Linux System Admin Command

A system administrator manages configuration, upkeep and reliable operations of computer operations. Sysadmin handles servers, has to manage system performance and security without exceeding the budget to meet users need.

Some important commands for system administrators

Command	Function
man	Display information about all commands
uptime	Show how long system is running
users	Show username who are currently logged in
service	Call and execute script
pkill	Kill a process
pmap	Memory map of a process
wget	Download file from network
ftp or sftp	Connect remote ftp host
free	Show memory status
top	Display processor activity of system
last	Display user's activity in the system
ps	Display about processes running on the system
Shutdown commands	Shutdown and reboot system
info	Display information about given command
env	Display environment variable for currently logged-in user
netstat	Display network status
arp	Check ethernet connectivity and IP address
df	Display filesystem information
du	Display usage
init	Allow to change server bootup
nano	A command line editor
nslookup	Check domain name and IP information
shred	Delete a file by over writing its content
cat	Display, copy or combine text files
pwd>	Print path of current working directory
locate	Finding files by name on system
>alias	To short a command
echo	Display text
cmp	Compare two files byte by byte
mount	Mount a filesystem
ifconfig	Display configuration
traceroute>	Trace existing network
sudo	Run a command as a root user
route	List routing table for your server
ping	Check connection by sending packet test packet

find	Find location of files/directories
users	Show current logged in user
who	Same as w but doesn't show current process
ls	List all the files
tar	Compress directories
grep	Search for a string in a file
su	Switch from one to another user
awk	Search lines for a given pattern

man Command

man is a built-in manual for utilizing Linux commands. It permits users to access the reference manual of a utility or a command to execute in the terminal.

For example,

1. man ls

This command will display all the information about **'ls'** command as shown in the screen shot.

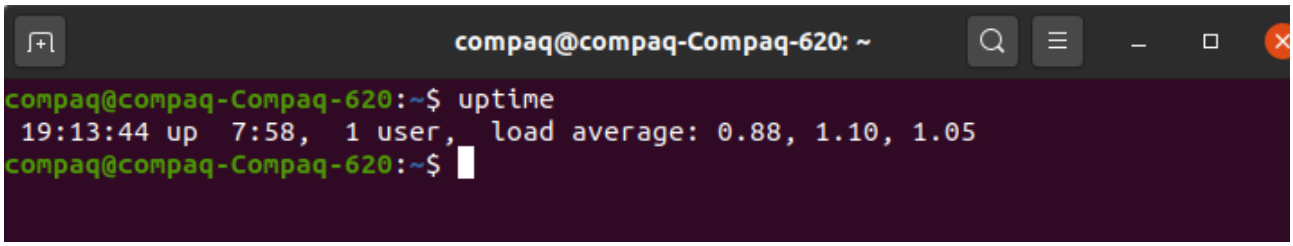
Uptime Command

The uptime command tells us how long a system has been running.

"uptime" displays output in one line.

- **currrent system time**
- duration for which system has been running (system is running since 18 minutes)
- number of users logged in (2 users are logged in)
- system load average CPU load for past 1, 5 and 15 minutes.

Here, system load averages are the processes which are either in runnable or in uninterruptable state.



