

Managing directories



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1. Change the current directory to /home/<user>.
There are several ways to access our home directory directly:

\$ cd \$HOME

\$ cd ~

\$ cd --

\$ cd

\$ cd ~/

\$ pwd (shows the current directory)

```
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/home$ cd ..
anacifu@anacifu-VirtualBox:/$ pwd
/
anacifu@anacifu-VirtualBox:/$ cd $HOME
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/home$ cd ..
anacifu@anacifu-VirtualBox:/$ pwd
/
```

```
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/home$ cd ..
anacifu@anacifu-VirtualBox:/$ pwd
/
```

```
anacifu@anacifu-VirtualBox:/$ cd ~
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/home$ cd ..
anacifu@anacifu-VirtualBox:/$ pwd
/
anacifu@anacifu-VirtualBox:/$ cd --
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/home$ pwd
/home
anacifu@anacifu-VirtualBox:/home$ cd ..
anacifu@anacifu-VirtualBox:/$ pwd
/
anacifu@anacifu-VirtualBox:/$ cd
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$
```

```
anacifu@anacifu-VirtualBox:~$
/home/anacifu
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/$ pwd
/
```

```
anacifu@anacifu-VirtualBox:~$ cd ..
anacifu@anacifu-VirtualBox:/home$ cd ..
anacifu@anacifu-VirtualBox:/$ cd ~/
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$
```

The command **cd (change directory)** allows us to change the directory in which we are to a different one. It is a command integrated into the system, that is, there is no need to install any additional package, since it is a command belonging to the Shell of the operating system. To change directory, **cd** allows us to use absolute or relative paths.

The absolute path to a directory indicates all the directories to go through starting from the root of the file system (**/**).

The path relative to a directory indicates the path to the directory to which we want to change but based on the directory from which the command is executed, that is, from the current or working directory.

The parent directory is the one that contains the current or working directory. To build relative paths you need to know that **..** indicates the parent directory.

If we run **cd ..** What we're doing is switching to the parent directory of the current directory, a directory just before in the directory tree.

. : Refers to the directory where we are. When we run a program and write. **/program.sh**, that point in front of the executable indicates that it is in the working directory.

.. : Refers to the parent directory. Using **..** we can tell the **cd** command to level back.

/home: It is the directory of standard users, and therefore, intended to store all user files, such as documents, photos, videos, music, templates, etc. It also includes temporary files of applications run in user mode, that serve to save program settings, etc.

Inside **/home** are the personal directories of all users, named according to the username used.

\$HOME: Stores the absolute path to your home directory. This turns out to very handy when you need the path of your home directory in shell scripts.

2. Create a directory called **systems**.

Suppose we are in the user's home directory (~) and we want to create the **systems** directory, the command would be as follows:

\$ mkdir systems

```
anacifu@anacifu-VirtualBox:~$ mkdir systems
anacifu@anacifu-VirtualBox:~$ ls -l
total 36
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Downloads
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Public
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:06 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Videos
anacifu@anacifu-VirtualBox:~$
```

The **mkdir** command is the command used to create directories or folders on Linux

3. Create a directory called **exercises**. Go to this directory and create another new directory called **programming**.

From /home directory: creates the exercises directory, then inside this directory creates the programming subdirectory.

\$ mkdir exercises; cd exercises; mkdir programming

Suppose now that we want to create the programming subdirectory that hangs from exercises, the command would be the following.

\$ mkdir -p exercises/programming

```
anacifu@anacifu-VirtualBox:~$ mkdir exercises; cd exercises; mkdir programming
anacifu@anacifu-VirtualBox:~/exercises$ pwd
/home/anacifu/exercises
anacifu@anacifu-VirtualBox:~/exercises$ ls -l
total 4
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:45 programming
anacifu@anacifu-VirtualBox:~/exercises$
```

```
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ mkdir -p exercises/programming
anacifu@anacifu-VirtualBox:~$ ls -l
total 40
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Downloads
drwxrwxr-x 3 anacifu anacifu 4096 nov 17 10:53 exercises
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Public
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:06 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Videos
anacifu@anacifu-VirtualBox:~$ cd exercises
anacifu@anacifu-VirtualBox:~/exercises$ ls -l
total 4
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:53 programming
anacifu@anacifu-VirtualBox:~/exercises$
```

-p, -parents: If the directory indicated in the path does not exist, create it. It is very useful if you want to create all the directories in the path at once. If they exist, it does not generate error.

4. Go back to the user's home directory. Delete the directories **"exercises"** and **"programming"** using just one command. Create the directories again with one command.

\$ rm -rf exercises

\$ mkdir -p exercises/programming

rm -rf: Remove the directory "exercises", and any files and directories it contains. If a file or directory that **rm** tries to delete is write-protected, you will not be prompted to make sure that you really want to delete it, just do it.

