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## LAB 2:

## USING BASIC LINUX COMMANDS

### Submission :

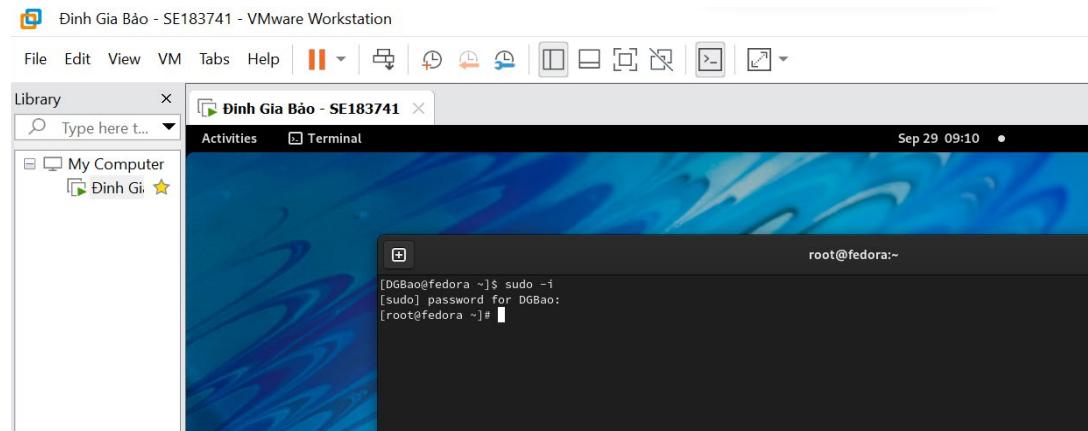
*Upload the word file to cms describes some requirements:*

- Present the content of manipulating of some commands (**including syntax, what does it for?, examples**) as

- su
- env
- mkdir, cp, mv, rmdir, ln, cat, rm
- chown, chgrp, chmod
- find
- ds, df
- ps, top, kill, jobs

- Capture the terminal screen using the “**ls -al**” to view all the files that are done at tutorial in File manage.

Initially, use command ‘**sudo -i**’ and enter your **password** to access the **root-user**.



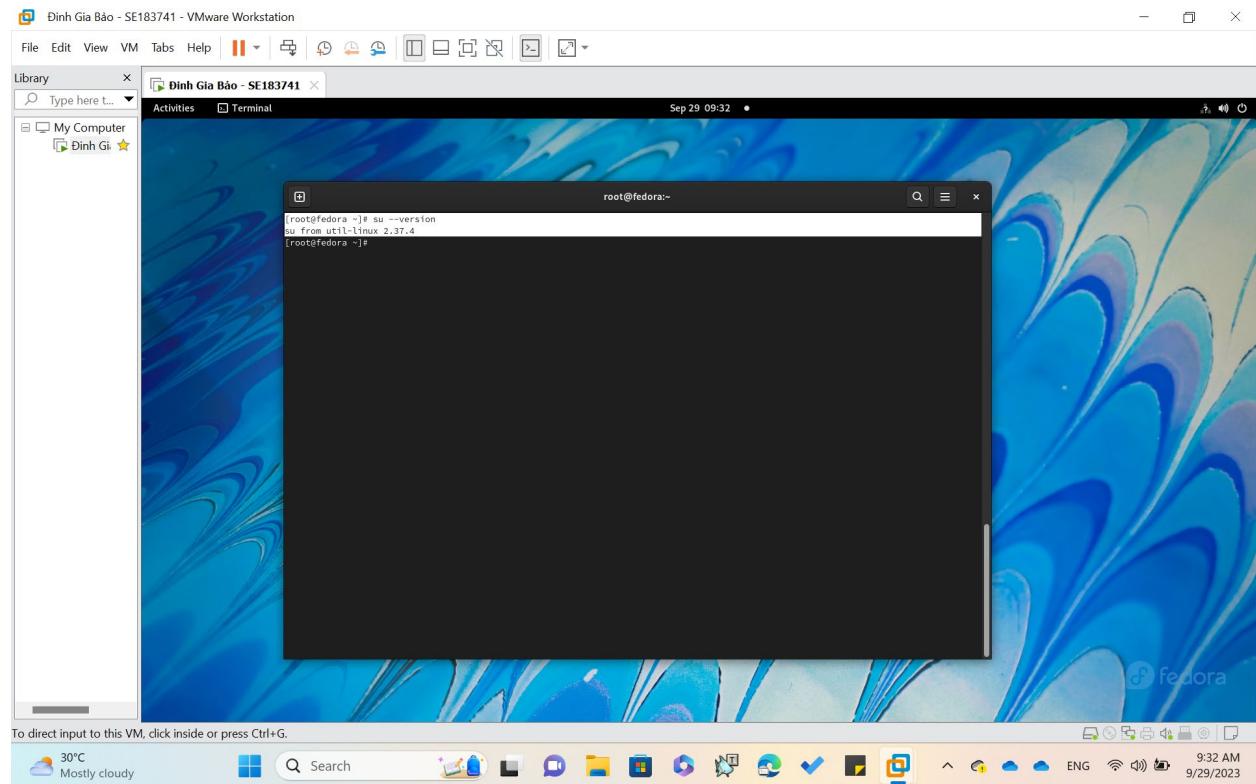
## **su : ( Substitute user identity )**

Run a command with substitute user and group id, allow one user to temporarily become another user. It runs a command (often an interactive shell) with the real and effective user id, group id, and supplemental groups of a given *user*.

### Syntax

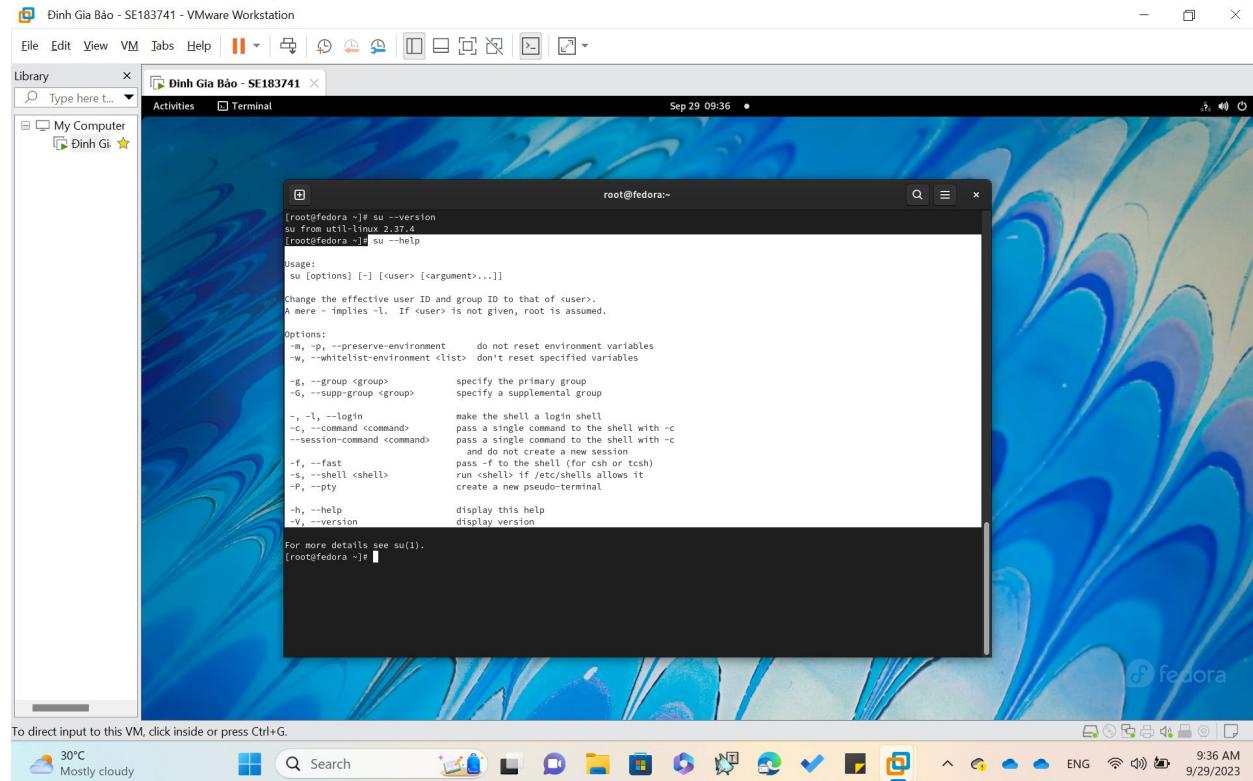
```
su [options]... [user [arg]]...
```

### Ex 1: \$ su --version



Output information version and exit

## Ex 2: \$ su --help



The screenshot shows a Fedora desktop environment with a terminal window open as root. The terminal displays the help output for the 'su' command. The desktop interface includes a taskbar at the bottom with various application icons and system status indicators.

```
[root@fedora ~]# su --help
su from util-linux 2.37.4
[root@fedora ~]# su --help

Usage:
su [options] [-l] [user] [<argument>...]
Change the effective user ID and group ID to that of <user>.
A mere - implies -l. If <user> is not given, root is assumed.

Options:
-m, --preserve-environment      do not reset environment variables
-w, --whitelist-environment <list>  don't reset specified variables
-g, --group <group>            specify the primary group
-G, --supp-group <group>        specify a supplemental group
-l, --login                     make the shell a login shell
-c, --command <command>        pass a single command to the shell with -c
--session-command <command>    pass a single command to the shell with -c
--anonymize                     anonymize current session
-f, --fast                      pass -f to the shell (for tcsh or tcsh)
--shell <shell>                run <shell> if /etc/shells allows it
-P, --pty                        create a new pseudo-terminal
-h, --help                       display this help
-V, --version                    display version

For more details see su(1).
[root@fedora ~]#
```

