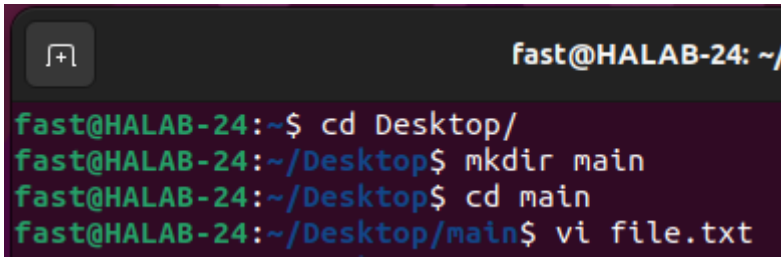
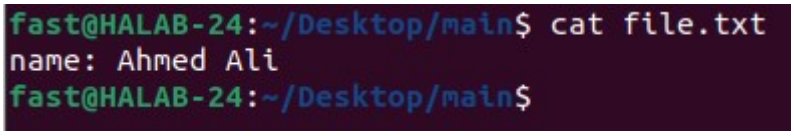
NAME: AHMED ALI
ROLL NO. 22p-9318
SECTION: BS(SE)-5B

OPERATING SYSTEMS LAB

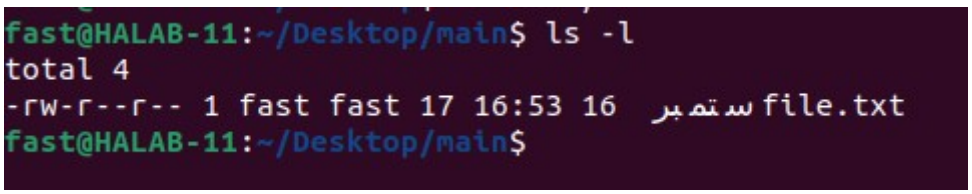


The Vim editor appears you have to press “I” to insert and and type whatever you want:

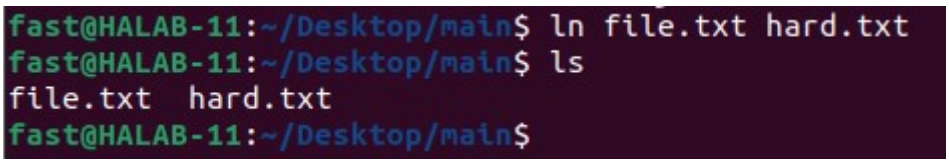
then press escape and after doing entering type :wq! To exit.



ls -l is used to list all files in main directory along with links of each file



The “ln file.txt hard.txt” makes a deep copy of file.txt



```
fast@HALAB-11:~/Desktop/main$ ls -l
total 8
-rw-r--r-- 2 fast fast 17 16:53 16 ستمبر file.txt
-rw-r--r-- 2 fast fast 17 16:53 16 ستمبر hard.txt
fast@HALAB-11:~/Desktop/main$
```

I have write my roll no and section, name was already written as I have created a deep copy and typed in deep copy.

```
fast@HALAB-11: ~/Desktop/main
name: Ahmed Ali
roll no: 22p-9318
Section: BS(SE)-5B
```

To check whether it is written or not: I used cat command

```
fast@HALAB-11:~/Desktop/main$ vim hard.txt
fast@HALAB-11:~/Desktop/main$ cat hard.txt
name: Ahmed Ali
roll no: 22p-9318
Section: BS(SE)-5B
fast@HALAB-11:~/Desktop/main$
```

```
fast@HALAB-11:~/Desktop/main$ vi file.txt
fast@HALAB-11:~/Desktop/main$ cat hard.txt
name: Ahmed Ali
roll no: 22p-9318
Section: BS(SE)-5B
fast@HALAB-11:~/Desktop/main$
```

```
fast@HALAB-11:~/Desktop/main$ rm file.txt
fast@HALAB-11:~/Desktop/main$ vi hard.txt
fast@HALAB-11:~/Desktop/main$ cat hard.txt
name: Ahmed Ali
roll no: 22p-9318
Section: BS(SE)-5B

helloo Mr. Ahmed
fast@HALAB-11:~/Desktop/main$
```

```
fast@HALAB-11:~/Desktop/main$ rm hard.txt
fast@HALAB-11:~/Desktop/main$ ls
fast@HALAB-11:~/Desktop/main$ vim file.txt
fast@HALAB-11:~/Desktop/main$ cat file.txt
hello world
```

