

1. List the permissions in your current directory, including hidden files.

ls -la

```
root@alvaro-VirtualBox:/home/alvaro/systems# ls -la
total 12
drw-r--r--  2 root  root  4096 ene 25 17:17 .
drwxr-xr-x 17 alvaro alvaro 4096 ene 27 11:13 ..
--wx-----  1 root  root    32 ene 25 17:17 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#
```

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

touch perm1

ls -l

User and groups will be the same as the user logged in

```
root@alvaro-VirtualBox:/home/alvaro/systems# touch perm1
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
-rw-r--r--  1 root  root   0 ene 27 12:46 perm1
--wx-----  1 root  root  32 ene 25 17:17 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#
```

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

```
root@alvaro-VirtualBox:/home/alvaro/systems# chmod u=rw,go=r perm1
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
-rw-r--r--  1 root  root   0 ene 27 12:46 perm1
--wx-----  1 root  root  32 ene 25 17:17 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#
```

I use this method `chmod u=rw,go=r perm1`

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

I make the script first

ls -l script1.sh to list the default permissions

```
root@alvaro-VirtualBox:/home/alvaro/systems# cat script1.sh
#!/bin/bash
clear
who

new line
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l script1.sh
--wx----- 1 root root 32 ene 25 17:17 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#
```

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

1º

chmod u-r script1.sh

2º

We don't have permissions to open the file

```
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
-rw-r--r-- 1 root root  0 ene 27 12:46 perm1
-rwx----- 1 root root 32 ene 25 17:17 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems# chmod u-r script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
-rw-r--r-- 1 root root  0 ene 27 12:46 perm1
--wx----- 1 root root 32 ene 25 17:17 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#
```

6. Remove the write permission from the owner on the file script1.sh. Add the line below. Is it possible? Why?

i add new line

chmod u-w script1.sh

With nano is not possible

This way is not possible either: echo "new line" >> lote1.sh

If we only had write permission for the owner (not read), echo "new line" >> lote1.sh would be possible.

```

root@alvaro-VirtualBox:/home/alvaro/systems# echo "new line" >> script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
-rw-r--r-- 1 root root  0 ene 27 12:46 perm1
---x----- 1 root root 41 ene 27 12:56 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems# cat script1.sh
#!/bin/bash
clear
who

new line
new line
root@alvaro-VirtualBox:/home/alvaro/systems#

```

- 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.

i use this method `chmod u=rwx,go=- script1.sh`

```

root@alvaro-VirtualBox:/home/alvaro/systems# chmod u=rwx,go=- script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
-rw-r--r-- 1 root root  0 ene 27 12:46 perm1
-rwx----- 1 root root 41 ene 27 12:56 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#

```

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

`echo "new line" >> script1.sh`

To run a file you need to use `./script1.sh` or `bash script1.sh`

```

alvaro :0 2022-01-27 10:41 (:0)
./script1.sh: line 5: new: command not found
./script1.sh: line 6: new: command not found
./script1.sh: line 7: new: command not found
root@alvaro-VirtualBox:/home/alvaro/systems#

```

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

`chmod u-r script1.sh`

It is not possible. We have permission to execute, but we cannot read the file.

```
alvaro :0 2022-01-27 10:41 (:0)
./script1.sh: line 5: new: command not found
./script1.sh: line 6: new: command not found
./script1.sh: line 7: new: command not found
root@alvaro-VirtualBox:/home/alvaro/systems#
```

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

`mkdir systems`

`chmod u-w systems`

`cp script1.sh systems`

Not possible

i don't understand but i can to do that

```
root@alvaro-VirtualBox:/home/alvaro/systems# cd ..
root@alvaro-VirtualBox:/home/alvaro# rm -r systems
root@alvaro-VirtualBox:/home/alvaro# ls -l
total 44
drwxr-xr-x 6 alvaro alvaro 4096 ene 25 17:02 Desktop
drwxr-xr-x 2 alvaro alvaro 4096 ene 27 11:12 Documents
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Downloads
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Music
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Pictures
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Public
--wx----- 1 alvaro alvaro 32 ene 25 17:16 script1.sh
-rw-rw-r-- 1 alvaro alvaro 262 ene 20 15:50 scripta.sh
drw-r--r-- 2 root root 4096 ene 27 11:13 systems2
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Templates
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Videos
root@alvaro-VirtualBox:/home/alvaro# mkdir systems
root@alvaro-VirtualBox:/home/alvaro# chmod u-w systems
root@alvaro-VirtualBox:/home/alvaro# cp script1.sh systems
root@alvaro-VirtualBox:/home/alvaro# cd systems
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 4
--wx----- 1 root root 32 ene 27 13:03 script1.sh
root@alvaro-VirtualBox:/home/alvaro/systems#
```