Display this help and exit

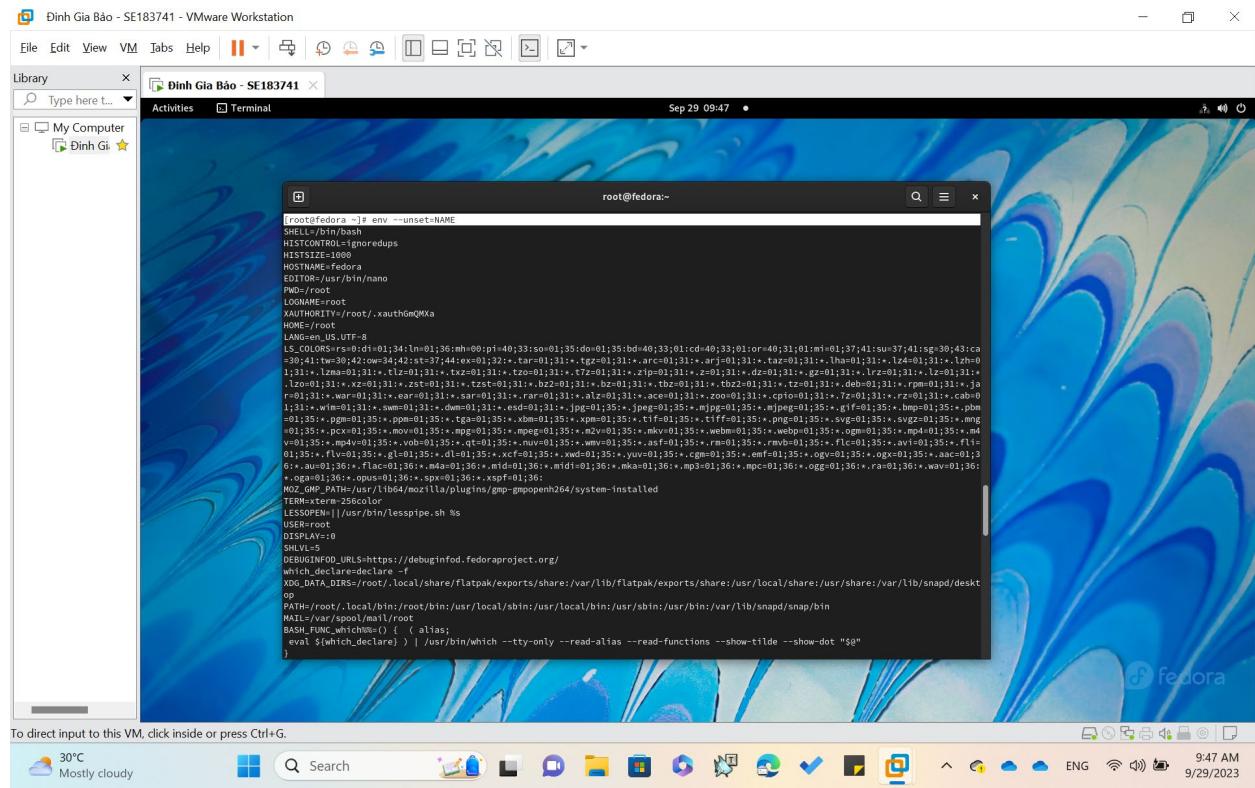
## env : ( Environmental variable )

Display, set, or remove environment variables, Run a command in a modified environment.

### Syntax

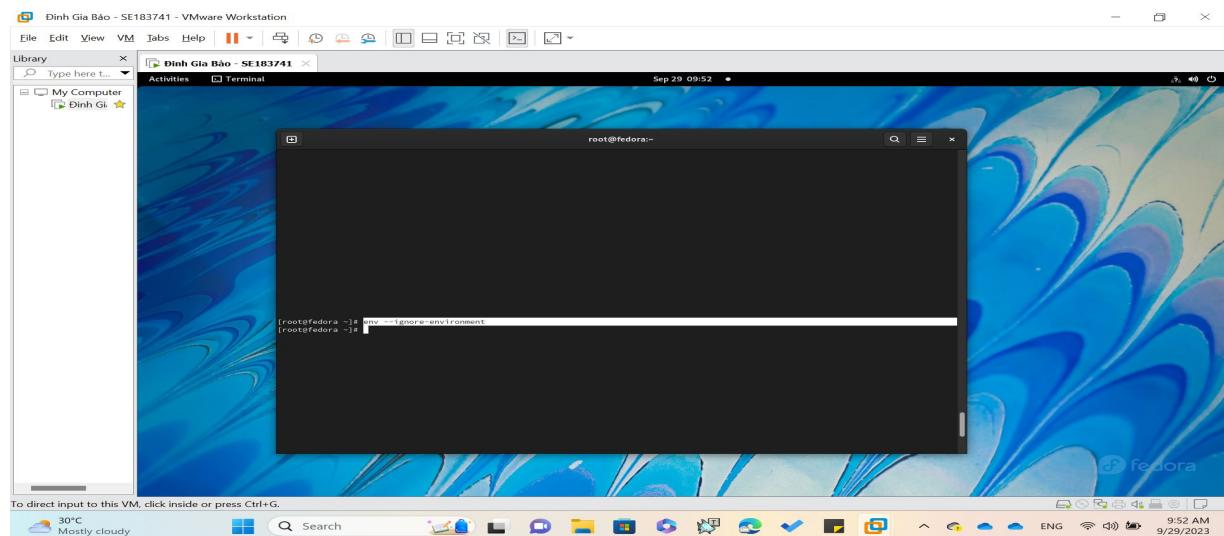
```
env [OPTION]... [NAME=VALUE]... [COMMAND [ARGS]]...
```

## Ex 1: \$ env --unset=NAME



Remove variable `NAME` from the environment, if it was in the environment.

## Ex 2: \$ env --ignore-environment



Start with an empty environment, ignoring the inherited environment.

## **mkdir : ( Create new directory )**

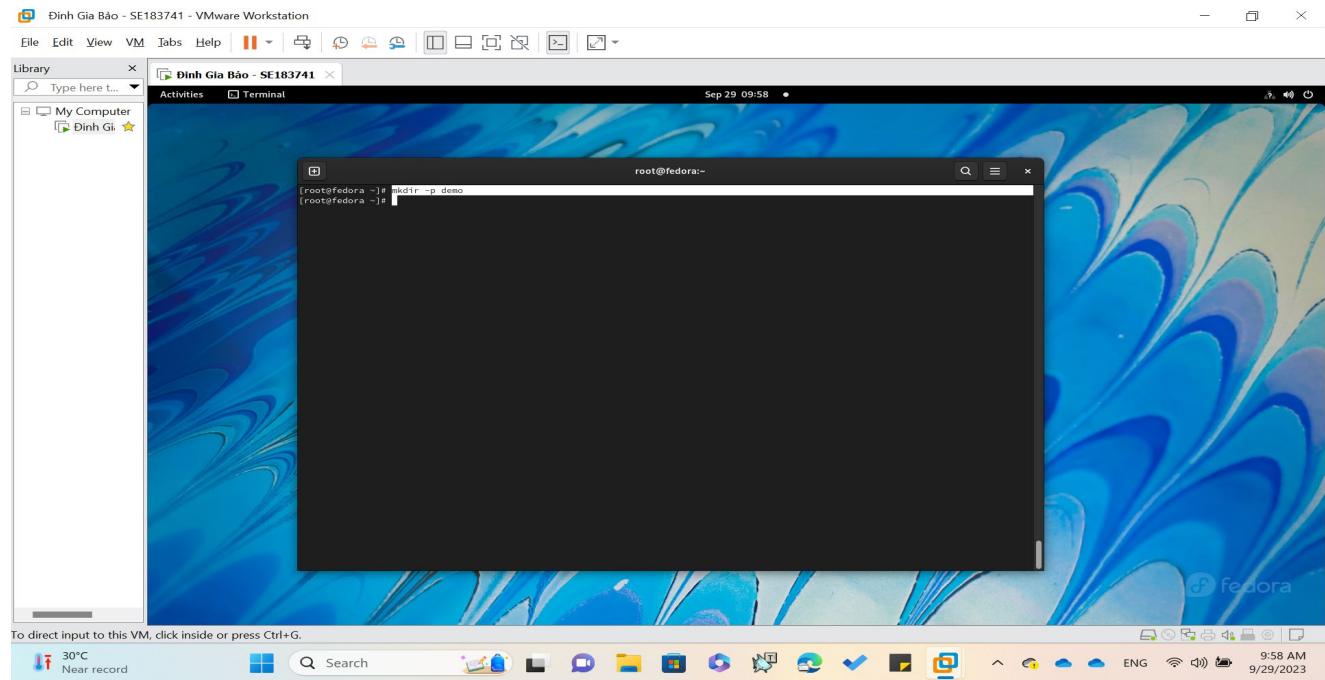
Create new folder(s), if they do not already exist.

