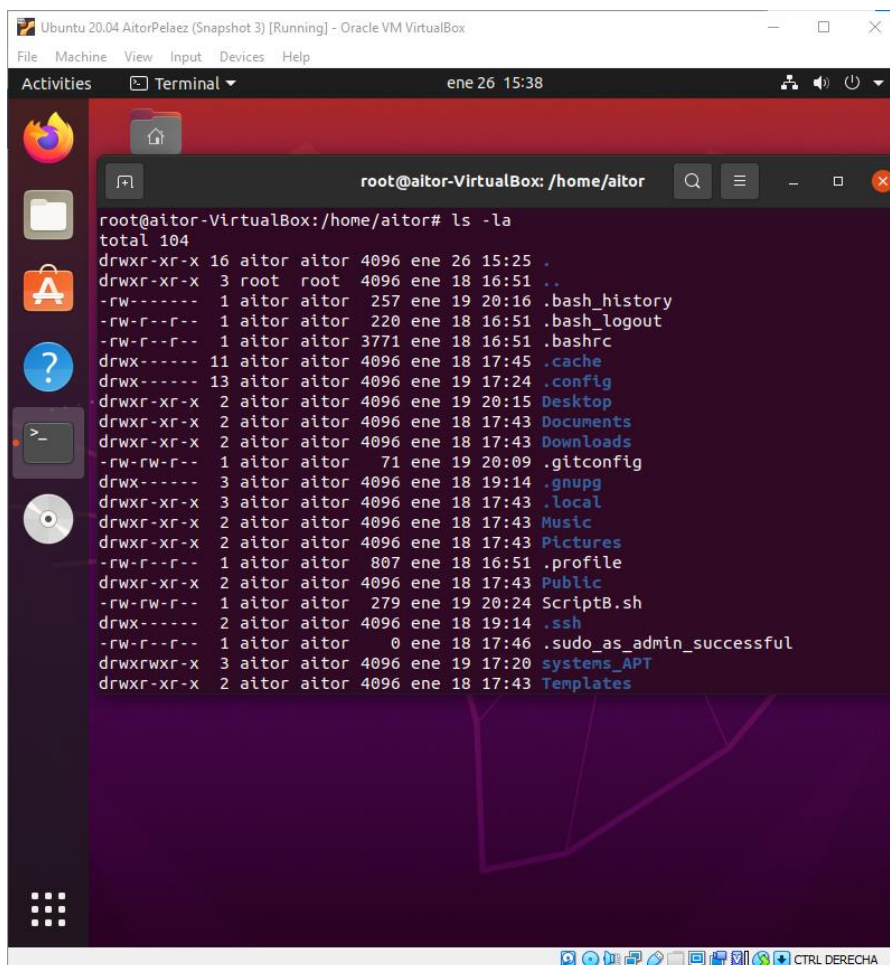


# Exercises about file and directory permission

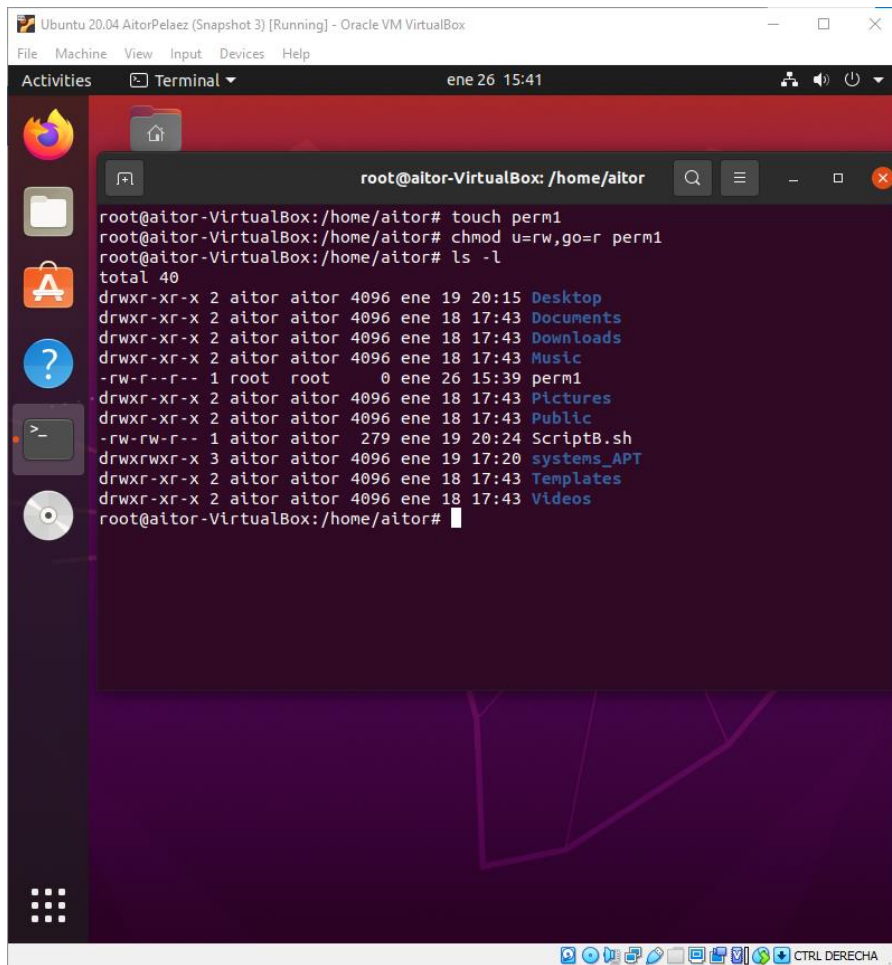
1. List the permissions in your current directory, including hidden files.



The screenshot shows a terminal window titled 'root@aitor-VirtualBox: /home/aitor'. The command 'ls -la' has been executed, displaying a detailed list of files and directories in the current directory. The output includes permissions, link counts, owner names, group names, file sizes, and timestamps for each item.

```
root@aitor-VirtualBox: /home/aitor# ls -la
total 104
drwxr-xr-x 16 aitor aitor 4096 ene 26 15:25 .
drwxr-xr-x  3 root  root 4096 ene 18 16:51 ..
-rw-r----- 1 aitor aitor 257 ene 19 20:16 .bash_history
-rw-r----- 1 aitor aitor 220 ene 18 16:51 .bash_logout
-rw-r----- 1 aitor aitor 3771 ene 18 16:51 .bashrc
drwx----- 11 aitor aitor 4096 ene 18 17:45 .cache
drwx----- 13 aitor aitor 4096 ene 19 17:24 .config
drwxr-xr-x  2 aitor aitor 4096 ene 19 20:15 Desktop
drwxr-xr-x  2 aitor aitor 4096 ene 18 17:43 Documents
drwxr-xr-x  2 aitor aitor 4096 ene 18 17:43 Downloads
-rw-rw-r--  1 aitor aitor   71 ene 19 20:09 .gitconfig
drwx-----  3 aitor aitor 4096 ene 18 19:14 .gnupg
drwxr-xr-x  3 aitor aitor 4096 ene 18 17:43 .local
drwxr-xr-x  2 aitor aitor 4096 ene 18 17:43 Music
drwxr-xr-x  2 aitor aitor 4096 ene 18 17:43 Pictures
-rw-r-----  1 aitor aitor  807 ene 18 16:51 .profile
drwxr-xr-x  2 aitor aitor 4096 ene 18 17:43 Public
-rw-rw-r--  1 aitor aitor 279 ene 19 20:24 ScriptB.sh
drwx-----  2 aitor aitor 4096 ene 18 19:14 .ssh
-rw-r-----  1 aitor aitor    0 ene 18 17:46 .sudo_as_admin_successful
drwxrwxr-x  3 aitor aitor 4096 ene 19 17:20 systems_APT
drwxr-xr-x  2 aitor aitor 4096 ene 18 17:43 Templates
```

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



The screenshot shows a terminal window titled 'root@aitor-VirtualBox: /home/aitor'. The user has executed the following commands: `touch perm1`, `chmod u=rw,go=r perm1`, and `ls -l`. The output of `ls -l` shows a list of files and directories with their permissions, owner, group, size, and modification time. The file `perm1` is listed with permissions `-rw-r--r--`, owned by `root` and `root`, with a size of `0` bytes, and a modification time of `ene 26 15:39`.

```
root@aitor-VirtualBox:/home/aitor# touch perm1
root@aitor-VirtualBox:/home/aitor# chmod u=rw,go=r perm1
root@aitor-VirtualBox:/home/aitor# ls -l
total 40
drwxr-xr-x 2 aitor aitor 4096 ene 19 20:15 Desktop
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Documents
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Downloads
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Music
-rw-r--r-- 1 root root    0 ene 26 15:39 perm1
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Pictures
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Public
-rw-rw-r-- 1 aitor aitor 279 ene 19 20:24 ScriptB.sh
drwxrwxr-x 3 aitor aitor 4096 ene 19 17:20 systems_APT
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Templates
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Videos
root@aitor-VirtualBox:/home/aitor#
```

