

1. By typing the `ls -l -a` command, we will be able to view all the files permission in your current directory, which in this case is \$HOME.

```
ignacio@ignacio-VirtualBox:~$ ls -l
total 80
-rw-rw-r-- 1 ignacio ignacio  40 dic  2 16:40 actors.txt
-rw-rw-r-- 1 ignacio ignacio 273 dic  2 16:39 awards.txt
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Desktop
-rw-rw-r-- 1 ignacio ignacio  12 dic  2 16:48 directors.txt
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Documents
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Downloads
-rw-rw-r-- 1 ignacio ignacio 1079 dic  9 17:06 inform
-rw-rw-r-- 1 ignacio ignacio  272 dic  9 16:56 list
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Music
-rw-rw-r-- 1 ignacio ignacio   49 dic  9 16:14 output
-rw-rw-r-- 1 ignacio ignacio   0 dic  2 17:12 people
-rw-rw-r-- 1 ignacio ignacio   78 dic  9 16:53 people2.txt
-rw-rw-r-- 1 ignacio ignacio  138 dic  9 15:50 people3.txt
-rw-rw-r-- 1 ignacio ignacio   56 dic  9 16:51 people_s.txt
-rw-rw-r-- 1 ignacio ignacio  194 dic  2 17:02 people.txt
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Pictures
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Public
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Templates
-rw-rw-r-- 1 ignacio ignacio    5 dic  9 17:10 test1
-rw-rw-r-- 1 ignacio ignacio    5 dic  9 17:10 test2
drwxr-xr-x 2 ignacio ignacio 4096 dic  2 16:18 Videos
ignacio@ignacio-VirtualBox:~$
```

2. By typing the **touch** command we will create the perm1 file. By typing perm1 after `ls -l` we will get the file permissions.

```
ignacio@ignacio-VirtualBox:~$ touch perm1
ignacio@ignacio-VirtualBox:~$

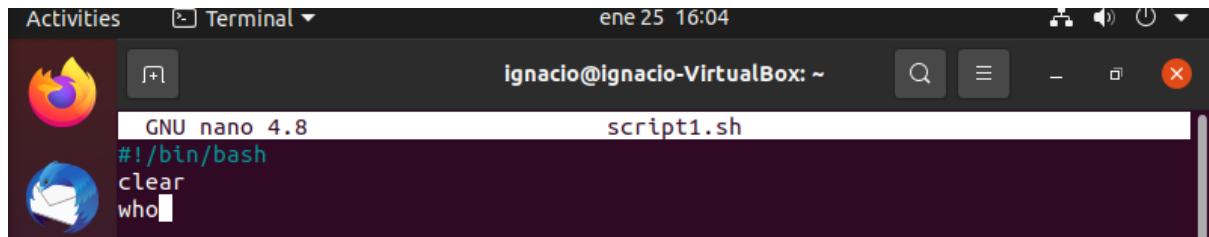
ignacio@ignacio-VirtualBox:~$ ls -l perm1
-rw-rw-r-- 1 ignacio ignacio 0 ene 13 16:49 perm1
ignacio@ignacio-VirtualBox:~$
```

3. By typing the **chmod 644 perm1** command we will change permissions so that everyone can read and only the owner user can write.

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

4. By typing **nano script1.sh** we will open the GNU nano 4.8 interface in which we will create a file called script1.sh. Then we will list the default permissions with **ls -l script1.sh**.

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



```
ignacio@ignacio-VirtualBox:~$ ls -l script1.sh
--w-rw-r-- 1 ignacio ignacio 23 ene 25 16:04 script1.sh
```

5. By typing the **chmod u-r script1.sh** command we will remove the read permission from the owner and try to open the file. We won't be able to open the file without permission.

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

6. By typing the following command we will remove the write permission from the owner on the file script1.sh. It is not possible to add **new line** because we don't have write permissions.

```
ignacio@ignacio-VirtualBox:~$ chmod u-w script1.sh
ignacio@ignacio-VirtualBox:~$ cat >> script1.sh
bash: script1.sh: Permission denied
ignacio@ignacio-VirtualBox:~$
```

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.

```
ignacio@ignacio-VirtualBox:~$ chmod 700 script1.sh
ignacio@ignacio-VirtualBox:~$ ls -l script1.sh
-rwx----- 1 ignacio ignacio 23 ene 25 16:04 script1.sh
ignacio@ignacio-VirtualBox:~$
```

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

```
ignacio@ignacio-VirtualBox:~$ echo "new line" >> script1.sh
```

```
ignacio@ignacio-VirtualBox:~$ cat script1.sh
#!/bin/bash
clear
who

new line
ignacio@ignacio-VirtualBox:~$
```