### Syntax

`mkdir [Options] folder...`

`mkdir "Name with spaces"`

**Ex :** \$ `mkdir -p demo`



Create the folder 'demo'

## **cp : ( Copy one or more files to another location )**

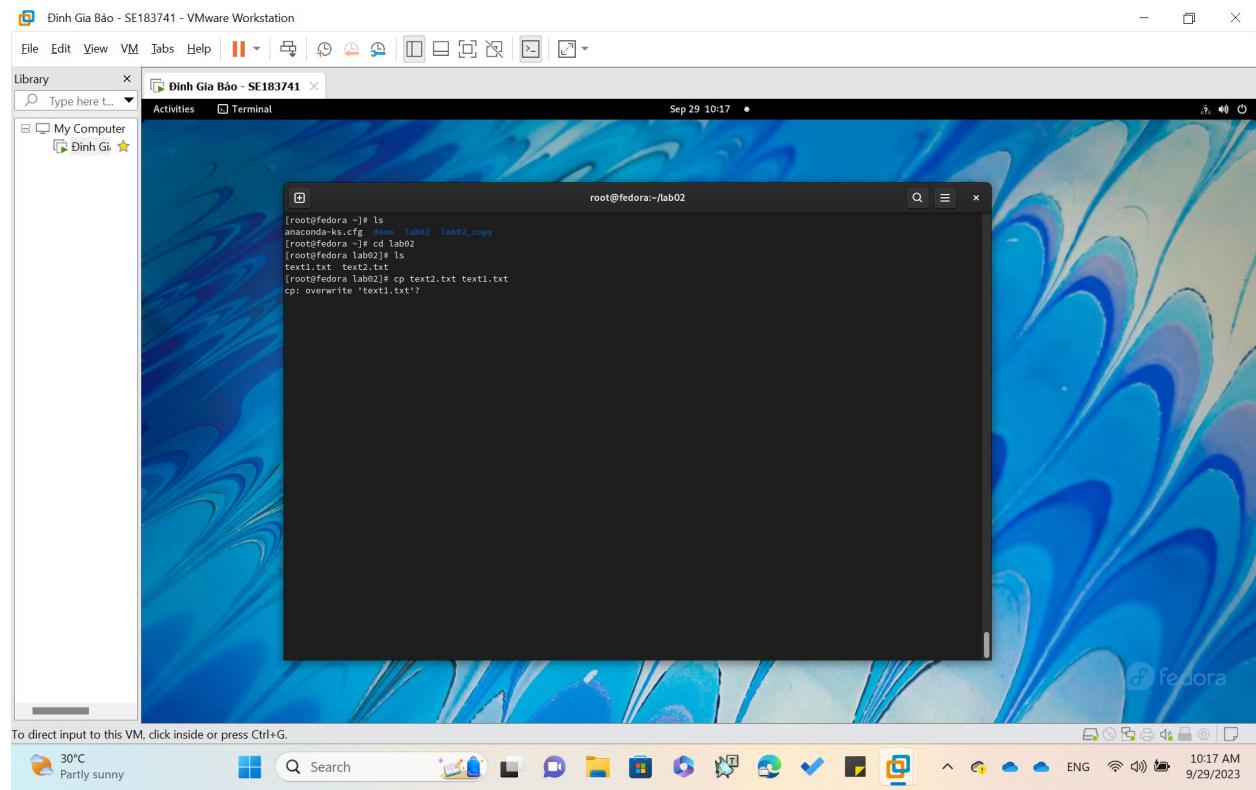
Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY.

### Syntax

`cp [options]... Source Dest`

`cp [options]... Source... Directory`

Ex: \$ cp text2.txt text1.txt



```
[root@fedora ~]# ls
anaconda-ks.cfg  lab02  lab02_copy
[root@fedora ~]# cd lab02
[root@fedora lab02]# ls
text1.txt  text2.txt
[root@fedora lab02]# cp text2.txt text1.txt
cp: overwrite 'text1.txt'? 
```

Copy text2 to text1

## mv : ( Move or rename files or directories )

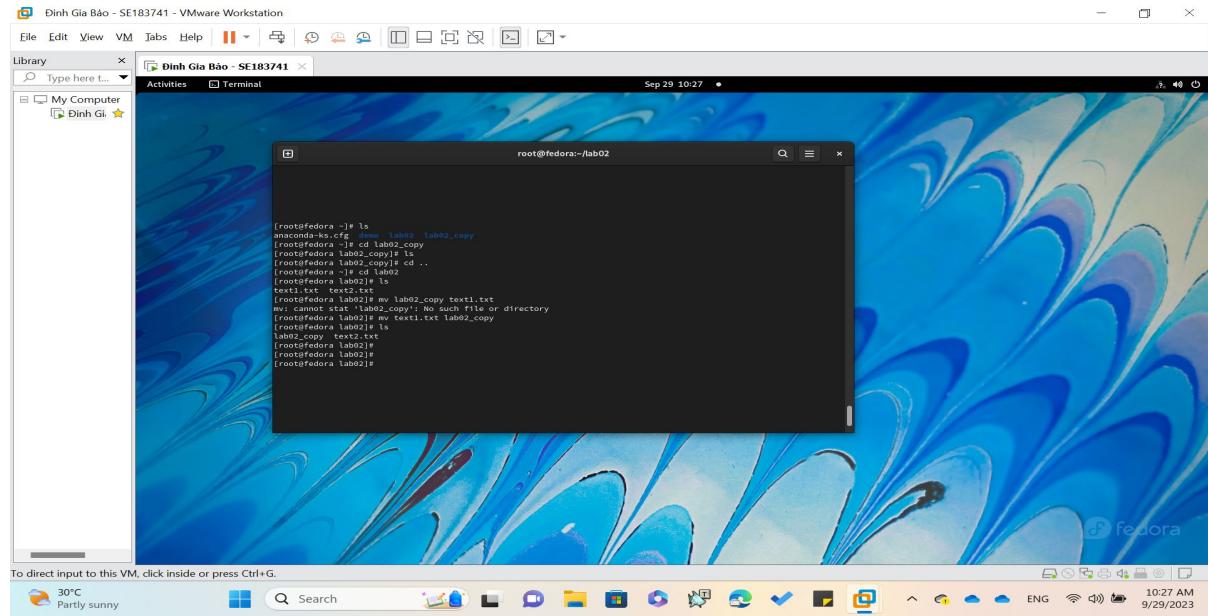
If the last argument names an existing directory, 'mv' moves each other given file into a file with the same name in that directory. Otherwise, if only two files are given, it renames the first as the second. It is an error if the last argument is not a directory and more than two files are given.

### SYNTAX

*mv [options]... Source Dest*

*mv [options]... Source... Directory*

**Ex :**



```
[root@Fedora ~]# ls
anaconda-ks.cfg  demo  lab02  lab02_copy
[root@Fedora lab02_copy]# cp
[root@Fedora lab02_copy]# cd ..
[root@Fedora lab02]# ls
text1.txt  text2.txt
[root@Fedora lab02]# mv lab02_copy aavel.txt
mv: cannot stat 'lab02_copy': No such file or directory
[root@Fedora lab02]# mv text1.txt lab02_copy
[root@Fedora lab02]# ls
lab02_copy  text2.txt
[root@Fedora lab02]#
[root@Fedora lab02]#
```

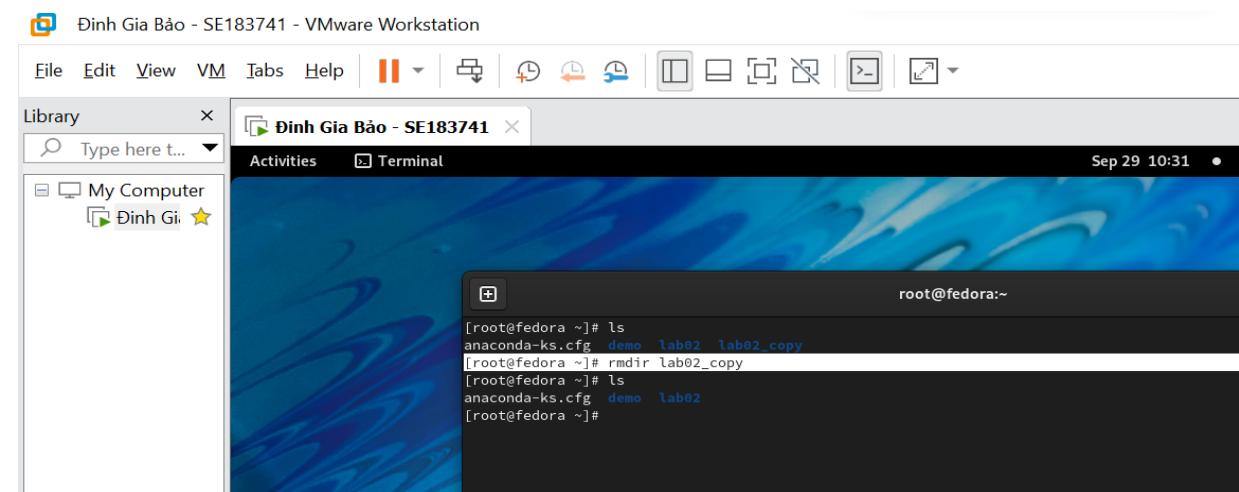
## rmdir : ( remove folders/directories )

Remove directory, this command will only work if the folders are empty.