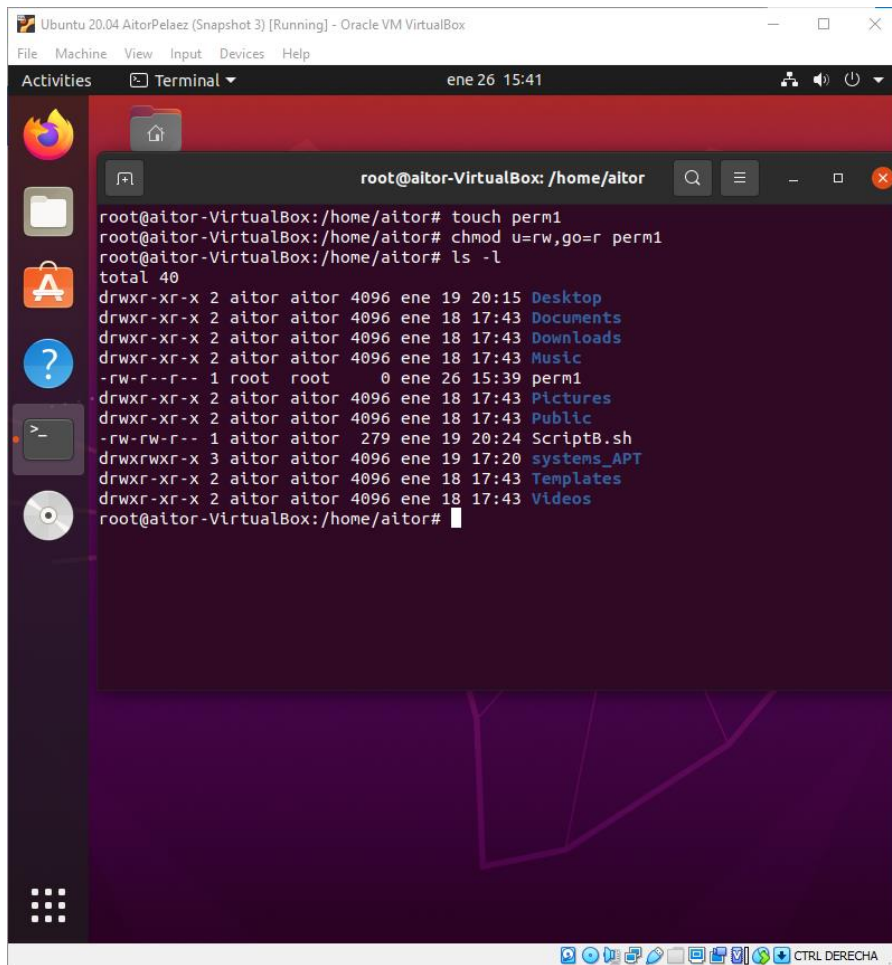
3. Change permissions of `perm1` so that everyone can read and only the owner user can write. Specify the command in all possible ways.

`chmod u=rw,go=r perm1`

`chmod a=rw,go-w perm1`

`chmod a=r,u+w perm1`

`chmod 644 perm1`



The screenshot shows a terminal window titled "Ubuntu 20.04 AitorPelaez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal is running as root at the prompt "root@aitor-VirtualBox: /home/aitor". The user has executed the following commands:

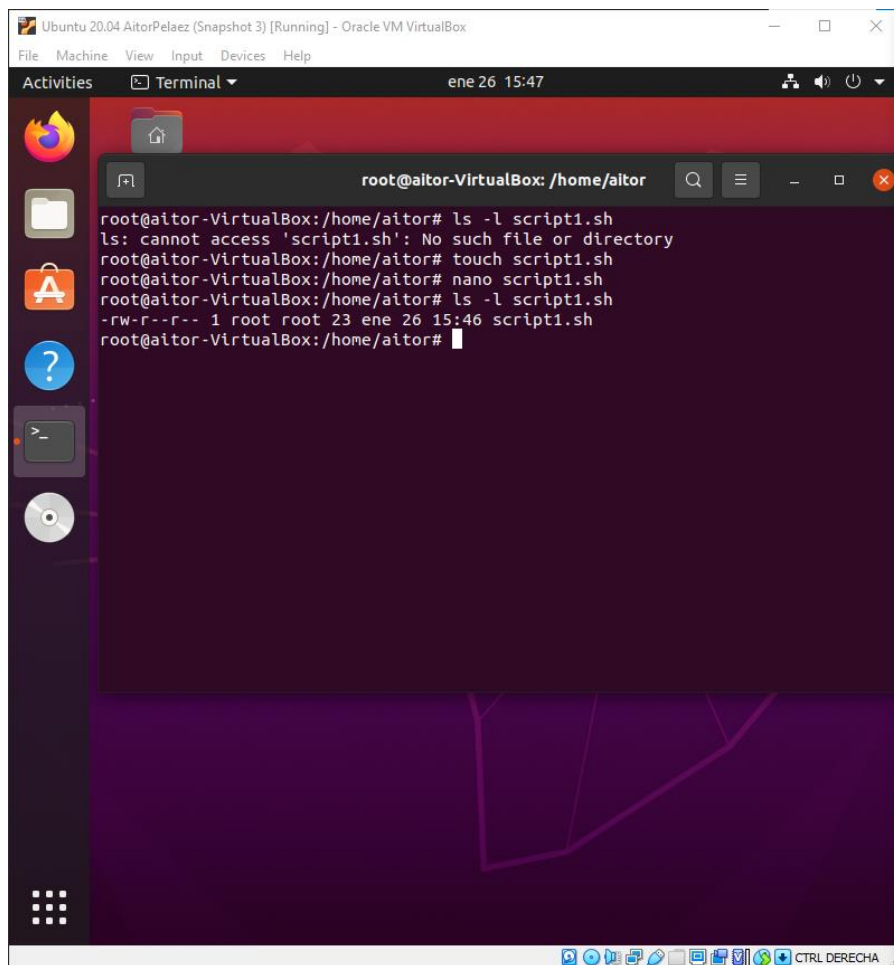
```
root@aitor-VirtualBox:/home/aitor# touch perm1
root@aitor-VirtualBox:/home/aitor# chmod u=rw,go=r perm1
root@aitor-VirtualBox:/home/aitor# ls -l
```

The output of the `ls -l` command is as follows:

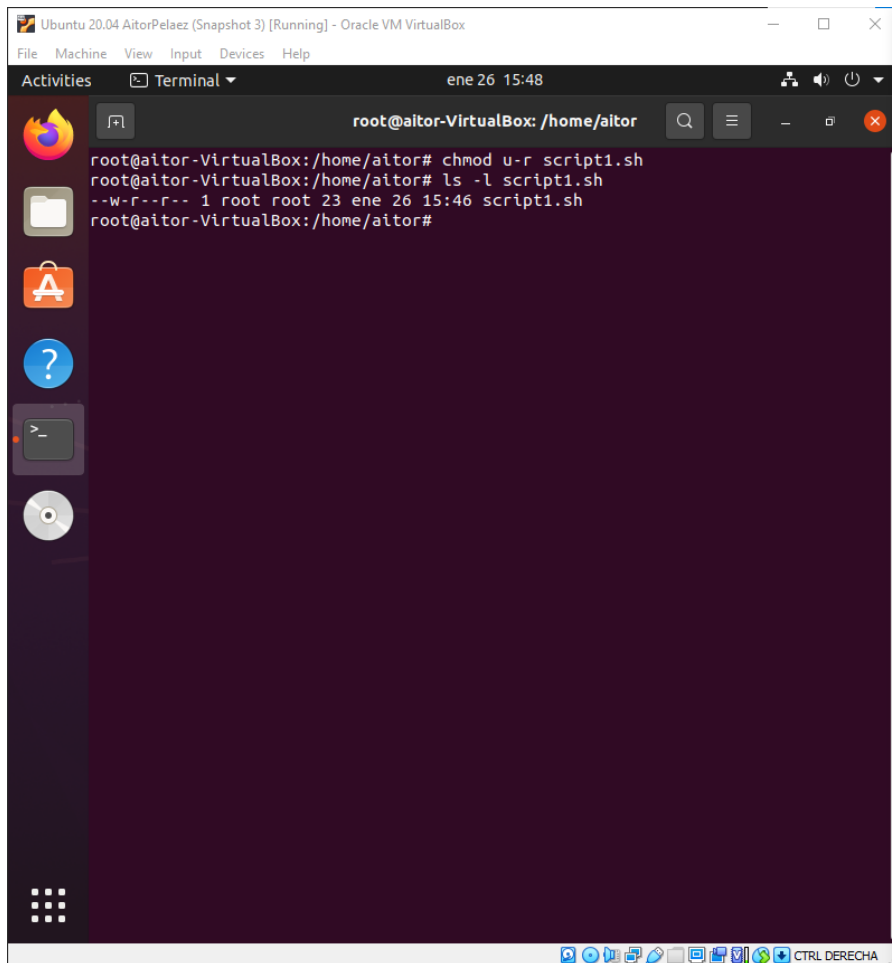
```
total 40
drwxr-xr-x 2 aitor aitor 4096 ene 19 20:15 Desktop
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Documents
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Downloads
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Music
-rw-r--r-- 1 root root 0 ene 26 15:39 perm1
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Pictures
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Public
-rw-rw-r-- 1 aitor aitor 279 ene 19 20:24 ScriptB.sh
drwxrwxr-x 3 aitor aitor 4096 ene 19 17:20 systems_APT
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Templates
drwxr-xr-x 2 aitor aitor 4096 ene 18 17:43 Videos
```

The terminal window is part of a desktop environment with a sidebar on the left containing icons for the Dash, Home, Applications, and a search icon. The bottom of the window shows a taskbar with various system icons and a "CTRL DERECHA" button.

