

1. Vi mycv

```
name:mostafa
age:24
school:moharmbek high school
college:computer science
experience:machine learning
~
```

:wq for save and exit

3. By pressing "j"
4. By pressing "k"
5. / age
6. Press 5 then G
7. dd delete current line
5 Then G move to line 5 then dd to delete
8. Press A jump to the end of the line and enter insert mode

Check if Root Password is Set:

```
mostafa@mostafa-VirtualBox:~$ sudo passwd -S root
root L 07/27/2025 0 99999 7 -1
```

-S status

root L means: Password is locked (no password set, only sudo works).

If was root P means : Password is set.

How to Change the Root Password

```
mostafa@mostafa-VirtualBox:~$ sudo passwd root
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
mostafa@mostafa-VirtualBox:~$ sudo passwd -S root
root P 07/29/2025 0 99999 7 -1
```

root P means : Password is set

- 9.

```
mostafa@mostafa-VirtualBox:~$ sudo useradd -m -c "Islam Asker" -s /bin/bash islam
mostafa@mostafa-VirtualBox:~$ sudo passwd islam
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
```

-m create home dir
-c comment
-s shell

10.

```
mostafa@mostafa-VirtualBox:~$ sudo useradd -m -c "Bad User" -s /bin/bash baduser
mostafa@mostafa-VirtualBox:~$ sudo passwd baduser
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
```

11.

```
mostafa@mostafa-VirtualBox:~$ sudo groupadd -g 30000 pgroup
```

-g group id

12.

```
mostafa@mostafa-VirtualBox:~$ sudo groupadd badgroup
```

13.

```
mostafa@mostafa-VirtualBox:~$ sudo usermod -aG pgroup islam
```

-a append user to group without remove from other groups
-G append group name ...

14.

```
mostafa@mostafa-VirtualBox:~$ sudo passwd islam
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: password updated successfully
```

15.

```
mostafa@mostafa-VirtualBox:~$ sudo chage -M 30 islam
mostafa@mostafa-VirtualBox:~$ sudo chage -l islam
Last password change           : 2025 ,30 يول
Password expires                : 2025 ,29 أغي
Password inactive               : never
Account expires                 : never
Minimum number of days between password change : 0
Maximum number of days between password change : 30
Number of days of warning before password expires : 7
```

-M 30: Sets the maximum number of days the password is valid to 30.

16.

```
mostafa@mostafa-VirtualBox:~$ sudo usermod -L baduser
```

17.

```
mostafa@mostafa-VirtualBox:~$ sudo userdel -r baduser
userdel: baduser mail spool (/var/mail/baduser) not found
```

18.

```
mostafa@mostafa-VirtualBox:~$ sudo groupdel badgroup
```

19.

```
mostafa@mostafa-VirtualBox:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs            390M  1.6M  389M   1% /run
/dev/sda2        49G   15G   32G  33% /
tmpfs            2.0G    0  2.0G   0% /dev/shm
tmpfs            5.0M  4.0K  5.0M   1% /run/lock
efivarfs         256K   58K  194K  23% /sys/firmware/efi/efivars
/dev/sda1        511M   6.1M  505M   2% /boot/efi
tmpfs            390M  116K  390M   1% /run/user/1000
```

answer: /dev/sda2

20.

```
mostafa@mostafa-VirtualBox:~$ sudo du -sh /* 2>/dev/null | sort -h -r
6.3G    /usr
5.0G    /snap
4.4G    /var
3.9G    /swapfile
203M    /boot
```

Sudo : Required to access system directories.

du -sh /*: Estimates disk usage (-s for summary, -h for human-readable) for all top-level directories in /.

2>/dev/null: Silences "permission denied" errors.

sort -h -r: Sorts results by size (human-readable) in descending order.

21.

```
mostafa@mostafa-VirtualBox:~$ sudo du -sh /home/* 2>/dev/null | sort -h -r
41M     /home/mostafa
16K     /home/islam
```

Sudo : Required to access system directories.

du -sh /*: Estimates disk usage (-s for summary, -h for human-readable) for all top-level directories in /home/.

2>/dev/null: Silences "permission denied" errors.

sort -h -r: Sorts results by size (human-readable) in descending order.

A screenshot of a terminal window with a dark purple background. The terminal text shows a command prompt 'mostafa@mostafa-VirtualBox: ~\$' followed by 'sudo -i nautilus'. Below this, several lines of output are visible, including '(org.gnome.Nautilus:12883): libunity-CRITICAL **: 14:13:14.784: file unity-l...', '-launch" (No such file or directory) (g-exec-error-quark, 8)', and '(org.gnome.Nautilus:12883): WARNING **: 14:13:15.069: Unable to get conte...'. Overlaid on the terminal is a Nautilus file manager window. The window title is 'Home' and it shows a sidebar with 'Starred', 'Home', 'Desktop', 'Trash', and 'Other Locations'. The main pane displays a folder icon labeled 'snap'.