**Syntax**

`rmdir [options]... folder(s)...`

**Ex :**



```
[root@fedora ~]# ls
anaconda-ks.cfg  demo  lab02  lab02_copy
[root@fedora lab02_copy]# rmdir lab02_copy
[root@fedora ~]# ls
anaconda-ks.cfg  demo  lab02
[root@fedora ~]#
```

Remove lab02\_copy directory

## In : ( create a symbolic link to a file )

Make links between files, by default, it makes hard links; with the `-s` option, it makes symbolic (or "soft") links.

### Syntax

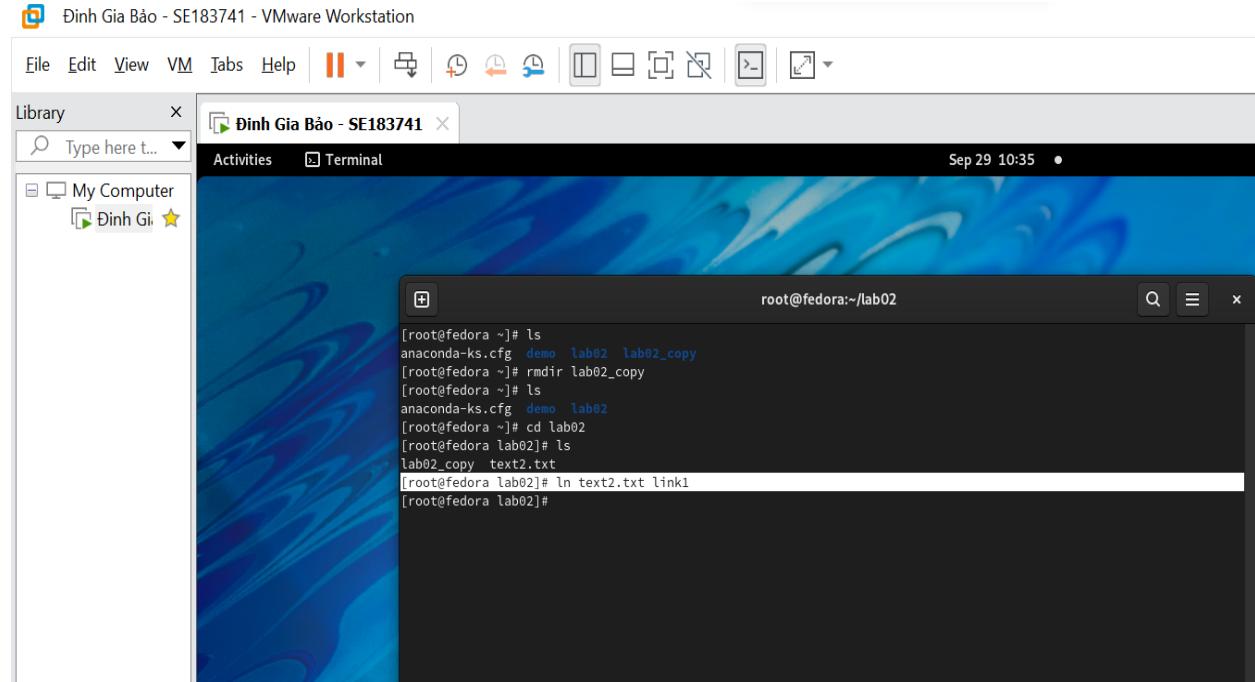
`ln [OPTION]... [-T] OriginalSourceFile NewLinkFile` (1st form)

`ln [OPTION]... OriginalSourceFile` (2nd form)

`ln [OPTION]... OriginalSourceFile... DIRECTORY` (3rd form)

`ln [OPTION]... -t DIRECTORY OriginalSourceFile...` (4th form)

### Ex :



Create a symbolic link1 for file text2.txt

## cat : ( Concatenate and print/display the content of files )

Concatenate *FILE*(s), or standard input, to standard output.

### Syntax

cat [*Options*] [*File*] ...

- First I will Create the file with name **trycat.txt** with content “**This is an example.**” located at 98 directory

```
[root@fedora ~]# ls
anaconda-ks.cfg  demo  lab02
[root@fedora ~]# mkdir 98
[root@fedora ~]# ls
98  anaconda-ks.cfg  demo  lab02
[root@fedora ~]# cd 98
[root@fedora 98]# touch trycat.txt
[root@fedora 98]# ls
trycat.txt
[root@fedora 98]# echo "This is an example."
This is an example.
[root@fedora 98]#
```

Use \$ cat trycat.txt – to display content in file trycat.txt

```
[root@fedora ~]# ls
98  anaconda-ks.cfg  demo  lab02
[root@fedora ~]# cd 98
[root@fedora 98]# ls
trycat.txt
[root@fedora 98]# cat trycat.txt
This is an example.

[root@fedora 98]#
```

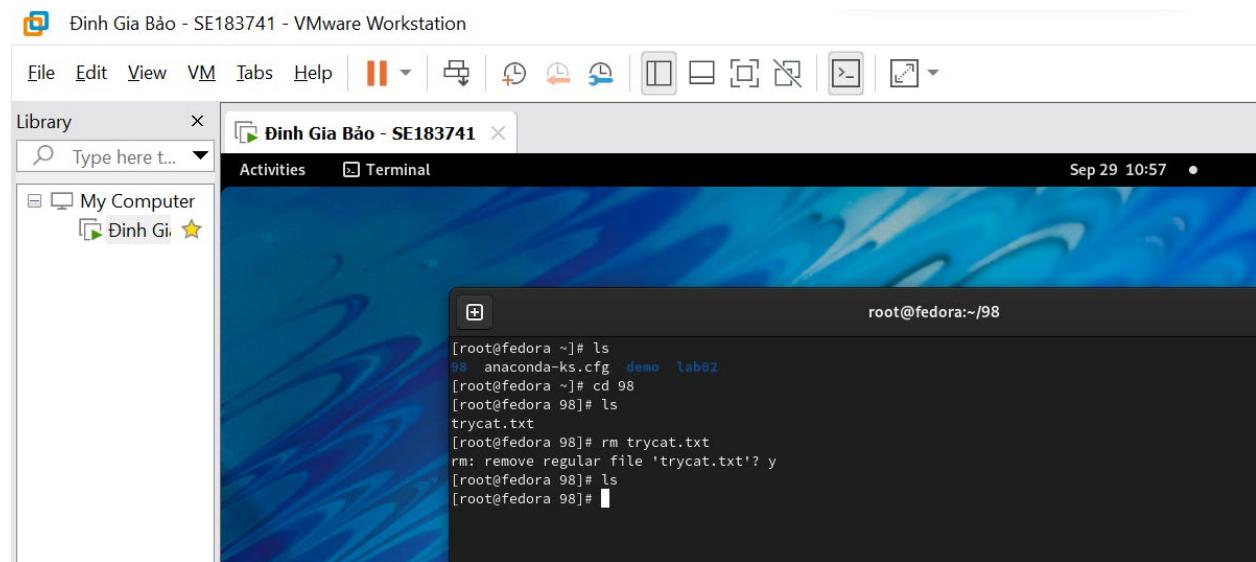
Display content ‘This is an example.’

## rm : ( remove file )

Remove files (delete/unlink).

### Syntax

```
rm [options]... file...
```



Remove file trycat.txt in 98 directory

## Chown : ( Change file owner and group )

Change owner, change the user and/or group ownership of each given File to a new Owner.

Chown can also change the ownership of a file to match the user/group of an existing reference file.