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

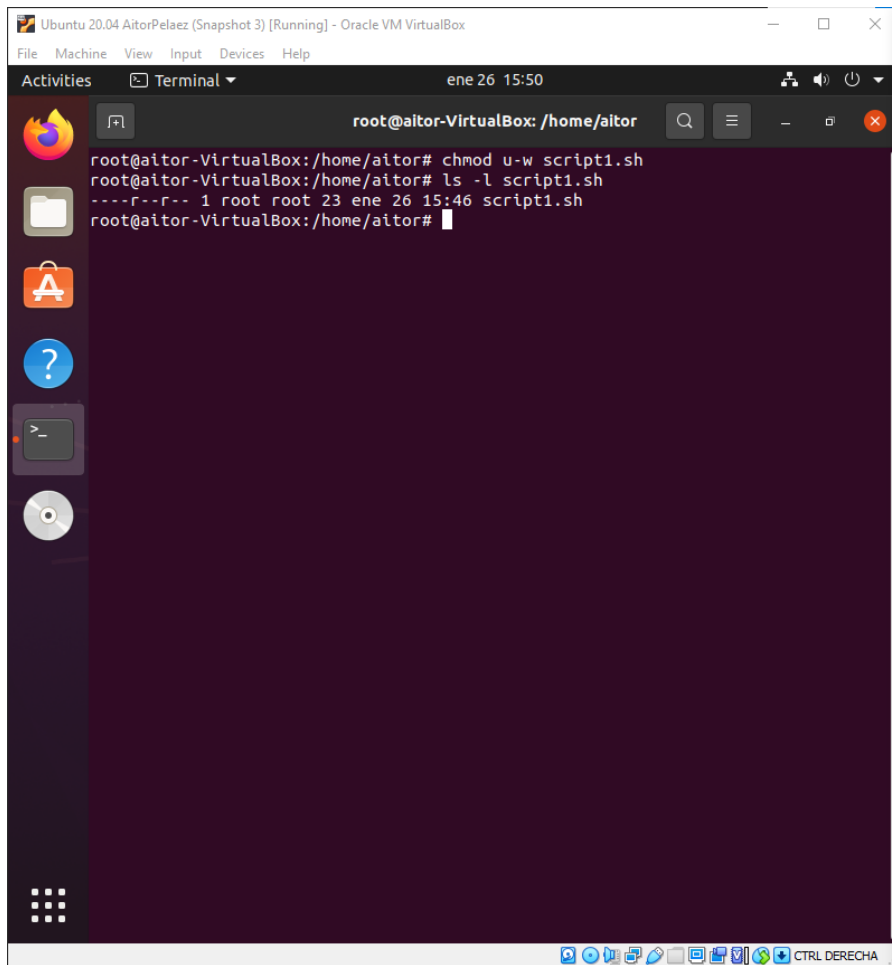


5. Remove the read permission from the owner and try to open the file

A screenshot of a terminal window within an Oracle VM VirtualBox. The window title is "Ubuntu 20.04 AitorPelaez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal shows a root user at the prompt "root@aitor-VirtualBox: /home/aitor". The user has executed two commands: "chmod u-r script1.sh" and "ls -l script1.sh". The output of the ls command is "--w-r--r-- 1 root root 23 ene 26 15:46 script1.sh". The terminal window has a dark purple background and a sidebar on the left with icons for activities, terminal, and other applications. The bottom of the window shows a taskbar with various system icons and a "CTRL DERECHA" label.

```
root@aitor-VirtualBox: /home/aitor
root@aitor-VirtualBox:/home/aitor# chmod u-r script1.sh
root@aitor-VirtualBox:/home/aitor# ls -l script1.sh
--w-r--r-- 1 root root 23 ene 26 15:46 script1.sh
root@aitor-VirtualBox:/home/aitor#
```

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

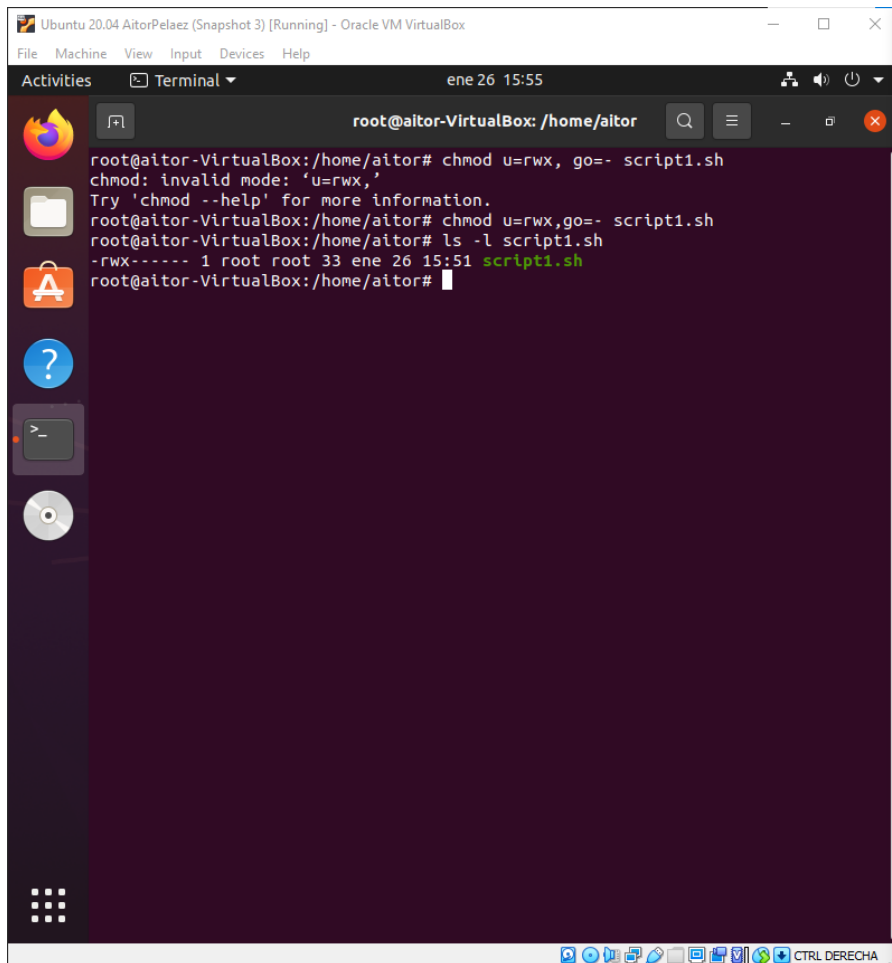


The screenshot shows a terminal window titled "Ubuntu 20.04 AitorPelaez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal is running as root at the prompt "root@aitor-VirtualBox: /home/aitor". The user has executed the command "chmod u-w script1.sh". The output of the command is shown in the terminal history: "root@aitor-VirtualBox:/home/aitor# ls -l script1.sh" followed by "----r--r-- 1 root root 23 ene 26 15:46 script1.sh". The terminal window has a dark purple background and a sidebar on the left with various application icons. The top of the window shows the menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The bottom of the window shows a taskbar with various system icons and a "CTRL DERECHA" button.

```
root@aitor-VirtualBox:/home/aitor# chmod u-w script1.sh
root@aitor-VirtualBox:/home/aitor# ls -l script1.sh
----r--r-- 1 root root 23 ene 26 15:46 script1.sh
root@aitor-VirtualBox:/home/aitor#
```

Because the owner dont have write permissions

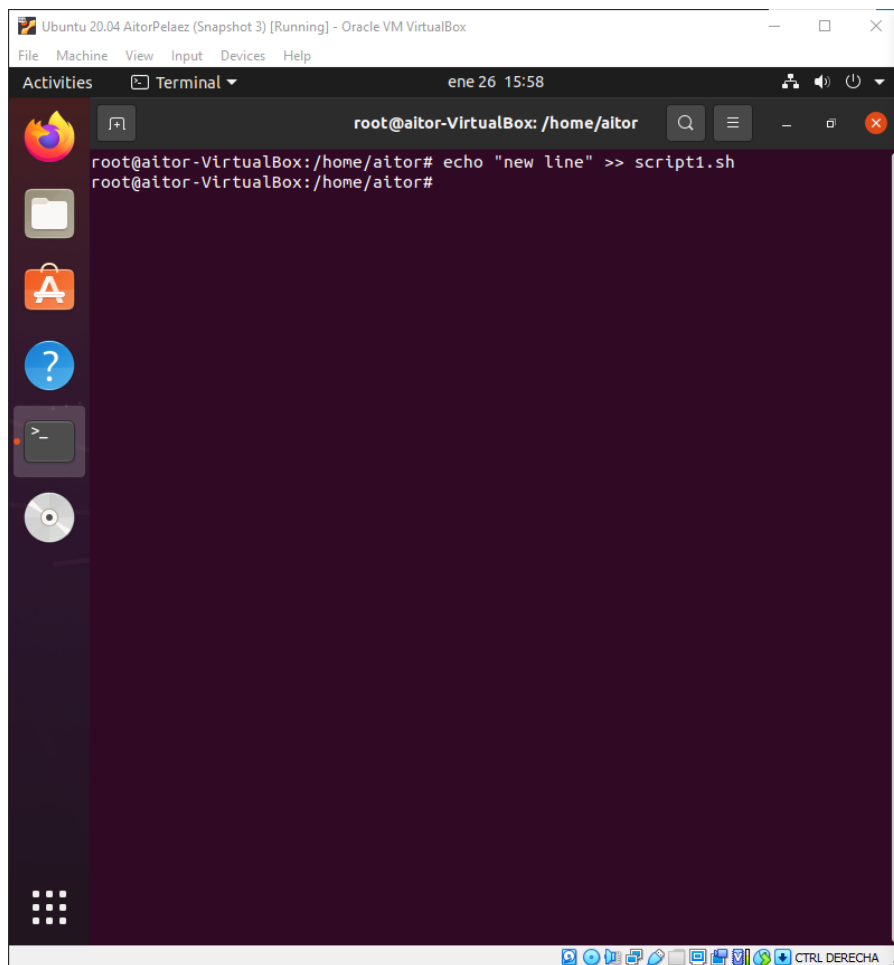
7. Change the permissions on the file script1.sh so that the owner can read, write and execute, but you deny all the permissions from the group and others.