9. Remove the read permission from the owner on the file script1.sh. Try to run the file. Is it possible? As we can see, it is not possible, we have permission to execute but not read.

```
ignacio@ignacio-VirtualBox:~$ chmod u-r script1.sh
ignacio@ignacio-VirtualBox:~$ ls -l script1.sh
--wx----- 1 ignacio ignacio 32 ene 25 17:22 script1.sh
ignacio@ignacio-VirtualBox:~$ cat script1.sh
cat: script1.sh: Permission denied
ignacio@ignacio-VirtualBox:~$
```

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

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

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

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

We must add read permissions to the file.

```
ignacio@ignacio-VirtualBox:~$ chmod u+r script1.sh
ignacio@ignacio-VirtualBox:~$ cp script1.sh systems
ignacio@ignacio-VirtualBox:~$
```

12. Remove the read permission from the user on the directory "systems" and try to list its contents. You can't list its contents.

```
ignacio@ignacio-VirtualBox:~$ chmod u-r systems
ignacio@ignacio-VirtualBox:~$ ls -l systems
ls: cannot open directory 'systems': Permission denied
ignacio@ignacio-VirtualBox:~$
```

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

```
ignacio@ignacio-VirtualBox:~$ chmod 766 systems
ignacio@ignacio-VirtualBox:~$ chmod u=rwx,go=r systems
ignacio@ignacio-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 as you cannot access the file

```
ignacio@ignacio-VirtualBox:~$ chmod u-x systems
ignacio@ignacio-VirtualBox:~$
```

15. Assign the execute permission to the directory again.

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

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

```
ignacio@ignacio-VirtualBox:~$ cd systems
ignacio@ignacio-VirtualBox:~/systems$ touch charles
ignacio@ignacio-VirtualBox:~/systems$ chmod u+wx charles
ignacio@ignacio-VirtualBox:~/systems$
ignacio@ignacio-VirtualBox:~/systems$ touch lucy
```

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.

```
ignacio@ignacio-VirtualBox:~/systems$ chmod 562 lucy
ignacio@ignacio-VirtualBox:~/systems$ chmod u=rx,g=rw,o=w lucy
ignacio@ignacio-VirtualBox:~/systems$
```

18. Login 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@ignacio-VirtualBox:/home/ignacio# ls -l systems
total 4
-rwxrw-r-- 1 ignacio ignacio 0 ene 25 19:01 charles
-r-xrw--w- 1 ignacio ignacio 0 ene 25 19:07 lucy
-rwx----- 1 ignacio ignacio 32 ene 25 18:47 script1.sh
root@ignacio-VirtualBox:/home/ignacio# chown root systems/charles
root@ignacio-VirtualBox:/home/ignacio# ls -l systems
total 4
-rwxrw-r-- 1 root      ignacio 0 ene 25 19:01 charles
-r-xrw--w- 1 ignacio ignacio 0 ene 25 19:07 lucy
-rwx----- 1 ignacio ignacio 32 ene 25 18:47 script1.sh
root@ignacio-VirtualBox:/home/ignacio#
```

```
ignacio@ignacio-VirtualBox:~$ chmod o-r systems/charles
chmod: changing permissions of 'systems/charles': Operation not permitted
ignacio@ignacio-VirtualBox:~$
```

You cannot change permissions because the owner is root.

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

```
ignacio@ignacio-VirtualBox:~$ sudo su
root@ignacio-VirtualBox:/home/ignacio# chmod 777 systems/charles
root@ignacio-VirtualBox:/home/ignacio# ls -l systems/charles
-rwxrwxrwx 1 root ignacio 0 ene 25 19:01 systems/charles
root@ignacio-VirtualBox:/home/ignacio#
```

**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?

```
root@ignacio-VirtualBox:/home/ignacio# chmod 060 systems/lucy
root@ignacio-VirtualBox:/home/ignacio# ls -l systems
total 4
-rwxrwxrwx 1 root    ignacio  0 ene 25 19:01 charles
----rw---- 1 ignacio ignacio  0 ene 25 19:07 lucy
-rwx----- 1 ignacio ignacio 32 ene 25 18:47 script1.sh
root@ignacio-VirtualBox:/home/ignacio#
```

You cannot open the file, you haven't got the read permission.

**21.** Create a group called “newsgroup”. Set the group as the owner of the file “lucy” and “root” as the owner user.

```
root@ignacio-VirtualBox:/home/ignacio# groupadd newgroup
root@ignacio-VirtualBox:/home/ignacio# chown root:newgroup systems/lucy
root@ignacio-VirtualBox:/home/ignacio#
```