File permissions in Linux

Project description

The organization's research team wants to update the permissions on their files and directories within the `projects` *directory. The current permissions are not up to date and need to be changed to the correct level of authorization. To do this, I completed the following tasks:*

Check file and directory details

Used command "ls -la" to check permissions of all files, including hidden files

```
researcher2@2a04e319cc6b:~$ cd projects
researcher2@2a04e319cc6b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 07:39 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 08:35 ..
-rw--w---- 1 researcher2 research_team   46 Oct  1 07:39 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  1 07:39 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct  1 07:39 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  1 07:39 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_t.txt
researcher2@2a04e319cc6b:~/projects$
```

`ls` *shows all of the files and directories within the current directory, and the* `-la` *flag shows the permissions of those files and directories, including hidden ones. The permissions are represented by a string of 10 characters.*

Describe the permissions string

Permission string by character:

1. *[file (-) or directory (d)]*
2. *[user read]*
3. *[user write]*
4. *[user execute]*
5. *[group read]*
6. *[group write]*
7. *[group execute]*
8. *[other read]*
9. *[other write]*

10. *[other execute]*

Change file permissions

The research team has determined that other users should not be able to write to the project_k.txt file, so I will remove the other write permission using chmod.

```
researcher2@2a04e319cc6b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 07:39 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 08:35 ..
-rw--w---- 1 researcher2 research_team   46 Oct  1 07:39 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  1 07:39 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Oct  1 07:39 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  1 07:39 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_t.txt
researcher2@2a04e319cc6b:~/projects$ chmod o-w project_k.txt
researcher2@2a04e319cc6b:~/projects$
```

As shown in the screenshot above, the file `project_k.txt` *has other write permissions. To change this so that other can only read, I used* `chmod o-w project_k.txt` *which removes the write permission from other.*

Change file permissions on a hidden file

Since the file .project_x.txt was recently archived, the research team as decided that no user should be able to write to that file, but the user and group users should still be able to read the file. The file currently has both user and group write permissions, but no group read permissions, so I will remove the two unneeded write permissions and add group read permissions.

```
researcher2@2a04e319cc6b:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@2a04e319cc6b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 07:39 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 08:35 ..
-r--r----- 1 researcher2 research_team   46 Oct  1 07:39 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Oct  1 07:39 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  1 07:39 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_t.txt
researcher2@2a04e319cc6b:~/projects$
```

By using the command `chmod u-w,g-w,g+r .project_x.txt`*, I have removed the user write permissions and the group write permissions, and added the group read permissions. I know this file is archived (hidden) because of the leading period. Now, the .project_x.txt file's permissions are properly configured.*

Change directory permissions

The research team has decided that the drafts directory should only be accessible by the owner of the directory. Thus, the group execute permissions should be removed.

```
researcher2@2a04e319cc6b:~/projects$ chmod g-x drafts
researcher2@2a04e319cc6b:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 07:39 .
drwxr-xr-x 3 researcher2 research_team 4096 Oct  1 08:35 ..
-r--r----- 1 researcher2 research_team   46 Oct  1 07:39 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Oct  1 07:39 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Oct  1 07:39 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Oct  1 07:39 project_t.txt
researcher2@2a04e319cc6b:~/projects$
```

I used the command `chmod g-x drafts` *to remove execute permissions from group. This means that only the user will be able execute, and thereby access, the drafts directory.*

Summary

I used the `ls` *function with the* `-l` *and* `-a` *tags to access the permissions of all files and directories, including hidden files, within the target directory. I changed the permissions of many files as instructed using the chmod command and based the changes on the original 10 character permission string, as described in the "Describe the permissions string" section.*

Additional note: the screenshots are taken from a later date than the completion of the activity and the certificate. I realized the original pictures did not have the correct commands.