File permissions in Linux

Project description

Changed the permissions on a directory, file, hidden file using multiple commands in linux so that only the specified people were allowed to read, write, or execute. This is to ensure safety throughout the system.

Check file and directory details

I used the ls -la command to display all files (including hidden files) and all the permissions of each file.

```
researcher2@2cb1192824a7:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 15:35 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 16:25 ..
-rw--w---- 1 researcher2 research_team   46 Sep 12 15:35 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 12 15:35 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Sep 12 15:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 12 15:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_r.txt
-rw-rw-r-- 1 researcher2 research team   46 Sep 12 15:35 project_t.txt
```

Describe the permissions string

In the second line that was returned back by the terminal, the drwxr-xr-x means that user has the permissions to read, write, and execute, while group and other only have the permission to read and execute.

Change file permissions

The organization does not allow other to have write access to any files. I used the chmod command to change the permission of project_k.txt to remove other from writing within the file; the o-w add-on did this.

```
researcher2@2cb1192824a7:~/projects$ chmod o-w project_k.txt
researcher2@2cb1192824a7:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 15:35 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 16:25 ..
-rw--w---- 1 researcher2 research_team   46 Sep 12 15:35 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 12 15:35 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 12 15:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_t.txt
```

Change file permissions on a hidden file

The research team has archived `.project_x.txt`, which is why it's a hidden file. This file should not have write permissions for anyone, but the user and group should be able to read the file. I used the add-ons u-w to remove the user's ability to write, and g-w+r to remove the group's ability to write and add the group's ability to read.

```
researcher2@2cb1192824a7:~/projects$ chmod u-w,g-w+r .project_x.txt
researcher2@2cb1192824a7:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 15:35 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 16:25 ..
-r--r----- 1 researcher2 research_team   46 Sep 12 15:35 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Sep 12 15:35 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 12 15:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_t.txt
```

Change directory permissions

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. I used the g-x add-on to remove group's permission to execute the drafts directory.

```
researcher2@2cb1192824a7:~/projects$ chmod g-x drafts
researcher2@2cb1192824a7:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 15:35 .
drwxr-xr-x 3 researcher2 research_team 4096 Sep 12 16:25 ..
-r--r----- 1 researcher2 research_team   46 Sep 12 15:35 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Sep 12 15:35 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Sep 12 15:35 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Sep 12 15:35 project_t.txt
```

Summary

Now all the files have the correct permissions, the system is more secure. People that shouldn't access different files and directories now don't have the permissions to do so. Information that people don't need to know is now hidden away from them, making data leaks less likely.