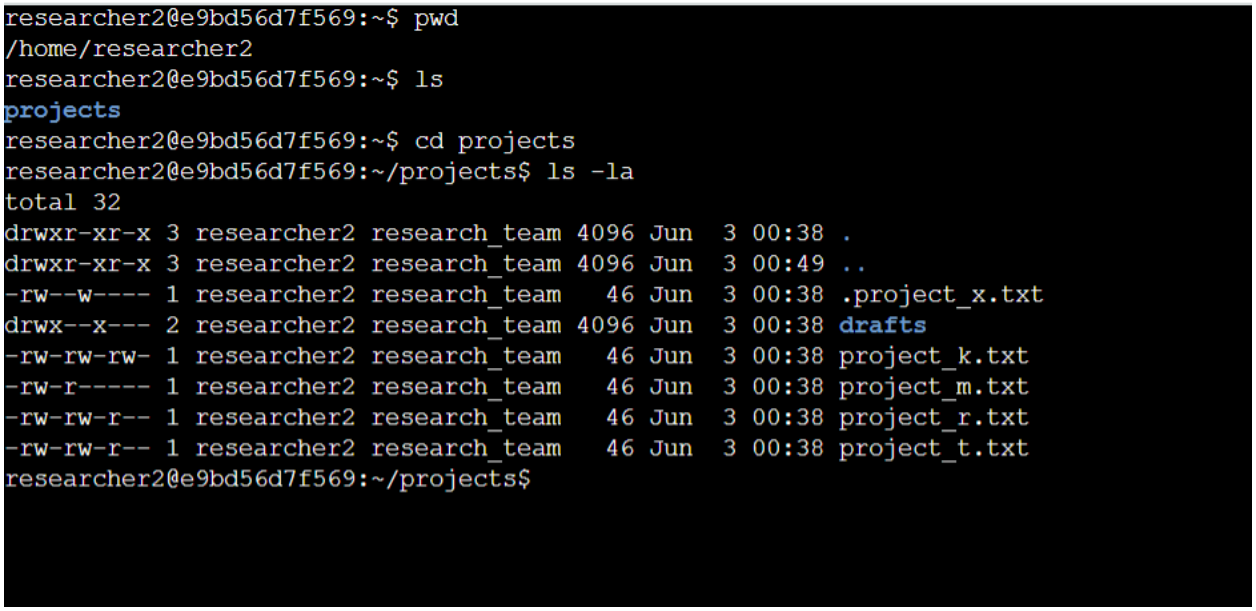
File permissions in Linux

Project description

The project's main goal is to implement the least privilege hardening security. For this I am using Bash scripting in LINUX to view, and edit permissions as per the role to make system secure.

Check file and directory details

Using the code ls -la the permissions of the files inside the projects directory have been displayed.