Command to create a Soft link is: ln -s [original filename] [link name] shallow copy

```
fast@HALAB-11:~/Desktop/main$ ln -s file.txt soft.txt
fast@HALAB-11:~/Desktop/main$ ls -l
total 4
-rw-rw-r-- 1 fast fast 12 17:26 16 ستمبر file.txt
lrwxrwxrwx 1 fast fast  8 17:28 16 ستمبر soft.txt -> file.txt
fast@HALAB-11:~/Desktop/main$
```

rm * will delate all files within a directory

```
fast@HALAB-11:~/Desktop/main$ rm *
fast@HALAB-11:~/Desktop/main$ ls
fast@HALAB-11:~/Desktop/main$
```

make a file named as blankfile

```
fast@HALAB-11:~/Desktop/main$ touch blankfile
fast@HALAB-11:~/Desktop/main$ ls
blankfile
```

Make a directory named as blankdir

```
fast@HALAB-11:~/Desktop/main$ mkdir blankdir
fast@HALAB-11:~/Desktop/main$ ls
blankdir  blankfile
fast@HALAB-11:~/Desktop/main$
```

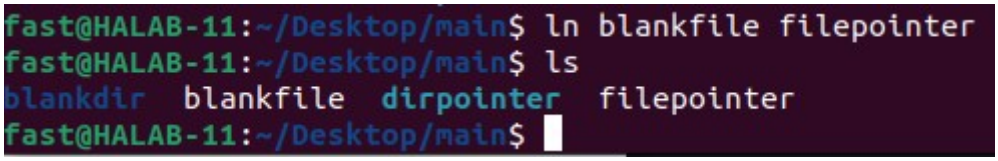
ln: The command to create links (either hard or symbolic).

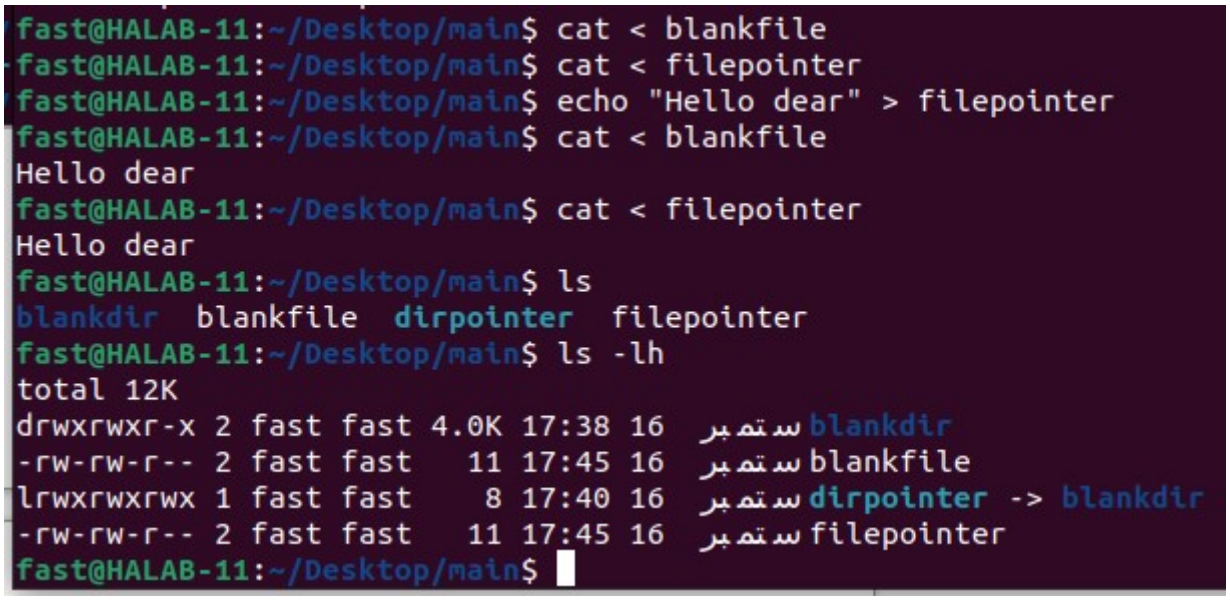
- -s: This flag specifies that a **symbolic link** should be created instead of a hard link.
- blankdir: The target directory that the symbolic link will point to.
- dirpointer: The name of the symbolic link being created.

