NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES

PROGRAM: SOFTWARE ENGINEERING

OPERATING SYSTEMS LAB

LAB TASK- 02

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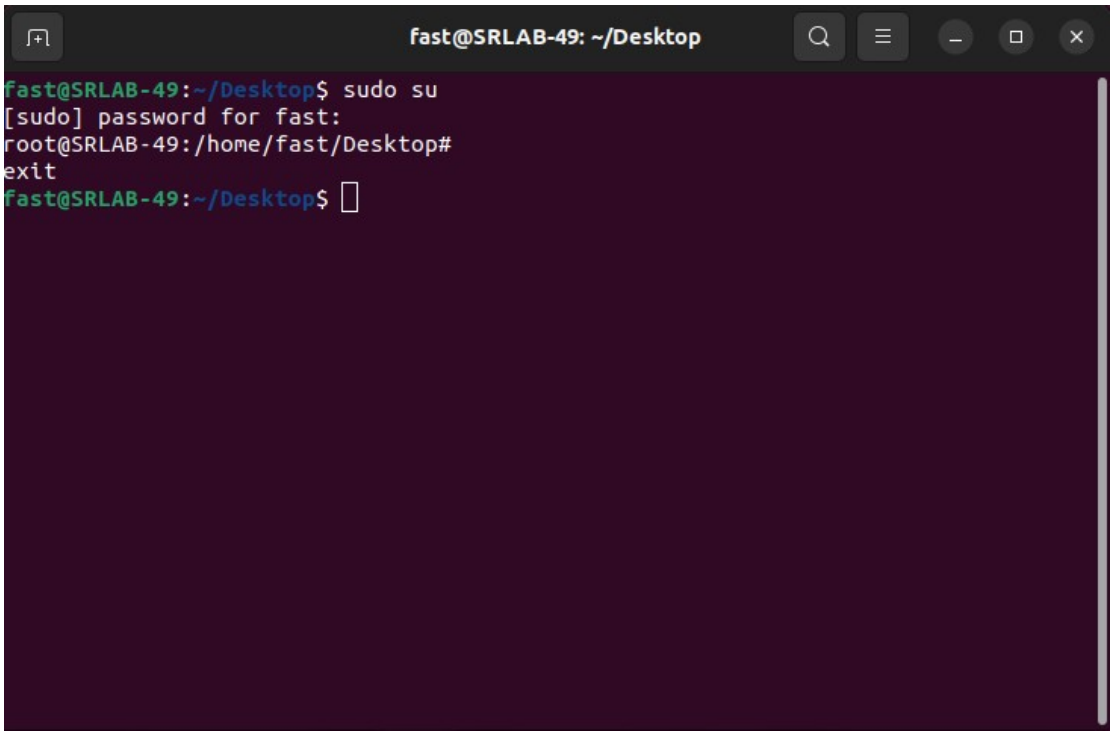
1. What is Sudo:

*`**sudo**` stands for "**superuser do**."*
It's a command used in Linux operating systems to allow a permitted user to execute a command with the security privileges of another user, usually the superuser (root).

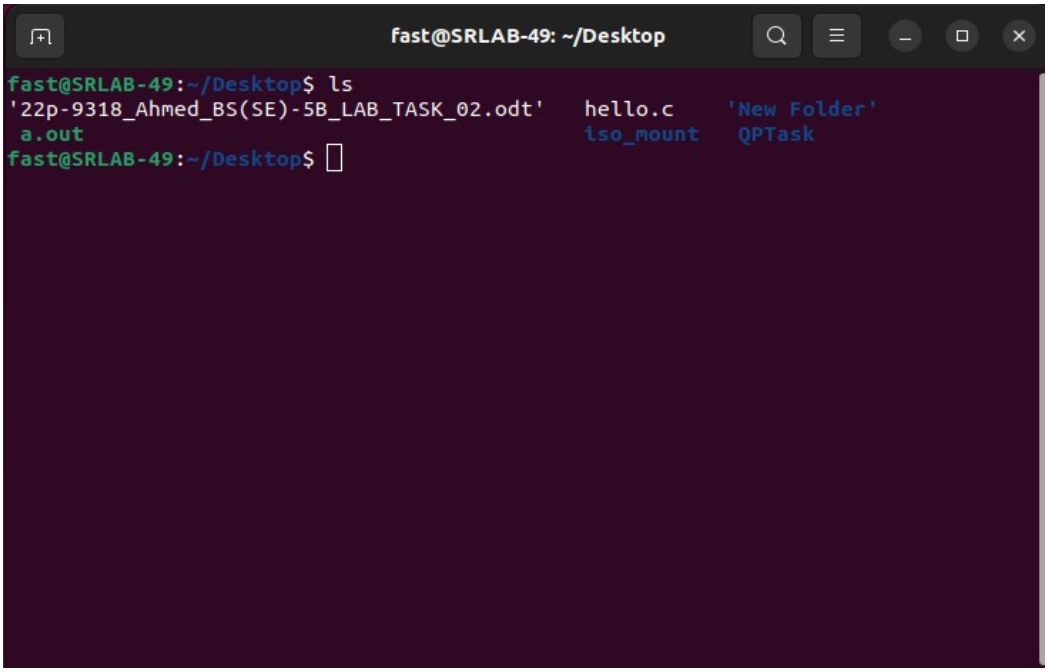
*→ Essentially, it lets you perform tasks that require higher permissions, like installing software or **modifying system files.***



