



# REST-for-Physics Framework

## 0.4 Basic Linux commands

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A Linux command is a program or utility that runs on a CLI (Command Line Interface) and interacts with the system via text or processes. It is similar to the Command Prompt application on Windows.

In general the syntax for a Linux command looks like:

**CommandName [option(s)] [parameter(s)]**

- CommandName is the program that you want to execute.
- Option or flag specify a particular a command's operation. To invoke it, use hyphens (-) or double hyphens (--).
- Parameter or argument specifies any necessary information for the command.

## PWD (Print Working Directory)

The *pwd* command prints the path of your current working directory. Simply entering `pwd` will return the full current path.

```
jgarcia@DESKTOP-N6F7QHK:~$ pwd
/home/jgarcia
```

## CD (Change Directory)

To navigate through directories, use the *cd* command. Depending on your current working directory, it requires either the full path or the directory name.

```
jgarcia@DESKTOP-N6F7QHK:~$ cd root
jgarcia@DESKTOP-N6F7QHK:~/root$ pwd
/home/jgarcia/root
jgarcia@DESKTOP-N6F7QHK:~/root$ cd
jgarcia@DESKTOP-N6F7QHK:~$ pwd
/home/jgarcia
jgarcia@DESKTOP-N6F7QHK:~$ cd ../
jgarcia@DESKTOP-N6F7QHK:/home$ pwd
/home
```

## MKDIR (MaKe DIRectory)

Use the *mkdir* command to create one or multiple directories at once.

```
jgarciap@DESKTOP-N6F7QHK:~$ mkdir newDir
jgarciap@DESKTOP-N6F7QHK:~$ cd newDir/
jgarciap@DESKTOP-N6F7QHK:~/newDir$ pwd
/home/jgarciap/newDir
```

## LS (LiSt)

The *ls* command lists files and directories within a system. Running it without a flag or parameter will show the current working directory content.

```
jgarciap@DESKTOP-N6F7QHK:~$ ls
apps  framework  newDir  root
jgarciap@DESKTOP-N6F7QHK:~$ ls apps
geant4-v11.0.3  geant4-v11.0.3-build  geant4-v11.0.3-install  geant4-v11.0.3.tar.gz
jgarciap@DESKTOP-N6F7QHK:~$ ls -lrth
total 16K
drwxr-xr-x 18 jgarciap jgarciap 4.0K Nov 16 12:36 root
drwxr-xr-x 16 jgarciap jgarciap 4.0K Jan 12 13:18 framework
drwxr-xr-x  2 jgarciap jgarciap 4.0K Jan 12 13:27 newDir
drwxr-xr-x  5 jgarciap jgarciap 4.0K Jan 12 13:29 apps
```

## MV (MoVe)

Use *mv* to move and/or rename files and directories.

```
jgarciap@DESKTOP-N6F7QHK:~$ ls
apps framework newDir root test
jgarciap@DESKTOP-N6F7QHK:~$ mv test production
jgarciap@DESKTOP-N6F7QHK:~$ ls
apps framework newDir production root
```

## CP (CoPy)

Use the *cp* command to copy files or directories and their content.

```
jgarciap@DESKTOP-N6F7QHK:~$ touch test
jgarciap@DESKTOP-N6F7QHK:~$ ls
apps framework newDir root test
jgarciap@DESKTOP-N6F7QHK:~$ cp test test2
jgarciap@DESKTOP-N6F7QHK:~$ ls
apps framework newDir root test test2
jgarciap@DESKTOP-N6F7QHK:~$ cp -r newDir copyDir
jgarciap@DESKTOP-N6F7QHK:~$ ls
apps copyDir framework newDir root test test2
```

## CAT (conCATenate)

Use *cat* to display a file content to the standard output.

```
jgarcia@DESKTOP-N6F7QHK:~$ cat test  
Hello world
```

## CLEAR

Use *clear* command to erase the content of the terminal.

## FIND

Use the *find* command to search for files within a specific directory.

```
jgarcia@DESKTOP-N6F7QHK:~$ find root/ -name TTree.h  
root/include/TTree.h
```

## GREP

Use **grep** to find a regular expression in a file or a directory.

```
jgarcia@DESKTOP-N6F7QHK:~$ grep school framework/LICENCE
You should also get your employer (if you work as a programmer) or school,
jgarcia@DESKTOP-N6F7QHK:~$ grep -r school framework/
framework/LICENCE: You should also get your employer (if you work as a programmer) or school,
```

## RM (ReMove)

The **rm** command is used to delete files or directories. Make sure that the user performing this command has write permissions.

```
jgarcia@DESKTOP-N6F7QHK:~$ ls
apps copyDir framework newDir root test test2
jgarcia@DESKTOP-N6F7QHK:~$ rm test2
jgarcia@DESKTOP-N6F7QHK:~$ rm -r copyDir/
jgarcia@DESKTOP-N6F7QHK:~$ ls
apps framework newDir root test
```