The screenshot shows a terminal window titled "Ubuntu 20.04 AitorPelaez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal is running as root at the prompt "root@aitor-VirtualBox: /home/aitor". The user attempts to run "chmod u=rwx, go=- script1.sh", which results in an error: "chmod: invalid mode: 'u=rwx,'". The user then corrects the command to "chmod u=rwx,go=- script1.sh". Finally, the user runs "ls -l script1.sh", which displays the file permissions: "-rwx----- 1 root root 33 ene 26 15:51 script1.sh".

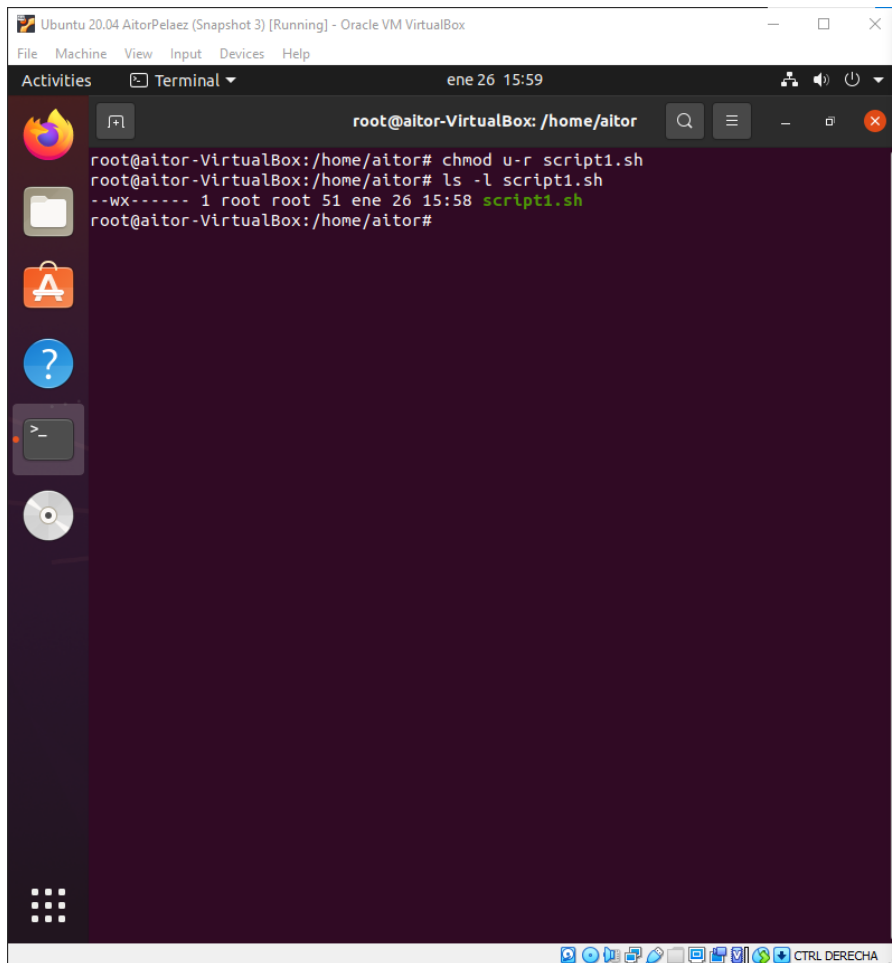
```
root@aitor-VirtualBox:/home/aitor# chmod u=rwx, go=- script1.sh
chmod: invalid mode: 'u=rwx,'
Try 'chmod --help' for more information.
root@aitor-VirtualBox:/home/aitor# chmod u=rwx,go=- script1.sh
root@aitor-VirtualBox:/home/aitor# ls -l script1.sh
-rwx----- 1 root root 33 ene 26 15:51 script1.sh
root@aitor-VirtualBox:/home/aitor#
```

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

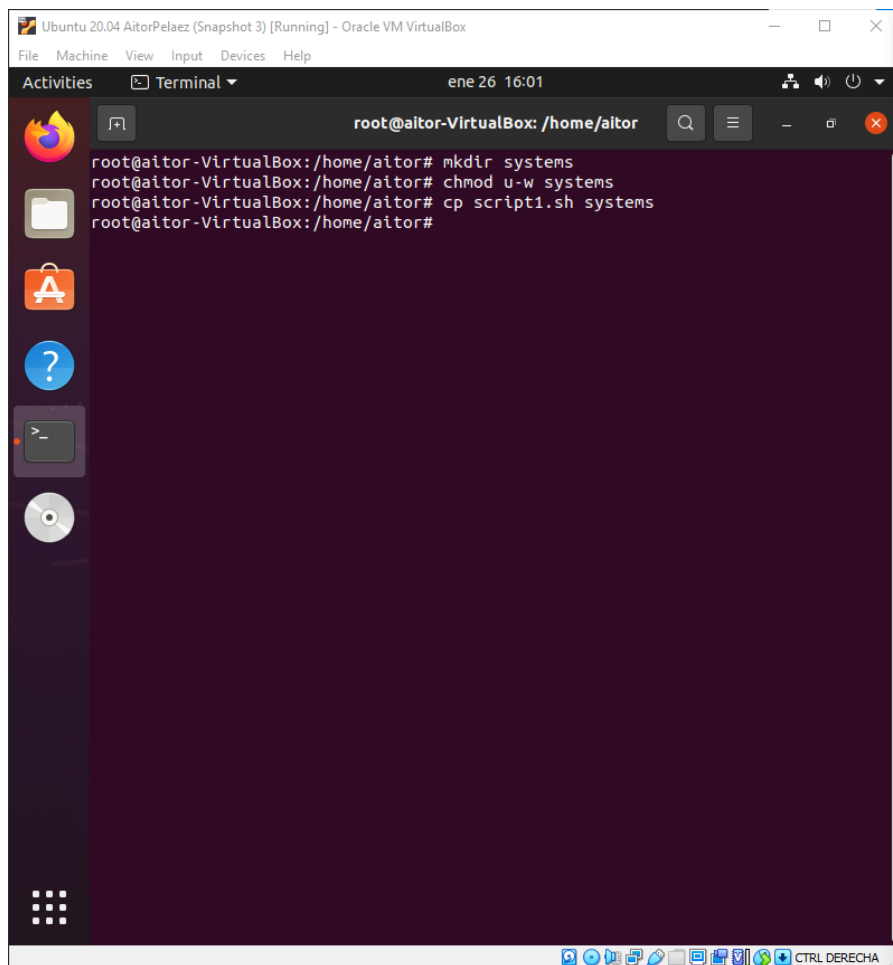


9. Remove the read permission from the owner on the file script1.sh. Try to run the file. Is it possible?

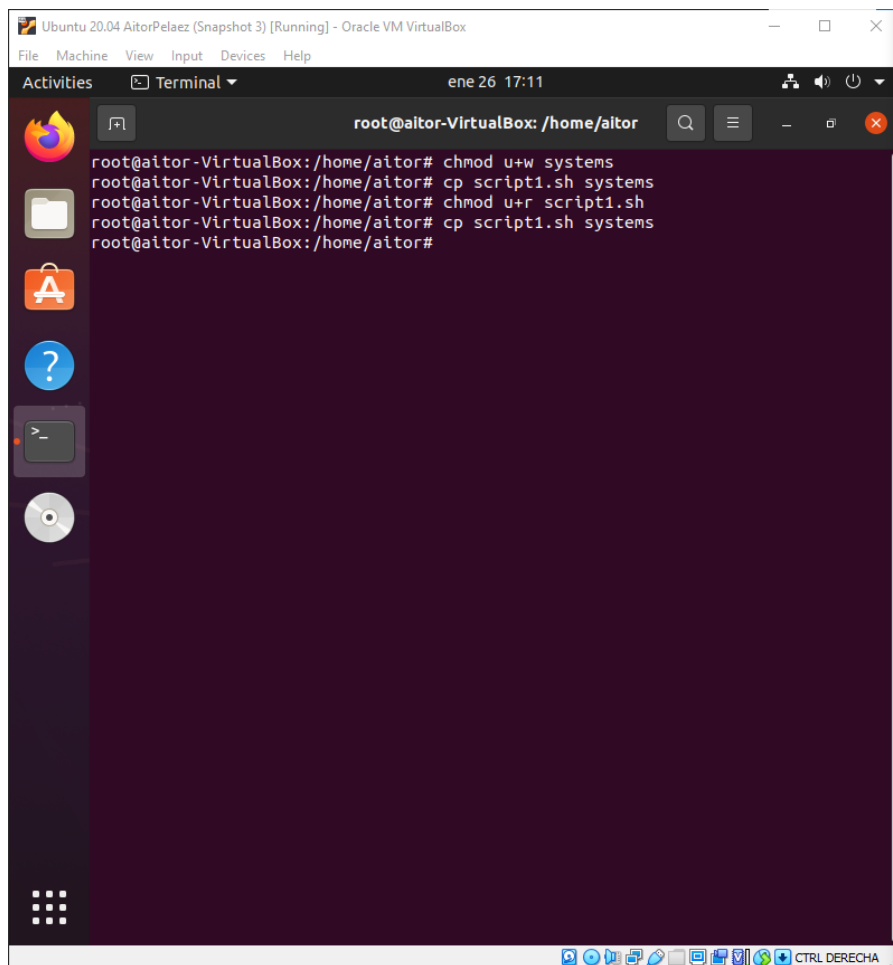


A screenshot of a terminal window within a virtual machine. The window title is "Ubuntu 20.04 AitorPelaiez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal shows the user 'root' at the prompt 'root@aitor-VirtualBox: /home/aitor'. The user has executed two commands: 'chmod u-r script1.sh' and 'ls -l script1.sh'. The output of the second command is '--wx----- 1 root root 51 ene 26 15:58 script1.sh', where 'script1.sh' is highlighted in green. The terminal window is part of a desktop environment with a sidebar on the left containing icons for Activities, Files, Applications, Help, and a terminal icon. The bottom of the window shows a taskbar with various system icons and a keyboard shortcut 'CTRL DERECHA'.