This really does remove one or more files just by specifying their name. At the same time, we can delete a complete directory if we write the **-r (r: Recursion)** means that the command is used not only in the directory to which it applies, but also in its subdirectories.) option below. It is one of the most dangerous commands, which you should be very careful to use especially as root. **rm -rf exercises** to delete files or directories forcefully, you can use this option to force a deletion operation without **rm** asking for confirmation.


```

anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ ls -l
total 40
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Downloads
drwxrwxr-x 3 anacifu anacifu 4096 nov 17 10:53 exercises
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Public
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:06 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Videos
anacifu@anacifu-VirtualBox:~$ rm -rf exercises
anacifu@anacifu-VirtualBox:~$ ls -l
total 36
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Downloads
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Public
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:06 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Videos
anacifu@anacifu-VirtualBox:~$ mkdir -p exercises/programming
anacifu@anacifu-VirtualBox:~$ ls -l
total 40
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Downloads
drwxrwxr-x 3 anacifu anacifu 4096 nov 18 11:19 exercises
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Public
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:06 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Videos
anacifu@anacifu-VirtualBox:~$ cd exercises
anacifu@anacifu-VirtualBox:~/exercises$ ls -l
total 4
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 11:19 programming
anacifu@anacifu-VirtualBox:~/exercises$

```

```

anacifu@anacifu-VirtualBox:~$ ls -l
total 40
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Downloads
drwxrwxr-x 3 anacifu anacifu 4096 nov 18 11:19 exercises
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Public
drwxrwxr-x 2 anacifu anacifu 4096 nov 17 10:06 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov  1 15:03 Videos
anacifu@anacifu-VirtualBox:~$ cd exercises
anacifu@anacifu-VirtualBox:~/exercises$ ls -l
total 4
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 11:19 programming
anacifu@anacifu-VirtualBox:~/exercises$

```

5. Print the content of the root directory.

\$ls /

```

anacifu@anacifu-VirtualBox:~$ ls /
bin boot cdrom dev etc home lib lib32 lib64 libx32 lost+found media mnt opt proc root run sbin snap srv sys tmp usr var
anacifu@anacifu-VirtualBox:~$

```

- ```
$ ls /usr/bin/d*
```

- \$ ls -R /etc**

**Recursion means** that the command is used not only in the directory to which it applies, but also in its subdirectories.

In the case of the **ls** command, the recursion is applied with the **-R parameter**, since the -r (lowercase) parameter already has the use of listing the files and directories in reverse order.

8. Create the empty files called student.txt, student1.txt, student2.txt, list, luggage and last in the directory named "system".

**\$ cd systems; touch student.txt student1.txt student2.txt list luggage last**

```
anacifu@anacifu-VirtualBox:~$ cd systems; touch student.txt student1.txt student2.txt list luggage last
anacifu@anacifu-VirtualBox:~/systems$ ls -l
total 0
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 last
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 list
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 luggage
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 student1.txt
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 student2.txt
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 student.txt
anacifu@anacifu-VirtualBox:~/systems$
```

**cd systems;** to switch to the systems directory, the semicolon allows you to execute multiple commands in succession, regardless of whether each previous command succeeds.

The **touch** command is mainly used to create empty files and change timestamps of files or folders (to manipulate the access time and modification of files by using various options). The touch command without any option creates a new file. If the file exists, the command will update the access and modification time to the current time without changing its content.

It is also possible to create multiple files using a single touch command. To do this, specify the file names with spaces between them.

9. Print all the files that begin with "l" in the directory "systems".

**\$ ls l\***

```
anacifu@anacifu-VirtualBox:~/systems$ ls l*
last list luggage
anacifu@anacifu-VirtualBox:~/systems$
```



10. Print all the files that end with "txt" in the directory "systems".

**\$ ls \*txt**

```
anacifu@anacifu-VirtualBox:~/systems$ ls *txt
student1.txt student2.txt student.txt
anacifu@anacifu-VirtualBox:~/systems$
```

**\*txt:** displays a list of txt archives.

11. Create a new directory into \$HOME called "config".

**\$ mkdir \$HOME/config**

```
anacifu@anacifu-VirtualBox:~$ mkdir $HOME/config
```

```
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$ ls -l
total 44
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 12:58 config
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Desktop
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Documents
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Downloads
drwxrwxr-x 3 anacifu anacifu 4096 nov 18 11:19 exercises
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 last
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 list
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 luggage
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Music
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Pictures
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Public
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 student1.txt
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 student2.txt
-rw-rw-r-- 1 anacifu anacifu 0 nov 18 12:15 student.txt
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 12:15 systems
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Templates
drwxr-xr-x 2 anacifu anacifu 4096 nov 1 15:03 Videos
```