You can see after typing command ***sudo su,*** your pc asked password, after entering password you are now working as root user.
→ You can also go to root-user by ***sudo -i*** and ***for leaving root user simply type exit or press CTRL+D***

2. What is ls command:

The `***ls` command*** is used in Linux operating systems ***to list the files and directories in a directory.***
→ ***It's a way to see what's inside a folder.***



What is ls command:

You can see **by entering "ls" command** *all the folders and files inside* **Desktop directory appears**

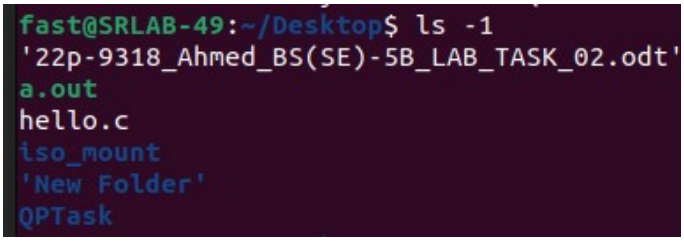
You can Type the command ***"ls --help"*** *and a list of commands that can be used along "****ls command".***

```
fast@SRLAB-49:~/Desktop$ ls
'22p-9318_Ahmed_BS(SE)-5B_LAB_TASK_02.odt'   hello.c    'New Folder'
 a.out                                       iso_mount   QPTask
fast@SRLAB-49:~/Desktop$ ls --help
Usage: ls [OPTION]... [FILE]...
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
  -B, --ignore-backups       do not list implied entries ending with ~
  -c                         with -lt: sort by, and show, ctime (time of last
                               modification of file status information);
                               with -l: show ctime and sort by name;
                               otherwise: sort by ctime, newest first
  -C                         list entries by columns
      --color[=WHEN]         colorize the output; WHEN can be 'always' (default
                               if omitted), 'auto', or 'never'; more info below
  -d, --directory            list directories themselves, not their contents
  -D, --dired                generate output designed for Emacs' dired mode
  -f                         do not sort, enable -aU, disable -ls --color
  -F, --classify             append indicator (one of */=>@|) to entries
      --file-type            likewise, except do not append '*'
      --format=WORD          across -x, commas -m, horizontal -x, long -l,
                               single-column -1, verbose -l, vertical -C
      --full-time            like -l --time-style=full-iso
  -g                         like -l, but do not list owner
      --group-directories-first
                             group directories before files;
                               can be augmented with a --sort option, but any
                               use of --sort=none (-U) disables grouping
  -G, --no-group             in a long listing, don't print group names
  -h, --human-readable       with -l and -s, print sizes like 1K 234M 2G etc.
      --si                   likewise, but use powers of 1000 not 1024
  -H, --dereference-command-line
                             follow symbolic links listed on the command line
      --dereference-command-line-symlink-to-dir
                             follow each command line symbolic link
                               that points to a directory
      --hide=PATTERN         do not list implied entries matching shell PATTERN
                               (overridden by -a or -A)
      --hyperlink[=WHEN]     hyperlink file names; WHEN can be 'always'
                               (default if omitted), 'auto', or 'never'
      --indicator-style=WORD  append indicator with style WORD to entry names:
                               none (default), slash (-p),
                               file-type (--file-type), classify (-F)
  -i, --inode                print the index number of each file
  -I, --ignore=PATTERN       do not list implied entries matching shell PATTERN
  -k, --kibibytes            default to 1024-byte blocks for disk usage;
                               used only with -s and per directory totals
  -l                         use a long listing format
```

We will see some of these commands uses

1) Like typing ***“ls -1”*** will list one file per line. Avoid usage of '\n'.

