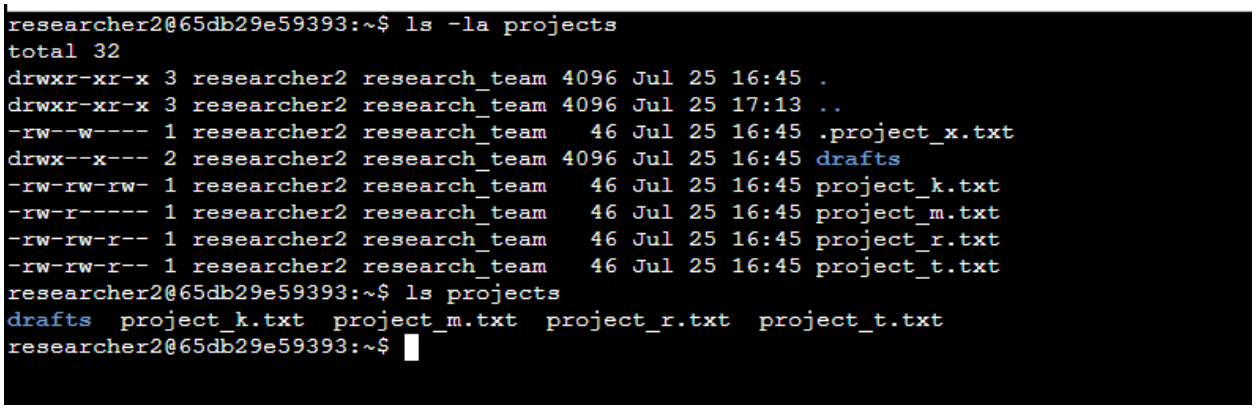
File permissions in Linux

Project description

I am acting as a security professional at a large organization. My job is to ensure that users on the research team are authorized with the appropriate permissions.

Check file and directory details

I used the " ls -la " command to check permissions to all the files located in the projects folder including hidden files



Describe the permissions string

For file type .project_x.txt you can see that the string is "-rw--w----". The first dash indicates that this is a file. If it was a directory it would start with a "d". The user is always character two and ends with four . The first three characters (rw-) indicate that the user only has read and write permissions but not execute permissions. Group starts from character five and ends with seven. Group only has write permissions and nothing more. Other ranges from characters eight and ends with ten. Since this is a hidden file, the "other" group does not need to read,

write or execute this file for security reasons.