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

`chmod u+w systems`

`cp script1.sh systems`

It is not possible because you do not have read permissions on the file. You can add read permissions to script1.sh

chmod u+r script1.sh

cp script1.sh systems

```
root@alvaro-VirtualBox:/home/alvaro/systems# cp script1.sh systems
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 8
-rwx----- 1 root root 32 ene 27 13:03 script1.sh
-rwx----- 1 root root 32 ene 27 13:06 systems
root@alvaro-VirtualBox:/home/alvaro/systems#
```

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

```
root@alvaro-VirtualBox:/home/alvaro/systems# cd ..
root@alvaro-VirtualBox:/home/alvaro# chmod u-r systems
root@alvaro-VirtualBox:/home/alvaro# cd systems
root@alvaro-VirtualBox:/home/alvaro/systems# cd ..
root@alvaro-VirtualBox:/home/alvaro# ls -l systems
total 8
-rwx----- 1 root root 32 ene 27 13:03 script1.sh
--wx----- 1 root root 32 ene 27 13:06 systems
root@alvaro-VirtualBox:/home/alvaro#
```

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

next

```
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Pictures
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Public
--wx----- 1 alvaro alvaro 32 ene 25 17:16 script1.sh
-rw-rw-r-- 1 alvaro alvaro 262 ene 20 15:50 scripta.sh
drwxr--r-- 2 root root 4096 ene 27 13:06 systems
drw-r--r-- 2 root root 4096 ene 27 11:13 systems2
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Templates
drwxr-xr-x 2 alvaro alvaro 4096 ene 16 11:44 Videos
root@alvaro-VirtualBox:/home/alvaro# cd systems
```

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

```
root@alvaro-VirtualBox:/home/alvaro/systems# chmod u-x systems
root@alvaro-VirtualBox:/home/alvaro/systems# ./systems
bash: ./systems: Permission denied
root@alvaro-VirtualBox:/home/alvaro/systems#
```

15. Assign the execute permission to the directory again

```

bash: ./systems: Permission denied
root@alvaro-VirtualBox:/home/alvaro/systems# chmod u+x systems
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 8
-rwx----- 1 root root 32 ene 27 13:03 script1.sh
--wx----- 1 root root 32 ene 27 13:06 systems

```

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

i create both this way:

cd systems

touch lucy; touch charles

chmod o+wx charles

```

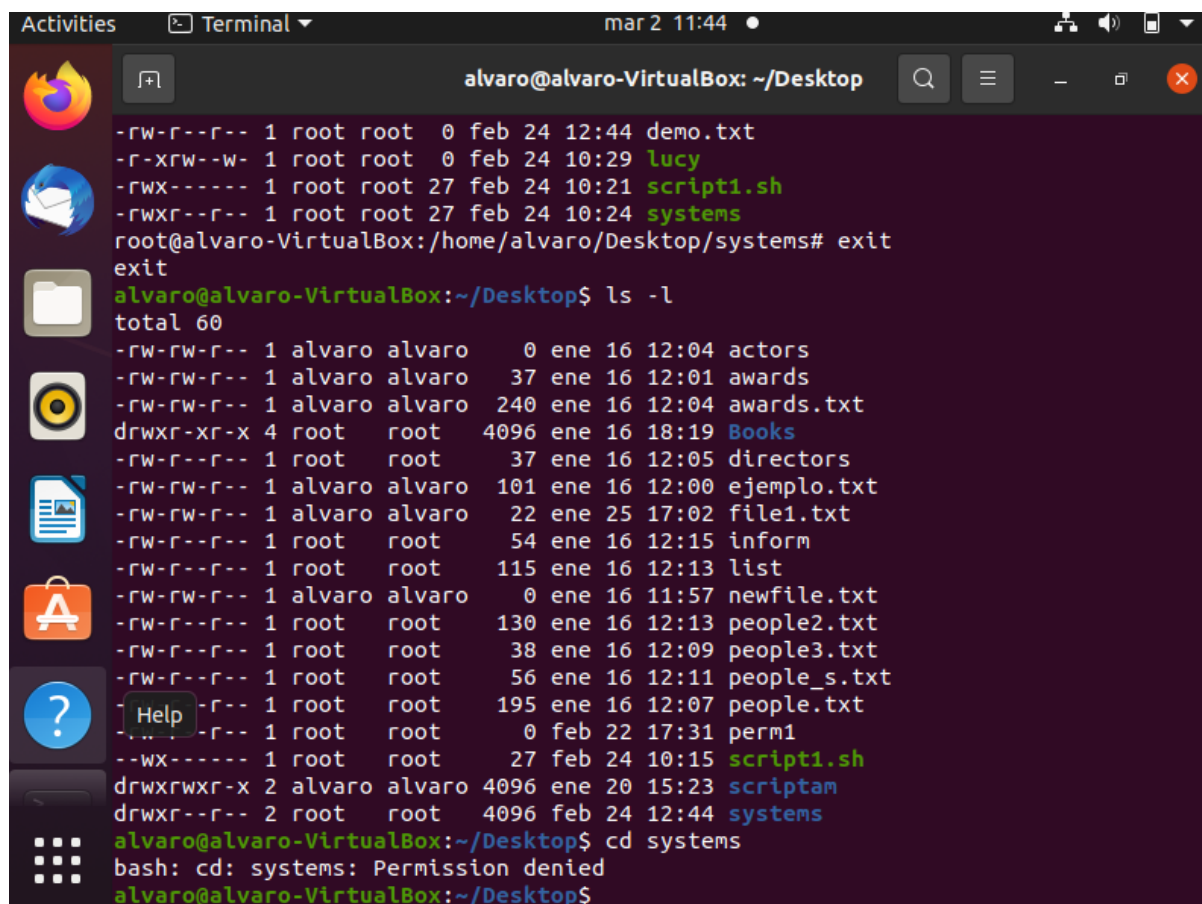
root@alvaro-VirtualBox:/home/alvaro/systems# chmod o+wx charles
root@alvaro-VirtualBox:/home/alvaro/systems# ls -l
total 8
-rw-r--rwx 1 root root 0 ene 27 13:15 charles
-rw-r--r-- 1 root root 0 ene 27 13:15 lucy
-rwx----- 1 root root 32 ene 27 13:03 script1.sh
--wx----- 1 root root 32 ene 27 13:06 systems
root@alvaro-VirtualBox:/home/alvaro/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.

```
root@alvaro-VirtualBox: /home/alvaro/Desktop/systems
alvaro@alvaro-VirtualBox:~/Desktop$ cd systems
bash: cd: systems: Permission denied
alvaro@alvaro-VirtualBox:~/Desktop$ sudo su
[sudo] password for alvaro:
root@alvaro-VirtualBox:/home/alvaro/Desktop# cd systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rw-r--rwx 1 root root  0 feb 24 10:29 charles
-rw-r--r-- 1 root root  0 feb 24 12:44 demo.txt
-r-xr--w- 1 root root  0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chmod 562 lucy
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rw-r--rwx 1 root root  0 feb 24 10:29 charles
-rw-r--r-- 1 root root  0 feb 24 12:44 demo.txt
-r-xr--w- 1 root root  0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/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?