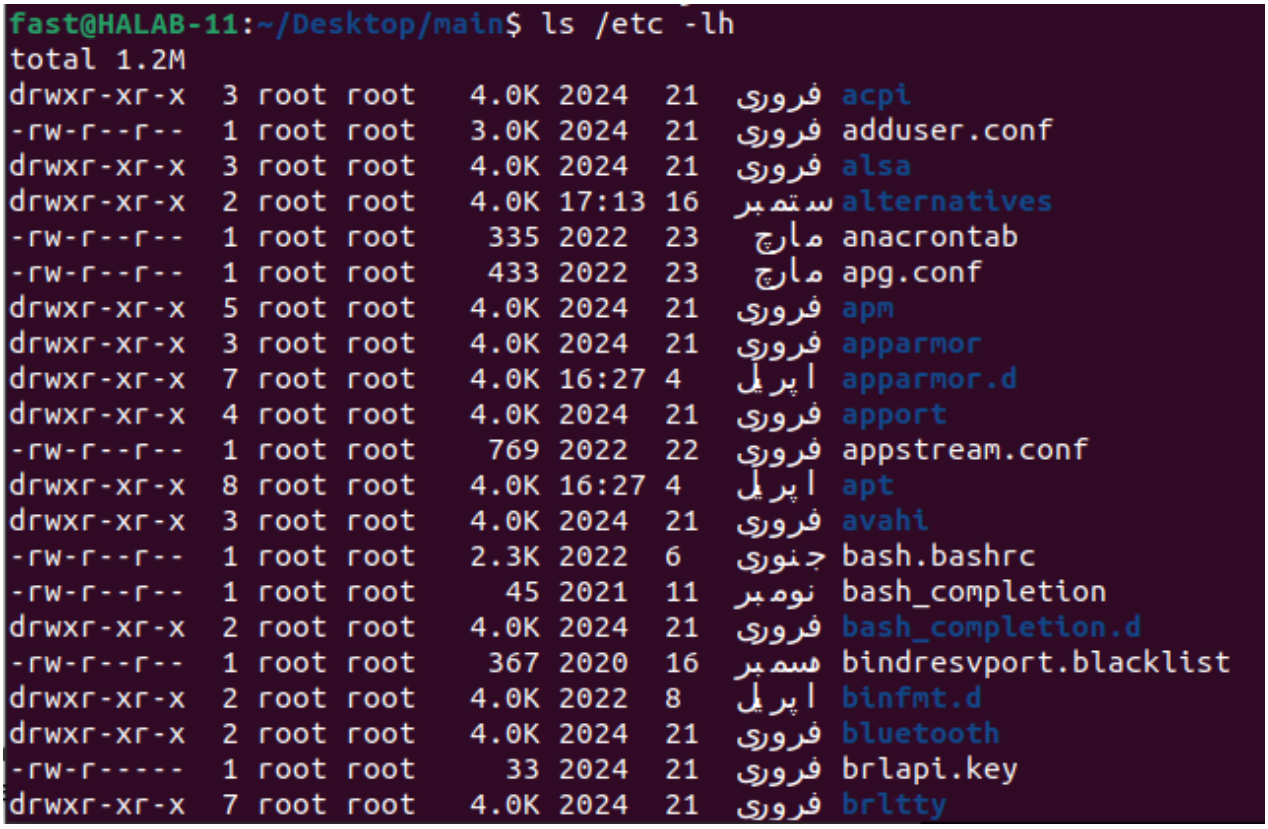
```
fast@HALAB-11:~/Desktop/main$ ln blankdir dirpointer
ln: blankdir: hard link not allowed for directory
fast@HALAB-11:~/Desktop/main$ ln -s blankdir dirpointer
fast@HALAB-11:~/Desktop/main$ ls
blankdir  blankfile  dirpointer
fast@HALAB-11:~/Desktop/main$
```