12. Copy all the files in /etc which begin with "a" into "config".

Frome \$HOME directory:

**\$ cd \$HOME**

**\$ cp /etc/a\* config**

```

anacifu@anacifu-VirtualBox:~$ cd $HOME
anacifu@anacifu-VirtualBox:~$ cp /etc/a* config
cp: -r not specified; omitting directory '/etc/acpi'
cp: -r not specified; omitting directory '/etc/alsa'
cp: -r not specified; omitting directory '/etc/alternatives'
cp: -r not specified; omitting directory '/etc/apm'
cp: -r not specified; omitting directory '/etc/apparmor'
cp: -r not specified; omitting directory '/etc/apparmor.d'
cp: -r not specified; omitting directory '/etc/apport'
cp: -r not specified; omitting directory '/etc/apt'
cp: -r not specified; omitting directory '/etc/avahi'
anacifu@anacifu-VirtualBox:~$ cd config
anacifu@anacifu-VirtualBox:~/config$ ls -l
total 16
-rw-r--r-- 1 anacifu anacifu 3028 nov 18 13:21 adduser.conf
-rw-r--r-- 1 anacifu anacifu 401 nov 18 13:21 anacrontab
-rw-r--r-- 1 anacifu anacifu 433 nov 18 13:21 apg.conf
-rw-r--r-- 1 anacifu anacifu 769 nov 18 13:21 appstream.conf
anacifu@anacifu-VirtualBox:~/config$

```

**cp** stands for copy. This command is used to copy files or group of files or directory. It creates an exact image of a file on a disk with different file name. **cp** command require at least two filenames in its arguments. `cp [options] source destination`.

**cp /etc/a\* config:** To copy files starting with a\* from the etc directory to the config directory. If you wanted a directory from one place to another, you would have to use the -r or -R option.

13. Delete all the files in “config” which end with “conf”.

From \$HOME

**\$ rm config/\*conf**

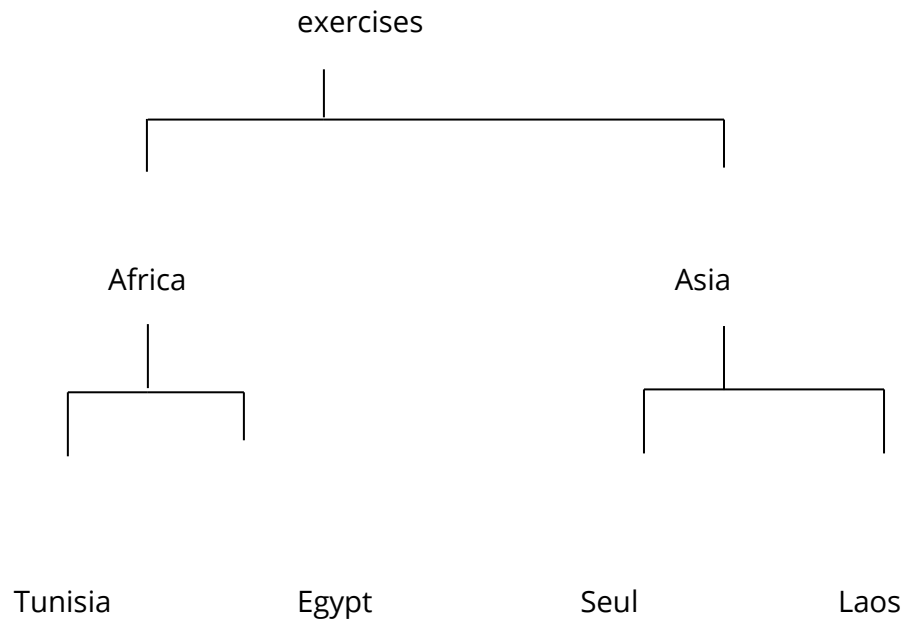
```

anacifu@anacifu-VirtualBox:~$ rm config/*conf
anacifu@anacifu-VirtualBox:~$ ls -l config
total 4
-rw-r--r-- 1 anacifu anacifu 401 nov 18 13:21 anacrontab
anacifu@anacifu-VirtualBox:~$

```

## B. COPY, RENAME AND EDIT FILES

Create the following directory structure in /home/<user>/exercises.