The screenshot shows a terminal window titled "alvaro@alvaro-VirtualBox: ~/Desktop". The terminal output is as follows:

```
-rw-r--r-- 1 root root 0 feb 24 12:44 demo.txt
-r-xrw--w- 1 root root 0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# exit
exit
alvaro@alvaro-VirtualBox:~/Desktop$ ls -l
total 60
-rw-rw-r-- 1 alvaro alvaro 0 ene 16 12:04 actors
-rw-rw-r-- 1 alvaro alvaro 37 ene 16 12:01 awards
-rw-rw-r-- 1 alvaro alvaro 240 ene 16 12:04 awards.txt
drwxr-xr-x 4 root root 4096 ene 16 18:19 Books
-rw-r--r-- 1 root root 37 ene 16 12:05 directors
-rw-rw-r-- 1 alvaro alvaro 101 ene 16 12:00 ejemplo.txt
-rw-rw-r-- 1 alvaro alvaro 22 ene 25 17:02 file1.txt
-rw-r--r-- 1 root root 54 ene 16 12:15 inform
-rw-r--r-- 1 root root 115 ene 16 12:13 list
-rw-rw-r-- 1 alvaro alvaro 0 ene 16 11:57 newfile.txt
-rw-r--r-- 1 root root 130 ene 16 12:13 people2.txt
-rw-r--r-- 1 root root 38 ene 16 12:09 people3.txt
-rw-r--r-- 1 root root 56 ene 16 12:11 people_s.txt
-rw-r--r-- 1 root root 195 ene 16 12:07 people.txt
-rw-r--r-- 1 root root 0 feb 22 17:31 perm1
-rwx----- 1 root root 27 feb 24 10:15 script1.sh
drwxrwxr-x 2 alvaro alvaro 4096 ene 20 15:23 scriptam
drwxr--r-- 2 root root 4096 feb 24 12:44 systems
alvaro@alvaro-VirtualBox:~/Desktop$ cd systems
bash: cd: systems: Permission denied
alvaro@alvaro-VirtualBox:~/Desktop$
```

sudo su

chown root charles

You cannot change the permissions, because the owner is root

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


```
Activities  Terminal  mar 2 11:45
root@alvaro-VirtualBox: /home/alvaro/Desktop/systems

-rw-rw-r-- 1 alvaro alvaro 101 ene 16 12:00 ejemplo.txt
-rw-rw-r-- 1 alvaro alvaro 22 ene 25 17:02 file1.txt
-rw-r--r-- 1 root root 54 ene 16 12:15 inform
-rw-r--r-- 1 root root 115 ene 16 12:13 list
-rw-rw-r-- 1 alvaro alvaro 0 ene 16 11:57 newfile.txt
-rw-r--r-- 1 root root 130 ene 16 12:13 people2.txt
-rw-r--r-- 1 root root 38 ene 16 12:09 people3.txt
-rw-r--r-- 1 root root 56 ene 16 12:11 people_s.txt
-rw-r--r-- 1 root root 195 ene 16 12:07 people.txt
-rw-r--r-- 1 root root 0 feb 22 17:31 perm1
--wx----- 1 root root 27 feb 24 10:15 script1.sh
drwxrwxr-x 2 alvaro alvaro 4096 ene 20 15:23 scriptam
drwxr--r-- 2 root root 4096 feb 24 12:44 systems
alvaro@alvaro-VirtualBox:~/Desktop$ cd systems
bash: cd: systems: Permission denied
alvaro@alvaro-VirtualBox:~/Desktop$ sudo su
root@alvaro-VirtualBox:/home/alvaro/Desktop# chmod 777 charles
chmod: cannot access 'charles': No such file or directory
root@alvaro-VirtualBox:/home/alvaro/Desktop# cd systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chmod 777 charles
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems#
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rwxrwxrwx 1 root root 0 feb 24 10:29 charles
-rw-r--r-- 1 root root 0 feb 24 12:44 demo.txt
-r-xr--w- 1 root root 0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems#
```

sudo su

chmod 777 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?

```

drwxrwxr-x 2 alvaro alvaro 4096 ene 20 15:23 scriptam
drwxr--r-- 2 root root 4096 feb 24 12:44 systems
alvaro@alvaro-VirtualBox:~/Desktop$ cd systems
bash: cd: systems: Permission denied
alvaro@alvaro-VirtualBox:~/Desktop$ sudo su
root@alvaro-VirtualBox:/home/alvaro/Desktop# chmod 777 charles
chmod: cannot access 'charles': No such file or directory
root@alvaro-VirtualBox:/home/alvaro/Desktop# cd systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chmod 777 charles
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems#
rhythmbox -VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rwxrwxrwx 1 root root 0 feb 24 10:29 charles
-rw-r--r-- 1 root root 0 feb 24 12:44 demo.txt
-r-xrw--w- 1 root root 0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chmod 060 lucy
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# cd lucy
bash: cd: lucy: Not a directory
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls lucy

```

chmod 060 lucy

chmod uo=-,g=rw lucy

You cannot open the file. Although you belong to the owner group, you are the owner, who has no permission to read (no matter if you are in the group).

