LAB02

1 - Using command line in Linux (shell script)
a) su

Syntax: **su** [OPTION]… [-] [USER [ARG]…]

What does it do? Change the effective user id and group id to that of the USER.

Example:

```
                              root@PhongNT:~                          _ □ ×

File  Edit  View  Search  Terminal  Help
[root@PhongNT ~]# su -l PhongNT
[PhongNT@PhongNT ~]$
[PhongNT@PhongNT ~]$ su -l
Password:
[root@PhongNT ~]# █
```

1 CHUYỂN TÀI KHOẢN ĐĂNG NHẬP TỪ ROOT SANG USER THƯỜNG (PHONGNT) VÀ NGƯỢC LẠI

b) env

Syntax: **env** [OPTION]… [-] [NAME=VALUE]… [COMMAND [ARG]…]

What does it do? Set each NAME to VALUE in the environment and run COMMAND.

Example:

```
                                     root@PhongNT:~                          _ □ ×
File  Edit  View  Search  Terminal  Help
[root@PhongNT ~]# env
HOSTNAME=PhongNT
SHELL=/bin/bash
TERM=xterm
HISTSIZE=1000
QTDIR=/usr/lib64/qt-3.3
QTINC=/usr/lib64/qt-3.3/include
USER=root
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;0
1:or=40;31;01:mi=01;05;37;41:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01
;32:*.tar=01;31:*.tgz=01;31:*.arj=01;31:*.taz=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31
:*.txz=01;31:*.zip=01;31:*.z=01;31:*.Z=01;31:*.dz=01;31:*.gz=01;31:*.lz=01;31:*.xz=01;31
:*.bz2=01;31:*.tbz=01;31:*.tbz2=01;31:*.bz=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.ja
r=01;31:*.rar=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.jpg=01;
35:*.jpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:
*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=01;35:*.
mng=01;35:*.pcx=01;35:*.mov=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.ogm
=01;35:*.mp4=01;35:*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;
35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*
.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;35:*.axv=0
1;35:*.anx=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=01;36:*.au=01;36:*.flac=01;36:*.mid=01;36
:*.midi=01;36:*.mka=01;36:*.mp3=01;36:*.mpc=01;36:*.ogg=01;36:*.ra=01;36:*.wav=01;36:*.a
xa=01;36:*.oga=01;36:*.spx=01;36:*.xspf=01;36:
MAIL=/var/spool/mail/root
PATH=/usr/lib64/qt-3.3/bin:/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin:
/root/bin
PWD=/root
LANG=en_US.UTF-8
SSH_ASKPASS=/usr/libexec/openssh/gnome-ssh-askpass
```
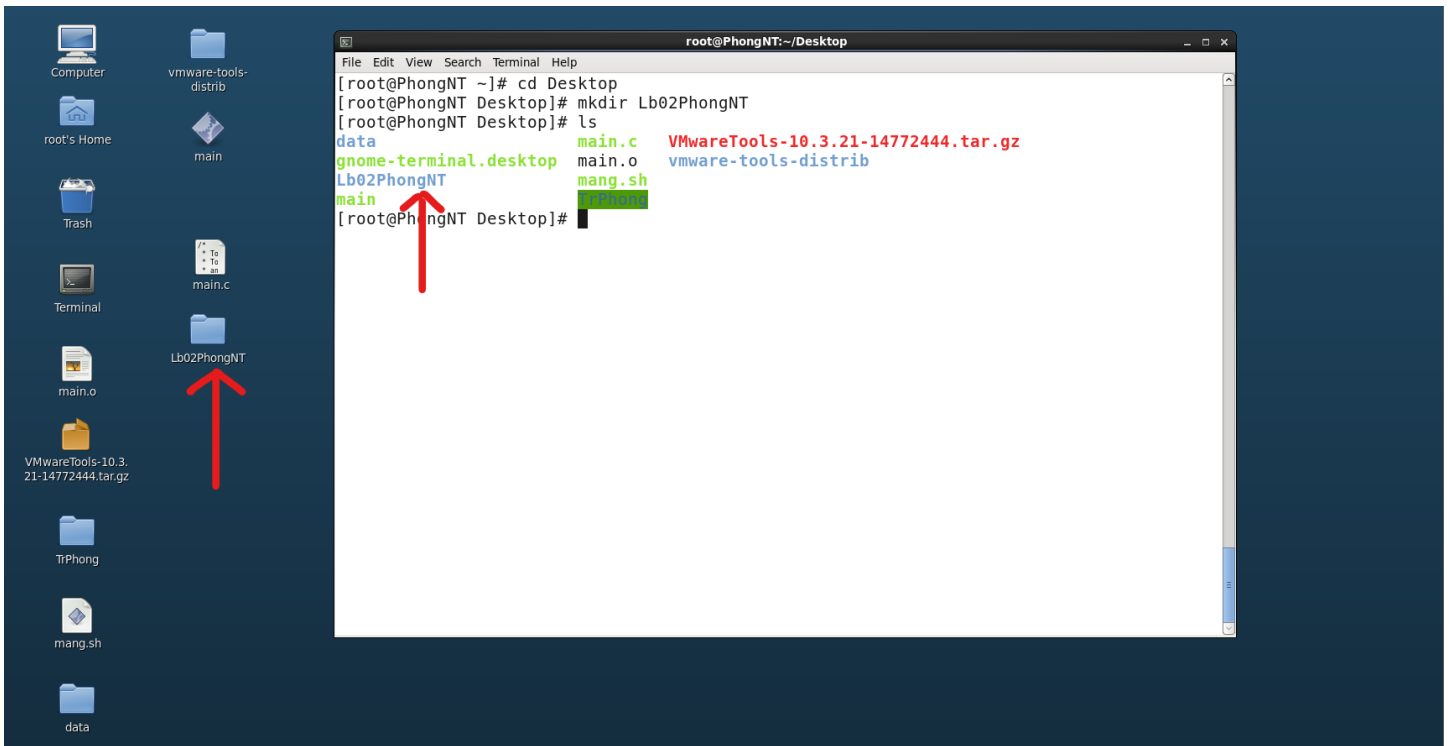
2 VIEW ALL THE ENVIRONMENT VARIABLES WITH THE COMMAND 'ENV' WITHOUR ANY ARGUMENT

c) mkdir

Syntax: mkdir [OPTION]… DIRECTORY…

What does it do? Create the DIRECTORY(ies), if they do not already exist.

