Sistemas Informáticos (Computer Systems)

Unit 05. Activities 03

GOBIERNO DE ESPAÑA
MINISTERIO DE EDUCACIÓN Y FORMACIÓN PROFESIONAL

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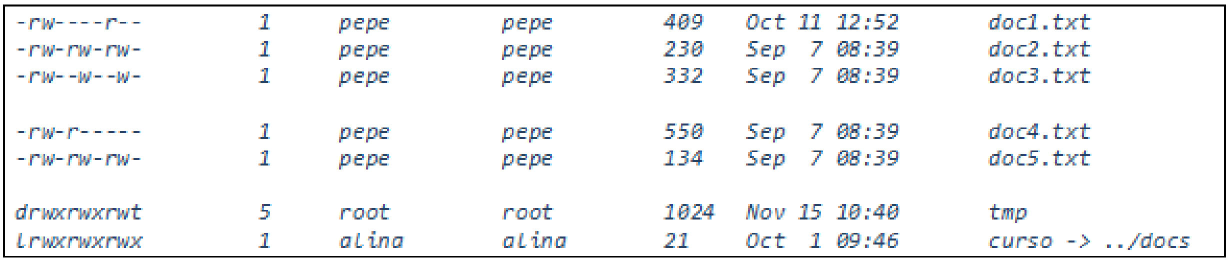
1. Exercise 01

Do those exercises using "*touch*", "*cat*", "*cd*", "*ls*", "*mkdir*", "*cp*", "*mv*", "*rmdir*", "*rm*", "*grep*".

- Write a command to create a new file called "*names.txt*".
- Write a command to view the content of "*names.txt*".
- Write a command to view the content of your home directory in long format (permissions, size, date, etc.).
- Write a command to view the content of your current directory in long format, showing hidden files/directories (permissions, size, date, etc.).
- Write a command to list all files that end with "*.png*" and starts with "*ga*".
- Write a command to store the result of a ls command in a file called "*myLS.txt*", deleting existing content.
- Write a command to store the result of a ls command in a file called "*myLS.txt*", adding the result to the end.
- Write a command to create a directory called "*Exercise1*" in your home.
- Write a command to move all files that starts with a from your home to directory, "*Exercise1*.
- Write a command to change name of directory "*Exercise1*" to "*Ex1*".
- Write a command to show lines of "*/etc/passwd*" that contains word "*root*".
- Delete all elements created.

2. Exercise 02

We have obtained this result running "*ls -l*" command.



```
-rw----r--        1    pepe     pepe     409    Oct 11 12:52     doc1.txt
-rw-rw-rw-        1    pepe     pepe     230    Sep  7 08:39     doc2.txt
-rw--w--w-        1    pepe     pepe     332    Sep  7 08:39     doc3.txt

-rw-r-----        1    pepe     pepe     550    Sep  7 08:39     doc4.txt
-rw-rw-rw-        1    pepe     pepe     134    Sep  7 08:39     doc5.txt

drwxrwxrwt        5    root     root     1024   Nov 15 10:40     tmp
lrwxrwxrwx        1    alina    alina    21     Oct  1 09:46     curso -> ../docs
```

- **In symbolic mode:** add execution permission to owner of "*doc1.txt*".
- **In symbolic mode:** delete write permission to group and others of "*doc2.txt*".
- **In octal mode**: add execution permission to group of "*doc4.txt*".
- **In octal mode**: delete write permission to group and read and write permissions for others of file "*doc5.txt*".
- Write a command to change owner to "*Eulogio*" and group to "*Eulogio*" of all files of the directory.

3. Exercise 03

1. Create user "*pepito*" in command line.
2. Create group "*tic*" in command line.
3. Change primary group of user "*pepito*" to "*tic*".

4. Exercise 04

Solves those exercises using “*grep*” command.

> 💬 **Interesting:** you can chain “grep” commands using “|” redirector.

- Show all lines of file “*list.txt*” that contain text “*lib*”.
- Show how many lines contain “*mp3*” in “*list.txt*”.
- Show files inside “/etc/ directory that contain “*host*” string inside.
- Show all lines of file “*list.txt*” that not contains letter “*a*” (uppercase or lowercase).
- Show all lines of file “*list.txt*” that not contains “*a*” (uppercase or lowercase) and contains “*m*” (lowercase).

> 💬 **Tip:** “|” is a tool to create a redirection, that is, to use the output of a command as input of another command. For example: “*cat file.txt | sort*” . This command consists of two commands joined by “|”. The output of the “*cat*” command is passed as an entry of the sort command, so the final result you will see is the file “*file.txt*” sorted.

5. Exercise 05

- Create a folder called “*shared*” in your home where everybody has all permissions.
- Create groups “*office1*” and “*office2*”.
- Create users “*pedro*” and “*pablo*”. Those users have to be members of group “*office1*”.
- Create users “*alba*” and “*nerea*”. Those users have to be members of group “*office2*”.
- As “*pedro*” create a file “*topsecret.txt*” that only “*pedro*” can read and write.
- As “*pedro*” create a file “*sales.txt*” that owner and group “*office1*” can read and write. Check as “*pablo*” if you can do those operations.
- As “*alba*” create a file “*employ.txt*” that every user can read and group “*office2*” can read and write. Check if it is right with “*pedro*” and “*nerea*”.

6. Exercise 06

Questions about permissions. Try to answer and reason them:

- **Question 01**: if a user has read permission to a file, but that file is inside a directory that our user doesn’t have execution permission and our user have read permission. Could it read the file?
- **Question 02**: if a user has read permission to a file, but that file is inside a directory that our user doesn’t have read permission and our user have execution permission. Could it read the file?

7. Exercise 06

Using bit SetUid and supposing that temporally (something like 1 hour) you have access to a machine as root and in that machine you have permanently access to a user called “*alumno*” without sudoer permissions:

- **Question 01:** How can we use bit SetUid bit to create a backdoor? (**Clue**: file “*/bin/sh*” could be useful).
- **Question 02:** How can we detect that kind of backdoors on our system? What kind of measures can we take to be safe against this kind of attack?