dirpointer is now a **symbolic link** to blankdir.

- Any time you access dirpointer, the system will redirect you to blankdir.
- Changes made in blankdir will be reflected when accessing dirpointer, and vice versa, since dirpointer is just a pointer







We can view the lost information using the more or less commands.

(MORE ON NEXT PAGE)

```
fast@HALAB-11:~/Desktop/main$ ls /etc -lh | more
total 1.2M
drwxr-xr-x  3 root root   4.0K 2024  21  فروری acpi
-rw-r--r--  1 root root   3.0K 2024  21  فروری adduser.conf
drwxr-xr-x  3 root root   4.0K 2024  21  فروری alsa
drwxr-xr-x  2 root root   4.0K 17:13 16  ستمبر alternatives
-rw-r--r--  1 root root    335 2022  23   مارچ anacrontab
-rw-r--r--  1 root root    433 2022  23   مارچ apg.conf
drwxr-xr-x  5 root root   4.0K 2024  21  فروری apm
drwxr-xr-x  3 root root   4.0K 2024  21  فروری apparmor
drwxr-xr-x  7 root root   4.0K 16:27 4   اپریل apparmor.d
drwxr-xr-x  4 root root   4.0K 2024  21  فروری apport
-rw-r--r--  1 root root    769 2022  22  فروری appstream.conf
drwxr-xr-x  8 root root   4.0K 16:27 4   اپریل apt
drwxr-xr-x  3 root root   4.0K 2024  21  فروری avahi
-rw-r--r--  1 root root   2.3K 2022  6   جنوری bash.bashrc
-rw-r--r--  1 root root     45 2021  11  نومبر bash_completion
drwxr-xr-x  2 root root   4.0K 2024  21  فروری bash_completion.d
-rw-r--r--  1 root root    367 2020  16  ستمبر bindresvport.blacklis
drwxr-xr-x  2 root root   4.0K 2022  8   اپریل binfmt.d
drwxr-xr-x  2 root root   4.0K 2024  21  فروری bluetooth
-rw-r-----  1 root root     33 2024  21  فروری brlapi.key
drwxr-xr-x  7 root root   4.0K 2024  21  فروری brltty
-rw-r--r--  1 root root    29K 2022  28    جون brltty.conf
```

To exit press q.