Example:

3 CREATE THE DIRECTORY 'LB02PHONGNT' ON DESKTOP

d) cp

Syntax:

> **cp** [OPTION]… [-T] SOURCE DEST

> **cp** [OPTION]… SOURCE… DIRECTORY

> **cp** [OPTION]… -t DIRECTORY SOURCE…

What does it do? Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY.

Example:

```
                          root@PhongNT:~/Desktop/Lb02PhongNT                    _  □  ×
File  Edit  View  Search  Terminal  Help
[root@PhongNT Desktop]# ls
data                      main      mang.sh    VMwareTools-10.3.21-14772444.tar.gz
gnome-terminal.desktop    main.c    text.txt   vmware-tools-distrib
Lb02PhongNT               main.o    frPhong
[root@PhongNT Desktop]# cd Lb02PhongNT
[root@PhongNT Lb02PhongNT]# ls
[root@PhongNT Lb02PhongNT]#
[root@PhongNT Lb02PhongNT]# cd -
/root/Desktop
[root@PhongNT Desktop]# cp text.txt Lb02PhongNT
[root@PhongNT Desktop]# cd Lb02PhongNT
[root@PhongNT Lb02PhongNT]# ls
text.txt
[root@PhongNT Lb02PhongNT]# ▮
```

4 COPY THE FILE 'TEXT.TXT' FROM DESKTOP TO LB02PHONGNT

e) mv

Syntax:

> **mv** [OPTION]… [-T] SOURCE DEST
>
> **mv** [OPTION]… SOURCE… DIRECTORY
>
> **mv** [OPTION]… -t DIRECTORY SOURCE

What does it do? Rename SOURCE to DEST, or move SOURCE(s) to DIRECTORY.

Example:

```
[root@PhongNT Lb02PhongNT]# ls
text.txt
[root@PhongNT Lb02PhongNT]# cd -
/root/Desktop
[root@PhongNT Desktop]# mv text.txt Lb02PhongNT/text22.txt
[root@PhongNT Desktop]# ls
data                    main.c    VMwareTools-10.3.21-14772444.tar.gz
gnome-terminal.desktop  main.o    vmware-tools-distrib
Lb02PhongNT             mang.sh
main                    TrPhong
[root@PhongNT Desktop]# cd Lb02PhongNT/
[root@PhongNT Lb02PhongNT]# ls
text22.txt  text.txt
[root@PhongNT Lb02PhongNT]#
```

5 MOVE THE FILE 'TEXT.TXT' FROM DESKTOP TO LB02PHONGNT AND RENAME IT TO 'TEXT22.TXT'

f) rmdir

Syntax: rmdir [OPTION]… DIRECTORY…

What does it do? Remove the DIRECTORY(ies), if they are empty.

Example:

```
[root@PhongNT data2]# mkdir mm nn pp
[root@PhongNT data2]# mkdir mm/aa
[root@PhongNT data2]# mkdir mm/aa/gg
[root@PhongNT data2]# ls
mm   nn   pp
[root@PhongNT data2]# cd mm
[root@PhongNT mm]# ls
aa
[root@PhongNT mm]# cd aa
[root@PhongNT aa]# ls
gg
[root@PhongNT aa]# cd --
[root@PhongNT ~]# cd Desktop/data2
[root@PhongNT data2]# rmdir nn pp
[root@PhongNT data2]# ls
mm
[root@PhongNT data2]# rmdir -p mm/aa/gg
[root@PhongNT data2]# ls
[root@PhongNT data2]# █
```

6 REMOVE THE EMPTY DIRECTORIES 'DATA2/NN' & 'DATA2/PP'; AND REMOVE ALL OF THE EMPTY DIRECTORIES IN 'MM' FOLDER

g) ln

Syntax:

      ln [OPTION]... [-T] TARGET LINK_NAME   (1st form)

      ln [OPTION]... TARGET   (2nd form)

      ln [OPTION]... TARGET... DIRECTORY   (3rd form)