### SYNTAX

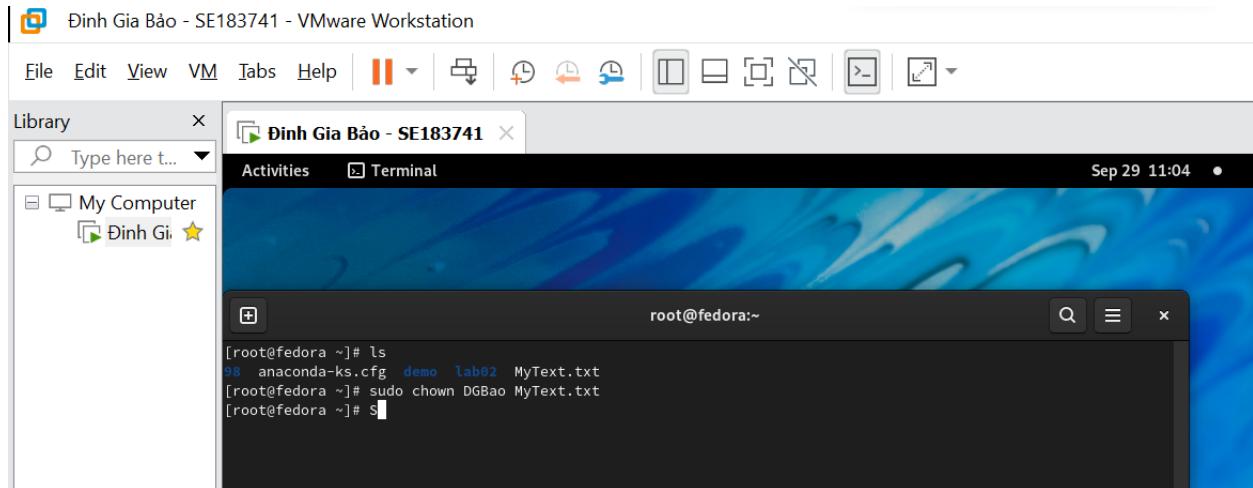
```
chown [Options]... NewOwner File...
```

```
chown [Options]... :Group File...
```

```
chown [Options]... --reference=RFILE File...
```

**Ex :**

```
$ sudo chown DGBao MyText.txt
```



Assign DGBao as the owner of "MyText.txt" file in the root directory.

## chgrp : ( Change group ownership )

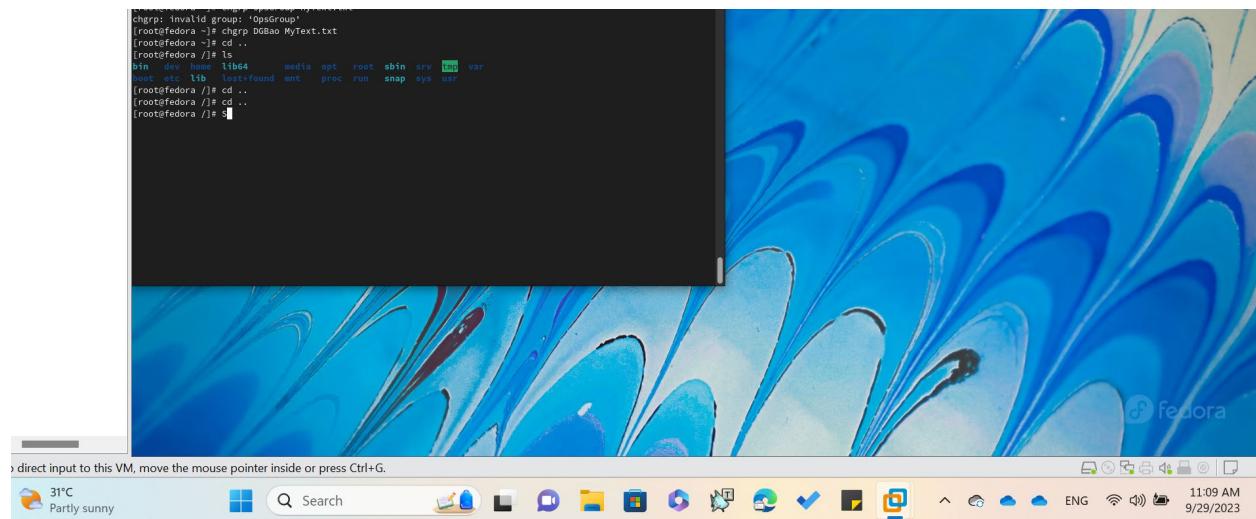
'chgrp' changes the group ownership of each given *File* to *Group* (which can be either a group name or a numeric group id) or to match the same group as an existing reference file.

### Syntax

```
chgrp [Options]... {Group | --reference=File} File...
```

Ex :

```
$ chgrp DGBao MyText.txt
```



Change the group ownership of a file to 'DGBao'

### Chmod : ( Change access permission )

Change access permissions, **change mode**.

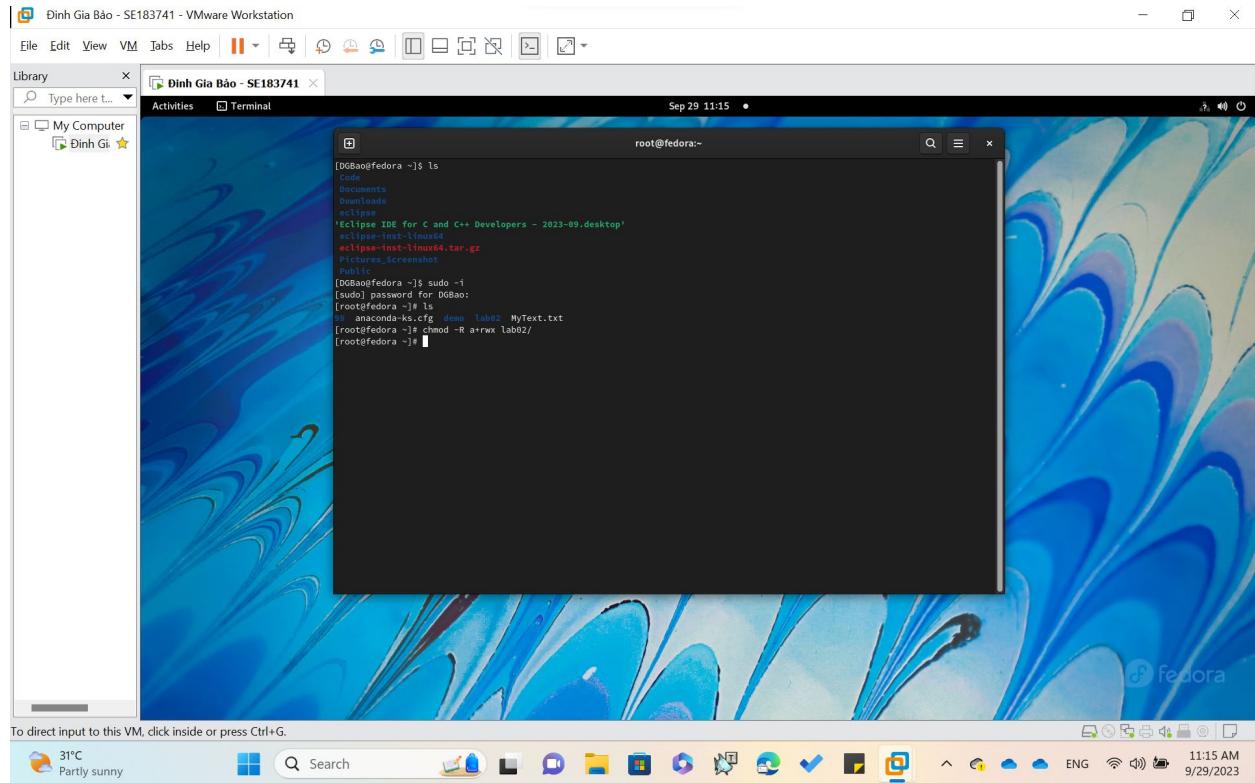
Syntax

```
chmod [Options]... Mode [,Mode]... file...
```

```
chmod [Options]... Numeric_Mode file...
```

```
chmod [Options]... --reference=RFile file...
```

**Ex :** \$ chmod -R a+rwx lab02/



To grant read, write , and execute permission to everyone for a directory and all its files and subdirectories within the “lab02”directory

### find: ( search for files that meet a desired criteria )

Search a folder hierarchy for filename(s) that meet a desired criteria: Name, Size, File Type - see [examples](#).

