File permissions in Linux

Project description

In this scenario, The research team have asked us to modify the file permissions in the projects directory.

Check file and directory details

First, I've checked how many files are there in this directory using `ls`

```
researcher2@cadf0521fcf6:~/projects$ ls
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@cadf0521fcf6:~/projects$
```

Then, I used `ls-la` to check the details of the files and directories including the hidden files.

```
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-rw--w---- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$
```

Describe the permissions string

```
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
```

In this permission string, the first letter indicates if it's a file or directory, in this case `d`. Then the next 3 letters show the permissions does the owner type "User" have, r is "read", w is "write" and x is "execute" so the user have all 3 permissions. (-) Hyphen also indicate that if the owner has permission or not. Next is the "Group" owner type, which have only read and execute permissions. And the last 3 letters show the owner type "Other" which have also read and execute permission.

Change file permissions

The organization does not allow others to have write access to any files. Based on the permissions established in Step 3, identify which file needs to have its permissions modified. Use a Linux command to modify these permissions.

```
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-rw--w---- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$ chmod o-w project_k.txt
researcher2@cadf0521fcf6:~/projects$ chmod g-r project_m.txt
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-rw--w---- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$
```

Previously the others have “write” permission to the project_k.txt file, The organization does not allow others to have write access to any files. After identifying which file allows the others to write, I’ve used the chmod command to remove the write permission on the project_k.txt so that others can only read the file.

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. Use a Linux command to assign **.project_x.txt** the appropriate authorization. By using `ls -la` I’ve identified that the **.project_x.txt** allows the group to write on the file, Also to the user including read permission.

```
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-rw--w---- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$ chmod u-w,g-w .project_x.txt
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-r-------- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$
```

After identifying, I've used chmod command and changes the permission to allow the user and group to read only.

```
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-r--r----- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$
```

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. Using the chmod command, I've allowed the researcher2 / user to access the directory and its content.

```
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-r--r----- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$ chmod g-x drafts
researcher2@cadf0521fcf6:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:04 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 15:33 ..
-r--r----- 1 researcher2 research_team   46 Jun 19 15:04 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Jun 19 15:04 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_k.txt
-rw------- 1 researcher2 research_team   46 Jun 19 15:04 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 15:04 project_t.txt
researcher2@cadf0521fcf6:~/projects$
```

Summary

Using Linux commands on bash shell, I've learned to manage file permissions. This will allows me to manage the access of confidential files in the real-world.