- i to open with root privileges

```
mostafa@mostafa-VirtualBox:~$ mkdir myteam
mostafa@mostafa-VirtualBox:~$ ls
Desktop  Documents  Downloads  Music  mycv  myteam  Pictures  Public  snap  Templates  Videos
```

```
mostafa@mostafa-VirtualBox:~$ chmod u=r,go= ~/myteam
mostafa@mostafa-VirtualBox:~$ ls -ld ~/myteam
dr----- 2 mostafa mostafa 4096 14:18 30 يول /home/mostafa/myteam
```

go=: Group/others get no permissions (---).

```
mostafa@mostafa-VirtualBox:~$ chmod 400 ~/myteam
mostafa@mostafa-VirtualBox:~$ ls -ld ~/myteam
dr----- 2 mostafa mostafa 4096 14:18 30 يول /home/mostafa/myteam
```

Owner: read-only (4), others: no access (0)

```
mostafa@mostafa-VirtualBox:~$ su islam
Password:
islam@mostafa-VirtualBox:/home/mostafa$ ls -l /home/mostafa/myteam
ls: cannot access '/home/mostafa/myteam': Permission denied
islam@mostafa-VirtualBox:/home/mostafa$ cat /home/mostafa/myteam
cat: /home/mostafa/myteam: Permission denied
```

28.

```
mostafa@mostafa-VirtualBox:~$ chmod 631 mycv
mostafa@mostafa-VirtualBox:~$ ls -l mycv
-rw--wx--x 1 mostafa mostafa 64 14:10 28 يول mycv
mostafa@mostafa-VirtualBox:~$ chmod u=rw,g=wx,o=x mycv
mostafa@mostafa-VirtualBox:~$ ls -l mycv
-rw--wx--x 1 mostafa mostafa 64 14:10 28 يول mycv
```

29.

```
mostafa@mostafa-VirtualBox:~$ umask 035
```

30. Default Maximum Permissions for New Files and Directories

1. For Files:

Maximum Default Permission: 666 (rw-rw-rw-)

Owner: Read + Write (rw-)

Group: Read + Write (rw-)

Others: Read + Write (rw-)

Why?

Linux intentionally excludes execute (x) by default for security. Execute permissions must be manually added

2. For Directories:

Maximum Default Permission: 777 (rwxrwxrwx)

Owner: Read + Write + Execute (rwx)

Group: Read + Write + Execute (rwx)

Others: Read + Write + Execute (rwx)

Why?

Directories need x (execute) to allow traversal (cd, ls). Without x, even with r, you cannot access contents.

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```
mostafa@mostafa-VirtualBox:~$ umask 777
mostafa@mostafa-VirtualBox:~$ touch testfile
mostafa@mostafa-VirtualBox:~$ mkdir testdir
mostafa@mostafa-VirtualBox:~$ ls -l
total 48
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Desktop
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Documents
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Downloads
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Music
-rw--wx--x 1 mostafa mostafa 64 14:10 28 يول mycv
dr----- 2 mostafa mostafa 4096 14:18 30 يول myteam
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Pictures
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Public
drwx----- 4 mostafa mostafa 4096 01:17 28 يول snap
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Templates
d----- 2 mostafa mostafa 4096 14:56 30 يول testdir
----- 1 mostafa mostafa 0 14:56 30 يول testfile
drwxr-xr-x 2 mostafa mostafa 4096 01:15 28 يول Videos
```

32.

```
mostafa@mostafa-VirtualBox:~$ su islam
Password:
islam@mostafa-VirtualBox:/home/mostafa$ cd
islam@mostafa-VirtualBox:~$ ls -l
total 0
-rw-rw-r-- 1 islam islam 0 14:59 30 يولي copyfile.txt
-rw-rw-r-- 1 islam islam 0 15:02 30 يولي file
islam@mostafa-VirtualBox:~$ exit
exit
mostafa@mostafa-VirtualBox:~$ cp /home/islam/file ~/my_copy
cp: cannot stat '/home/islam/file': Permission denied
mostafa@mostafa-VirtualBox:~$ sudo cp /home/islam/file ~/my_copy
[sudo] password for mostafa:
mostafa@mostafa-VirtualBox:~$ ls -l my_copy
-rw-r--r-- 1 root root 0 15:06 30 يولي my_copy
```

33.

34.	Source File:	r	x
	Target Directory:	w	x
35.	Source File:	x	
	Target Directory:	w	x
36.	w	x	
37.	x		
38.	r	x	
39.	r		
40.	w		

41.

```
mostafa@mostafa-VirtualBox:~$ touch file2.txt
mostafa@mostafa-VirtualBox:~$ chmod 444 file2.txt
mostafa@mostafa-VirtualBox:~$ ls -l file2.txt
-r--r--r-- 1 mostafa mostafa 0 15:22 30 يولي file2.txt
mostafa@mostafa-VirtualBox:~$ echo "new" >> file2.txt
bash: file2.txt: Permission denied
mostafa@mostafa-VirtualBox:~$ rm file2.txt
rm: remove write-protected regular empty file 'file2.txt'?
```

No permission for remove

42.

Files: x is about execution.

Directories: x is about access control.

43.

```
mostafa@mostafa-VirtualBox:~$ cp /bin/rm ~/myrm
mostafa@mostafa-VirtualBox:~$ chmod u+s ~/myrm
mostafa@mostafa-VirtualBox:~$ ls -l ~/myrm
-rwsr-xr-x 1 mostafa mostafa 59912 15:29 30 يولي /home/mostafa/myrm
```

The s in -rws indicates setuid is set.

When another user runs ~/myrm:

The program runs with your user's privileges (not theirs) because of setuid.

They can delete your files, even if they normally couldn't.