0:~/projects$ chmod g-x drafts
researcher2@1a1e4df611d0:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Aug 12 20:07 drafts
```

Summary

In this project I was able to apply learned knowledge managing directory and file permissions within a Linux operating system. A key takeaway for me is to pay attention to the existence of hidden files and their associated permissions within the context of least privilege.