`$ cd exercises; mkdir -p Africa/Tunisia; mkdir -p Africa/Egypt; mkdir -p Asia/Seul; mkdir -p Asia/Laos`

```
anacifu@student-VirtualBox:~$ cd exercises; mkdir -p Africa/Tunisia; mkdir -p Africa/Egypt; mkdir -p Asia/seul; mkdir -p Asia/Laos
anacifu@student-VirtualBox:~/exercises$ ls -l
total 12
drwxrwxr-x 4 anacifu anacifu 4096 nov 18 16:21 Africa
drwxrwxr-x 4 anacifu anacifu 4096 nov 18 16:21 Asia
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 programming
anacifu@student-VirtualBox:~/exercises$ cd Africa
anacifu@student-VirtualBox:~/exercises/Africa$ ls -l
total 8
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 Egypt
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 Tunisia
anacifu@student-VirtualBox:~/exercises/Africa$ cd ..
anacifu@student-VirtualBox:~/exercises$ cd Asia
anacifu@student-VirtualBox:~/exercises/Asia$ ls -l
total 8
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 Laos
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 seul
anacifu@student-VirtualBox:~/exercises/Asia$
```

```
anacifu@student-VirtualBox:~$ cd exercises
anacifu@student-VirtualBox:~/exercises$ cd Asia
anacifu@student-VirtualBox:~/exercises/Asia$ ls -l
total 8
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 Laos
drwxrwxr-x 2 anacifu anacifu 4096 nov 18 16:21 seul
anacifu@student-VirtualBox:~/exercises/Asia$
```

**-p, -parents:** If the directory indicated in the path does not exist, create it. It is very useful if you want to create all the directories in the path at once. If they exist, it does not generate error. Then directory/subdirectory.

**cd exercises;** to switch to the systems directory, the semicolon allows you to execute multiple commands in succession, regardless of whether each previous command succeeds.

```
anacifu@student-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ └── Tunisia
├── Asia
│ ├── Laos
│ └── seul
└── programming

7 directories, 0 files
anacifu@student-VirtualBox:~/exercises$
```

14. Create the following files using **nano** (or another editor): **song.doc** (write a few lines of a song) in the directory **Egypt**; **tv.doc** (write the name of your favourite TV programs) in the directory **Seul** and **marks** (write the marks you expect to get this year) in the directory **Tunisia**.

This is created from \$HOME:

**\$ nano Africa/Egypt/song.doc**

**\$ nano Asia/Seul/tv.doc**

**\$ nano Africa/Tunisia/marks**

```
anacifu@student-VirtualBox:~$ pwd
/home/anacifu
anacifu@student-VirtualBox:~$ tree
.
├── Desktop
├── Documents
├── Downloads
├── exercises
│ ├── Africa
│ │ ├── Egypt
│ │ └── Tunisia
│ ├── Asia
│ │ ├── Laos
│ │ └── seul
│ └── programming
├── Music
├── Pictures
├── Public
├── Templates
└── Videos

16 directories, 0 files
anacifu@student-VirtualBox:~$ $HOME
bash: /home/anacifu: Is a directory
anacifu@student-VirtualBox:~$ nano Africa/Egypt/song.doc
anacifu@student-VirtualBox:~$ nano exercises/Africa/Egypt/song.doc
anacifu@student-VirtualBox:~$ cd exercises
anacifu@student-VirtualBox:~/exercises$ nano Africa/Egypt/song.doc
anacifu@student-VirtualBox:~/exercises$ nano Asia/Seul/tv.doc
anacifu@student-VirtualBox:~/exercises$ nano Asia/seul/tv.doc
anacifu@student-VirtualBox:~/exercises$ nano Africa/Tunisia/marks
anacifu@student-VirtualBox:~/exercises$
```

The **tree** command also lists the directories of external devices.

Displaying the directories in the form of a tree in Linux is quite simple, thanks to the tree utility, which, by default, is not installed in most Linux distributions but which is in the official repositories.

It is a command widely used by Linux users, which allows us to display graphically and in a structured way the hierarchy of the directories of our operating system.



The way to create files is simply by invoking a text editor, this can be the **nano**, **vi**, **gedit** or any other that we want. We'll use the **nano** text editor.

To create the file all we have to do is write the **text editor** used and the relative or absolute path of the file (we include the file). When we do the terminal will change to the **text editor** (because we are using the nano), write what you want to write and save it, then the file will already be created in the path we have chosen. Depending on the **text editor** used, the reaction of the call will be different.



## CHANGE THE CURRENT DIRECTORY TO AFRICA AND DO THE FOLLOWING EXERCISES USING RELATIVE PATHS

15. Copy the file “song.doc” into “Laos”.

**\$ cp Egypt/song.doc ../Asia/Laos**



The image contains two terminal screenshots. The left screenshot shows the output of the 'tree' command in the directory ~/exercises. It displays a directory tree with 'Africa' containing 'Egypt' (with 'song.doc' and 'marks') and 'Tunisia'. 'Asia' contains 'Laos' (with 'tv.doc') and 'Seul'. The root of the tree is 'programming'. The right screenshot shows the same directory after the command 'cp Egypt/song.doc ../Asia/Laos' has been executed. The 'tree' command now shows only 'Egypt' (with 'song.doc' and 'marks') and 'Tunisia' under 'Africa', and 'Laos' (with 'tv.doc') and 'Seul' under 'Asia'. The summary at the bottom of the right screenshot indicates '2 directories, 2 files'.

