File permissions in Linux

Project description

In this project, I use the `ls` command in Linux to list directories, files, and their permissions. I then use the `chmod` command to modify the permissions of three files and one directory.

Check file and directory details

The basic command for listing directories and files in Linux is `ls`. To display permissions of files and directories, the command `ls -l` is used. To list hidden files, run `ls -a` (note that a hidden file or directory starts with a period [.]). In this exercise, I run this command to list all the files, directories and permissions in the `/home/researcher2/projects` directory:

```
ls -la
```

And it displays the following output:

```
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Aug 15 16:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Aug 15 16:32 ..
-rw--w---- 1 researcher2 research_team   46 Aug 15 16:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Aug 15 16:03 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Aug 15 16:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Aug 15 16:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 15 16:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Aug 15 16:03 project_t.txt
```

Describe the permissions string

Each file and directory has a 10-character permission string associated with it. The first character indicates whether it is a file (-) or a directory (d). Characters 2-4 specify the read (r), write (w), and execute (x) permission for the user. The next three characters indicate the same permissions for the group. The final three delegate those permissions to all other users. Whenever there is a hyphen (-) in characters 2-10, that means the particular user is not granted a specific permission.

Change file permissions

Now that we know about the permissions string I will run the following `chmod` command to ensure that the file `project_k.txt` does not allow other users to write to it:

`chmod o-w project_k.txt`
Additionally, I will remove the group's read permissions from `project_m.txt` with this command:

`chmod g-r project_m.txt`

Change file permissions on a hidden file

Now, I will modify permissions on the hidden file `.project_x.txt`. As mentioned earlier, I must remember to include the period in the name of the file. I will run two commands to remove write permissions from the user and the group, and one to add read permissions to the group:

```
chmod u-w .project_x.txt
chmod g-w .project_x.txt
chmod g+r .project_x.txt
```

Change directory permissions

Finally, I will modify permissions for the `drafts` directory. Specifically, I will use the following command to remove execution permissions for the group:

`chmod g-x drafts`

Summary

I used the `ls -la` command to list the files, directories and their respective permissions. Then I used the `chmod` command to modify permission according to the organization's standards.