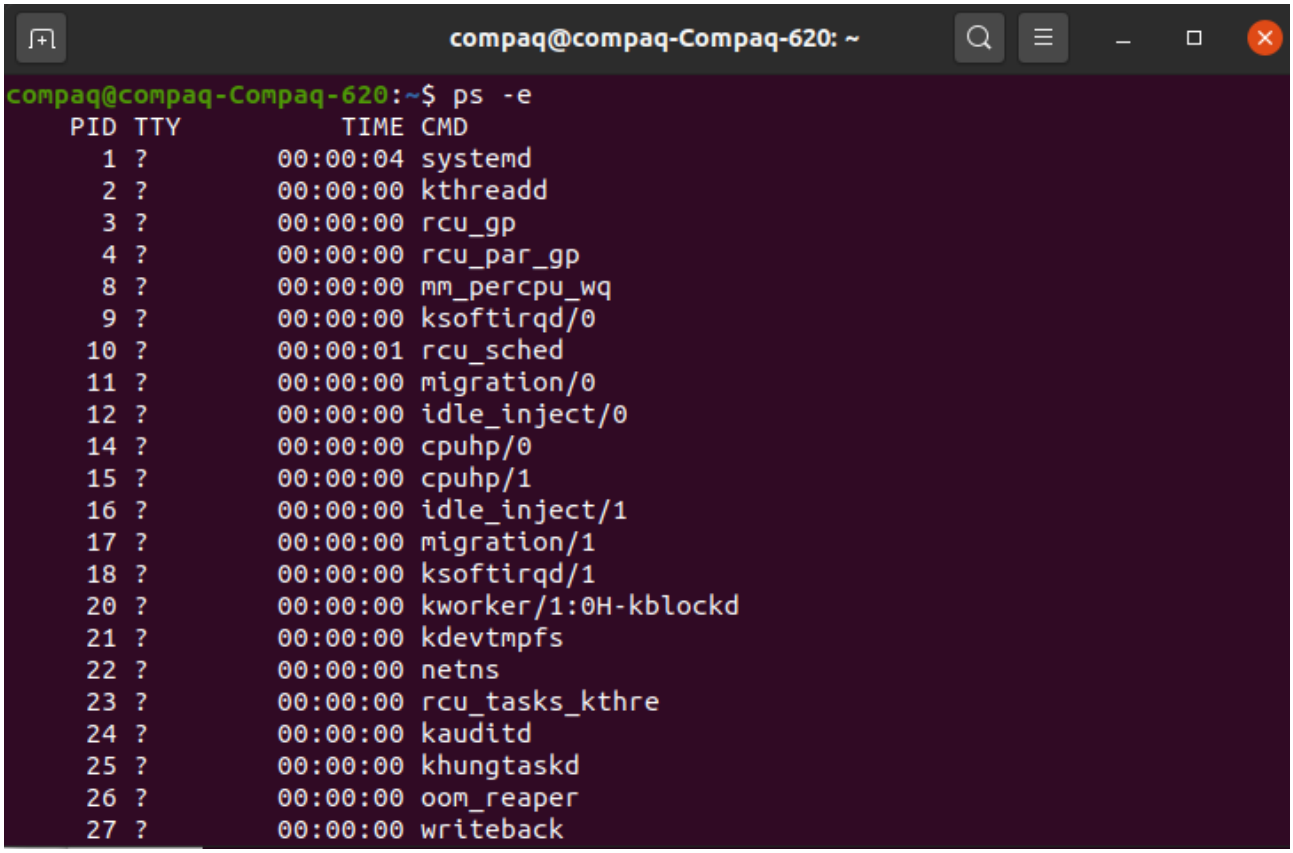
ps Command in Linux/Unix with Examples

The ps command is used to view currently running processes on the system. It helps us to determine which process is doing what in our system, how much memory it is using, how much CPU space it occupies, user ID, command name, etc .

The ps command may display different results for different systems because it displays information about the currently running process of a system.

Syntax:

1. ps



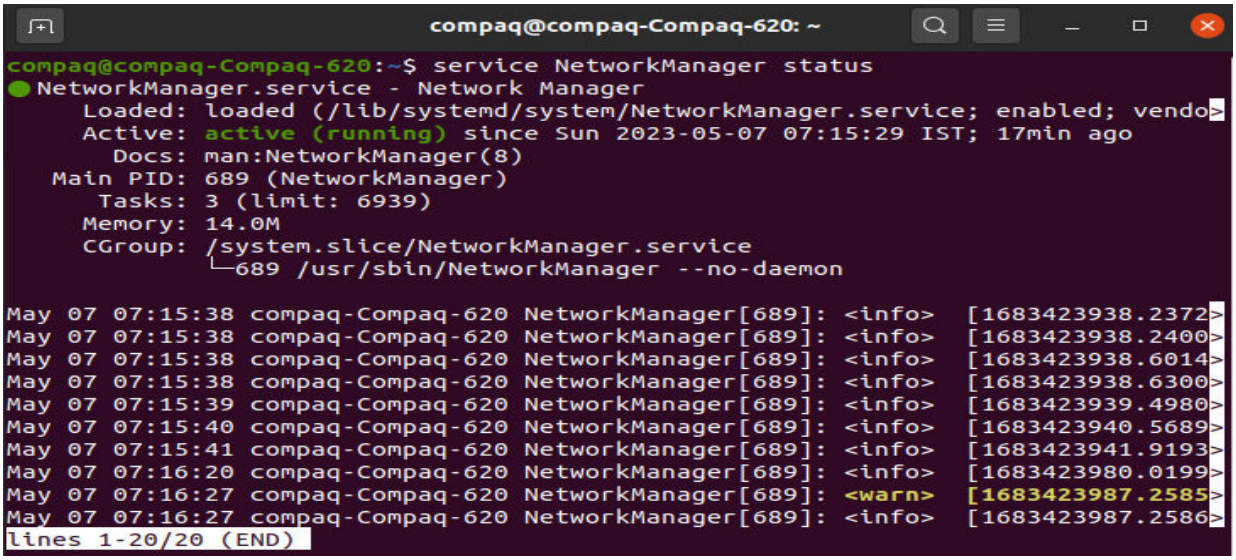
Linux service

The service command starts, stop and restart a daemon or services by calling the script. Usually all scripts are stored in **/etc/init.d** directory.

