

Exercises about file and directory permission

1. List the permissions in your current directory, including hidden files.
In this case we have to use `ls -la`

```
student@student-VirtualBox:~/systems$ ls -la
total 20
```

2. Create a file called `perm1`. Now, check the default permissions and user and group ownership.

```
drwxrwxr-x 2 student student 4096 ene 13 16:00 perm1
```

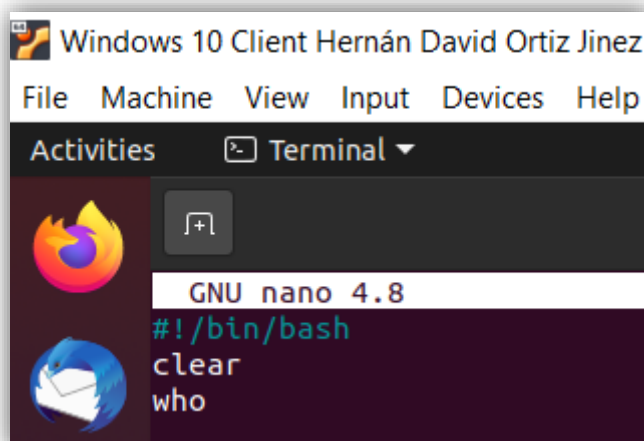
3. Change permissions of `perm1` so that everyone can read and only the owner user can write. Specify the command in all possible ways.

```
student@student-VirtualBox:~$ chmod 644 perm1
```

```
drw-r--r-- 2 student student 4096 ene 13 16:00 perm1
```

4. Create a file called `script1.sh`, including the content below. List the default permissions.

```
student@student-VirtualBox:~$ nano script1.sh
```



```
-rw-rw-r-- 1 student student 22 ene 13 16:20 script1.sh
```

5. Remove the read permission from the owner and try to open the file.

```
student@student-VirtualBox:~$ chmod u-r script1.sh
student@student-VirtualBox:~$ nano script1.sh
```

```
[ Error reading script1.sh: Permission denied ]
tify ^C Cur Pos M-U Undo M-A Mark Text M-] To B
```

6. Remove the write permission from the owner on the file script.sh. Add the line below. Is it possible? Why?

```
student@student-VirtualBox:~$ chmod u-w script1.sh
```

```
----rw-r-- 1 student student 22 ene 13 16:20 script1.sh
```

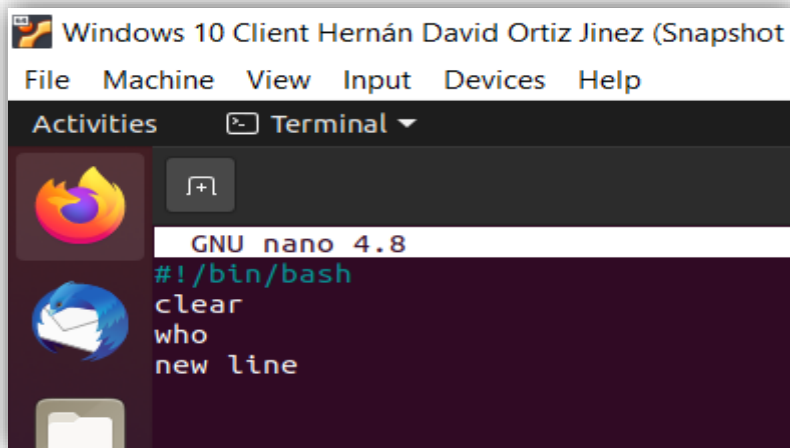
It is not possible to write because we remove the write permission for that.

7. Change the permissions on the file script1.sh so that the owner can read, write and execute, but you deny all the permissions from the group and others.

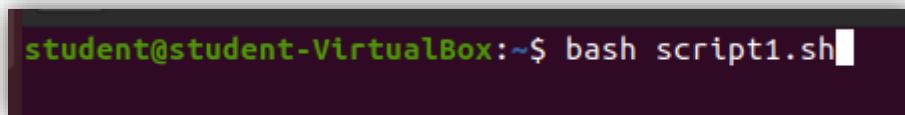
```
student@student-VirtualBox:~$ chmod 700 script1.sh
student@student-VirtualBox:~$
```

```
-rwx----- 1 student student 22 ene 13 16:20 script1.sh
```

