File permissions in Linux

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Project description

Determine if the permissions match the authorization that should be given. If they do not match, you'll need to modify the permissions to authorize the appropriate users and remove any unauthorized access.

Check file and directory details

The **ls -la** command is used to show all items and permissions, including hidden files. The projects folder contains 4 files, 1 directory and 1 hidden file

```
researcher2@732cb34c30f4:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Nov 30 17:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 30 18:05 ..
-rw--w---- 1 researcher2 research_team   46 Nov 30 17:03 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Nov 30 17:03 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Nov 30 17:03 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Nov 30 17:03 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 30 17:03 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Nov 30 17:03 project_t.txt
```

Describe the permissions string

The permissions string is 10 characters in length. **Character 1** is (-) or d indicating whether the object is a file or directory, respectively. **Characters 2-4** represent permissions for the user owner type. **Characters 5-7** represent permissions for the group owner type. **Characters 8-10** represent permissions for the other owner type. Permissions for each owner type are represented by letters r, w and x for read, write and execute, respectively.

Change file permissions

Requirement #1: The other owner type should not have write permissions to any object in the projects directory.

To filter files by permission type for other owner type, the **find** command is used:

```
researcher2@732cb34c30f4:~/projects$ find . -type f -perm -o=w
./project_k.txt
```

The **chmod** command is used to modify the permissions to remove write permissions for other owner type:

```
researcher2@732cb34c30f4:~/projects$ chmod o-w project_k.txt
```

Requirement #2: The file **project_m.txt** is a **restricted** file and should not be **readable or writable** by the group or other; only the user should have these permissions on this file.

Viewing permissions for **project_m.txt** with the **ls -la** command:

```
researcher2@732cb34c30f4:~/projects$ ls -l project_m.txt
-rw-r----- 1 researcher2 research_team 46 Nov 30 17:03 project_m.txt
```

The **chmod** command is used to modify the permissions to remove read permissions for the group owner type:

```
researcher2@732cb34c30f4:~/projects$ chmod g-r project_m.txt
```

Change file permissions on a hidden file

Requirement #1: The file **.project_x.txt** is a hidden file that has been archived and should not be written to by anyone. (The user and group should still be able to read this file.)

Viewing permissions for **.project_x.txt** using the **ls -la** command:

```
researcher2@732cb34c30f4:~/projects$ ls -la .project_x.txt
-rw--w---- 1 researcher2 research_team 46 Nov 30 17:03 .project_x.txt
```

The **chmod** command is used to modify the permissions to remove write permissions from user and group owner types and add read permissions to group owner type:

```
researcher2@732cb34c30f4:~/projects$ chmod u-w,g-w+r .project_x.txt
```

Change directory permissions

Requirement #1: Only the **researcher2** user should be allowed to access the **~/projects/drafts** directory and its contents. (This means that only researcher2 should have execute privileges.)

Viewing permissions for **~/projects/drafts** with the **ls -la** command:

```
researcher2@732cb34c30f4:~/projects$ ls -la drafts/
total 8
drwx--x--- 2 researcher2 research_team 4096 Nov 30 17:03 .
drwxr-xr-x 3 researcher2 research_team 4096 Nov 30 17:03 ..
```

Note: "**.**" is the relative reference for the current directory.

The **chmod** command is used to modify the permissions of **~/projects/drafts** to remove execute permissions for group owner type:

```
researcher2@732cb34c30f4:~/projects$ chmod g-x ./drafts/
```

Summary

Through this brief exercise, practical experience was gained through the use of linux bash shell and demonstrated the competencies required to complete the following tasks efficiently and effectively:

- examine file and directory permissions
- change permissions on files
- change permissions on directories