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

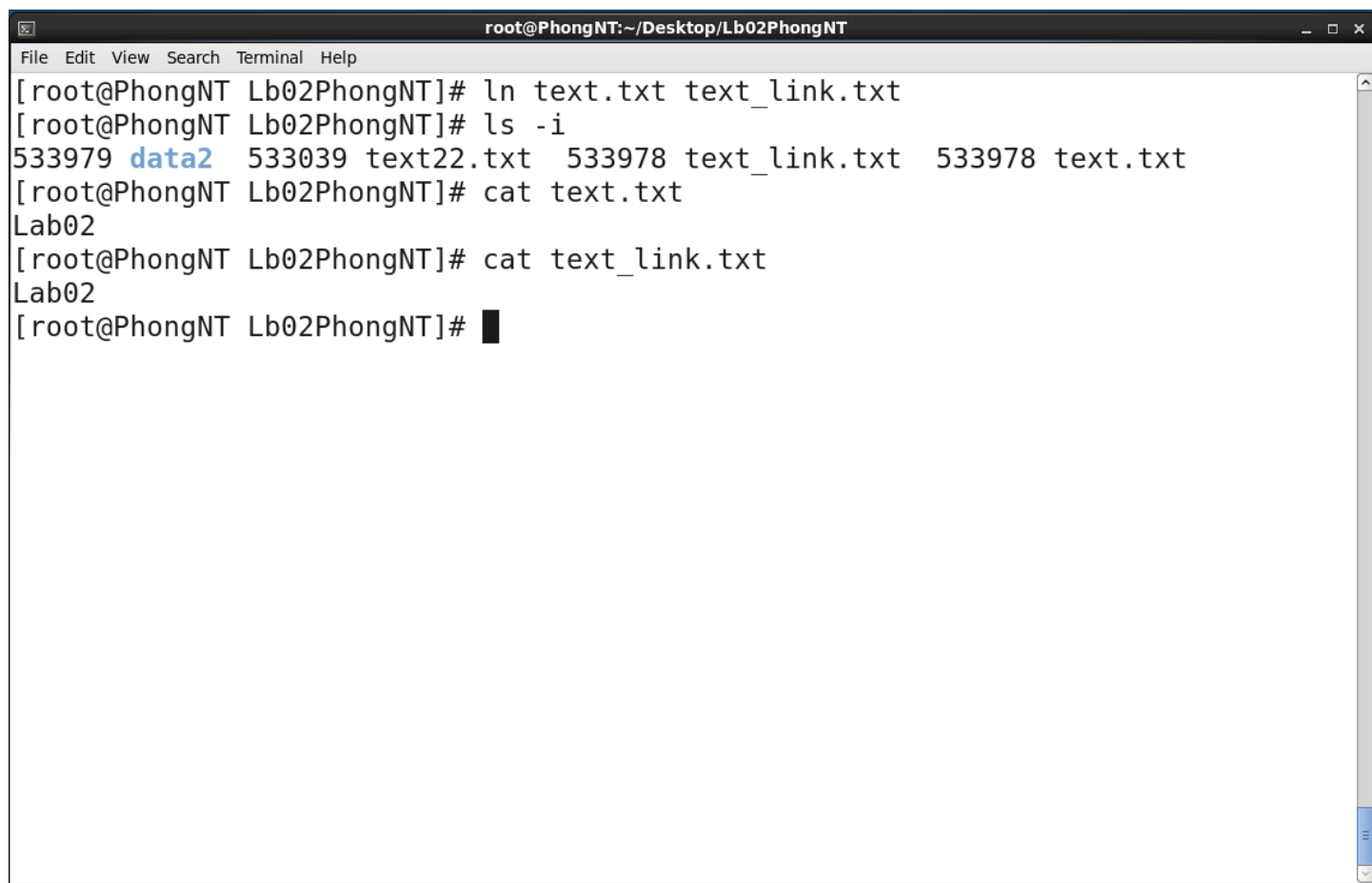**What does it do?**

      In the 1st form, create a link to TARGET with the name LINK_NAME.

      In the 2nd form, create a link to TARGET in the current directory.

      In the 3rd and 4th forms, create links to each TARGET in DIRECTORY.

Create hard links by default, symbolic links with **--symbolic**. When creating hard links, each TARGET must exist. Symbolic links can hold arbitrary text; if later resolved, a relative link is interpreted in relation to its parent directory.

Example:

```
root@PhongNT:~/Desktop/Lb02PhongNT
File  Edit  View  Search  Terminal  Help
[root@PhongNT Lb02PhongNT]# ln text.txt text_link.txt
[root@PhongNT Lb02PhongNT]# ls -i
533979 data2   533039 text22.txt   533978 text_link.txt   533978 text.txt
[root@PhongNT Lb02PhongNT]# cat text.txt
Lab02
[root@PhongNT Lb02PhongNT]# cat text_link.txt
Lab02
[root@PhongNT Lb02PhongNT]# █
```

7 CREATE A SOFTLINK BETWEEN 'TEXT.TXT' AND 'TEXT_LINK.TXT'

h) cat

Syntax: cat [OPTION]… [FILE]…

What does it do? Concatenate FILE(s), or standard input, to standard output.

Example:

8 VIEW CONTENT OF THE FILE 'HELLO.TXT'

i) rm

Syntax: rm [OPTION]… FILE…

What does it do? Remove files or directories (with their contents recursively).

Example:

```
[root@PhongNT Lb02PhongNT]# ls
data2  data3  hello.txt  text22.txt  text_link.txt
[root@PhongNT Lb02PhongNT]# rm text_link.txt
rm: remove regular file `text_link.txt'? y
[root@PhongNT Lb02PhongNT]# ls
data2  data3  hello.txt  text22.txt
[root@PhongNT Lb02PhongNT]# cd data2
[root@PhongNT data2]# ls
text.txt
[root@PhongNT data2]# cd -
/root/Desktop/Lb02PhongNT
[root@PhongNT Lb02PhongNT]# rm -r data2
rm: descend into directory `data2'? y
rm: remove regular file `data2/text.txt'? y
rm: remove directory `data2'? y
[root@PhongNT Lb02PhongNT]# ls
data3  hello.txt  text22.txt
[root@PhongNT Lb02PhongNT]# █
```

9 DELETE FILE AND DIRECTORY

j) chown

Syntax:

> **chown** [OPTION]… [OWNER] [:[GROUP]] FILE…

> **chown** [OPTION]… --reference=RFILE FILE…

What does it do? Change file owner and group.

Example:

```
                        root@PhongNT:~/Desktop/Lb02PhongNT              _ □ ×
File  Edit  View  Search  Terminal  Help
[root@PhongNT Lb02PhongNT]# ls -l
total 12
drwxr-xr-x. 2 root root 4096 Jun  6 11:00 data3
-rw-r--r--. 1 root root   17 Jun  6 10:51 hello.txt
-rw-r--r--. 1 root root    6 Jun  6 10:21 text22.txt
[root@PhongNT Lb02PhongNT]# chown PhongNT hello.txt
[root@PhongNT Lb02PhongNT]# ls -l
total 12
drwxr-xr-x. 2 root     root 4096 Jun  6 11:00 data3
-rw-r--r--. 1 PhongNT root   17 Jun  6 10:51 hello.txt
-rw-r--r--. 1 root     root    6 Jun  6 10:21 text22.txt
[root@PhongNT Lb02PhongNT]# █
```

10 CHANGE THE OWNER FROM 'ROOT' TO 'PHONGNT'

k) chgrp

<u>Syntax:</u>

chgrp [<u>OPTION</u>]… <u>GROUP</u> <u>FILE</u>…

chgrp [<u>OPTION</u>]… <u>--reference=RFILE</u> <u>FILE</u>…

<u>What does it do?</u> Change the group of each <u>FILE</u> to <u>GROUP</u>. With **–reference**, change the group of each <u>FILE</u> to that of <u>RFILE</u>.