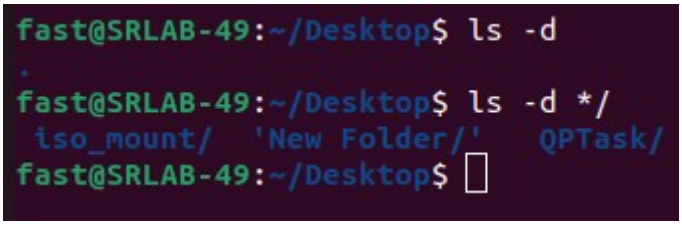


2) Similarly entering command ***“ls -a”*** will sow all the files and folders even the hidden files and folders will also be shown.

3) If you enter the “***ls -l”*** command in Ubuntu ***It provides a detWhat is ls command:ailed listing of files and directories in the current directory.***

→ ***It shows additional information such as file permissions, number of links, owner, group, size, and the last modified date and time for each item.***

4) The ***“ls -d” command*** in Ubuntu ***lists directories themselves rather than their contents.***
→ For example, ***if you use ls -d */, it will show the directories in the current location without listing their contents.***
→ *This can be useful if you want to see the directory names without expanding into them.*

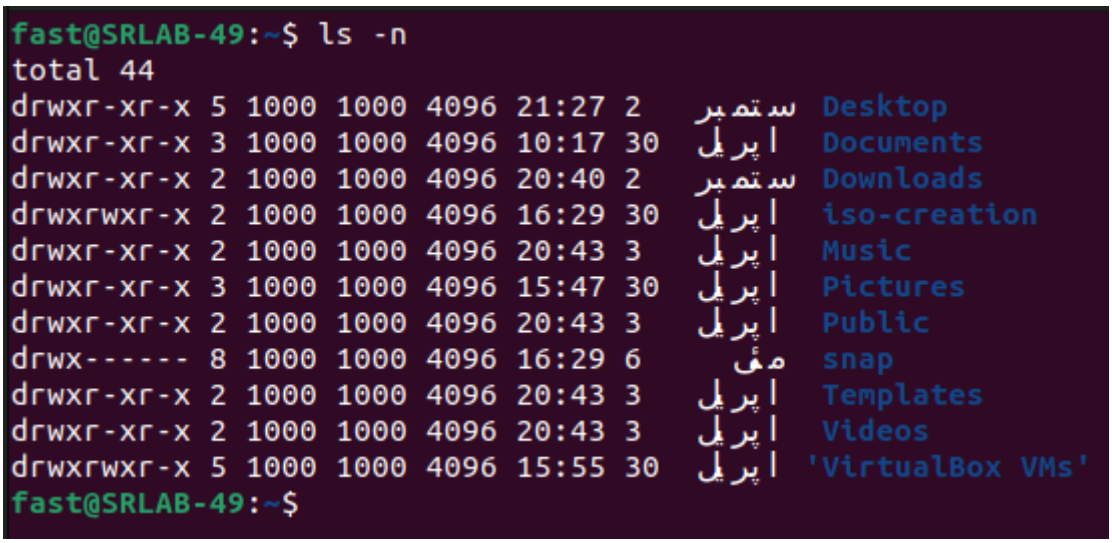


You can see by entering only **ls -d command** it shows only relative directory while using ***ls -d */ command*** *will also show only the directories inside it.*

*5) The **ls -n command** in Linux operating systems **lists directory contents with numeric user and group IDs instead of names.***
→ *This is useful in scenarios where you might need to see the numeric values of ownership instead of resolving them to user or group names.*

Here's a breakdown of the ls -n output:

- The command displays a list of files and directories.
- *For each file or directory,* ***it shows details such as permissions, number of links, numeric user ID (UID), numeric group ID (GID), file size, modification date, and file name.***



In this output:

- `1000` is the numeric UID of the file owner.
- `1000` is the numeric GID of the group.

This can be useful for scripting or when managing systems where user and group names might not be readily available or when working with systems where user and group names have not been properly set up.