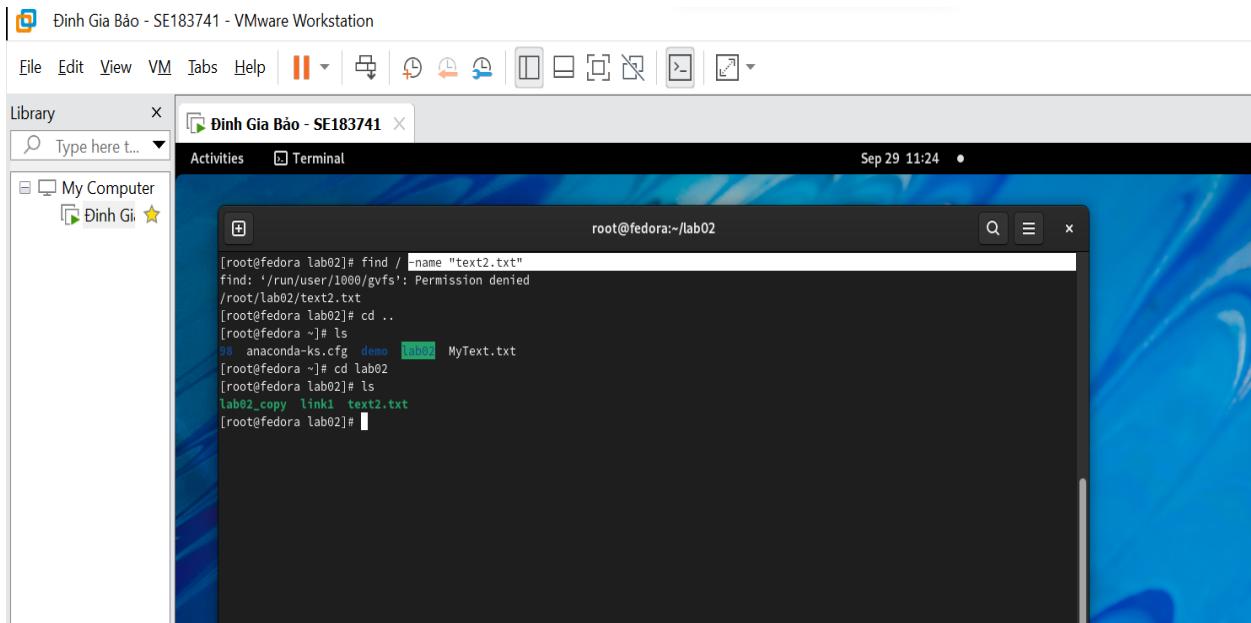
#### Syntax

```
find [-H] [-L] [-P] [path...] [expression]
```

GNU find searches the directory tree rooted at each given file name by evaluating the given *expression* from left to right, according to the rules of precedence ([see Operators](#)), until the outcome is known (the left hand side is false for **AND** operations, true for **OR**), at which point find moves on to the next file name.

Ex: \$ find / -name "text2.txt"

Find all files with the name “text2.txt” throughout the entire system



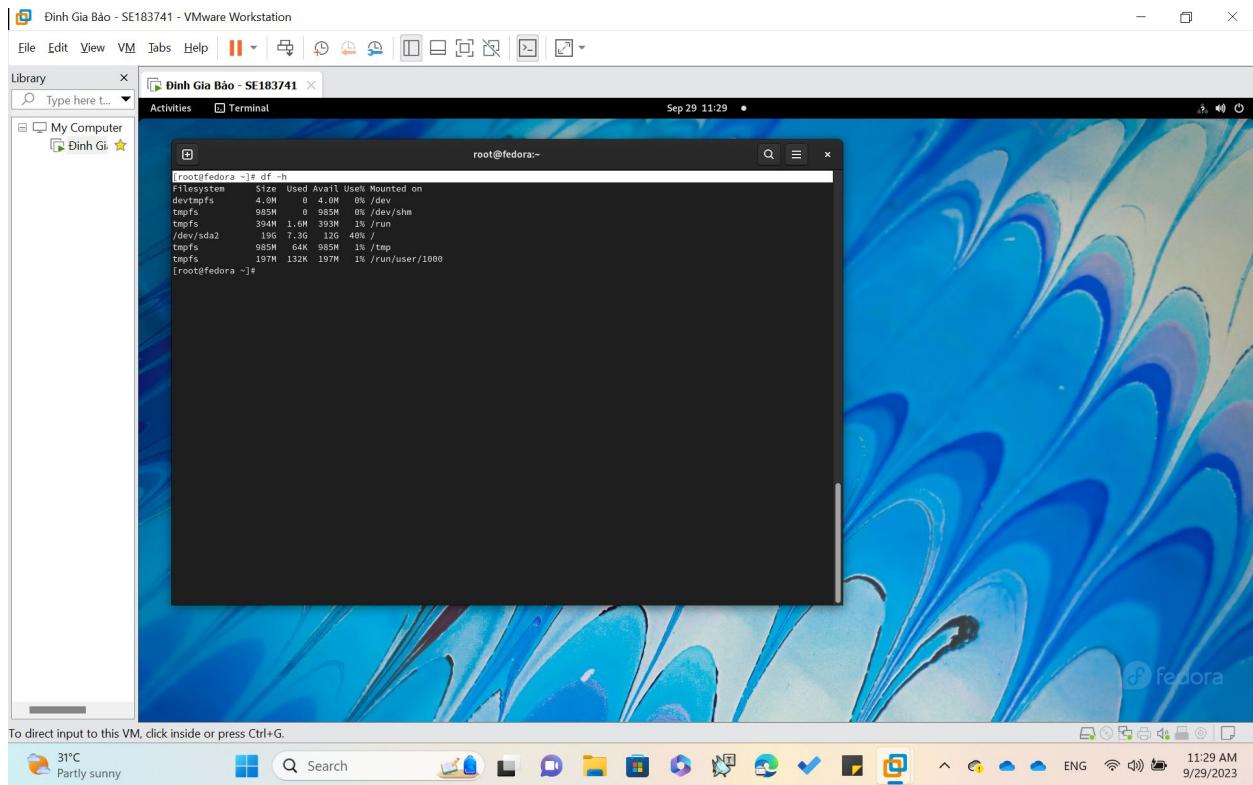
Find all files with the name “text2.txt” throughout the entire system

## df : ( Disk-Free)

The df command in Linux and Unix-like operating systems is used to display information about disk space utilization on file systems. Its purpose is to provide a summary of the disk space usage, including details about total disk space, used space, available space, and the percentage of space used on each mounted file system. Here is the basic syntax of the df command:

Syntax :                  df [options] [filesystem...]

Ex : \$ df -h



```
[root@fedora ~]# df -h
Filesystem      Size   Used  Avail   Mounted on
/dev/sda1        4.0M     0  4.0M  /dev/sda1
tmpfs          985M     0  985M  /dev/shm
tmpfs          394M  1.6M 393M  /run
/dev/sda2       196  7.3G 126  40% /
tmpfs          985M   64K 985M  /tmp
tmpfs         197M 132K 197M  1% /run/user/1000
[root@fedora ~]#
```

This command is used to display information about disk space and free space on the files systems mounted on your system.

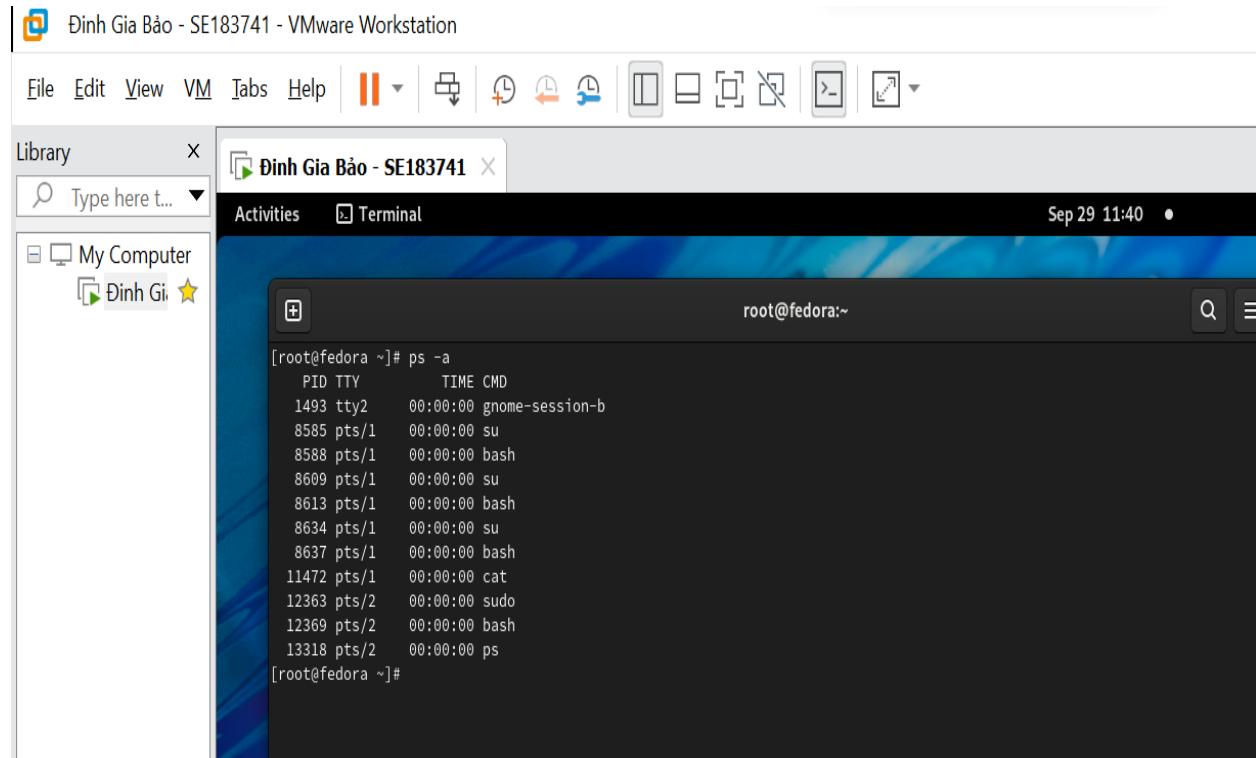
### Ps: ( process status )

Process status, information about processes running in memory. If you want a repetitive update of this status, use [top](#).