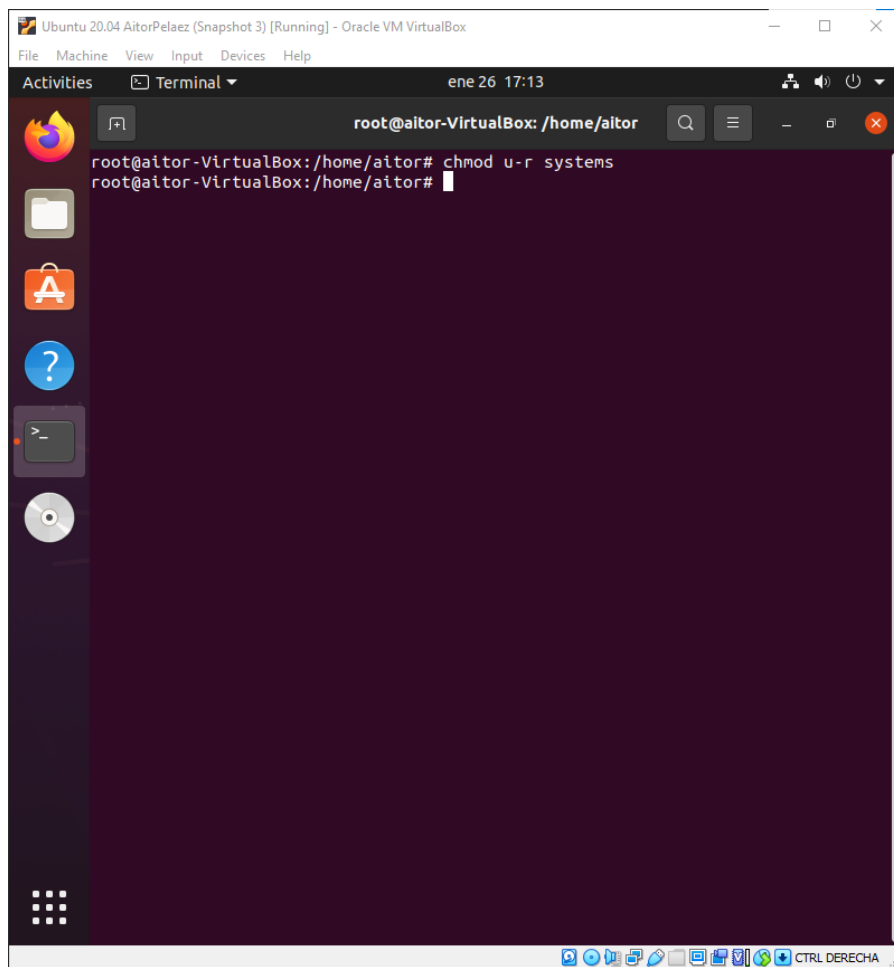
10. Create a directory called “systems”. Remove the write permission from it and try to copy script1.sh inside.



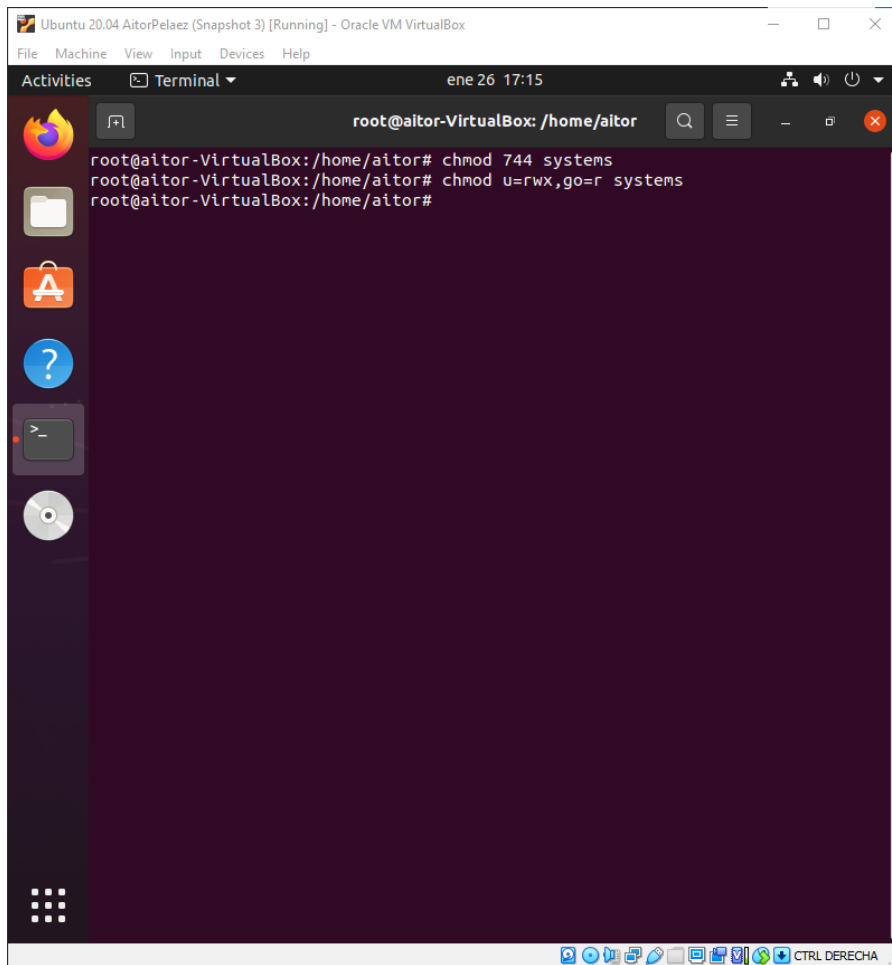
11. If you were not able to copy the file, add the write permission again and copy the file inside.



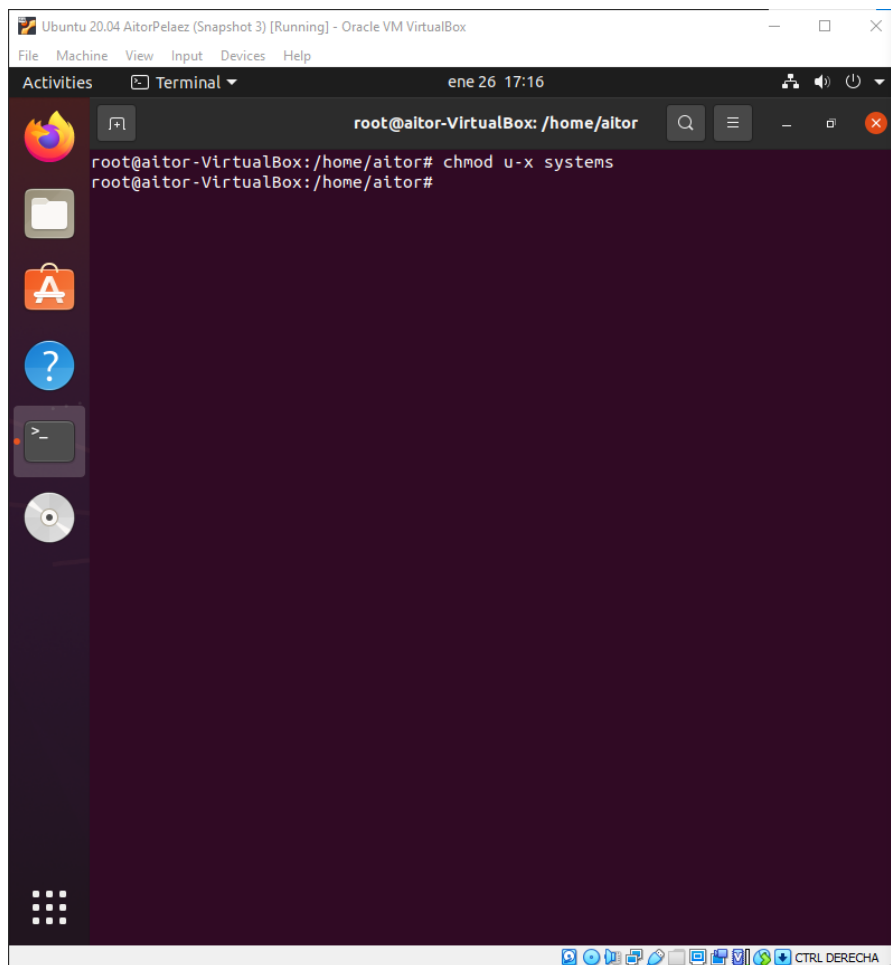
12. Remove the read permission from the user on the directory "systems" and try to list its contents.



