File permissions in Linux

Project description

This project is based on the activity we go through in order to implement permissions structure for the organization at research team. Here we established the decided permission access of team members for the security and safe access to the data.

Check file and directory details

On going through the directory structure we get following files and directories with these permission structures.

```
researcher2@1edb4ad0430e:~/projects$ ls -ls
total 20
4 drwx--x--- 2 researcher2 research_team 4096 May 18 22:06 drafts
4 -rw-rw-rw- 1 researcher2 research_team   46 May 18 22:06 project_k.txt
4 -rw-r----- 1 researcher2 research_team   46 May 18 22:06 project_m.txt
4 -rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_r.txt
4 -rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_t.txt
```

Here, inside the directory: Project we find multiple files with different permissions.
Also there was a directory named as drafts on traversing through it we found:

```
researcher2@1edb4ad0430e:~/projects$ cd drafts
researcher2@1edb4ad0430e:~/projects/drafts$ ls -la
total 8
drwx--x--- 2 researcher2 research_team 4096 May 18 22:06 .
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:06 ..
```

Describe the permissions string:

In the /home/researcher2/projects directory, there are five files with the following names and permissions:

- project_k.txt
  - User = read, write,
  - Group = read, write
  - Other = read, write
- project_m.txt

○ User = read, write
○ Group = read
○ Other = none
● project_r.txt
○ User= read, write
○ Group = read, write
○ Other = read
● project_t.txt
○ User = read, write
○ Group = read, write
○ Other = read
● .project_x.txt
○ User = read, write
○ Group = write
○ Other = none

There is also one subdirectory inside the projects directory named drafts. The permissions on drafts are:
● User = read, write, execute
● Group = execute
● Other = none

Change file permissions

In order to change permissions for the file project_k.txt we use following commands:

```
researcher2@1edb4ad0430e:~/projects$ chmod o-w project_k.txt
researcher2@1edb4ad0430e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:06 .
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:48 ..
-rw--w---- 1 researcher2 research_team   46 May 18 22:06 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 18 22:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_k.txt
-rw-r----- 1 researcher2 research_team   46 May 18 22:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_t.txt
```

The other user's permissions to write the file project_k.txt has been revoked and limited to read only.

Another change we need to do is changing the permissions of project_m.txt.

```
researcher2@1edb4ad0430e:~/projects$ chmod g-r project_m.txt
researcher2@1edb4ad0430e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:06 .
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:48 ..
-rw--w---- 1 researcher2 research_team   46 May 18 22:06 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 18 22:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_k.txt
-rw------- 1 researcher2 research_team   46 May 18 22:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_t.txt
```

This limits the others and group users to read the file project_m.txt.

Change file permissions on a hidden file

The file `.project_x.txt` is a hidden file that has been archived and should not be written to by anyone.

```
researcher2@1edb4ad0430e:~/projects$ chmod u-w,g-w,g+r .project_x.txt
researcher2@1edb4ad0430e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:06 .
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:48 ..
-r--r----- 1 researcher2 research_team   46 May 18 22:06 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 May 18 22:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_k.txt
-rw------- 1 researcher2 research_team   46 May 18 22:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_t.txt
researcher2@1edb4ad0430e:~/projects$
```

The file permissions were limited to read only for user and group meanwhile other users cannot access this file.

Change directory permissions

Removing the execute permission for the group from the `drafts` directory.

```
researcher2@1edb4ad0430e:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:06 .
drwxr-xr-x 3 researcher2 research_team 4096 May 18 22:48 ..
-r--r----- 1 researcher2 research_team   46 May 18 22:06 .project_x.txt
drwx------ 2 researcher2 research_team 4096 May 18 22:06 drafts
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_k.txt
-rw------- 1 researcher2 research_team   46 May 18 22:06 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 May 18 22:06 project_t.txt
researcher2@1edb4ad0430e:~/projects$
```

Summary

For this activity we changed the permissions according to the structure given and other changes that were needed in order to maintain security in the file directory for the organization. This activity helps organizations to organize the files access to employees or users and limit the access to files which they don't need.