<u>Example:</u>

```
[root@PhongNT Lb02PhongNT]# ls -l
total 12
drwxr-xr-x. 2 root    root 4096 Jun  6 11:00 data3
-rw-r--r--. 1 PhongNT root   17 Jun  6 10:51 hello.txt
-rw-r--r--. 1 root    root    0 Jun  6 11:10 man.txt
-rw-r--r--. 1 root    root    6 Jun  6 10:21 text22.txt
[root@PhongNT Lb02PhongNT]# chgrp PhongNT hello.txt
[root@PhongNT Lb02PhongNT]# ls -l
total 12
drwxr-xr-x. 2 root    root    4096 Jun  6 11:00 data3
-rw-r--r--. 1 PhongNT PhongNT   17 Jun  6 10:51 hello.txt
-rw-r--r--. 1 root    root       0 Jun  6 11:10 man.txt
-rw-r--r--. 1 root    root       6 Jun  6 10:21 text22.txt
[root@PhongNT Lb02PhongNT]# █
```

11 CHANGE THE GROUP OWNERSHIP FROM 'ROOT' TO 'PHONGNT' OF THE FILE 'HELLO.TXT'

l) chmod

Syntax:

chmod [OPTION]… MODE[,MODE]… FILE…

chmod [OPTION]… OCTAL-MODE FILE…

chmod [OPTION]… --reference=RFILE FILE…

What does it do? Change file mode bits

Example:

```
root@PhongNT:~/Desktop/Lb02PhongNT                         _ □ ×
File  Edit  View  Search  Terminal  Help
[root@PhongNT Lb02PhongNT]# ls -l
total 12
drwxr-xr-x. 2 root     root     4096 Jun  6 11:00 data3
-rw-r--r--. 1 PhongNT PhongNT    17 Jun  6 10:51 hello.txt
-rw-r--r--. 1 root     root        0 Jun  6 11:10 man.txt
-rw-r--r--. 1 root     root        6 Jun  6 10:21 text22.txt
[root@PhongNT Lb02PhongNT]# chmod +x man.txt
[root@PhongNT Lb02PhongNT]# ls -l
total 12
drwxr-xr-x. 2 root     root     4096 Jun  6 11:00 data3
-rw-r--r--. 1 PhongNT PhongNT    17 Jun  6 10:51 hello.txt
-rwxr-xr-x. 1 root     root        0 Jun  6 11:10 man.txt
-rw-r--r--. 1 root     root        6 Jun  6 10:21 text22.txt
[root@PhongNT Lb02PhongNT]# █
```

12 ADD THE PERMISSION TO EXECUTE TO THE FILE 'MAN.TXT'

m)find

Syntax: find [-H] [-L] [-P] [-D debugopts] [-0level] [path…] [expression]

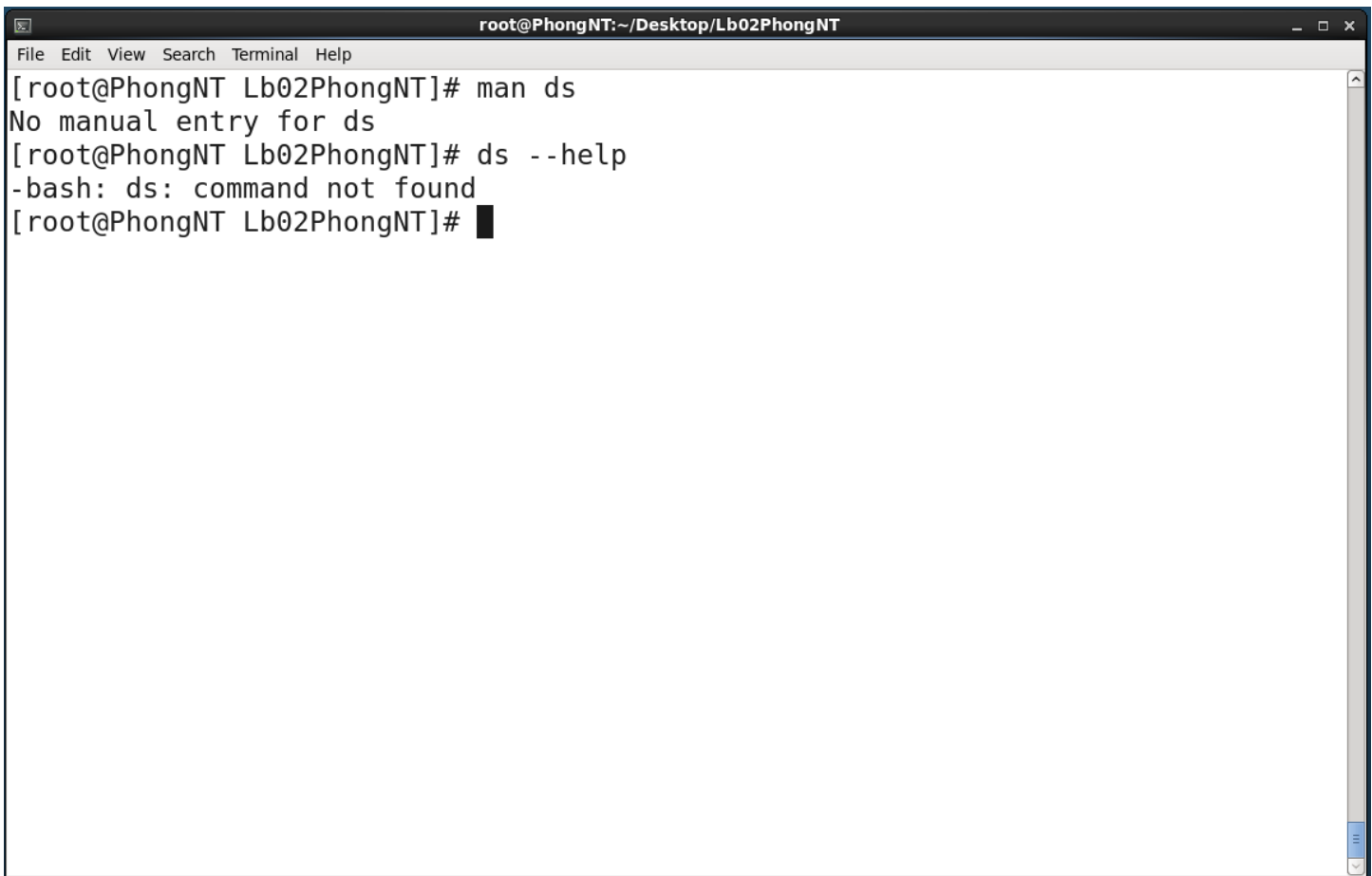**What does it do?** Search for files in a directory hierarchy

Example:

```
[root@PhongNT Lb02PhongNT]# find *.txt
hello.txt
man.txt
text22.txt
[root@PhongNT Lb02PhongNT]# find -user root
.
./data3
./text22.txt
./man.txt
[root@PhongNT Lb02PhongNT]# 
```

13 FIND FILES WITH THE FORMAT '*.TXT' AND FILES / FOLDER WITH USER OWNER OF ROOT

n) ds

No such a command

```
[root@PhongNT Lb02PhongNT]# man ds
No manual entry for ds
[root@PhongNT Lb02PhongNT]# ds --help
-bash: ds: command not found
[root@PhongNT Lb02PhongNT]# █
```

o) df

Syntax: df [OPTION]... [FILE]...