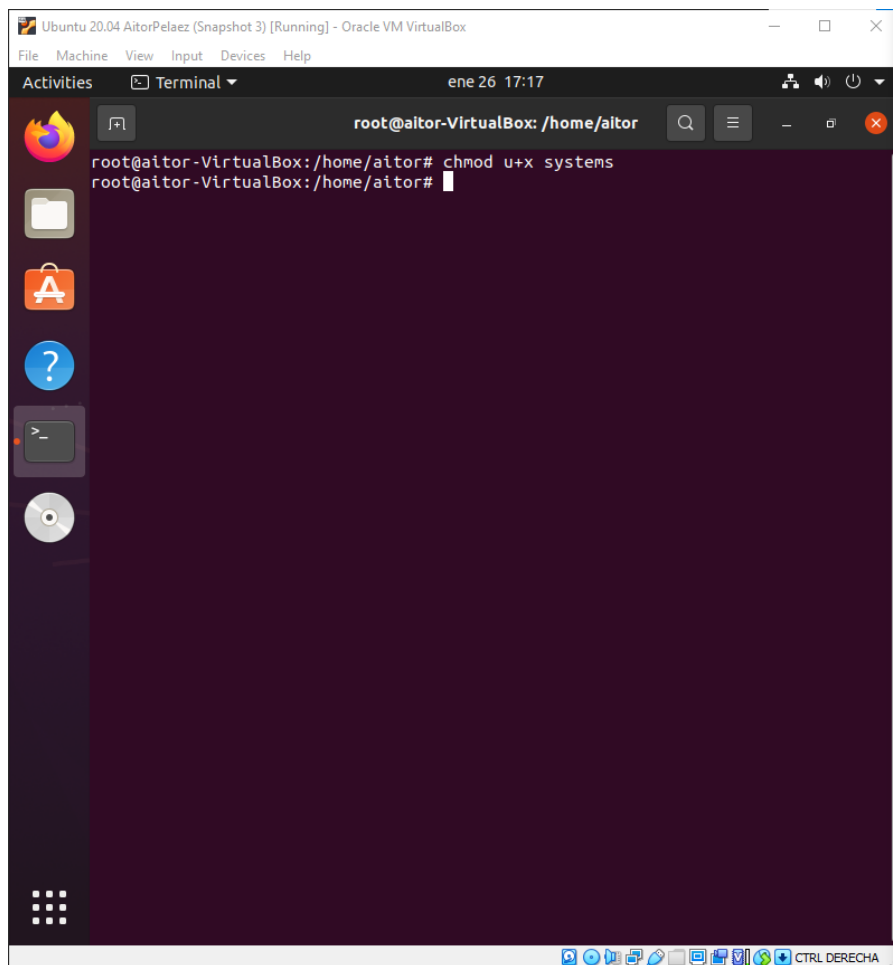
13. Change the permissions from “systems” so that the owner can read, write and execute, but the group and others can only read.



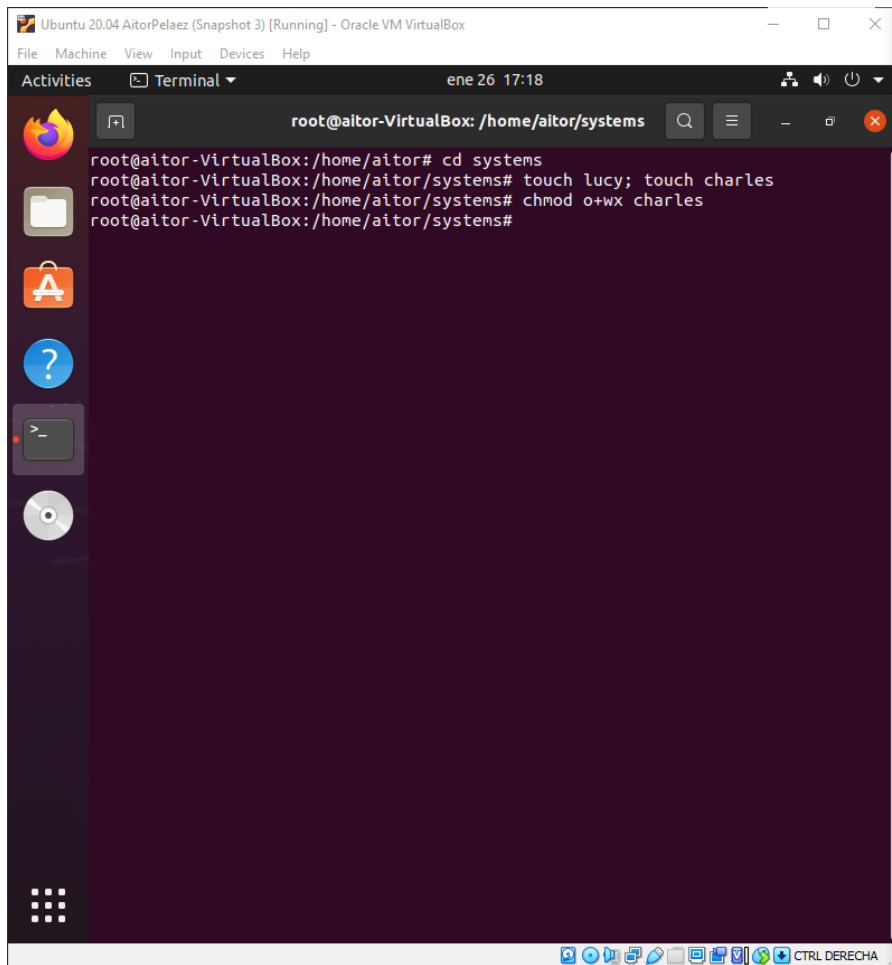
14. Remove the execute permission from “systems”. Can you execute systems/script1.sh? Is it possible to access the directory to execute the file?



15. Assign the execute permission to the directory again

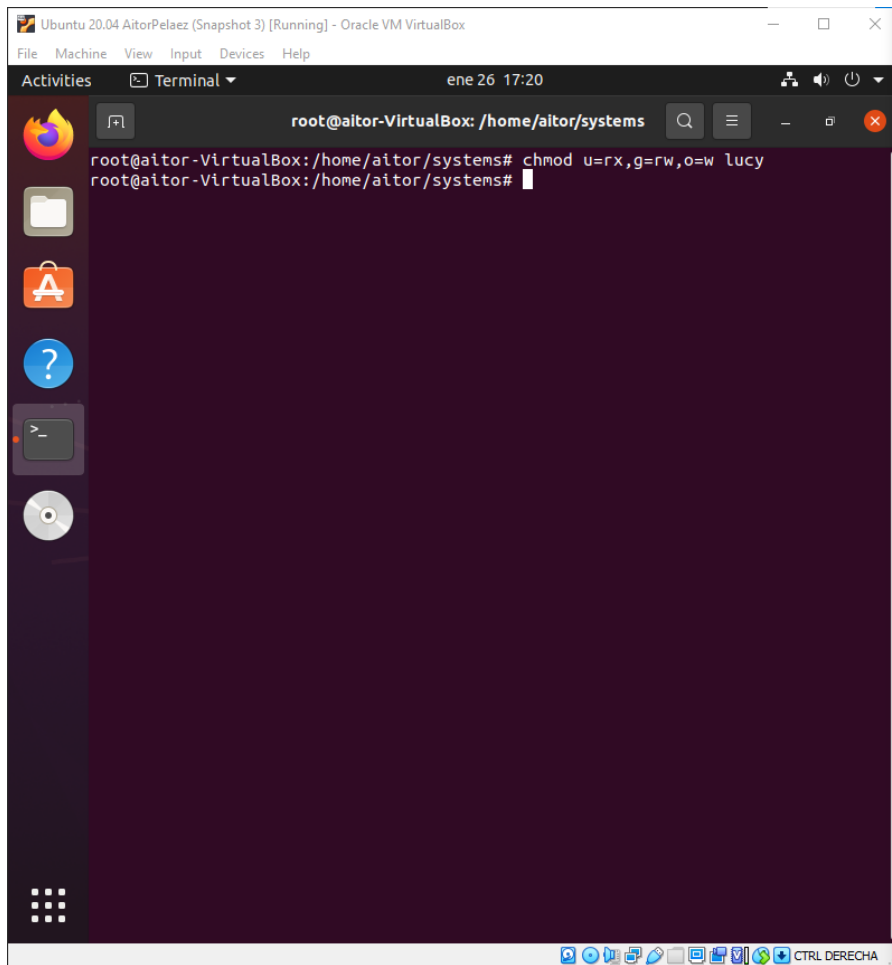


16. Create two files called "lucy" and "charles" into "systems". Change permissions of "charles", so that others can write and execute.



