File permissions in Linux

Project description

The description of this project is to examine existing permissions to file and directories within our organisation, and ensure that the permissions match the authorisation that should be given to employees.

Check file and directory details

To check the permissions of the file and directory, including hidden files, we used the ls -la command. The ls -la command is a combination of the ls-l and ls-a command, and displays all permissions to the files and directories including hidden files.

```
researcher2@376c77b477f2:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 28 01:59 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 28 02:43 ..
-rw--w---- 1 researcher2 research_team   46 Jun 28 01:59 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 28 01:59 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 28 01:59 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 28 01:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 28 01:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 28 01:59 project_t.txt
researcher2@376c77b477f2:~/projects$
```

Describe the permissions string

The permissions string is a 10 character string which represents the permissions of the three groups on a Linux system. Let's use this file and its string as an example, and highlight what permissions it represents.

```
-rw-rw-rw- 1 researcher2 research_team   46 Jun 28 01:59 project_k.txt
```

The string says '-rw-rw-rw-'. This means that all three groups (User, Group, and Other) have permissions to read and write to the project_k.txt file. As you can see, the permissions also have a missing place which is represented by a hyphen. This is the execute command, however, is missing as this is a text file.

Change file permissions

The files that need its permissions changed include the prokect_k.txt, project_m.txt, and the hidden file which is .project_x.txt files. This is the command we used to change the permissions for the project_k and project_m files to remove the Other group from writing to the project_k file, and removing read and write from the Group group to the project_m file.
Chmod o-w project_k.txt - o (Other) - (Remove) w (Write permissions) project_k.txt (Intended file to remove permissions from).

Chmod g-rw project_m.txt - g (Group) - (Remove permissions) rw (Read and write permissions) project_m.txt (Intended file to remove permissions from).

```
researcher2@376c77b477f2:~/projects$ chmod o-w project_k.txt
researcher2@376c77b477f2:~/projects$ chmod g-rw project_m.txt
```

Change file permissions on a hidden file

The hidden file currently shows permissions for the User group being able to write to the file which should not be the case as it is an archived file, however, both the User and Group groups should be allowed to read the file. The command below assigns these permissions to ensure that the appropriate authorisation is issued.
Chmod ug+r-w - UG (User and Group) + (Add permission) r (Read permission) - (Remove) w (Write permissions) .project_x.txt (Intended file to remove and add permissions to).

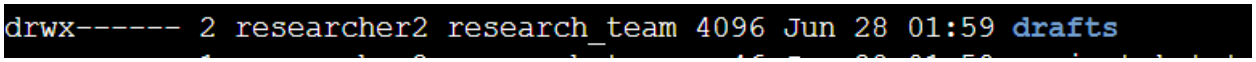
```
researcher2@376c77b477f2:~/projects$ chmod ug+r-w .project_x.txt
-r--r----- 1 researcher2 research_team   46 Jun 28 01:59 .project_x.txt
```

Change directory permissions

```
drwx--x--- 2 researcher2 research_team 4096 Jun 28 01:59 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 28 01:59 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 28 01:59 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 28 01:59 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 28 01:59 project_t.txt
```

At this current moment, the ‘drafts’ directory allows the Group group to execute files that are in the ‘drafts’ directory, which should not be the case, and only allow access to the ‘researcher2’ user as it belongs to them. This is the command that was used to remove the execute privileges from the Group group.

```
researcher2@376c77b477f2:~/projects$ chmod g-x drafts
```



Chmod g-x drafts - g stands for Group, the minus (-) means remove permission, and the x represents the permission to be removed (execute), and drafts is the intended directory to remove these permissions from.

Summary

In this project, we addressed the issue of incorrect permissions given to files and directories, and amended this issue by issuing chmod commands to ensure that the appropriate authorisation was given. This included the permissions of the project_k, project_m, .project_x files, and the drafts directory. In the above, we have provided screenshots of the commands that were used, as well as confirming that the permissions were changed by providing the permissions to the file and directory before and after the chmod command was issued.