3. ***What is cd command:***

*The **cd command** in Linux operating systems **stands for "change directory"** and is **used to navigate between directories in the filesystem.***

cd Command

- **Usage**: cd [directory]
- **Function**: Changes the current working directory to the specified [directory].
- **Example**: cd Documents changes the current directory to Documents, assuming it's a subdirectory of the current directory.

cd ..

- **Usage**: cd ..
- **Function**: Moves up one level in the directory hierarchy.
- **Example**: If you are in /home/user/Documents and run cd .., you will move up to /home/user.

cd /

- **Usage**: cd /
- **Function**: Changes the current directory to the root directory of the filesystem.
- **Example**: If you are in /home/user/Documents and run cd /, you will move to the root directory (/).

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Summary of Uses

- cd [directory]: Navigate to a specific directory.
- cd ..: Move up one directory level.
- ***cd /: Move to the root directory of the filesystem for coming back simply enter cd.***

4. What is pwd command:

The ***pwd command stands for "print working directory"*** and is ***used in Linux operating systems to display the current working directory.***

Usage

- **Command**: pwd
- **Function**: Outputs the absolute path of the directory you are currently in.

Example

If you are in the directory /home/fast/Desktop and you run the command pwd, it will output: **/home/fast/Desktop**

Uses of pwd

Confirm Current Directory: Helps you verify your current location in the filesystem, which is useful for ensuring you are in the correct directory before executing further commands.

1) **Script Debugging**: In scripts, pwd can be used to record the current directory, especially when navigating directories programmatically. This can help in debugging or logging directory paths.

2)**Path Reference**: Useful when you need to reference or work with absolute paths, particularly when moving files, running programs, or setting environment variables.

3)**Navigation Aid**: Helps in visualizing your location in the filesystem, making it easier to understand the context of your work, especially when dealing with deep directory structures.

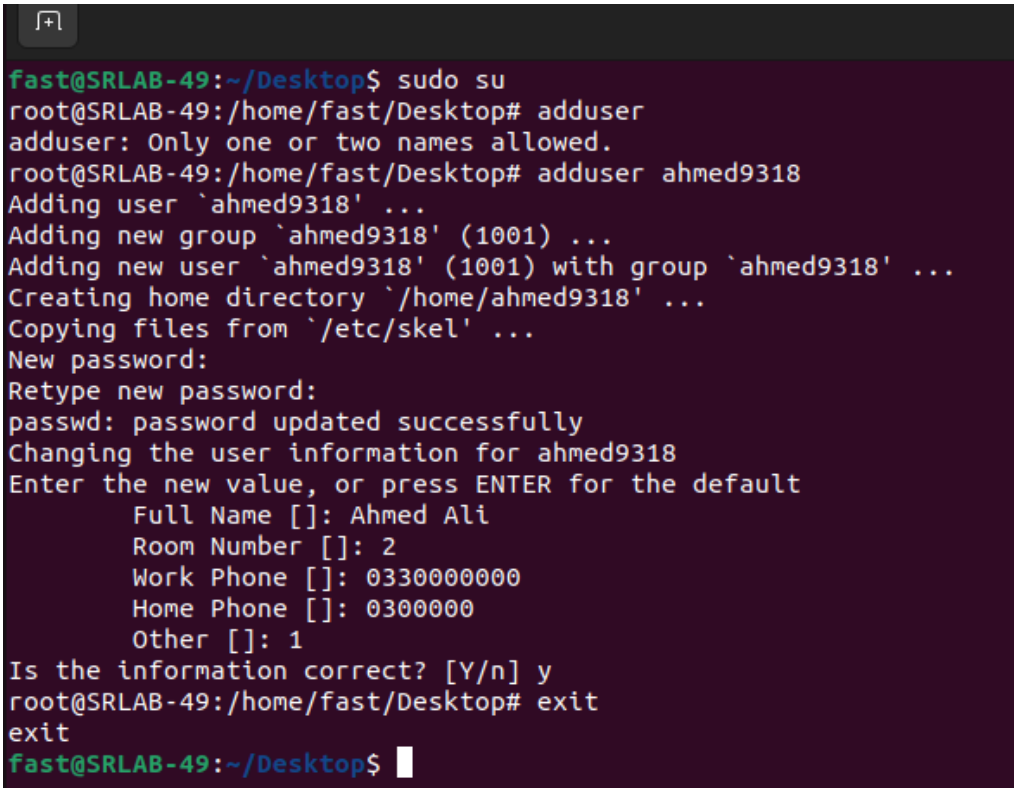
5. ***What is adduser command:***

adduser : *Addition of new user.*

The ***`adduser`*** *command in Ubuntu is* **used to create a new user account on the system***.*