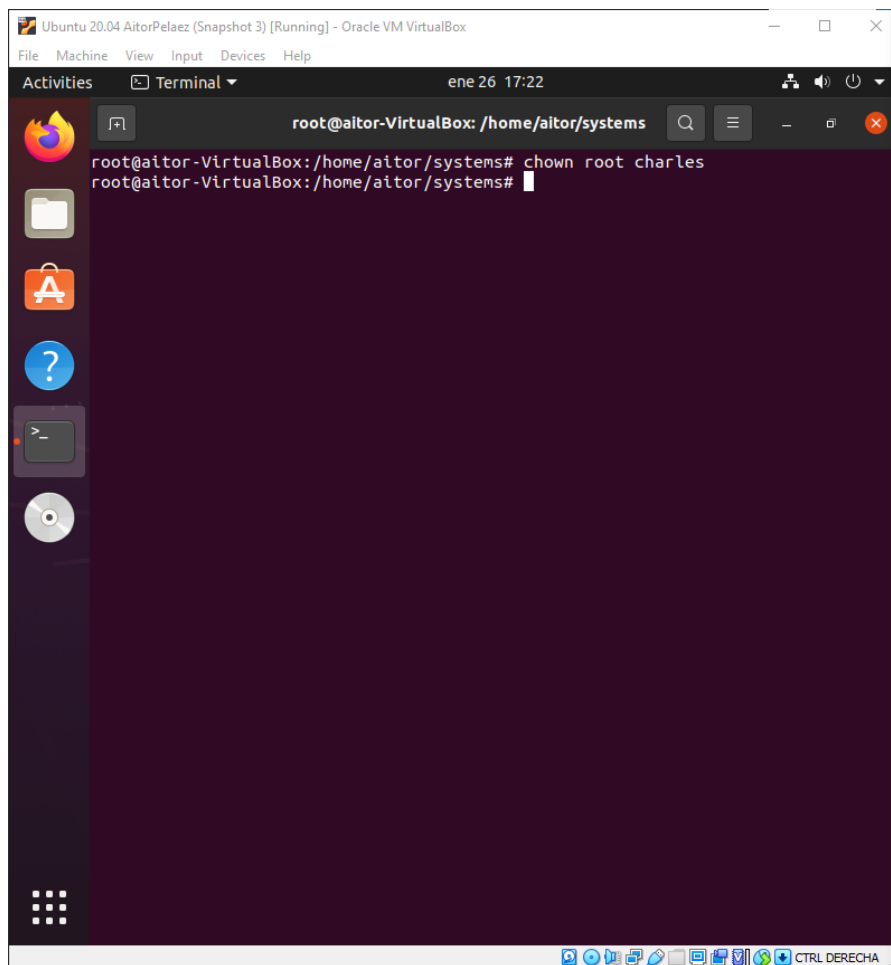
17. Change permissions of “lucy” so that the owner can read and execute, the group can read and write and others can only write. Specify the command in all possible ways.



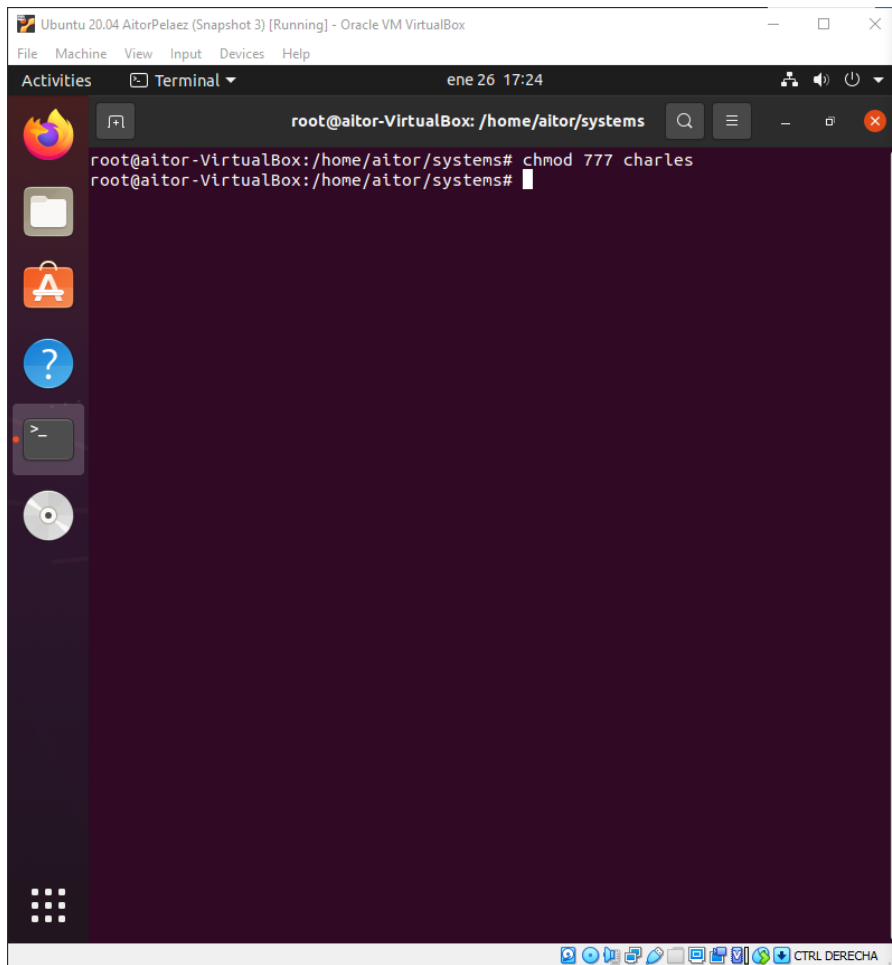


Chmod 562 lucy

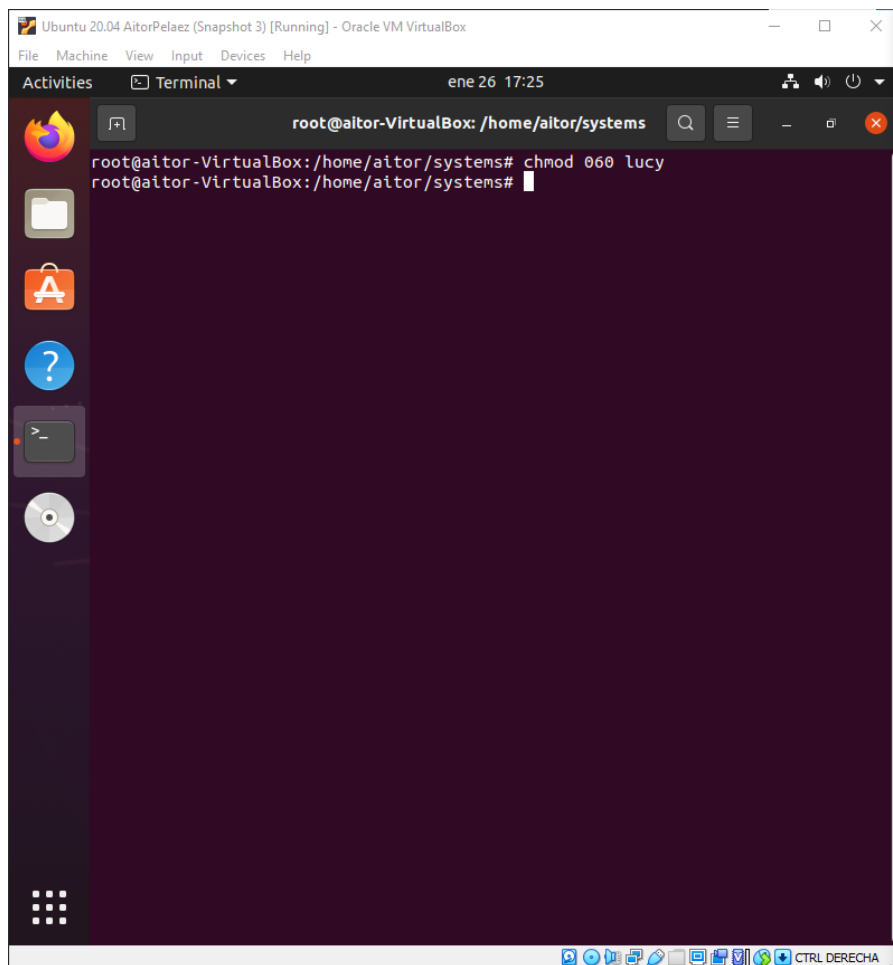
18. Log in as root. Change the ownership of "charles" to "root". Exit the root session. Now, try to change the permission so that others cannot read and execute. Is it possible? Why?