**cd Africa;** to switch to the systems directory, the semicolon allows you to execute multiple commands in succession, regardless of whether each previous command succeeds.

**cp** stands for copy. This command is used to copy files or group of files or directory. It creates an exact image of a file on a disk with different file name.

**cp** command require at least two filenames in its arguments. **cp [options] source destination.**

**The path relative** to a directory indicates the path to the directory to which we want to change but based on the directory from which the command is executed, that is, from the current or working directory.

**The parent directory** is the one that contains the current or working directory. To build relative paths you need to know that **..** indicates the parent directory.

If we run **cd ..** What we're doing is switching to the parent directory of the current directory, a directory just before in the directory tree.

**.** : Refers to the directory where we are. When we run a program and write. /program.sh, that point in front of the executable indicates that it is in the working directory.

**..** : Refers to the parent directory. Using **..** we can tell the **cd** command to level back.

The **tree** command also lists the directories of external devices.

16. Copy the file “tv.doc” into “Egypt” with the name “radio.txt”

**\$ cp ../Asia/Seul/tv.doc Egypt/radio.txt**



The first terminal screenshot shows the output of the 'tree' command in the directory ~/exercises/Africa. It displays a directory structure with 'Egypt' containing 'radio.txt' and 'song.doc', and 'Tunisia' containing 'marks'. The second terminal screenshot shows the output of the 'tail -n 10 radio.txt' command, displaying the last 10 lines of the file 'radio.txt' in the 'Egypt' directory. The output includes the text: 'MY FAVOURITE TV PROGRAMMES', 'EL HORMIGUERO 3.0', 'SABER Y GANAR', and 'GREAT DOCUMENTARIES'.

Copy from the relative path directory Asia, subdirectory Seul the file tv.doc to the current directory Africa, subdirectory Egypt with the name radio.txt. Then you can show the tree and edit the text in the command line with “**tail**” command that allows to see part of the information of a file and the argument “**n**” in which we can immediately indicate the number of rows that will be displayed from the end.

17. Rename the file “marks” to “exam.wri” (it is located in the directory named Tunisia)

**\$ mv Tunisia/marks Tunisia/exam.wri**



The first terminal screenshot shows the output of the 'tree' command in the directory ~/exercises. It displays a directory structure with 'Africa' containing 'Egypt' (with 'radio.txt' and 'song.doc') and 'Tunisia' (with 'marks'), 'Asia' containing 'Laos' (with 'song.doc') and 'Seul' (with 'tv.doc'), and 'programming'. The second terminal screenshot shows the output of the 'mv Tunisia/marks Tunisia/exam.wri' command followed by the 'tree' command in the directory ~/exercises/Africa. The output shows the directory structure with 'Egypt' containing 'radio.txt' and 'song.doc', and 'Tunisia' containing 'exam.wri'. The output also indicates '2 directories, 3 files'.

The “**mv**” command is a command line utility that moves files or directories from one place to another. It supports moving single files, multiple files and directories. It can prompt before overwriting and has an option to only move files that are new than the destination.

To move a file using the mv command pass the name of the file and then the new name for the file. In the following example the file **marks** is renamed to **exam.wri** into the same directory.

18. Copy the file “song.doc” (located in “Egypt”) inside “Tunisia”  
\$ cp Egypt/song.doc Tunisia

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ tree
.
├── Egypt
│ ├── radio.txt
│ └── song.doc
└── Tunisia
 ├── exam.wri
 └── song.doc

2 directories, 4 files
anacifu@anacifu-VirtualBox:~/exercises/Africa$
```

Using the “**cp**” command you can copy from subdirectory **Egypt** the file **song.doc** to another directory.

19. Print the content of the current directory using long listing format.  
\$ ls -l

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ ls -l
total 8
drwxrwxr-x 2 anacifu anacifu 4096 nov 25 03:19 Egypt
drwxrwxr-x 2 anacifu anacifu 4096 nov 25 03:50 Tunisia
```

The **ls** command allows viewing the contents of the directory in which we are located and the **-l** (long) option of the **ls** command provides more information than the name of the files such as the attributes of the permissions, the owner of the file, group of users, size in bytes, etc...

20. Rename the file “song.doc” (located in “Laos”) to “aa.doc”.  
\$ mv ../Asia/Laos/song.doc ../Asia/Laos/aa.doc

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ mv ../Asia/Laos/song.doc ../Asia/Laos/aa.doc
anacifu@anacifu-VirtualBox:~/exercises/Africa$ tree
.
├── Egypt
│ ├── radio.txt
│ └── song.doc
└── Tunisia
 ├── exam.wri
 └── song.doc

2 directories, 4 files
anacifu@anacifu-VirtualBox:~/exercises/Africa$ cd ..
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ └── song.doc
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── tv.doc
│ └── programming
└── ...

