File permissions in Linux

Project description

This project focuses on managing file and directory permissions in Linux. It involves examining existing permissions, understanding their structure, and using the 'chmod' command to adjust access rights.

Check file and directory details

The commands 'cd' , 'ls' , 'ls -l' & 'ls-a' are used to navigate though directories and check files and directories.

```
researcher2@5485ef4a331e:~$ cd projects
researcher2@5485ef4a331e:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug 11 05:00 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug 11 05:00 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 11 05:00 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 05:00 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 05:00 project_t.txt
```

Describe the permissions string

Permissions string is a 10-character code showing file type and read, write, execute rights for owner, group and others respectively.

```
drwxr-xr-x 3 researcher2 research_team 4096 Aug
```

Change file permissions

To change permissions on a file , 'chmod' command is used followed by 2 arguments , first being what permission to change from whom and second argument being the file/directory of which the permission has to be changed.

```
researcher2@185aa8495ab0:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug 11 02:59 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug 11 02:59 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 11 02:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_t.txt
researcher2@185aa8495ab0:~/projects$ chmod o-w project_k.txt
researcher2@185aa8495ab0:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug 11 02:59 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 11 02:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_t.txt
```

In the above ss, permission was modified so that the owner type of other doesn't have write permissions in the file `project_k.txt`.

Change file permissions on a hidden file

It's similar to changing file permission on a normal file except the hidden file name has a `.` before its name (.project_x.txt). The same command 'chmod' is used along with the arguments to change file permissions on a hidden file

```
researcher2@185aa8495ab0:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 11 02:59 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 11 03:44 ..
-rw--w---- 1 researcher2 research_team   46 Aug 11 02:59 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 11 02:59 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_k.txt
-rw------- 1 researcher2 research_team   46 Aug 11 02:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_t.txt
researcher2@185aa8495ab0:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@185aa8495ab0:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 11 02:59 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 11 03:44 ..
-r--r----- 1 researcher2 research_team   46 Aug 11 02:59 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 11 02:59 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_k.txt
-rw------- 1 researcher2 research_team   46 Aug 11 02:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_t.txt
```

In the above ss, The file `.project_x.txt` is a hidden file that has been archived and should not be written to by anyone, but the owner type group and others had write to permission on them. Also the owner type group had to be given read permission on the file. So by using the 'chmod' command, I removed write to permissions from the user and the group and added read permission to the group.

Change directory permissions

Here, again the ‘chmod’ command is used to change directory permission.

```
researcher2@185aa8495ab0:~/projects$ ls -l
total 20
drwx--x--- 2 researcher2 research_team 4096 Aug 11 02:59 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_k.txt
-rw------- 1 researcher2 research_team   46 Aug 11 02:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_t.txt
researcher2@185aa8495ab0:~/projects$ chmod g-x drafts
researcher2@185aa8495ab0:~/projects$ ls -l
total 20
drwx------ 2 researcher2 research_team 4096 Aug 11 02:59 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_k.txt
-rw------- 1 researcher2 research_team   46 Aug 11 02:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 11 02:59 project_t.txt
```

The files and directories in the projects directory belong to the researcher2 user. Only researcher2 should be allowed to access the drafts directory and its contents. So by using the ‘chmod’ command, i was able to remove the execute permission on the ‘drafts’ directory of the group owner type.

Summary

This project demonstrated how to view and modify file and directory permissions in Linux using the cd ls and chmod commands. The permissions for files and directories were examined, and changes were applied to restrict access for certain users