# TOP

The **top** command in Linux Terminal will display all the running processes and a dynamic real-time view of the current system

```
top - 17:12:13 up 2:21, 0 users, load average: 7.78, 6.92, 5.89
Tasks: 66 total, 9 running, 57 sleeping, 0 stopped, 0 zombie
%Cpu(s): 63.6 us, 3.0 sy, 0.0 ni, 32.3 id, 0.0 wa, 0.0 hi, 1.1 si, 0.0 st
MiB Mem : 25474.2 total, 14790.0 free, 1008.7 used, 9675.5 buff/cache
MiB Swap: 7168.0 total, 7168.0 free, 0.0 used, 24066.6 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
15344	jgarcia	p	0	233724	210900	22776	R	71.1	0.8	0:02.14	cc1plus
15377	jgarcia	p	0	246168	199804	111316	R	28.2	0.8	0:00.85	rootcling
15350	jgarcia	p	0	181856	164672	22700	R	54.8	0.6	0:01.65	cc1plus
15356	jgarcia	p	0	171248	153156	22068	R	49.8	0.6	0:01.50	cc1plus
15368	jgarcia	p	0	161124	141216	21388	R	35.9	0.5	0:01.08	cc1plus
15386	jgarcia	p	0	99268	73024	14668	R	13.0	0.3	0:00.39	cc1plus
15392	jgarcia	p	0	92284	66540	14504	R	10.3	0.3	0:00.31	cc1plus
15398	jgarcia	p	0	83504	58356	14224	R	7.0	0.2	0:00.21	cc1plus
14516	jgarcia	p	0	542320	48044	37320	S	0.0	0.2	0:00.20	gedit
1576	jgarcia	p	0	329696	18896	14608	S	0.0	0.1	0:00.06	xdg-desktop-por
1557	jgarcia	p	0	395368	13816	10092	S	0.0	0.1	0:00.03	xdg-desktop-por
15376	jgarcia	p	0	63508	12848	11140	S	0.0	0.0	0:00.00	cmake
1581	jgarcia	p	0	162784	10488	7664	S	0.0	0.0	0:00.01	at-spi2-registr
1550	jgarcia	p	0	309452	9528	6828	S	0.0	0.0	0:00.00	at-spi-bus-laun
1562	jgarcia	p	0	531732	8872	6224	S	0.0	0.0	0:00.01	xdg-document-po
1590	jgarcia	p	0	156852	7848	5292	S	0.0	0.0	0:00.00	dconf-service
23510	jgarcia	p	0	7812	6792	2280	S	0.0	0.0	0:00.45	make
15345	jgarcia	p	0	8120	5780	3372	S	0.0	0.0	0:00.00	as
15357	jgarcia	p	0	7724	5612	3468	S	0.0	0.0	0:00.00	as
22053	jgarcia	p	0	6340	5432	3564	S	0.0	0.0	0:00.13	bash
12	jgarcia	p	0	6324	5340	3488	S	0.0	0.0	0:00.14	bash
15351	jgarcia	p	0	7328	5340	3468	S	0.0	0.0	0:00.00	as
9859	jgarcia	p	0	6208	5216	3408	S	0.0	0.0	0:00.10	bash
1566	jgarcia	p	0	230972	4872	4464	S	0.0	0.0	0:00.00	xdg-permission-
15399	jgarcia	p	0	6800	4476	3364	S	0.0	0.0	0:00.00	as



## KILL

Use the *kill* command to terminate an unresponsive program manually. It will signal misbehaving applications and instruct them to close their processes.

```
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Tasks: 66 total, 9 running, 57 sleeping, 0 stopped, 0 zombie
%Cpu(s): 63.6 us, 3.0 sy, 0.0 ni, 32.3 id, 0.0 wa, 0.0 hi, 1.1 si, 0.0 st
MiB Mem : 25474.2 total, 14790.0 free, 1008.7 used, 9675.5 buff/cache
MiB Swap: 7168.0 total, 7168.0 free, 0.0 used, 24066.6 avail Mem
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```
jgarcia@DESKTOP-N6F7QHK:~$ kill -9 14516
```

## MAN (MANual)

The *man* command provides manual of any command or utility you can run in Terminal, including the name, description, and options.

```
jgarcia@DESKTOP-N6F7QHK:~$ man ls
```

```
LS(1)                                User Commands                                LS(1)
NAME
  ls - list directory contents
SYNOPSIS
  ls [OPTION]... [FILE]...
DESCRIPTION
  List information about the FILEs (the current directory by default). Sort entries
  alphabetically if none of -cftuvSUX nor --sort is specified.

  Mandatory arguments to long options are mandatory for short options too.

  -a, --all
      do not ignore entries starting with .

  -A, --almost-all
      do not list implied . and ..

  --author
      with -l, print the author of each file

  -b, --escape
      print C-style escapes for nongraphic characters

  --block-size=SIZE
      with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see
      SIZE format below
```

## Tips and Tricks

- Press the **TAB** to autofill after entering a command with an argument.
- Use **Ctrl + C** to terminate a running command.
- Press **Ctrl + Z** to pause a working command.
- Use **Ctrl + R** to find a previous executed command.
- Use arrows to navigate between executed commands.

Useful link:

<https://www.hostinger.com/tutorials/linux-commands>