→ *It sets up the user's home directory and initial configuration files, and can also prompt you to enter additional information like the user's full name.*

→ ***For adding user you first need to go to root user type command sudo su or sudo -i.***



first go to root user by entering ***command sudo su***

enter the password

then type command adduser

again ***type adduser[name of user]***

Enter password for new user

Confirm password for new user

You will be asked some information

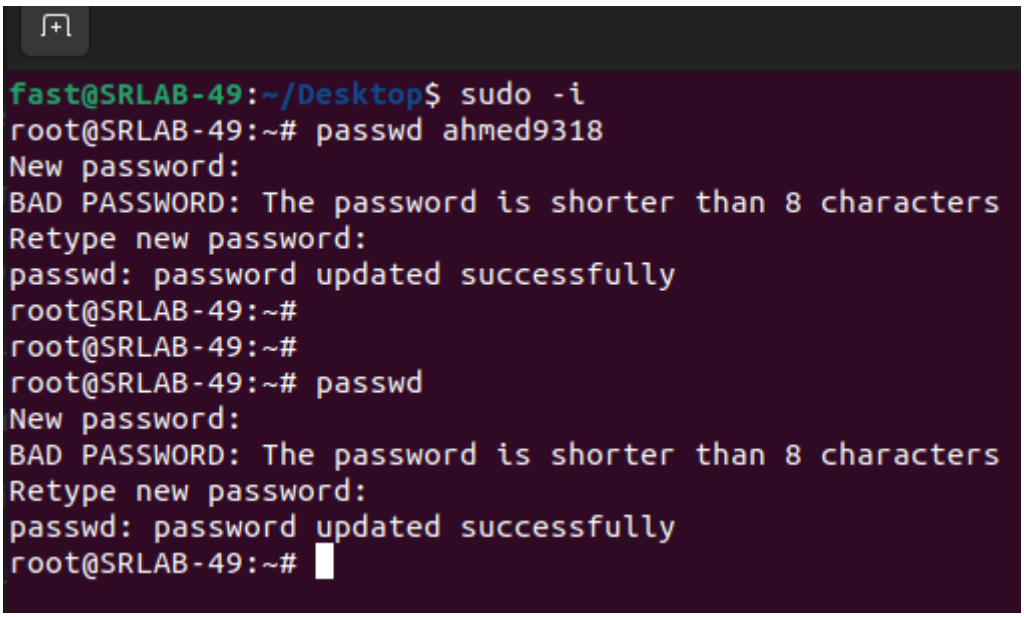
fill it up and after filling you will be asked;

Is the information correct enter y.

6. <u>What is passwd command:</u>

The ***`passwd` command*** *in Ubuntu is* ***used to change a user's password.***

→ It can be used to update your own password or, with appropriate permissions, to change the passwords of other users.



<u>What is passwd command:</u>

*First You need to go to root user for that I used **sudo -i command.***

*→ Then if You enter only **passwd command** it will ask you to enter the new password **it means it is changing the password of current user.***

*→ For changing password of other user go to root user for that I used **sudo -i command;***

