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File Permissions in Linux

Project description

In this project, I use bash commands on the Linux command line interface (CLI) to check file/directory permissions and modify them so that the correct read, write, and execute permissions are in place for the user, group, and others. The modifications are made to both unhidden and hidden files.

Check file and directory details

```
researcher2@a0973557e05e:~$ pwd
/home/researcher2
researcher2@a0973557e05e:~$ ls
projects
researcher2@a0973557e05e:~$ cd projects
researcher2@a0973557e05e:~/projects$ ls
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
```

Checked current directory: `pwd`

Listed files/directories: `ls`

Changed directory into the “projects” directory: `cd projects`

```
researcher2@a0973557e05e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:10 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:44 ..
-rw--w---- 1 researcher2 research_team   46 Jun 19 17:10 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 17:10 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jun 19 17:10 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 19 17:10 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_t.txt
```

Listed permissions for all directories/files, including hidden: `ls -la`

Describe the permissions string

The fourth entry (line 6) in the above image shows the following 10-character string: `drwx--x---`

The first character ‘d’ represents that this entity is a directory and not a file (in this case, the directory called “drafts”).

The following set of three characters “rwx” shows the read, write, & execute permissions for the user (researcher2, the owner of the file). In this case, the user has read, write, and execute permissions.
The second set of three characters “--x” shows read, write, & execute permissions for the group (research_team). In this case, the group does not have read or write permissions but does have execute permissions.

The final set of three characters “---” shows read, write, & execute permissions for all others (besides the user and group members). In this case, others do not have read, write, or execute permissions.

Change file permissions

```
researcher2@a0973557e05e:~/projects$ chmod o-w project_k.txt
researcher2@a0973557e05e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:10 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:44 ..
-rw--w---- 1 researcher2 research_team   46 Jun 19 17:10 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 17:10 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 19 17:10 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_t.txt
```

Removed writing permissions for others on `project_k.txt` file: `chmod o-w project_k.txt`
Reviewed all permissions to verify change was successful: `ls -la`

Change file permissions on a hidden file

```
researcher2@a0973557e05e:~/projects$ chmod u=r,g=r .project_x.txt
researcher2@a0973557e05e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:10 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:44 ..
-r--r----- 1 researcher2 research_team   46 Jun 19 17:10 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jun 19 17:10 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 19 17:10 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_t.txt
```

Changed user permissions for the hidden file `.project_x.txt` so that user and group could only read: `chmod u=r,g=r .project_x.txt`
Reviewed all permissions to verify change was successful: `ls -la`

Change directory permissions

```
researcher2@a0973557e05e:~/projects$ chmod g-x drafts
researcher2@a0973557e05e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:10 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun 19 17:44 ..
-r--r----- 1 researcher2 research_team   46 Jun 19 17:10 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Jun 19 17:10 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun 19 17:10 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun 19 17:10 project_t.txt
```

Changed permissions so that only user could access drafts directory and its content: `chmod g-x drafts`

Reviewed all permissions to verify change was successful: `ls -la`

Summary

Through the usage of `chmod` command, read, write, and execute permissions were modified for user, group, and others. We initially entered the “projects” directory and viewed the permissions for all files and directories (including hidden files). We modified the permissions of `project_k.txt` to remove write permissions for others. We then changed the permissions of hidden file `.project_x.txt` so that user and group would have only read permissions. We concluded by modifying the `drafts` directory so that only the user had access with full read, write, and execute permissions. Throughout the process, we reviewed current permissions using the `ls -la` command.