What does it do? Report file system disk space usage.

Example:

```
                              root@PhongNT:~/Desktop/Lb02PhongNT                    _ □ ×

File  Edit  View  Search  Terminal  Help
[root@PhongNT Lb02PhongNT]# df /root/Desktop
Filesystem      1K-blocks     Used Available Use% Mounted on
/dev/sda2        15118728 4899144   9451584   35% /
[root@PhongNT Lb02PhongNT]# df
Filesystem      1K-blocks     Used Available Use% Mounted on
/dev/sda2        15118728 4899144   9451584   35% /
tmpfs              510116      224   509892    1% /dev/shm
/dev/sda1          495844    34888   435356    8% /boot
[root@PhongNT Lb02PhongNT]# █
```

p) ps

Syntax: ps [options]

What does it do? Report a snapshot of the current processes.

Example:

```
[root@PhongNT Lb02PhongNT]# ps -ef
UID        PID  PPID  C STIME TTY          TIME CMD
root         1     0  0 10:17 ?        00:00:02 /sbin/init
root         2     0  0 10:17 ?        00:00:00 [kthreadd]
root         3     2  0 10:17 ?        00:00:00 [migration/0]
root         4     2  0 10:17 ?        00:00:00 [ksoftirqd/0]
root         5     2  0 10:17 ?        00:00:00 [migration/0]
root         6     2  0 10:17 ?        00:00:00 [watchdog/0]
root         7     2  0 10:17 ?        00:00:00 [events/0]
root         8     2  0 10:17 ?        00:00:00 [cgroup]
root         9     2  0 10:17 ?        00:00:00 [khelper]
root        10     2  0 10:17 ?        00:00:00 [netns]
root        11     2  0 10:17 ?        00:00:00 [async/mgr]
root        12     2  0 10:17 ?        00:00:00 [pm]
root        13     2  0 10:17 ?        00:00:00 [sync_supers]
root        14     2  0 10:17 ?        00:00:00 [bdi-default]
root        15     2  0 10:17 ?        00:00:00 [kintegrityd/0]
root        16     2  0 10:17 ?        00:00:00 [kblockd/0]
root        17     2  0 10:17 ?        00:00:00 [kacpid]
root        18     2  0 10:17 ?        00:00:00 [kacpi_notify]
root        19     2  0 10:17 ?        00:00:00 [kacpi_hotplug]
root        20     2  0 10:17 ?        00:00:00 [ata_aux]
root        21     2  0 10:17 ?        00:00:02 [ata_sff/0]
root        22     2  0 10:17 ?        00:00:00 [ksuspend_usbd]
root        23     2  0 10:17 ?        00:00:00 [khubd]
root        24     2  0 10:17 ?        00:00:00 [kseriod]
root        25     2  0 10:17 ?        00:00:00 [md/0]
root        26     2  0 10:17 ?        00:00:00 [md_misc/0]
root        27     2  0 10:17 ?        00:00:00 [linkwatch]
```

q) top

Syntax: top –hv | -abcHimMsS –d <u>delay</u> **–n** <u>iterations</u> **–p** <u>pid</u> [, <u>pid</u> …]

What does it do? Display Linux tasks.

Example:

```
 ⊡                    root@PhongNT:~/Desktop/Lb02PhongNT              _ □ ×
File  Edit  View  Search  Terminal  Help
[root@PhongNT Lb02PhongNT]# top -p 2901




top - 11:39:32 up  1:21,  2 users,  load average: 0.00, 0.00, 0.00
Tasks:   1 total,   0 running,   1 sleeping,   0 stopped,   0 zombie
Cpu(s):  1.4%us,  0.3%sy,  0.0%ni, 98.3%id,  0.0%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:   1020232k total,   569656k used,   450576k free,    39864k buffers
Swap:  2097144k total,        0k used,  2097144k free,   208020k cached

  PID USER       PR  NI  VIRT  RES  SHR S %CPU %MEM   TIME+   COMMAND
 2901 root       20   0  296m  12m 9556 S  0.7  1.3   0:14.52 gnome-terminal
```

14 SEE DETAILS OF THE **'**TERMINAL**'** PROCESS **-** PID**: 2901**

r) kill

Syntax:

kill [**-s** <u>signal</u> | **-p**] [--] <u>pid</u>…
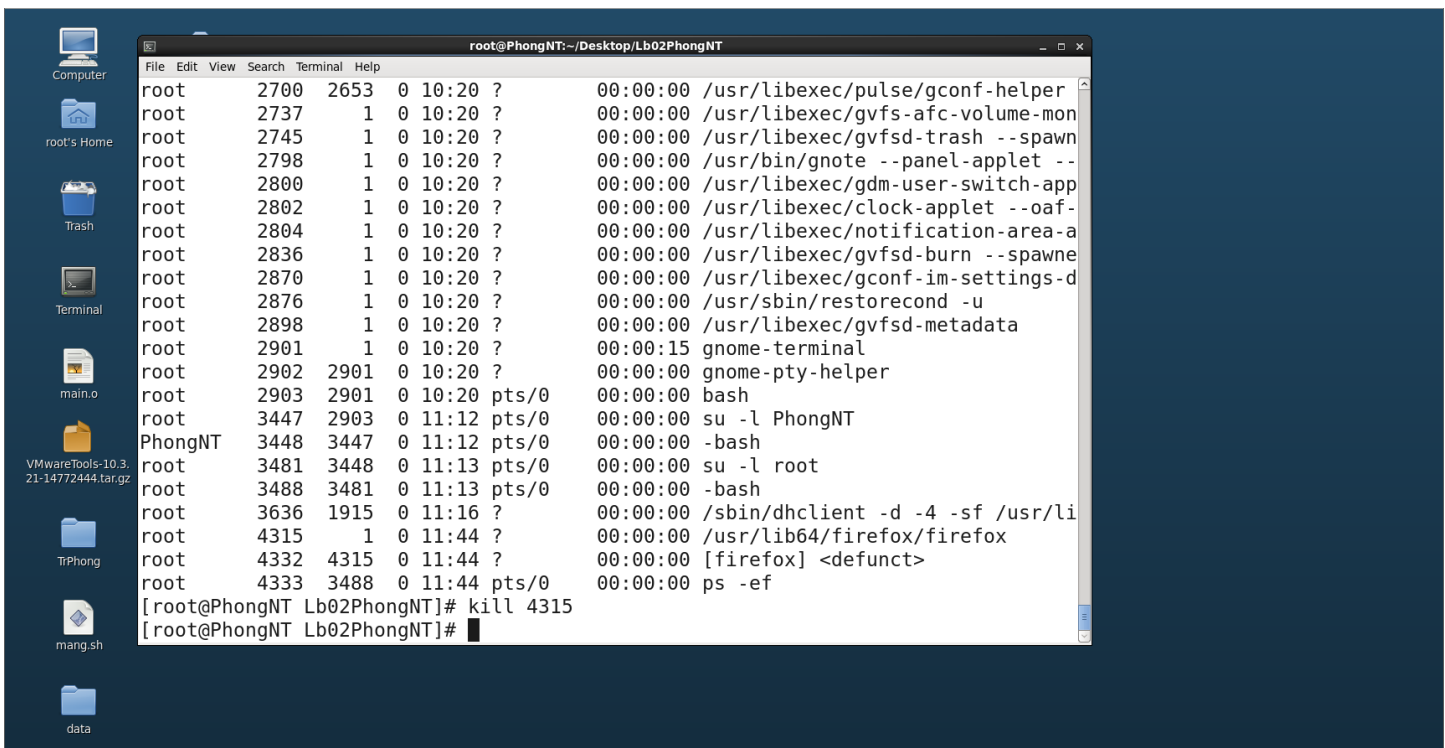
kill –l [<u>signal</u>]

What does it do? Terminate a process.

Example:

```
root        2686       1   0 10:20 ?        00:00:00 /usr/libexec/gvfs-gphoto2-volume
root        2700    2653   0 10:20 ?        00:00:00 /usr/libexec/pulse/gconf-helper
root        2737       1   0 10:20 ?        00:00:00 /usr/libexec/gvfs-afc-volume-mon
root        2745       1   0 10:20 ?        00:00:00 /usr/libexec/gvfsd-trash --spawn
root        2798       1   0 10:20 ?        00:00:00 /usr/bin/gnote --panel-applet --
root        2800       1   0 10:20 ?        00:00:00 /usr/libexec/gdm-user-switch-app
root        2802       1   0 10:20 ?        00:00:00 /usr/libexec/clock-applet --oaf-
root        2804       1   0 10:20 ?        00:00:00 /usr/libexec/notification-area-a
root        2836       1   0 10:20 ?        00:00:00 /usr/libexec/gvfsd-burn --spawne
root        2870       1   0 10:20 ?        00:00:00 /usr/libexec/gconf-im-settings-d
root        2876       1   0 10:20 ?        00:00:00 /usr/sbin/restorecond -u
root        2898       1   0 10:20 ?        00:00:00 /usr/libexec/gvfsd-metadata
root        2901       1   0 10:20 ?        00:00:15 gnome-terminal
root        2902    2901   0 10:20 ?        00:00:00 gnome-pty-helper
root        2903    2901   0 10:20 pts/0    00:00:00 bash
root        3447    2903   0 11:12 pts/0    00:00:00 su -l PhongNT
PhongNT     3448    3447   0 11:12 pts/0    00:00:00 -bash
root        3481    3448   0 11:13 pts/0    00:00:00 su -l root
root        3488    3481   0 11:13 pts/0    00:00:00 -bash
root        3636    1915   0 11:16 ?        00:00:00 /sbin/dhclient -d -4 -sf /usr/li
root        4315       1   0 11:44 ?        00:00:00 /usr/lib64/firefox/firefox
root        4332    4315   0 11:44 ?        00:00:00 [firefox] <defunct>
root        4333    3488   0 11:44 pts/0    00:00:00 ps -ef
[root@PhongNT Lb02PhongNT]#
```

15 FIREFOX IS RUNNING WITH PID = 4315

```
root        2700    2653   0 10:20 ?        00:00:00 /usr/libexec/pulse/gconf-helper
root        2737       1   0 10:20 ?        00:00:00 /usr/libexec/gvfs-afc-volume-mon
root        2745       1   0 10:20 ?        00:00:00 /usr/libexec/gvfsd-trash --spawn
root        2798       1   0 10:20 ?        00:00:00 /usr/bin/gnote --panel-applet --
root        2800       1   0 10:20 ?        00:00:00 /usr/libexec/gdm-user-switch-app
root        2802       1   0 10:20 ?        00:00:00 /usr/libexec/clock-applet --oaf-
root        2804       1   0 10:20 ?        00:00:00 /usr/libexec/notification-area-a
root        2836       1   0 10:20 ?        00:00:00 /usr/libexec/gvfsd-burn --spawne
root        2870       1   0 10:20 ?        00:00:00 /usr/libexec/gconf-im-settings-d
root        2876       1   0 10:20 ?        00:00:00 /usr/sbin/restorecond -u
root        2898       1   0 10:20 ?        00:00:00 /usr/libexec/gvfsd-metadata
root        2901       1   0 10:20 ?        00:00:15 gnome-terminal
root        2902    2901   0 10:20 ?        00:00:00 gnome-pty-helper
root        2903    2901   0 10:20 pts/0    00:00:00 bash
root        3447    2903   0 11:12 pts/0    00:00:00 su -l PhongNT
PhongNT     3448    3447   0 11:12 pts/0    00:00:00 -bash
root        3481    3448   0 11:13 pts/0    00:00:00 su -l root
root        3488    3481   0 11:13 pts/0    00:00:00 -bash
root        3636    1915   0 11:16 ?        00:00:00 /sbin/dhclient -d -4 -sf /usr/li
root        4315       1   0 11:44 ?        00:00:00 /usr/lib64/firefox/firefox
root        4332    4315   0 11:44 ?        00:00:00 [firefox] <defunct>
root        4333    3488   0 11:44 pts/0    00:00:00 ps -ef
[root@PhongNT Lb02PhongNT]# kill 4315
[root@PhongNT Lb02PhongNT]#
```