#### Syntax

`ps option(s)`

Ex : \$ ps -a



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "Đinh Gia Bảo - SE183741". The terminal content displays the output of the "ps -a" command:

```
[root@fedora ~]# ps -a
 PID TTY      TIME CMD
 1493 tty2    00:00:00 gnome-session-b
 8585 pts/1    00:00:00 su
 8588 pts/1    00:00:00 bash
 8609 pts/1    00:00:00 su
 8613 pts/1    00:00:00 bash
 8634 pts/1    00:00:00 su
 8637 pts/1    00:00:00 bash
 11472 pts/1    00:00:00 cat
 12363 pts/2    00:00:00 sudo
 12369 pts/2    00:00:00 bash
 13318 pts/2    00:00:00 ps
[root@fedora ~]#
```

Select all processes except both session leaders (see `getsid(2)`) and processes not associated with a terminal.

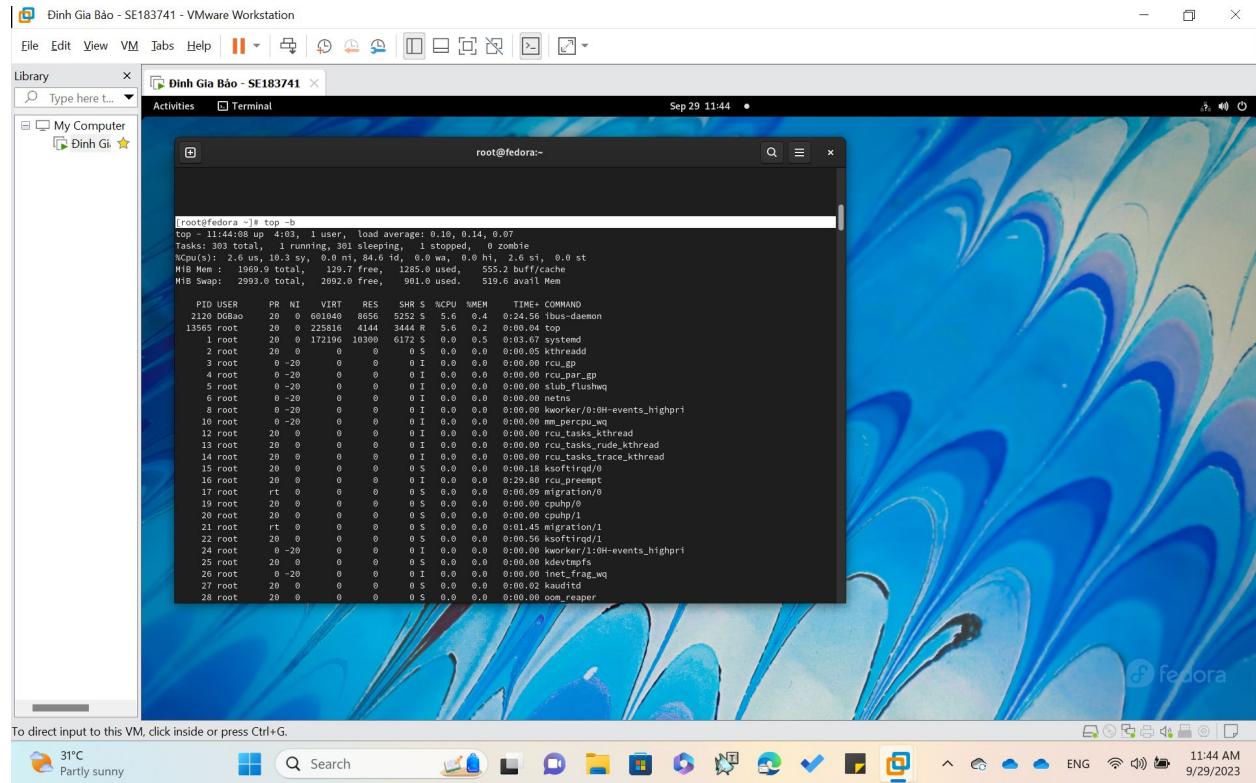
### Top : ( List processes running on the system )

Process viewer, find the CPU-intensive programs currently running. See [ps](#) for explanations of the field descriptors.

#### Syntax

```
top options
```

Ex : \$ top -b



Run in batch mode; don't accept command-line input.  
Useful for sending output to another command or to a file.

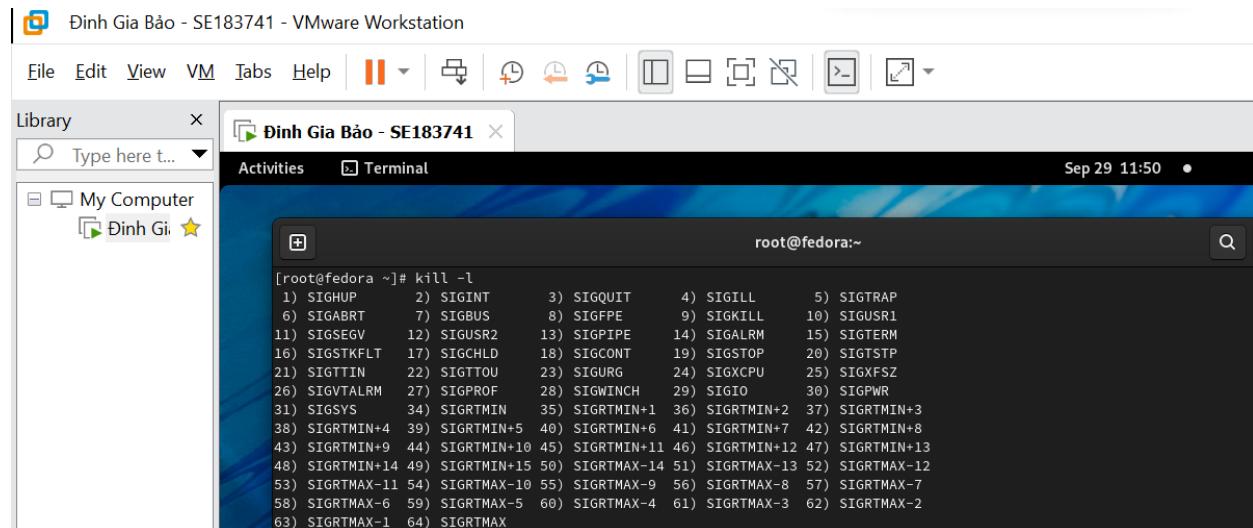
## Kill: ( Kill a process by specifying its PID )

Kill a process by specifying its PID, either via a signal or forced termination.