ls /etc -lh | less

```
fast@HALAB-11:~/Desktop/main$ ls /etc -lh | less
```

```
total 1.2M
drwxr-xr-x  3 root root   4.0K 2024  21  فروری acpi
-rw-r--r--  1 root root   3.0K 2024  21  فروری adduser.conf
drwxr-xr-x  3 root root   4.0K 2024  21  فروری alsa
drwxr-xr-x  2 root root   4.0K 17:13 16  ستمبر alternatives
-rw-r--r--  1 root root    335 2022  23   مارچ anacrontab
-rw-r--r--  1 root root    433 2022  23   مارچ apg.conf
drwxr-xr-x  5 root root   4.0K 2024  21  فروری apm
drwxr-xr-x  3 root root   4.0K 2024  21  فروری apparmor
drwxr-xr-x  7 root root   4.0K 16:27 4   اپریل apparmor.d
drwxr-xr-x  4 root root   4.0K 2024  21  فروری apport
-rw-r--r--  1 root root    769 2022  22  فروری appstream.conf
drwxr-xr-x  8 root root   4.0K 16:27 4   اپریل apt
drwxr-xr-x  3 root root   4.0K 2024  21  فروری avahi
-rw-r--r--  1 root root   2.3K 2022  6   جنوری bash.bashrc
-rw-r--r--  1 root root     45 2021  11  نومبر bash_completion
drwxr-xr-x  2 root root   4.0K 2024  21  فروری bash_completion.d
-rw-r--r--  1 root root    367 2020  16  ستمبر bindresvport.blacklist
drwxr-xr-x  2 root root   4.0K 2022  8   اپریل binfmt.d
drwxr-xr-x  2 root root   4.0K 2024  21  فروری bluetooth
-rw-r-----  1 root root     33 2024  21  فروری brlapi.key
drwxr-xr-x  7 root root   4.0K 2024  21  فروری brltty
-rw-r--r--  1 root root    29K 2022  28    جون brltty.conf
:
```

less is more powerful, allowing bi-directional navigation (both up and down).

more is simpler, only allowing forward navigation

```
fast@HALAB-11:~/Desktop/main$ vim file.txt
fast@HALAB-11:~/Desktop/main$ more file.txt
hello fast

fast@HALAB-11:~/Desktop/main$
```

denying permissions;

```
fast@HALAB-11:~/Desktop/main$ find / -name "*.pdf"
```

```
fast@HALAB-11:~/Desktop/main$ find / -name "*.pdf"
find: ‘/sys/kernel/tracing’: Permission denied
find: ‘/sys/kernel/debug’: Permission denied
find: ‘/sys/fs/pstore’: Permission denied
find: ‘/sys/fs/bpf’: Permission denied
find: ‘/root’: Permission denied
find: ‘/proc/tty/driver’: Permission denied
find: ‘/proc/1/task/1/fd’: Permission denied
find: ‘/proc/1/task/1/fdinfo’: Permission denied
find: ‘/proc/1/task/1/ns’: Permission denied
find: ‘/proc/1/fd’: Permission denied
find: ‘/proc/1/map_files’: Permission denied
find: ‘/proc/1/fdinfo’: Permission denied
find: ‘/proc/1/ns’: Permission denied
find: ‘/proc/2/task/2/fd’: Permission denied
find: ‘/proc/2/task/2/fdinfo’: Permission denied
find: ‘/proc/2/task/2/ns’: Permission denied
find: ‘/proc/2/fd’: Permission denied
find: ‘/proc/2/map_files’: Permission denied
find: ‘/proc/2/fdinfo’: Permission denied
find: ‘/proc/2/ns’: Permission denied
find: ‘/proc/3/task/3/fd’: Permission denied
```

now I have used sudo which a lot permission to it to find in root directories

```
fast@HALAB-11:~/Desktop/main$ sudo find / -name "*.pdf"
[sudo] password for fast:
/usr/lib/libreoffice/share/xpdfimport/xpdfimport_err.pdf
/usr/share/doc/shared-mime-info/shared-mime-info-spec.pdf
/usr/share/doc/printer-driver-foo2zjs/manual.pdf
/usr/share/cups/data/topsecret.pdf
/usr/share/cups/data/default.pdf
/usr/share/cups/data/standard.pdf
/usr/share/cups/data/form_russian.pdf
/usr/share/cups/data/classified.pdf
/usr/share/cups/data/confidential.pdf
/usr/share/cups/data/default-testpage.pdf
/usr/share/cups/data/form_english.pdf
/usr/share/cups/data/secret.pdf
/usr/share/cups/data/unclassified.pdf
/snap/snap-store/959/usr/share/doc/shared-mime-info/shared-mime-info-spec.pdf
/home/fast/Documents/p224949-task3.pdf
find: ‘/run/user/1000/doc’: Permission denied
find: ‘/run/user/1000/gvfs’: Permission denied
fast@HALAB-11:~/Desktop/main$
```