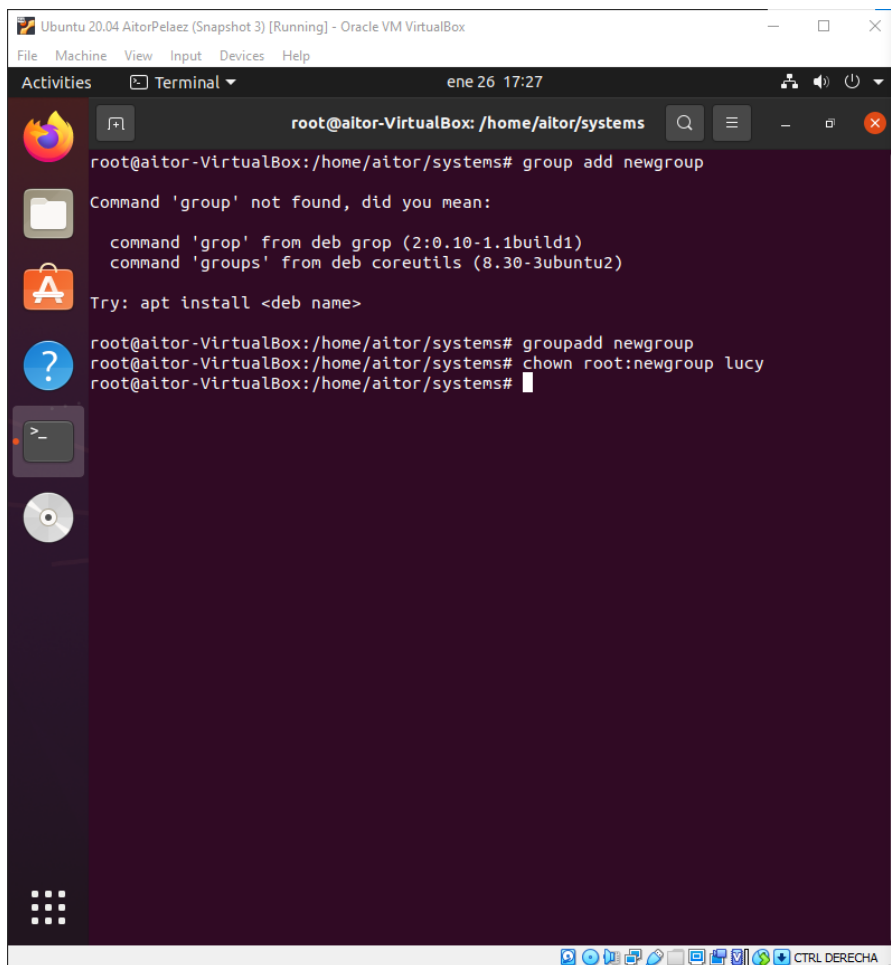
19. Change the permissions of "charles" so that everybody can do everything



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?



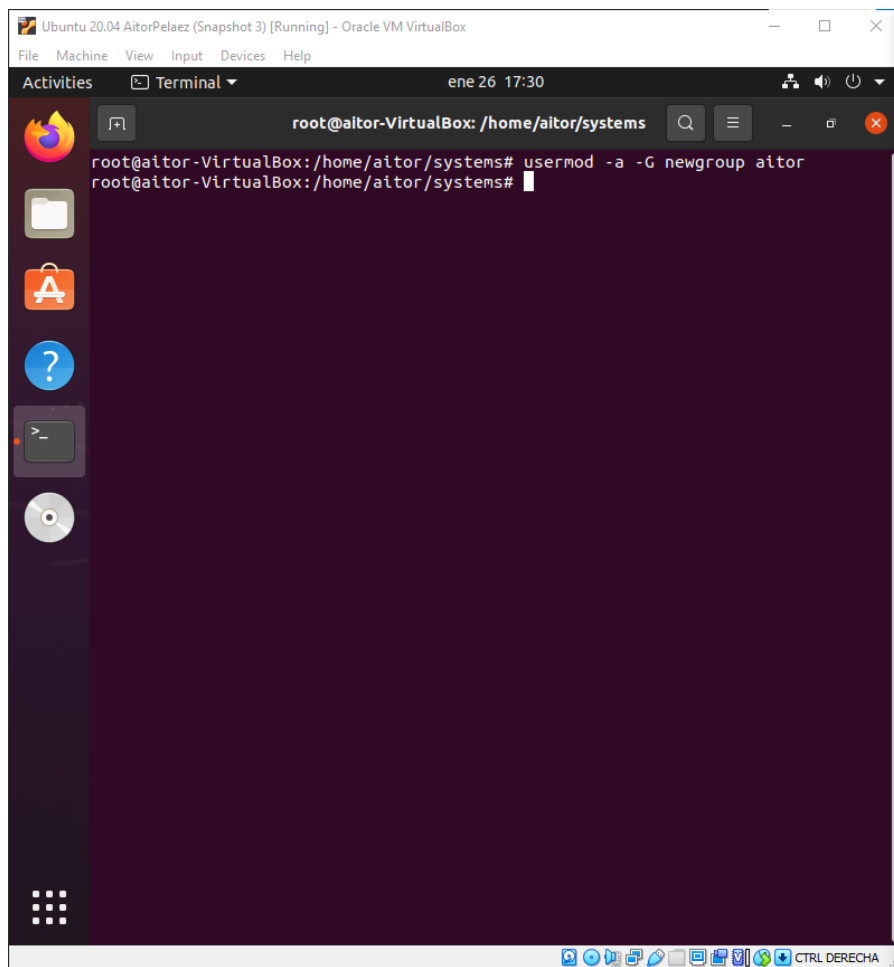
21. Create a group called "newgroup". Set the group as the owner of the file "lucy" and "root" as the owner user.



The screenshot shows a terminal window titled "Ubuntu 20.04 AitorPelaez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal is running as root at the prompt "root@aitor-VirtualBox: /home/aitor/systems". The user attempts to run "group add newgroup", which fails with the message "Command 'group' not found, did you mean:". It then lists two suggestions: "command 'grop' from deb grop (2:0.10-1.1build1)" and "command 'groups' from deb coreutils (8.30-3ubuntu2)". The user then runs "groupadd newgroup", which succeeds. Next, the user runs "chown root:newgroup lucy", which also succeeds. The terminal prompt returns to "root@aitor-VirtualBox: /home/aitor/systems#".

```
root@aitor-VirtualBox:/home/aitor/systems# group add newgroup
Command 'group' not found, did you mean:
  command 'grop' from deb grop (2:0.10-1.1build1)
  command 'groups' from deb coreutils (8.30-3ubuntu2)
Try: apt install <deb name>
root@aitor-VirtualBox:/home/aitor/systems# groupadd newgroup
root@aitor-VirtualBox:/home/aitor/systems# chown root:newgroup lucy
root@aitor-VirtualBox:/home/aitor/systems#
```

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

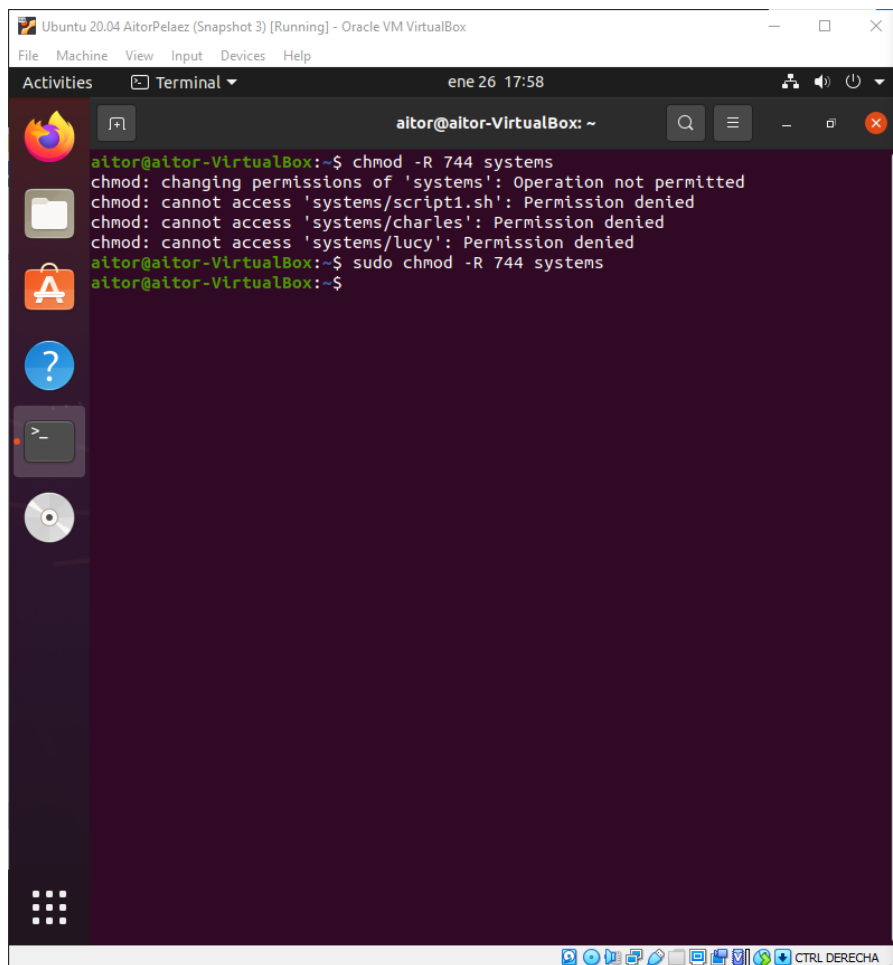


23. Change permissions of "lucy" so that everybody can read.

The screenshot shows a terminal window titled "Ubuntu 20.04 AitorPelaez (Snapshot 3) [Running] - Oracle VM VirtualBox". The terminal output is as follows:

```
aitor@aitor-VirtualBox: ~  
aitor@aitor-VirtualBox:~$ sudo chmod 444 systems/lucy  
[sudo] password for aitor:  
aitor@aitor-VirtualBox:~$ ls -l systems | grep lucy  
ls: cannot access 'systems/script1.sh': Permission denied  
ls: cannot access 'systems/charles': Permission denied  
ls: cannot access 'systems/lucy': Permission denied  
-???????? ? ? ? ? ? ? lucy  
aitor@aitor-VirtualBox:~$ sudo ls -l systems | grep lucy  
-r--r--r-- 1 root newgroup 0 ene 26 17:18 lucy  
aitor@aitor-VirtualBox:~$ cat systems/lucy  
cat: systems/lucy: Permission denied  
aitor@aitor-VirtualBox:~$ sudo cat systems/lucy  
aitor@aitor-VirtualBox:~$
```

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



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



