File permissions in Linux

Project description

Through Linux commands, I can configure authorization to protect sensitive information and maintain the security of a system. Linux commands allow you to change file and directory permissions to manage who can access specific files and directories.

Check file and directory details

List the contents and permissions of the `projects` directory:

```
researcher2@02a5221e7f41:~$ cd projects/
researcher2@02a5221e7f41:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
```

Check for hidden files:

```
researcher2@02a5221e7f41:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 22 21:07 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 22 22:02 ..
-rw--w---- 1 researcher2 research_team   46 Jun 22 21:07 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
```

Describe the permissions string

10-character string: begins with file type (`d` for directory, – for regular file), next 3 characters indicate permissions for the user, next 3 indicate permissions for the group, and last 3 indicate permissions for all others.

Change file permissions

Change the permissions of `project_k.txt` so that the owner type of other doesn't have write permissions:

```
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
researcher2@02a5221e7f41:~/projects$ chmod o-w project_k.txt
researcher2@02a5221e7f41:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
```

Change the permissions of the `project_m.txt` file so that the group doesn't have read or write permissions:

```
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
researcher2@02a5221e7f41:~/projects$ chmod g= project_m.txt
researcher2@02a5221e7f41:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
```

Change file permissions on a hidden file

Change the permissions of the file `.project_x.txt` so that both the user and the group can read, but not write to, the file:

```
drwxr-xr-x 3 researcher2 research_team 4096 Jun 22 21:07 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 22 22:02 ..
-rw--w---- 1 researcher2 research_team   46 Jun 22 21:07 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
researcher2@02a5221e7f41:~/projects$ chmod u=r,g=r .project_x.txt
researcher2@02a5221e7f41:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 22 21:07 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 22 22:02 ..
-r--r----- 1 researcher2 research_team   46 Jun 22 21:07 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
```

Change directory permissions

Remove the executive permissions for the group from the `drafts` directory:

```
drwx--x--- 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
researcher2@02a5221e7f41:~/projects$ chmod g-x drafts
researcher2@02a5221e7f41:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Jun 22 21:07 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 22 21:07 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 22 21:07 project_t.txt
```

Summary

This activity gave me experience in using basic Linus Bash shell commands to examine file and directory permissions, change permissions on files, and change permissions on directories.