File permissions in Linux

Project description

The task is to examine file permissions on a Linux file system and determine if they match the appropriate authorisation set out in the organisation's policies. To do this, permissions will need to be verified and then updated as needed.

Check file and directory details

First, the permissions of files in the "projects" directory are checked (including any hidden files or directories).

```
researcher2@47e181e45d0c:~$ cd projects/
researcher2@47e181e45d0c:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 03:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 04:07 ..
-rw--w---- 1 researcher2 research_team   46 Jan 12 03:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 12 03:25 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jan 12 03:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 12 03:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_t.txt
```

Describe the permissions string

The permissions string for the file "project_r.txt" indicates that the user, group and other classes all have read permission for the file, but only the user and group classes have permission to write to the file.

Change file permissions

Because the organisation does not allow “other” to have write access to any file, the permissions of “project_k.txt” need to be changed using the chmod command.

```
researcher2@47e181e45d0c:~/projects$ chmod o-w project_k.txt
researcher2@47e181e45d0c:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 03:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 04:07 ..
-rw--w---- 1 researcher2 research_team   46 Jan 12 03:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 12 03:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 12 03:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_t.txt
```

The write permissions for “other” have now been removed and all files are in compliance with the organisation’s policy.

Change file permissions on a hidden file

The file “project_x.txt” has been archived and should not have any write permissions, but the user and group should still be able to read the file. This is accomplished through the use of chmod.

```
researcher2@47e181e45d0c:~/projects$ chmod u-w,g-w+r .project_x.txt
researcher2@47e181e45d0c:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 03:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 04:07 ..
-r--r----- 1 researcher2 research_team   46 Jan 12 03:25 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 12 03:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 12 03:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_t.txt
```

Change directory permissions

Only the “researcher2” user should have access to the “drafts” directory. These permissions can be set using chmod.

```
researcher2@47e181e45d0c:~/projects$ chmod g-x drafts/
researcher2@47e181e45d0c:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 03:25 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 12 04:07 ..
-r--r----- 1 researcher2 research_team   46 Jan 12 03:25 .project_x.txt
drwx------ 2 researcher2 research_team 4096 Jan 12 03:25 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jan 12 03:25 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jan 12 03:25 project_t.txt
```

Summary

This exercise has demonstrated the ability to manage Linux file permissions according to an organisation’s policy. This was accomplished through the use of the “ls” command to verify file permissions, and the “chmod” command to change permissions as needed.