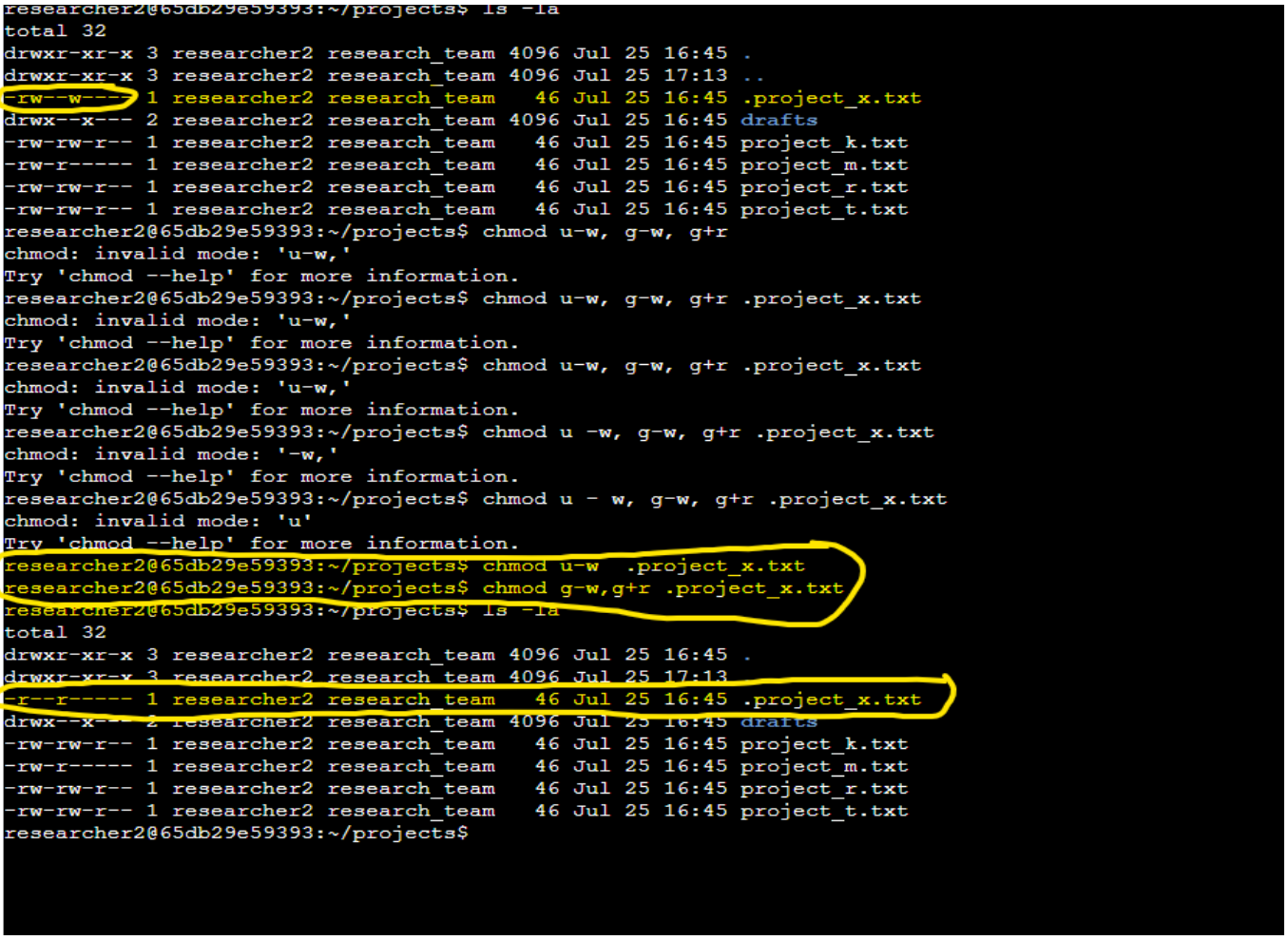
```
researcher2@65db29e59393:~$ ls -la projects
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul 25 16:45 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul 25 17:13 ..
-rw--w---- 1 researcher2 research_team   46 Jul 25 16:45 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jul 25 16:45 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jul 25 16:45 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jul 25 16:45 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_t.txt
researcher2@65db29e59393:~$ ls projects
drafts  project_k.txt  project_m.txt  project_r.txt  project_t.txt
researcher2@65db29e59393:~$
```

Change file permissions

```
researcher2@65db29e59393:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul 25 16:45 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul 25 17:13 ..
-rw--w---- 1 researcher2 research_team   46 Jul 25 16:45 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jul 25 16:45 drafts
-rw-rw-rw- 1 researcher2 research_team   46 Jul 25 16:45 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jul 25 16:45 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_t.txt
researcher2@65db29e59393:~/projects$ chmod o-w project_k.txt
researcher2@65db29e59393:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jul 25 16:45 .
drwxr-xr-x 3 researcher2 research_team 4096 Jul 25 17:13 ..
-rw--w---- 1 researcher2 research_team   46 Jul 25 16:45 .project_x.txt
drwx--x--- 2 researcher2 research_team 4096 Jul 25 16:45 drafts
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jul 25 16:45 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jul 25 16:45 project_t.txt
researcher2@65db29e59393:~/projects$
```

