

File permissions in Linux

Project description

In this mock scenario it is my task to modify the permissions of the contents within the 'projects' directory according to organizational policy and as needed. I will also describe in thorough detail my understanding of the information presented and demonstrate my level of competency with modifying permissions in a given system.

Check file and directory details

Using `ls -la` in the 'projects' directory I am able to list ALL file and directory permissions.

```
researcher2@7828de257149:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jan 10 11:40 .
drwxr-xr-x 3 researcher2 research_team 4096 Jan 10 12:29 ..
-rw--w---- 1 researcher2 research_team  46 Jan 10 11:40 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jan 10 11:40 drafts
-rw-rw-rw- 1 researcher2 research_team  46 Jan 10 11:40 project_k.txt
-rw-r----- 1 researcher2 research_team  46 Jan 10 11:40 project_m.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan 10 11:40 project_r.txt
-rw-rw-r-- 1 researcher2 research_team  46 Jan 10 11:40 project_t.txt
researcher2@7828de257149:~/projects$
```

Describe the permissions string

Once all permissions are displayed, I am able to check the permissions of each file and directory individually.

```
-rw-rw-rw- 1 researcher2 research_team  46 Jan 10 11:40 project_k.txt
```

In this example I am checking the file permissions for 'project_k.txt'. The permissions are represented by the ten character string on the far left of the output line. The first character (-) indicates that these are the permissions for a file rather than a directory (which would be indicated by 'd'). The rest of the string can be divided into three segments made up of three characters each representing the read (r), write (w), and execute (x) permissions for the three owner types (User, Group, and Other) respectively from left to right.

With all this in mind we can see that all Owner Types have read and write permissions to the file. None have execute permissions.

Change file permissions

In this scenario, it is the organization's policy that Other does not have the Write access to any files or directories. As we have already observed, 'project_k.txt' allows Other to Write to the file. To remediate this error we will enter the command `chmod o-w project_k.txt`.

```
researcher2@d501cc26f806:~/projects$ chmod o-w project_k.txt
```

After checking the directory's permissions again we can see that the permissions for 'project_k.txt' have been modified to be in compliance with the organization's policy.

```
-rw-rw-r-- 1 researcher2 research team 46 Jan 10 12:20 project_k.txt
```

Change file permissions on a hidden file

Viewing ALL permissions in the projects directory using the command `ls -la` we are able to view a *hidden* file named '.project_x.txt'.

```
-rw--w---- 1 researcher2 research team 46 Jan 10 12:20 .project_x.txt
```

It has been decided that the research team should be able to read the file while removing the access to write to the file completely. This can be modified using the command `chmod u-w,g-w,g+r .project_x.txt`.

```
researcher2@d501cc26f806:~/projects$ chmod u-w,g-w,g+r .project_x.txt
```

This means that Write permissions have been removed for both the User (researcher2) and the Group (research_team) while adding Read permissions for the Group.

```
-r--r----- 1 researcher2 research team 46 Jan 10 12:20 .project_x.txt
```

Change directory permissions

It has been decided by me (the User, 'researcher2') to limit access to the drafts directory.

```
drwx--x--- 2 researcher2 research team 4096 Jan 10 12:20 drafts
```

In order to do this it seems we will need to modify the Execute permissions for the Group by removing its access. This is done with the command `chmod g-x drafts`.

```
researcher2@d501cc26f806:~/projects$ chmod g-x drafts
```

Now the only person who has access to the drafts directory is 'researcher2'.

```
drwx----- 2 researcher2 research team 4096 Jan 10 12:20 drafts
```

Summary

In this scenario we have made a number of important modifications to the file and directory permissions within the 'projects' directory.

