File permissions in Linux

Project description

This project is about changing permission for files and directory using LINUX. In this, I have updated the file permissions for certain files and directories within the projects directory. The permissions do not currently reflect the level of authorization that should be given. Following are the tasks I have performed:

Check file and directory details

First, I used LINUX commands to check the permissions for the given files and directory.

```
researcher2@e36dbef134dc:~$ cd projects
researcher2@e36dbef134dc:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 04:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 05:42 ..
-rw--w---- 1 researcher2 research_team   46 Apr 24 04:51 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr 24 04:51 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Apr 24 04:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 24 04:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_t.txt
researcher2@e36dbef134dc:~/projects$
```

Above is the screenshot of the permissions for the given files and directory along with the hidden files. The first line is Linux commands and other lines are the results in respond to that command. I used the `ls` command with the `-la` option to display a detailed listing of the file contents that also returned hidden files. The output of my command indicates that there is one directory named `drafts`, one hidden file named `.project_x.txt`, and five other project files. The 10-character string in the first column represents the permissions set on each file or directory.

Describe the permissions string

The 10-character string can be used to check who is authorized to access the file. The characters and what they represent are as follows:

1st character: This character is either d or hyphen(-). If it is d then it represents directory and if it is hyphen then it is a regular file.

2nd-4th character: These characters indicate the read(r), write(w), and execute(x) permissions for the user. When one of these characters is a hyphen(-) instead, it indicates that this permission is not granted to the user.

5th-7th characters: Similarly, like 2nd-4th characters, these characters indicate the read(r), write(w), and execute(x) permissions for the group.

8th-10th characters: These characters grant permissions for other.

For example, the file permissions for project_t.txt are -rw-rw-r--. Since the first character is a hyphen (-), this indicates that project_t.txt is a file, not a directory. The second, fifth, and eighth characters are all r, which indicates that user, group, and other all have read permissions. The third and sixth characters are w, which indicates that only the user and group have write permissions. No one has execute permissions for project_t.txt.

Change file permissions

Now, I have changed permissions using the chmod command. The chmod command changes the permissions on file and directories. In this example, I removed write permissions from other for the `project_k.txt` file. After this, I used `ls -la` to review the updates I made.

```
researcher2@e36dbef134dc:~/projects$ chmod o-w project_k.txt
researcher2@e36dbef134dc:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 04:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 05:42 ..
-rw--w---- 1 researcher2 research_team   46 Apr 24 04:51 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr 24 04:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 24 04:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_t.txt
researcher2@e36dbef134dc:~/projects$
```

Change file permissions on a hidden file

Similarly, using the same command, I have changed the permission for hidden files too.

```
researcher2@e36dbef134dc:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@e36dbef134dc:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 04:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 05:42 ..
-r--r----- 1 researcher2 research_team   46 Apr 24 04:51 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Apr 24 04:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 24 04:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_t.txt
researcher2@e36dbef134dc:~/projects$
```

Change directory permissions

`I want researcher2` user to have access to the `drafts` directory and its contents. This means that no one other than `researcher2` should have execute permissions.

The following code demonstrates how I used Linux commands to change the permissions:

```
researcher2@e36dbef134dc:~/projects$ chmod g-x drafts
researcher2@e36dbef134dc:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 04:51 .
drwxr-xr-x 3 researcher2 research_team 4096 Apr 24 05:42 ..
-r--r----- 1 researcher2 research_team   46 Apr 24 04:51 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Apr 24 04:51 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Apr 24 04:51 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Apr 24 04:51 project_t.txt
researcher2@e36dbef134dc:~/projects$
```

Summary

I changed multiple permissions for files and directories authorization in the `projects` directory. The first step in this was using `ls -la` to check the permissions for the directory. This informed my decisions in the following steps. I then used the `chmod` command multiple times to change the permissions on files and directories.