Permissions are hierarchical. So, if you are the owner of a file with 060 permissions, you cannot write to it, despite the fact that anyone else in the group can.

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

```

...: command not found
rhythmbox -VirtualBox:/home/alvaro/Desktop/systems# cd ..
rhythmbox -VirtualBox:/home/alvaro/Desktop# cd systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# groupadd newgroup
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chown root:newgroup lucy
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rwxrwxrwx 1 root root 0 feb 24 10:29 charles
-rw-r--r-- 1 root root 0 feb 24 12:44 demo.txt
----rw---- 1 root newgroup 0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems#

```

groupadd newgroup

chown root:newgroup lucy or

chown root lucy; chgrp newgroup lucy

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

```
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rwxrwxrwx 1 root root    0 feb 24 10:29 charles
-rw-r--r-- 1 root root    0 feb 24 12:44 demo.txt
----rw---- 1 root newgroup 0 feb 24 10:29 lucy
-rwx----- 1 root root   27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root   27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chown root lucy; chgrp new
group lucy
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chown newgroup lucy; chgrp
VBox_GAs_6.1.30
chown: invalid user: 'newgroup'
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# cat lucy
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l lucy
```

usermod -a -G newgroup student

cat lucy

Now you belong to the group, but you are not the owner. Then, you are able to read and write.

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

```
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# usermod -a -G newgroup stu
dent
usermod: user 'student' does not exist
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# usermod student
u Terminal user 'student' does not exist
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# chmod a+r lucy
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rwxrwxrwx 1 root root    0 feb 24 10:29 charles
-rw-r--r-- 1 root root    0 feb 24 12:44 demo.txt
-r--rw-r-- 1 root newgroup 0 feb 24 10:29 lucy
-rwx----- 1 root root   27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root   27 feb 24 10:24 systems
```

chmod a+r lucy

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

`chmod -R 744 systems`

`chmod -R u=rwx,go=r systems`

```
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# cd ..
root@alvaro-VirtualBox:/home/alvaro/Desktop# chmod a+r systems
root@alvaro-VirtualBox:/home/alvaro/Desktop# ls -l
total 60
-rw-rw-r-- 1 alvaro alvaro  0 ene 16 12:04 actors
-rw-rw-r-- 1 alvaro alvaro 37 ene 16 12:01 awards
-rw-rw-r-- 1 alvaro alvaro 240 ene 16 12:04 awards.txt
drwxr-xr-x 4 root root 4096 ene 16 18:19 Books
-rw-r--r-- 1 root root 37 ene 16 12:05 directors
-rw-rw-r-- 1 alvaro alvaro 101 ene 16 12:00 ejemplo.txt
-rw-rw-r-- 1 alvaro alvaro 22 ene 25 17:02 file1.txt
-rw-r--r-- 1 root root 54 ene 16 12:15 inform
-rw-r--r-- 1 root root 115 ene 16 12:13 list
-rw-rw-r-- 1 alvaro alvaro  0 ene 16 11:57 newfile.txt
-rw-r--r-- 1 root root 130 ene 16 12:13 people2.txt
-rw-r--r-- 1 root root 38 ene 16 12:09 people3.txt
-rw-r--r-- 1 root root 56 ene 16 12:11 people_s.txt
-rw-r--r-- 1 root root 195 ene 16 12:07 people.txt
-rw-r--r-- 1 root root  0 feb 22 17:31 perm1
--wx----- 1 root root 27 feb 24 10:15 script1.sh
drwxrwxr-x 2 alvaro alvaro 4096 ene 20 15:23 scriptam
drwxr--r-- 2 root root 4096 feb 24 12:44 systems
```

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

```
root@alvaro-VirtualBox:/home/alvaro/Desktop# cd systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems# ls -l
total 8
-rwxrwxrwx 1 root root  0 feb 24 10:29 charles
-rw-r--r-- 1 root root  0 feb 24 12:44 demo.txt
-r--rw-r-- 1 root root  0 feb 24 10:29 lucy
-rwx----- 1 root root 27 feb 24 10:21 script1.sh
-rwxr--r-- 1 root root 27 feb 24 10:24 systems
root@alvaro-VirtualBox:/home/alvaro/Desktop/systems#
```

`chgrp -R root systems`