7 directories, 6 files
anacifu@anacifu-VirtualBox:~/exercises$
```

With the **mv** command you can rename into the same directory with another name taking into account that Laos is a subdirectory inside another directory.

21. Create the directory "Others" in "Laos".

**\$ mkdir ../Asia/Laos/Others**

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ mkdir ../Asia/Laos/Others
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ └── song.doc
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── Others
│ └── Seul
│ └── tv.doc
└── programming

8 directories, 6 files
anacifu@anacifu-VirtualBox:~/exercises$
```

In this case you use the **mkdir** command to create a directory indicating that you want to create a directory called Others which is in another directory which in turn is in another directory.

22. Rename the directory named "Programming" (which you created in the first exercises) to pro-c.

**\$ mv ../programming ../pro-c**

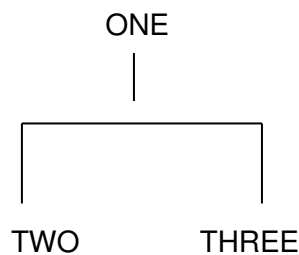
```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ mv ../programming ../pro-c
anacifu@anacifu-VirtualBox:~/exercises/Africa$ cd ..
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ └── song.doc
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── Others
│ └── Seul
│ └── tv.doc
└── pro-c

8 directories, 6 files
anacifu@anacifu-VirtualBox:~/exercises$
```

The **"mv"** command is a command line utility that moves files or directories from one place to another. It supports moving single files, multiple files and directories. It can prompt before overwriting and has an option to only move files that are new than the destination.

With the mv command you can rename a directory taking into account that the directory **"programming"** belongs to another directory inside **"exercises"** directory.

23. Create the following directory tree in "exercises" (using as few commands as possible).



**\$ mkdir -p ../ONE/{TWO,THREE}**

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ mkdir -p ../ONE/{TWO,THREE}
anacifu@anacifu-VirtualBox:~/exercises/Africa$ cd ..
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ └── song.doc
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── others
│ └── Seoul
│ └── tv.doc
├── ONE
│ ├── THREE
│ └── TWO
└── pro-c

11 directories, 6 files
anacifu@anacifu-VirtualBox:~/exercises$
```

The **mkdir** command is used to create directories or folders on Linux.

**-p, -parents:** If the directory indicated in the path does not exist, create it. It is very useful if you want to create all the directories in the path at once. If they exist, it does not generate error. Then directory/ and two subdirectories in "exercises" directory. **This is a new branch of the tree.**

To create a new directory with multiple subdirectories faster the **{}** are used.

24. Copy the files with txt extension from the directory named "systems" to "exercises".

**cp ../../systems/\*.txt ..**



```

anacifu@anacifu-VirtualBox:~/exercises/Africa$ cp ../../systems/*txt ..
anacifu@anacifu-VirtualBox:~/exercises/Africa$ cd ..
anacifu@anacifu-VirtualBox:~/exercises$ cd ..

```

```

anacifu@anacifu-VirtualBox:~$ tree
.
├── config
│ └── anacrontab
├── Desktop
├── Documents
├── Downloads
├── exercises
│ ├── Africa
│ │ ├── Egypt
│ │ │ ├── radio.txt
│ │ │ └── song.doc
│ │ ├── Tunisia
│ │ │ ├── exam.wri
│ │ │ └── song.doc
│ │ ├── Asia
│ │ │ ├── Laos
│ │ │ │ ├── aa.doc
│ │ │ │ └── Others
│ │ │ └── Seoul
│ │ │ └── tv.doc
│ │ ├── ONE
│ │ │ └── THREE
│ │ │ └── TWO
│ │ ├── pro-c
│ │ ├── student1.txt
│ │ ├── student2.txt
│ │ └── student.txt
├── last
├── list
├── luggage
├── Music
├── Pictures
├── Public
├── student1.txt
├── student2.txt
├── student.txt
├── systems
│ ├── last
│ ├── list
│ ├── luggage
│ ├── student1.txt
│ ├── student2.txt
│ └── student.txt
├── Templates
└── Videos

```

This means that you are coping the **txt** extension files from the “**systems**” directory which are inside /home/anacifu/systems to “**exercises**” directory which is another branch of the tree.

25. Move the files you copied in the exercise above to the directory THREE.

**\$ mv ../../exercises/\*txt ../ONE/THREE**

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ mv ../../exercises/*txt ../ONE/THREE
anacifu@anacifu-VirtualBox:~/exercises/Africa$ cd ..
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ └── song.doc
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── Others
│ └── Seul
│ └── tv.doc
├── ONE
│ └── THREE
│ ├── student1.txt
│ ├── student2.txt
│ └── student.txt
├── TWO
└── pro-c

11 directories, 9 files
anacifu@anacifu-VirtualBox:~/exercises$
```

This means that you are coping the **txt** extension files from the “**systems**” directory which are inside /home/anacifu/systems to “**THREE**” directory which is another branch of the tree.