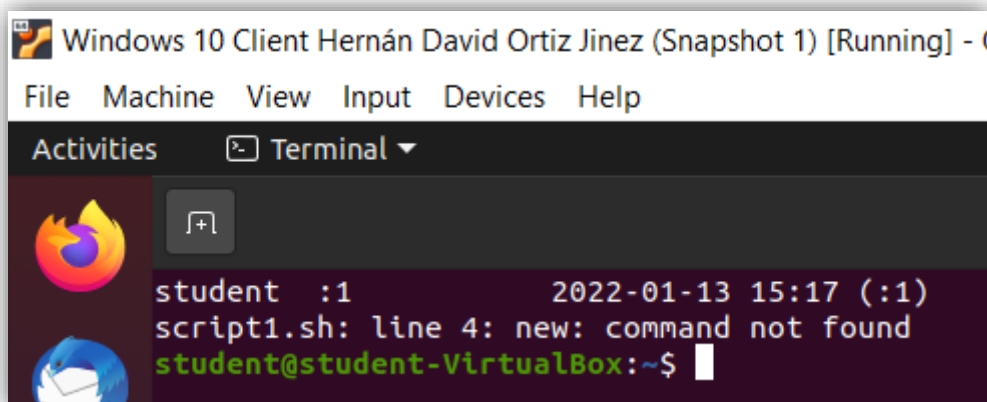
8. Add the line indicated in exercise 6, in case it was not possible. Try to run the file like a command.



```
Windows 10 Client Hernán David Ortiz Jinez (Snapshot 1) [Running] - C:\Program Files\Oracle\VirtualBox
File Machine View Input Devices Help
Activities Terminal
GNU nano 4.8
#!/bin/bash
clear
who
new line
```

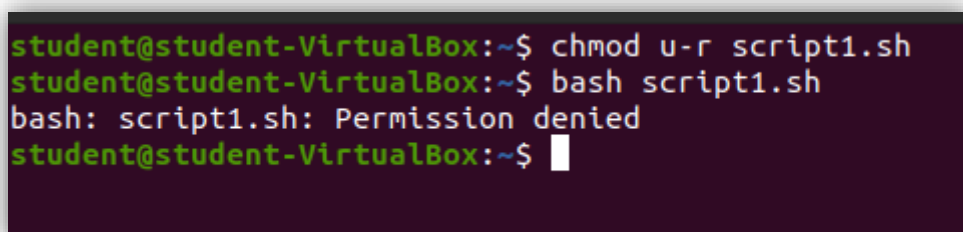


```
student@student-VirtualBox:~$ bash script1.sh
```



```
Windows 10 Client Hernán David Ortiz Jinez (Snapshot 1) [Running] - C:\Program Files\Oracle\VirtualBox
File Machine View Input Devices Help
Activities Terminal
student :1 2022-01-13 15:17 (:1)
script1.sh: line 4: new: command not found
student@student-VirtualBox:~$
```

9. Remove the read permission from the owner on the file script1.sh. Try to run the file. Is it possible?



```
student@student-VirtualBox:~$ chmod u-r script1.sh
student@student-VirtualBox:~$ bash script1.sh
bash: script1.sh: Permission denied
student@student-VirtualBox:~$
```

10. Create a directory called “systems”. Remove the write permission from it and try to copy script1.sh inside.

```
student@student-VirtualBox:~$ mkdir systems
```

```
student@student-VirtualBox:~$ chmod u-w systems
student@student-VirtualBox:~$ cp script1.sh systems
cp: cannot open 'script1.sh' for reading: Permission denied
student@student-VirtualBox:~$
```

11. If you were not able to copy the file, add the write permission again and copy the file inside.

```
student@student-VirtualBox:~$ chmod u+w systems
student@student-VirtualBox:~$ cp script1.sh systems
cp: cannot open 'script1.sh' for reading: Permission denied
student@student-VirtualBox:~$ chmod u=rwx script1.sh
student@student-VirtualBox:~$ cp script1.sh systems
student@student-VirtualBox:~$
```

12. Remove the read permission from the user on the directory “systems” and try to list its contents.

```
student@student-VirtualBox:~$ chmod u-r systems
student@student-VirtualBox:~$
```

```
student@student-VirtualBox:~/systems$ ls
ls: cannot open directory '.': Permission denied
student@student-VirtualBox:~/systems$
```

13. Change the permissions from “systems” so that the owner can read, write and execute, but the group and others can only read.

```
student@student-VirtualBox:~$ chmod 744 systems
student@student-VirtualBox:~$
```

14. Remove the execute permission from “systems”. Can you execute systems/script1.sh? Is it possible to access the directory to execute the file?