### Syntax

```
kill [-s sigspec] [-n signum] [-sigspec] jobspec or pid
kill -l [exit_status]
kill -l [sigspec]
```

**Ex : \$ kill -l**



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```
[root@fedora ~]# kill -l
 1) SIGHUP      2) SIGINT      3) SIGQUIT      4) SIGILL      5) SIGTRAP
 6) SIGABRT     7) SIGBUS      8) SIGFPE       9) SIGKILL     10) SIGUSR1
11) SIGSEGV     12) SIGUSR2     13) SIGPIPE     14) SIGALRM     15) SIGTERM
16) SIGSTKFLT   17) SIGCHLD     18) SIGCONT     19) SIGSTOP     20) SIGTSTP
21) SIGTTIN     22) SIGTTOU     23) SIGURG      24) SIGXCPU     25) SIGXFSZ
26) SIGVTALRM   27) SIGPROF     28) SIGWINCH    29) SIGIO       30) SIGPWR
31) SIGSYS      34) SIGRTMIN   35) SIGRTMIN+1 36) SIGRTMIN+2 37) SIGRTMIN+3
38) SIGRTMIN+4 39) SIGRTMIN+5 40) SIGRTMIN+6 41) SIGRTMIN+7 42) SIGRTMIN+8
43) SIGRTMIN+9 44) SIGRTMIN+10 45) SIGRTMIN+11 46) SIGRTMIN+12 47) SIGRTMIN+13
48) SIGRTMIN+14 49) SIGRTMIN+15 50) SIGRTMAX-14 51) SIGRTMAX-13 52) SIGRTMAX-12
53) SIGRTMAX-11 54) SIGRTMAX-10 55) SIGRTMAX-9 56) SIGRTMAX-8 57) SIGRTMAX-7
58) SIGRTMAX-6 59) SIGRTMAX-5 60) SIGRTMAX-4 61) SIGRTMAX-3 62) SIGRTMAX-2
63) SIGRTMAX-1 64) SIGRTMAX
```

List the signal names

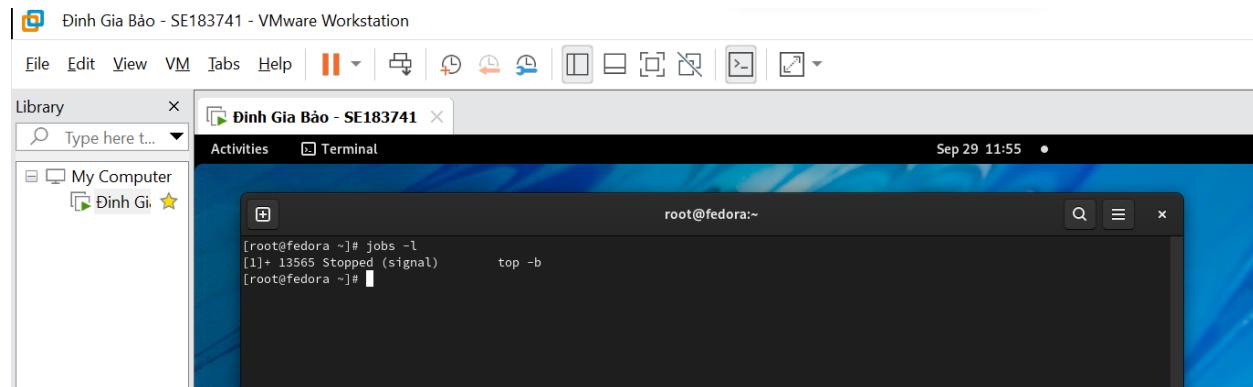
**Jobs: ( list active jobs )**

Print currently running jobs and their status.

**Syntax**

jobs [*OPTIONS*] [*PID*]

**Ex1 : \$ jobs -l**



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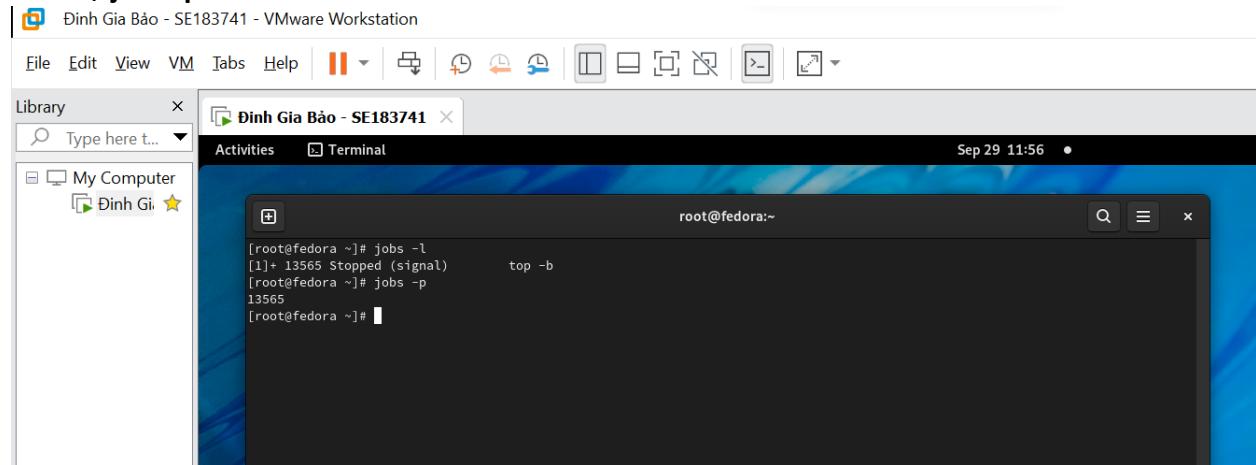
Activities Terminal Sep 29 11:55

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```
[root@fedora ~]# jobs -l
[1]+ 13565 Stopped (signal)          top -b
[root@fedora ~]#
```

Only the last job to be started is printed

## Ex2 : \$ jobs -p



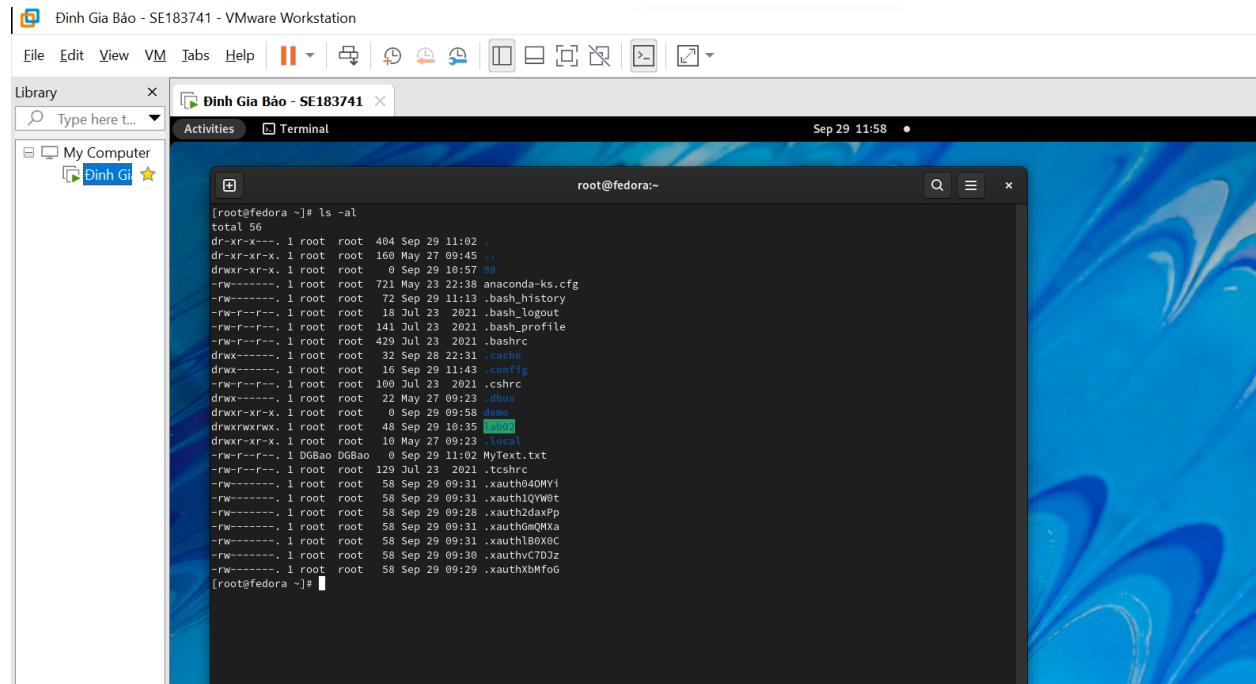
```
[root@fedora ~]# jobs -p
[1]+ 13565 Stopped (signal)          top -b
[root@fedora ~]#
```

Print the process id for each process in all jobs

## ls -al :

when you run ls -al, it will display a detailed list of all files and directories in the current directory, including hidden files, in a long format that shows additional information about each file and directory.

Syntax:      **ls -al [directory]**



```
[root@fedora ~]# ls -al
total 56
dr-xr-x---. 1 root  root  404 Sep 29 11:02 .
dr-xr-xr-x. 1 root  root  160 May 27 09:45 ..
drwxr-xr-x. 1 root  root   0 Sep 29 10:57 98
-rw-------. 1 root  root  721 May 23 22:38 anaconda-ks.cfg
-rw-------. 1 root  root  72 Sep 29 11:13 .bash_history
-rw-r--r--. 1 root  root  18 Jul 23 2021 .bash_logout
-rw-r--r--. 1 root  root  141 Jul 23 2021 .bash_profile
-rw-r--r--. 1 root  root  429 Jul 23 2021 .bashrc
drwx-----. 1 root  root  32 Sep 28 22:31 .cache
drwx-----. 1 root  root  16 Sep 29 11:43 .config
drwx-----. 1 root  root  100 Jul 23 2021 .csrc
drwx-----. 1 root  root  22 May 27 09:23 .dbus
drwxr-xr-x. 1 root  root   0 Sep 29 09:58 demo
drwxrwxrwx. 1 root  root  48 Sep 29 10:35 libbz2
drwxr-xr-x. 1 root  root  10 May 27 09:23 .local
-rw-r--r--. 1 DGao  DGao   0 Sep 29 11:02 MyText.txt
-rw-r--r--. 1 root  root  129 Jul 23 2021 .tcschr
-rw-----. 1 root  root  58 Sep 29 09:31 .xauth04OMYi
-rw-----. 1 root  root  58 Sep 29 09:31 .xauth10YWot
-rw-----. 1 root  root  58 Sep 29 09:28 .xauth2daxPp
-rw-----. 1 root  root  58 Sep 29 09:31 .xauthGmQXa
-rw-----. 1 root  root  58 Sep 29 09:31 .xauth1B6X0C
-rw-----. 1 root  root  58 Sep 29 09:30 .xauthvC7Djz
-rw-----. 1 root  root  58 Sep 29 09:29 .xauthXBmfoG
[root@fedora ~]#
```

**END.**