26. Delete the directory **THREE** including all the files and, if so, subdirectories.

**\$ rm -rf ../ONE/THREE**

```
anacifu@anacifu-VirtualBox:~/exercises/Africa$ rm -rf ../ONE/THREE
anacifu@anacifu-VirtualBox:~/exercises/Africa$ cd ..
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ └── song.doc
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── Others
│ └── Seul
│ └── tv.doc
├── ONE
│ └── TWO
└── pro-c

10 directories, 6 files
anacifu@anacifu-VirtualBox:~/exercises$
```

**rm -rf:** Remove the directory “**THREE**”, and any files and directories it contains. If a file or directory that **rm** tries to delete is write-protected, you will not be prompted to make sure that you really want to delete it, just do it. From the current directory “**Africa**” to another subdirectory of a directory belonging to another branch of the tree.

## CHANGE INTO SYSTEMS AND DO THE FOLLOWING EXERCISES

### USING ABSOLUTE PATHS

27. Copy the files that end with “txt” of the directory named “systems” to “Tunisia”

**\$ cp \$HOME/systems/\*txt \$HOME/exercises/Africa/Tunisia**

```
anacifu@anacifu-VirtualBox:~$ cd systems
anacifu@anacifu-VirtualBox:~/systems$ pwd
/home/anacifu/systems
anacifu@anacifu-VirtualBox:~/systems$ cp $HOME/systems/*txt $HOME/exercises/Africa/Tunisia
anacifu@anacifu-VirtualBox:~/systems$ tree
.
├── last
├── list
├── luggage
├── student1.txt
├── student2.txt
└── student.txt

0 directories, 6 files
anacifu@anacifu-VirtualBox:~/systems$ cd ..
anacifu@anacifu-VirtualBox:~$ cd exercises
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ ├── song.doc
│ ├── student1.txt
│ ├── student2.txt
│ └── student.txt
├── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ └── others
│ └── Seul
│ └── tv.doc
├── ONE
├── TWO
└── pro-c

10 directories, 9 files
anacifu@anacifu-VirtualBox:~/exercises$
```

From /home/anacifu/systems directory you copy the files that end with txt to “Tunisia” directory which is in another branch of the tree (exercises/Africa).

28. Copy the file “tv.doc” (located in “Seul”) to the directory named “exercises”

**\$ cp \$HOME/exercises/Asia/Seul/tv.doc \$HOME/exercises**

```

anacifu@anacifu-VirtualBox:~/exercises$ cp $HOME/exercises/Asia/Seul/tv.doc $HOME/exercises
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ ├── song.doc
│ ├── student1.txt
│ ├── student2.txt
│ └── student.txt
├── Asia
│ ├── Laos
│ │ └── aa.doc
│ ├── Others
│ └── Seul
│ └── tv.doc
├── ONE
├── TWO
├── pro-c
└── tv.doc
0 directories, 10 files

```

From /home/anacifu/exercises/Asia/Seul directories you copy the file tv.doc to the exercisesy which is in the same branch of the tree (/home/anacifu/exercises).

29. Rename the file student1.txt (located in “Tunisia”) to tuition.txt.

```

$ mv $HOME/exercises/Africa/Tunisia/student1.txt
$HOME/exercises/Africa/Tunisia/tuition.txt

```

```

anacifu@anacifu-VirtualBox:~/systems$ mv $HOME/exercises/Africa/Tunisia/student1.txt $HOME/exercises/Africa/Tunisia/tuition.txt

```

```

anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Africa
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ ├── song.doc
│ ├── student2.txt
│ ├── student.txt
│ └── tuition.txt
├── Asia
│ ├── Laos
│ │ └── aa.doc
│ ├── Others
│ └── Seul
│ └── tv.doc
├── ONE
├── TWO
├── pro-c
└── tv.doc
10 directories, 10 files

```

30. Create a new directory called “earth” into “systems”. Create another directory called “countries” inside “earth”.

```

$ mkdir -p $HOME/systems/earth/countries

```

```

anacifu@anacifu-VirtualBox:~/exercises$ mkdir -p $HOME/systems/earth/countries
anacifu@anacifu-VirtualBox:~/exercises$ cd ..
anacifu@anacifu-VirtualBox:~$ cd systems
anacifu@anacifu-VirtualBox:~/systems$ tree
.
├── earth
│ └── countries
├── last
├── list
├── luggage
├── student1.txt
├── student2.txt
└── student.txt

2 directories, 6 files
anacifu@anacifu-VirtualBox:~/systems$

```

**-p, -parents:** If the directory indicated in the path does not exist, create it. It is very useful if you want to create all the directories in the path at once. If they exist, it does not generate error.