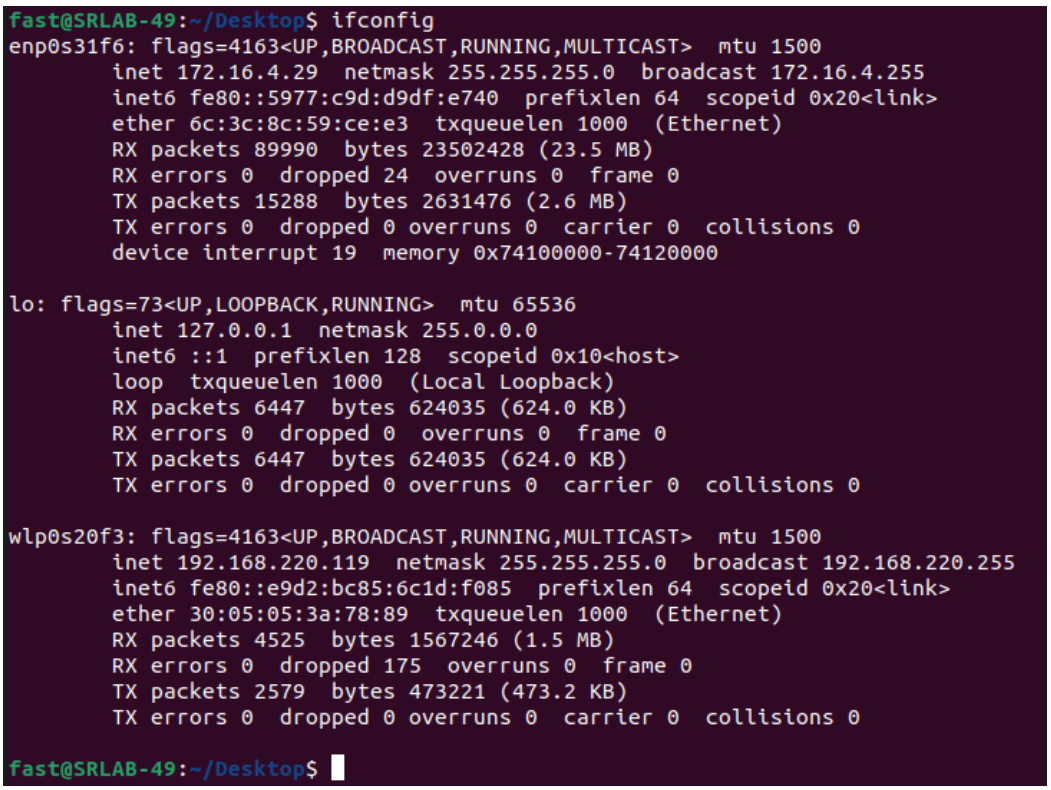
***Type passwd[name of other user]** and hit enter you will be asked to enter new password.*

7. What is ifconfig command:

***ifconfig**: Used to configure and display network interfaces on a system. It shows information about network interfaces like IP addresses and network statistics.*

```
fast@SRLAB-49:~/Desktop$ ifconfig
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
fast@SRLAB-49:~/Desktop$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libreoffice-ogltrans linux-image-6.2.0-26-generic linux-modules-6.2.0-26-generic linux-modules-extra-6.2.0-26-generic
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 152 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://pk.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 11s (19.2 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 252295 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
```

If this command is not working type sudo apt install net-tools and try again



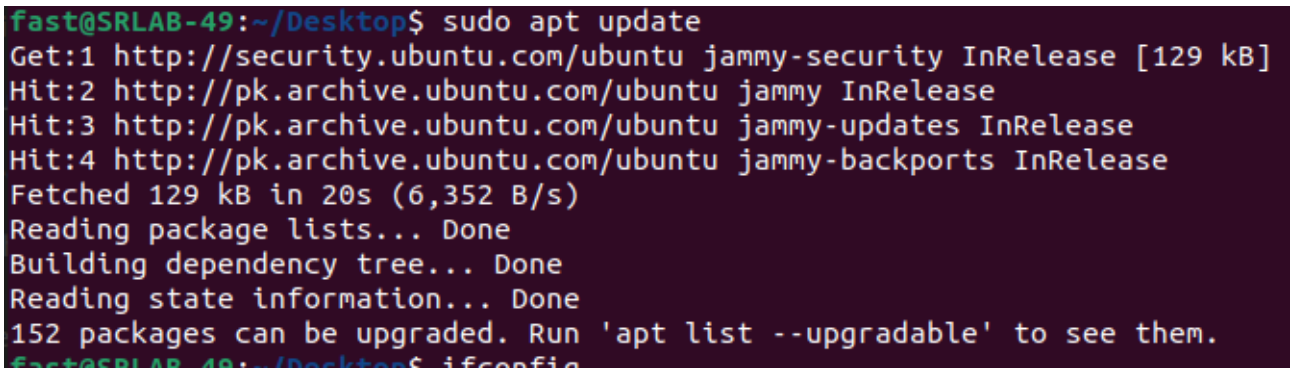
***iwconfig**: Used to configure and display wireless network interfaces. It shows details about wireless network settings such as SSID, frequency, and signal strength.*

Just type iwconfig in terminal.

Sudo apt update:

The `sudo apt update` command in Ubuntu updates the local package index with the latest information from the software repositories.

→ It helps ensure that you have the most current information about available packages and their versions before installing or upgrading software.



While installing sudo apt install tree show you directories and files with in a directory in hierarichal structures