16 FIREFOX DISAPPEARED

s) jobs

Syntax:

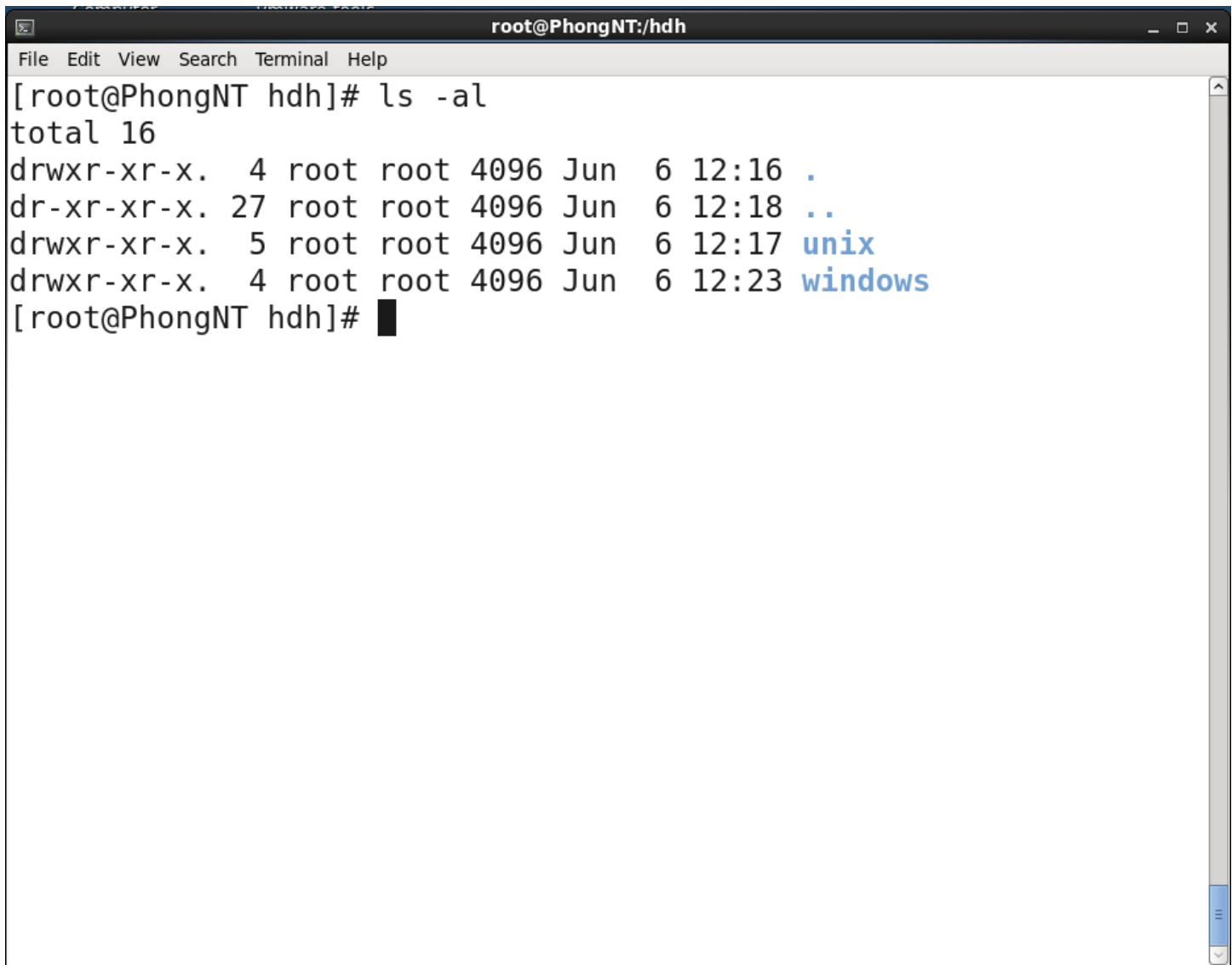**jobs** [**-lnprs**] [jobspec ...]

jobs –x command [args ...]

What does it do? List the active jobs.

Example:

```
root@PhongNT:~                                                      _ □ ✕
File  Edit  View  Search  Terminal  Help
[root@PhongNT ~]# jobs
[2]-   Stopped                 firefox
[3]+   Stopped                 gnome-calculator
[root@PhongNT ~]# ▮
```