It is not possible to execute the file.

```
student@student-VirtualBox:~$ bash systems/script1.sh
bash: systems/script1.sh: Permission denied
student@student-VirtualBox:~$
```

15. Assign the execute permission to the directory again.

```
student@student-VirtualBox:~$ chmod u+x systems
student@student-VirtualBox:~$
```

16. Create two files called “lucy” and “charles” into “systems”. Change permissions of “charles”, so that others can write and execute.

```
student@student-VirtualBox:~/systems$ cat >> luci;
charles: cannot read: found
```

```
student@student-VirtualBox:~/systems$ cat >> charles
student@student-VirtualBox:~/systems$
```

```
student@student-VirtualBox:~/systems$ chmod o=wx charles
student@student-VirtualBox:~/systems$
```

17. Change permissions of “lucy” so that the owner can read and execute, the group can read and write and others can only write. Specify the command in all possible ways.

```
student@student-VirtualBox:~/systems$ chmod 521 luci
student@student-VirtualBox:~/systems$
```

18. Log in as root. Change the ownership of “charles” to “root”. Exit the root session. Now, try to change the permission so that others cannot read and execute. Is it possible? Why?

```
root@student-VirtualBox:/home/student# chown root /home/student/systems/charles
root@student-VirtualBox:/home/student# exit
exit
```

```
student@student-VirtualBox:~$ chmod o-wx /home/student/systems/charles
chmod: cannot access '/home/student/systems/charles': Permission denied
student@student-VirtualBox:~$
```

This happens because we don't have permissions from student.

19. Change the permissions of "charles" so that everybody can do everything

```
student@student-VirtualBox:~$ sudo chmod 777 /home/student/systems/charles
```

20. Change the permissions of "lucy" so that the group can read and write, but the owner and others cannot do anything. Can you open the file?

```
student@student-VirtualBox:~$ sudo chmod 060 /home/student/systems/lucy
```

```
student@student-VirtualBox:~$ sudo ls -l systems
total 8
drwxrwxrwx 2 root root 4096 ene 20 16:58 charles
d---rw---- 2 root root 4096 ene 20 17:27 lucy
student@student-VirtualBox:~$
```

```
student@student-VirtualBox:~/systems$ cat lucy
cat: lucy: Permission denied
```

It is not possible to open lucy.

21. Create a group called "newgroup". Set the group as the owner of the file "lucy" and "root" as the owner user.

```
student@student-VirtualBox:~$ sudo groupadd newgroup
```

```
student@student-VirtualBox:~$ sudo chown root:newgroup systems/lucy
student@student-VirtualBox:~$ ls -l systems/lucy
-rwxrwxrwx 1 root newgroup 0 ene 26 22:38 systems/lucy
student@student-VirtualBox:~$
```

22. Add your user to the secondary group “newgroup”. Try to open the file “lucy” now. Is it possible?

```
student@student-VirtualBox:~$ sudo usermod -a -G newgroup student
student@student-VirtualBox:~$ cat lucy
cat: lucy: No such file or directory
student@student-VirtualBox:~$ cat systems/lucy
cat: systems/lucy: Permission denied
student@student-VirtualBox:~$
```

It is not possible to open it because I am not the owner.

23. Change permissions of “lucy” so that everybody can read.

```
student@student-VirtualBox:~$ sudo chmod 777 systems/lucy
student@student-VirtualBox:~$
```

We can use the command **chmod a+r** as well.

24. Do exercise 13 again, but this time granting permissions to the folder “systems” including files and subfolders

```
student@student-VirtualBox:~$ sudo chmod -R 744 systems
student@student-VirtualBox:~$
```

25. Change the group owner of “systems” to “root” including files and subfolders

```
student@student-VirtualBox:~$ sudo chgrp -R root systems
student@student-VirtualBox:~$ ls -l systems
total 4
-rwxr--r-- 1 root    root  0 ene 26 22:38 charles
-rwxr--r-- 1 root    root  0 ene 26 22:38 lucy
-rwxr--r-- 1 student root 31 ene 26 22:33 script1.sh
student@student-VirtualBox:~$
```