finding file from root directory:

```
fast@HALAB-11:~/Desktop/main$ sudo find / -name file
/sys/kernel/security/apparmor/features/file
/usr/lib/file
/usr/lib/apt/methods/file
/usr/share/bug/file
/usr/share/bash-completion/completions/file
/usr/share/doc/file
/usr/share/file
/usr/share/perl5/URI/file
/usr/bin/file
/snap/core22/1612/usr/share/bash-completion/completions/file
/snap/core22/1380/usr/share/bash-completion/completions/file
find: ‘/run/user/1000/doc’: Permission denied
find: ‘/run/user/1000/gvfs’: Permission denied
fast@HALAB-11:~/Desktop/main$
```

first we have only entered file name now I have typed the extension of the file too:

```
fast@HALAB-11:~/Desktop/main$ sudo find / -name file.txt
/home/fast/Desktop/main/file.txt
/home/fast/main/file.txt
/home/fast/file.txt
find: ‘/run/user/1000/doc’: Permission denied
find: ‘/run/user/1000/gvfs’: Permission denied
fast@HALAB-11:~/Desktop/main$
```

Finding directory:

```
fast@HALAB-11:~/Desktop/main$ sudo find . -name blankdir
./blankdir
fast@HALAB-11:~/Desktop/main$
```

Searching with file Extention
sudo find / -name "*.pdf"
sudo find . -name "*.c"
sudo find . -name "*.cpp"
sudo find . -name "*.txt"
find Desktop -name "*.txt" will find all txt files in Desktop directory.

```
fast@HALAB-11:~/Desktop/main$ sudo find . -name "*.txt"
./file.txt
```

```
fast@HALAB-11:~/Desktop/main$ sudo find / -name "*.pdf"
/usr/lib/libreoffice/share/xpdfimport/xpdfimport_err.pdf
/usr/share/doc/shared-mime-info/shared-mime-info-spec.pdf
/usr/share/doc/printer-driver-foo2zjs/manual.pdf
/usr/share/cups/data/topsecret.pdf
/usr/share/cups/data/default.pdf
/usr/share/cups/data/standard.pdf
/usr/share/cups/data/form_russian.pdf
/usr/share/cups/data/classified.pdf
/usr/share/cups/data/confidential.pdf
/usr/share/cups/data/default-testpage.pdf
/usr/share/cups/data/form_english.pdf
/usr/share/cups/data/secret.pdf
/usr/share/cups/data/unclassified.pdf
/snap/snap-store/959/usr/share/doc/shared-mime-info/shared-mime-info-spec.pdf
/home/fast/Documents/p224949-task3.pdf
```

locate command:

```
fast@HALAB-11:~/Desktop/main$ locate file.txt
/home/fast/file.txt
/home/fast/Desktop/main/file.txt
/home/fast/main/file.txt
/usr/share/doc/alsa-base/driver/Procfile.txt.gz
fast@HALAB-11:~/Desktop/main$
```

The locate command will list all paths where that file is found. It searches quickly because it uses the updated database of file locations.

QUESTION:

locate command search in database while file command search in filesystem what is meant by database and filesystem

ANSWER BELOW:

- **Database**: A database is a place where organized data is stored, like a table of records. It's used to store information in a structured way so it can be easily searched and managed.
- **Filesystem**: A filesystem is how your computer stores and organizes files on a hard drive or other storage. It keeps track of where files are saved and how to find them when needed.

So, a **database** holds organized information, and a **filesystem** manages how files are stored on your computer.