2 - File management
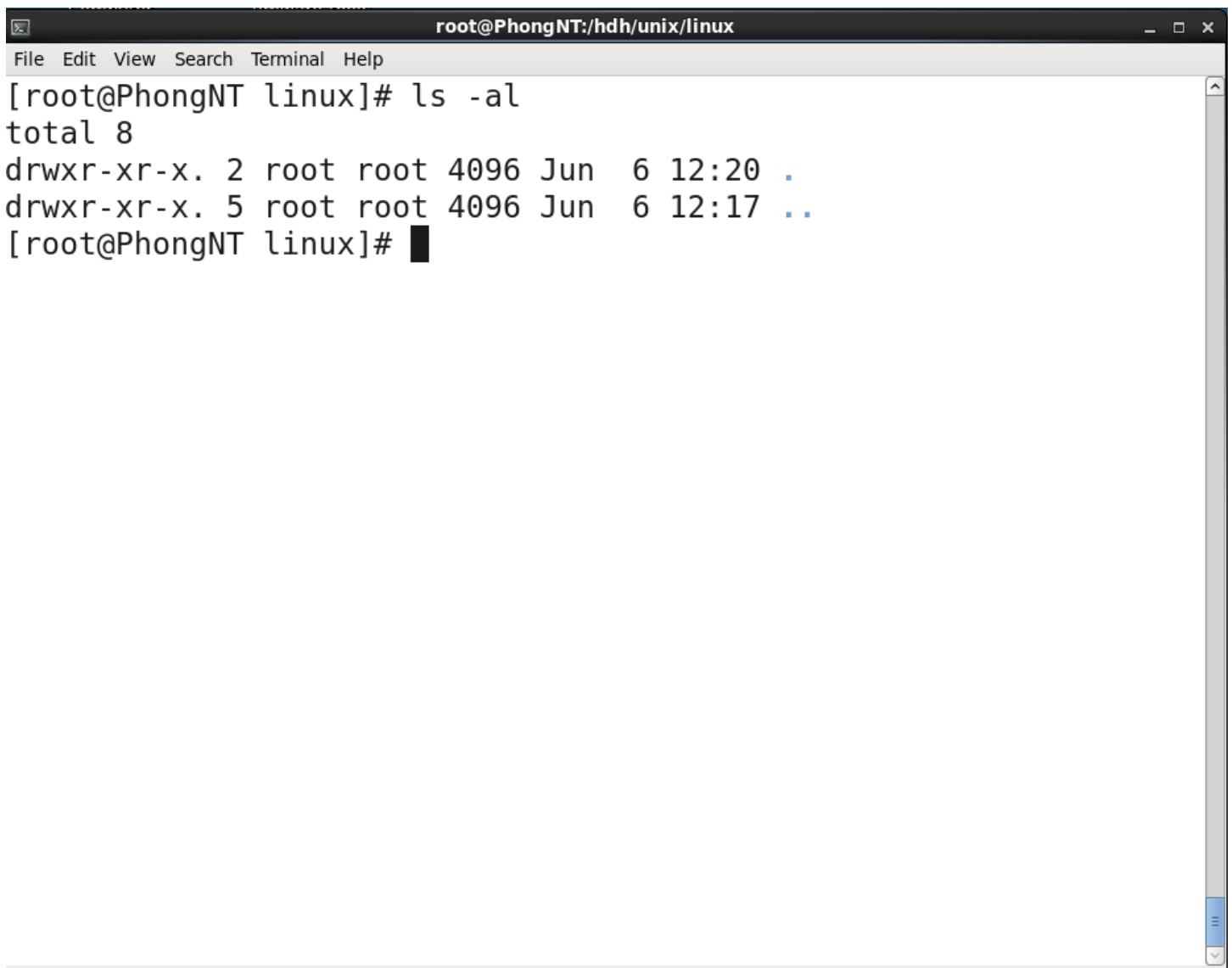

```
root@PhongNT:/hdh
File  Edit  View  Search  Terminal  Help
[root@PhongNT hdh]# ls -al
total 16
drwxr-xr-x.  4 root root 4096 Jun  6 12:16 .
dr-xr-xr-x. 27 root root 4096 Jun  6 12:18 ..
drwxr-xr-x.  5 root root 4096 Jun  6 12:17 unix
drwxr-xr-x.  4 root root 4096 Jun  6 12:23 windows
[root@PhongNT hdh]# 
```

17 THE 'HDH' FOLDER

```
[root@PhongNT unix]# ls -al
total 20
drwxr-xr-x. 5 root root 4096 Jun  6 12:17 .
drwxr-xr-x. 4 root root 4096 Jun  6 12:16 ..
drwxr-xr-x. 2 root root 4096 Jun  6 12:22 freebsd
drwxr-xr-x. 2 root root 4096 Jun  6 12:20 linux
drwxr-xr-x. 3 root root 4096 Jun  6 12:22 openbsd
[root@PhongNT unix]#
```

18 THE 'UNIX' FOLDER

19 THE 'FREEBSD' FOLDER

```
[root@PhongNT linux]# ls -al
total 8
drwxr-xr-x. 2 root root 4096 Jun  6 12:20 .
drwxr-xr-x. 5 root root 4096 Jun  6 12:17 ..
[root@PhongNT linux]# 
```

20 THE 'LINUX' FOLDER

File   Edit   View   Search   Terminal   Help

```
[root@PhongNT openbsd]# ls -al
total 12
drwxr-xr-x. 3 root root 4096 Jun  6 12:22 .
drwxr-xr-x. 5 root root 4096 Jun  6 12:17 ..
drwxr-xr-x. 5 root root 4096 Jun  6 12:19 wins
[root@PhongNT openbsd]# cd wins
[root@PhongNT wins]# ls -al
total 20
drwxr-xr-x. 5 root root 4096 Jun  6 12:19 .
drwxr-xr-x. 3 root root 4096 Jun  6 12:22 ..
drwxr-xr-x. 2 root root 4096 Jun  6 12:19 2000
drwxr-xr-x. 2 root root 4096 Jun  6 12:19 2003
drwxr-xr-x. 2 root root 4096 Jun  6 12:19 98
[root@PhongNT wins]# cd 98
[root@PhongNT 98]# ls -al
total 12
drwxr-xr-x. 2 root root 4096 Jun  6 12:19 .
drwxr-xr-x. 5 root root 4096 Jun  6 12:19 ..
-rw-r--r--. 1 root root   64 Jun  6 12:19 thoca.txt
[root@PhongNT 98]# 
```

21 THE 'OPENBSD' FOLDER

```
root@PhongNT:/hdh/windows/98/backup

File  Edit  View  Search  Terminal  Help

[root@PhongNT windows]# ls -al
total 16
drwxr-xr-x. 4 root root 4096 Jun  6 12:23 .
drwxr-xr-x. 4 root root 4096 Jun  6 12:16 ..
drwxr-xr-x. 2 root root 4096 Jun  6 12:26 2003
drwxr-xr-x. 3 root root 4096 Jun  6 12:28 98
[root@PhongNT windows]# cd 98
[root@PhongNT 98]# ls -al
total 32
drwxr-xr-x. 3 root root  4096 Jun  6 12:28 .
drwxr-xr-x. 4 root root  4096 Jun  6 12:23 ..
drwxr-xr-x. 2 root root  4096 Jun  6 12:29 backup
-rw-r--r--. 1 root root 10240 Jun  6 12:26 thoca.tar
-rw-r--r--. 1 root root   167 Jun  6 12:26 thoca.tar.gz
-rw-r--r--. 1 root root    64 Jun  6 12:18 thoca.txt
[root@PhongNT 98]# cd backup
[root@PhongNT backup]# ls -al
total 12
drwxr-xr-x. 2 root root 4096 Jun  6 12:29 .
drwxr-xr-x. 3 root root 4096 Jun  6 12:28 ..
-rw-r--r--. 1 root root   64 Jun  6 12:18 thoca.txt
[root@PhongNT backup]# █
```

22 THE 'WINDOWS' FOLDER