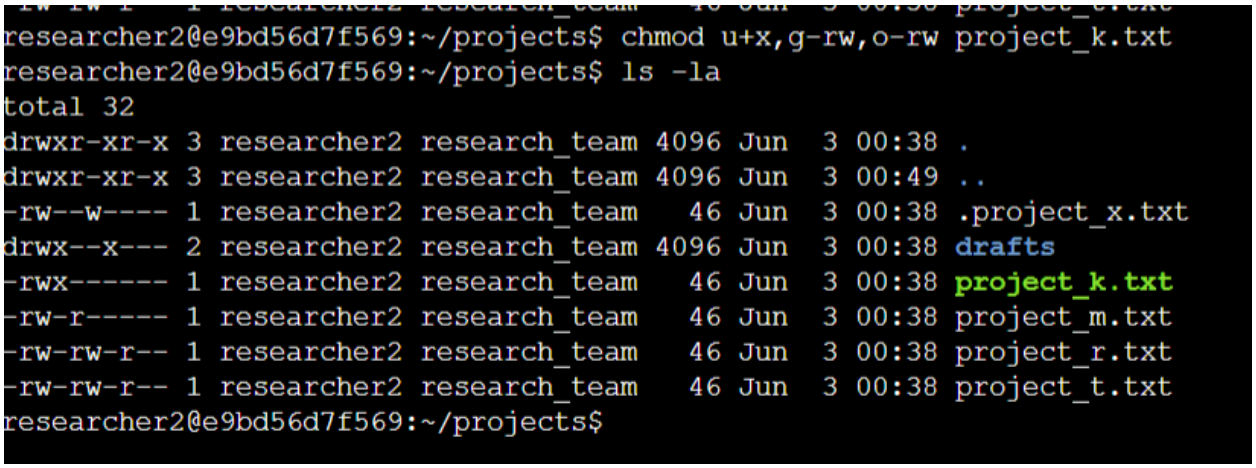
Describe the permissions string

In the above screenshot, for example, consider the file project_k.txt.The permissions for project_k.txt have been provided as -rw-rw-rw- which is a 10-character string. The first character - shows that it is a file. The 2,3,4 characters represent permissions for a user which is shown as rw- which means the user has read and write permissions and no execute permissions. Similarly, 5,6,7 characters represent the permissions for a group which is represented as rw- that shows the group has read and write permissions but not execute permissions. The final three characters 8,9,10 represent the permissions for others which is

shown as rw-. This shows that others have both read and write permissions apart from execute permissions.

Change file permissions

For suppose I want this file project_k.txt to have only user permissions of all r,w,x and remove access for groups, and others. The code implemented below

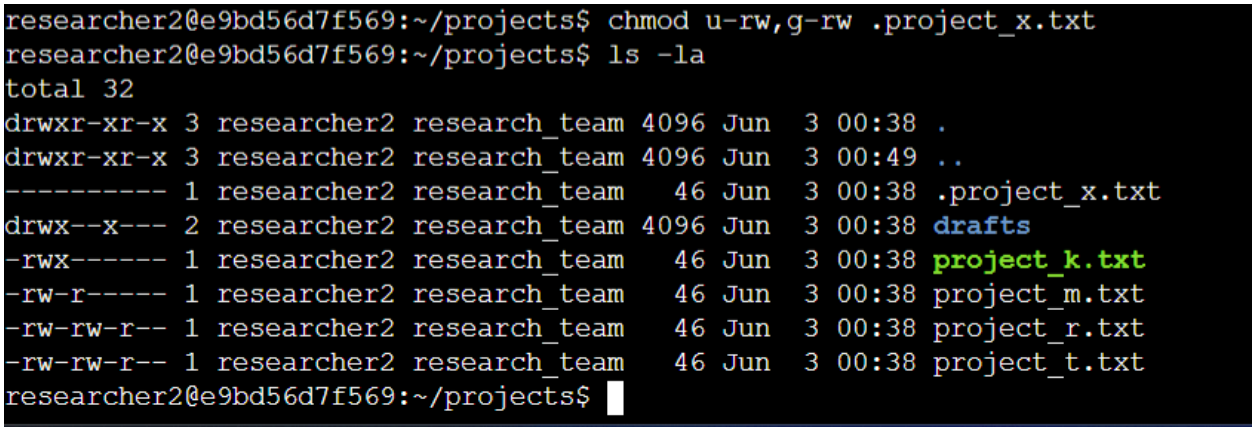


In the above screenshot, I have used the code `chmod u+x,g-rw,o-rw project_k.txt` to add execute access to the user and remove read and write access to groups and others.

Change file permissions on a hidden file

Here the hidden file starts with .
In the above screenshot, .project_x.txt is the hidden file that has rw permissions for the user and w permission for the group.

Now I want to remove rw permissions for both user and group for a hidden file named .project_x.txt as follows



Change directory permissions

In the above screenshot, we see a directory draft. We know it is a directory from the 10-character string where the first character is d.

It has the following permissions drwx- - x - - - which means the user has r,w,x access and the group has only x access. Now I am going to provide r,w access to group and r access to other which is implemented as follows

```
researcher2@e9bd56d7f569:~/projects$ chmod g+rw,o+r drafts
researcher2@e9bd56d7f569:~/projects$ ls -la
total 32
drwxr-xr-x 3 researcher2 research_team 4096 Jun  3 00:38 .
drwxr-xr-x 3 researcher2 research_team 4096 Jun  3 00:49 ..
---------- 1 researcher2 research_team   46 Jun  3 00:38 .project_x.txt
drwxrwxr-- 2 researcher2 research_team 4096 Jun  3 00:38 drafts
-rwx------ 1 researcher2 research_team   46 Jun  3 00:38 project_k.txt
-rw-r----- 1 researcher2 research_team   46 Jun  3 00:38 project_m.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun  3 00:38 project_r.txt
-rw-rw-r-- 1 researcher2 research_team   46 Jun  3 00:38 project_t.txt
researcher2@e9bd56d7f569:~/projects$
```

I have implemented the code `chmod g+rw,o+r` drafts to provide read and write access for the group and read access for others.

Summary

We have followed the least privilege security protocol to provide better security to the organization by implementing code in Linux bash script.