31. Rename “Africa” (located in “exercises”) to “Afri”.

**\$ mv \$HOME/exercises/Africa \$HOME/exercises/Afri**

(from /home/anacifu/exercises/Africa directories)  
(to /home/anacifu/exercises/Afri directories)

```

anacifu@anacifu-VirtualBox:~/exercises$ mv $HOME/exercises/Africa $HOME/exercises/Afri
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Afri
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── song.doc
│ └── Tunisia
│ ├── exam.wri
│ ├── song.doc
│ ├── student2.txt
│ ├── student.txt
│ └── tuition.txt
├── Asia
│ ├── Laos
│ │ └── aa.doc
│ └── Others
│ └── tv.doc
├── ONE
├── TWO
├── pro-c
└── tv.doc

10 directories, 10 files
anacifu@anacifu-VirtualBox:~/exercises$

```

**NOW YOU CAN BE PLACED IN THE DIRECTORY YOU WANT**



32. Move the file “song.doc”, which is located in Egypt, to “Laos” with the name “bb.doc”.

```
$ cd $HOME/exercises (from /home/anacifu/exercises directories)
$ mv Afri/Egypt/song.doc Asia/Laos/bb.doc
```

```
anacifu@anacifu-VirtualBox:~/exercises$ mv Afri/Egypt/song.doc Asia/Laos/bb.doc
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Afri
│ ├── Egypt
│ │ ├── radio.txt
│ │ └── Tunisia
│ │ ├── exam.wri
│ │ ├── song.doc
│ │ ├── student2.txt
│ │ ├── student.txt
│ │ └── tuition.txt
│ └── Asia
│ ├── Laos
│ │ ├── aa.doc
│ │ ├── bb.doc
│ │ └── Others
│ └── Seul
│ └── tv.doc
├── ONE
├── TWO
├── pro-c
└── tv.doc
10 directories, 10 files
anacifu@anacifu-VirtualBox:~/exercises$
```

A user’s **\$HOME** directory is also the default working directory, that is, the working directory that is set when a terminal is opened.

From /home/anacifu/exercises you move with the mv command that is located in /Afri/Egypt the file song.doc (changing its name for bb.doc) to another directory Asia/Laos.

33. Copy the files whose name contains the letter “u” from “systems” to “exercises”.

```
$ cd $HOME (from /home/anacifu directories)
$ cp systems/*u* exercises
u means u can be anywhere in the word
```



**\$ pwd**

```
anacifu@anacifu-VirtualBox:~$ pwd
/home/anacifu
anacifu@anacifu-VirtualBox:~$
```

36. Copy the folder "Afri" including files and subdirectories to "Asia".

**\$ cd \$HOME/exercises (from /home/anacifu/exercises directories)**  
**\$ cp -R Afri Asia**

**-R:** recursive copy (including hidden files). Copy from Afri to Asia.

```
anacifu@anacifu-VirtualBox:~/exercises$ cp -R Afri Asia
anacifu@anacifu-VirtualBox:~/exercises$ tree
.
├── Afri
│ ├── Egypt
│ │ └── radio.txt
│ └── Tunisia
│ ├── exam.wri
│ ├── song.doc
│ ├── student2.txt
│ ├── student.txt
│ └── tuition.txt
└── Asia
 ├── Afri
 │ ├── Egypt
 │ │ └── radio.txt
 │ └── Tunisia
 │ ├── exam.wri
 │ ├── song.doc
 │ ├── student2.txt
 │ ├── student.txt
 │ └── tuition.txt
```

37. Move all the files and subdirectories of "Laos" to "Seul" and rename it to "Seul2"

**\$ cd \$HOME/exercises/Asia (path: /home/anacifu/exercises/Asia directories)**  
**\$ mv Laos Seul/Seul2**

```
anacifu@anacifu-VirtualBox:~/exercises$ cd Asia
anacifu@anacifu-VirtualBox:~/exercises/Asia$ mv Laos Seul/Seul2
anacifu@anacifu-VirtualBox:~/exercises/Asia$ tree
.
├── Afri
│ ├── Egypt
│ │ └── radio.txt
│ └── Tunisia
│ ├── exam.wri
│ ├── song.doc
│ ├── student2.txt
│ ├── student.txt
│ └── tuition.txt
└── Seul
 ├── Seul2
 │ ├── aa.doc
 │ ├── bb.doc
 │ └── Others
 └── tv.doc

6 directories, 9 files
anacifu@anacifu-VirtualBox:~/exercises/Asia$
```

You have to write as source the name you want to change, and as destination we put the name with which we want to call the renamed file.