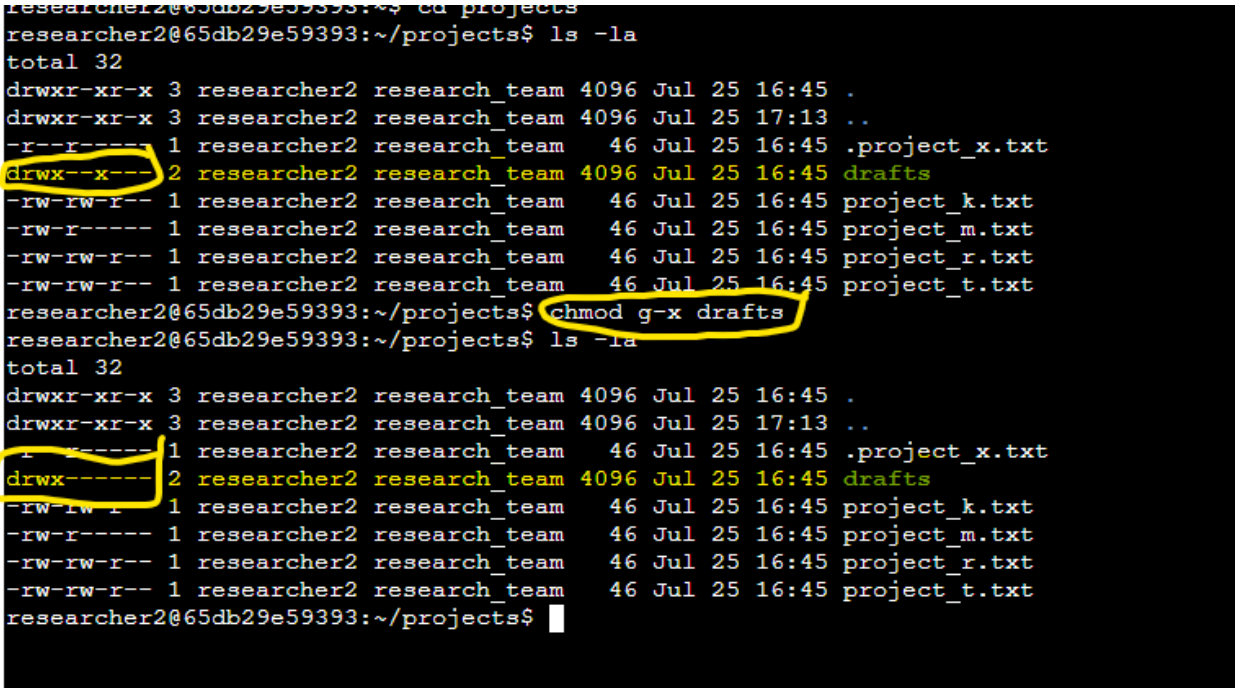
project_k.txt is seen giving others the permission to write which is not allowed. By loading up the permissions to the files and directories using the “ls -la” command. Once I identify that others have write permissions I use the command “chmod o-w project_k.txt”. Chmod stands for “change mode”, the “o-w” stands for others minus permission write then i type the file im changing which is “project_k.txt”.

Change file permissions on a hidden file



.project_x.txt is a hidden file that is allowing group the write permission instead of read. I changed this by using the " ls -la" command to bring up all files hidden or not to see who has permission. I changed their permissions using "g-w,g+r .project_x.txt" adding the read permission and taking away the write permission. I also took away the users permission to write by using the "chmod u-w .project_x.txt".

Change directory permissions



Group was given the execute permission for the directory “drafts”. Only the user that created the directory needs to read, write and execute. I changed this by using “chmod g-x drafts” so only the user can have full control over the directory.

Summary

As a security professional at my organization, it's important to make sure that the right permissions are granted to the right people. By using the “ ls - la” command I was able to bring up permissions to files and directories including the hidden files. Once I was able to recognize that certain groups had permissions that were not allowed, I used the command “chmod” to change the permissions allowing those who needed to only read files to be read. Those that are supposed to write were allowed to write and those who needed to execute were able to execute.