File permissions in Linux

Project description

In this lab I examined a directory for permission issues and rectified them using the bash command chmod.

Check file and directory details

```
researcher2@0a8dfe2cb848:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct 17 00:53 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct 17 01:15 ..
-rw--w---- 1 researcher2 research_team   46 Oct 17 00:53 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct 17 00:53 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct 17 00:53 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct 17 00:53 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 17 00:53 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct 17 00:53 project_t.txt
```

Describe the permissions string

The permissions string is a 10 character string that is the first token in the output of ls -la. The first character is d if it is a directory, and - if a regular file. The next three characters in order describe the **r**ead, **w**rite, and e**x**ecute permissions of the user group respectively. Anywhere there is a - means that the type of permission is not granted. This is repeated in the next 3 for the group permissions, and the last 3 for the other permissions.

Change file permissions

First we notice that the other group has permissions to write to project_k.txt, which is not intentional. This is solved with the following command:

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

The project_m file is restricted and only the researcher2 user should be able to access it. Currently users in the group can read it. We remedy the mistake with this command:

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

Change file permissions on a hidden file

The file .project_x.txt is a hidden file that has been archived and should not be written to by anyone but can be read by both users and the group who owns it. We must remove the permissions for both the user and the group then add read permission for the group with:

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

Change directory permissions

Only the researcher2 user should be allowed to access the drafts directory and its contents, so we will remove the execute permission from the group.

```
chmod g-x drafts
```

Summary

Overall, we corrected permission issues in the researcher2 directory to learn how to manage Linux file permissions. An authorized user can edit the permissions of files to ensure security and follow the principle of least privilege whenever possible.