It runs a script in as predictable environment as possible.

Syntax:

1. service script_name command



stop command

To stop a service use the following syntax,

Syntax:

1. service script_name stop

start command

To start a service use the following syntax,

Syntax:

1. service script_name start

restart command

To restart a service use the following syntax,

Syntax:

1. service script_name restart

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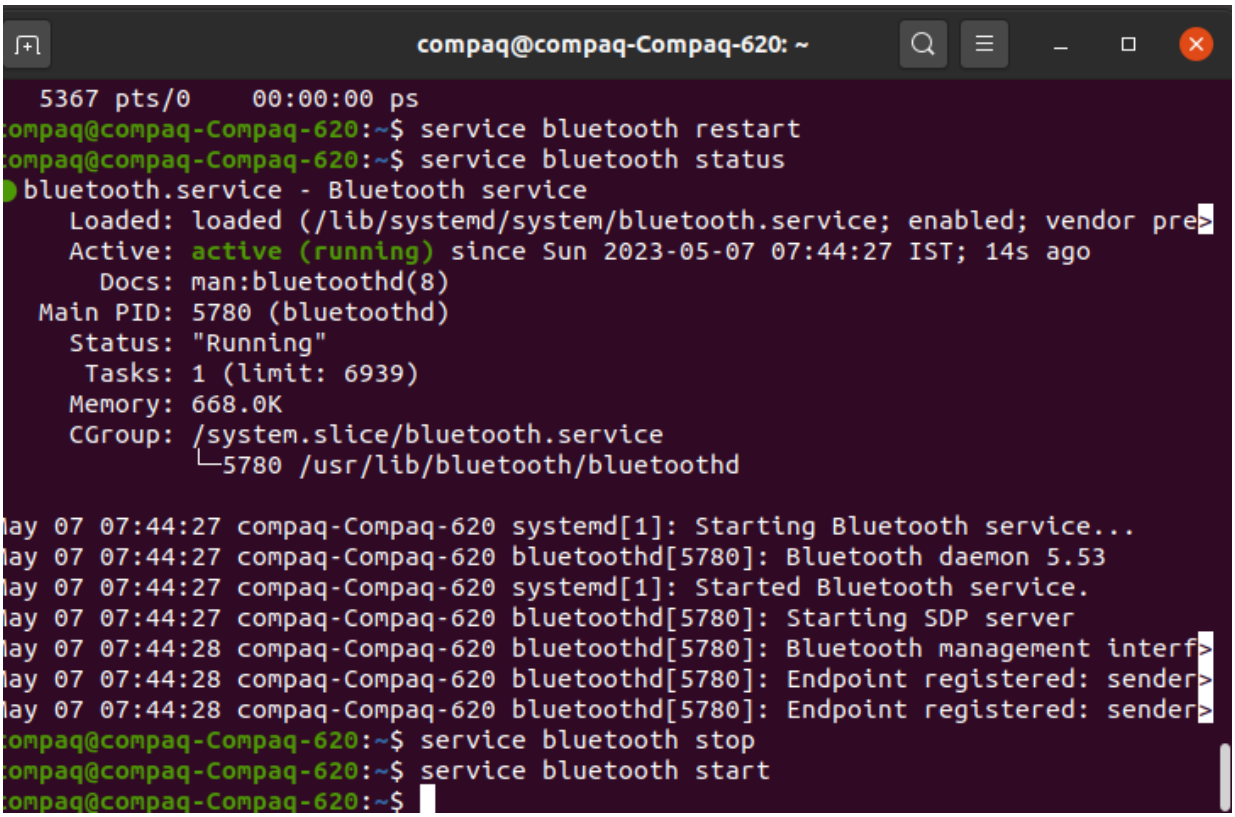
status command

To get current status of a service use the following syntax,

Syntax:

1. service script_name status



Linux Terminating

There are four ways to kill or terminate a process. These commands allow you to run the system uninterruptedly after terminating a process without rebooting the system. These commands can be internal or external.

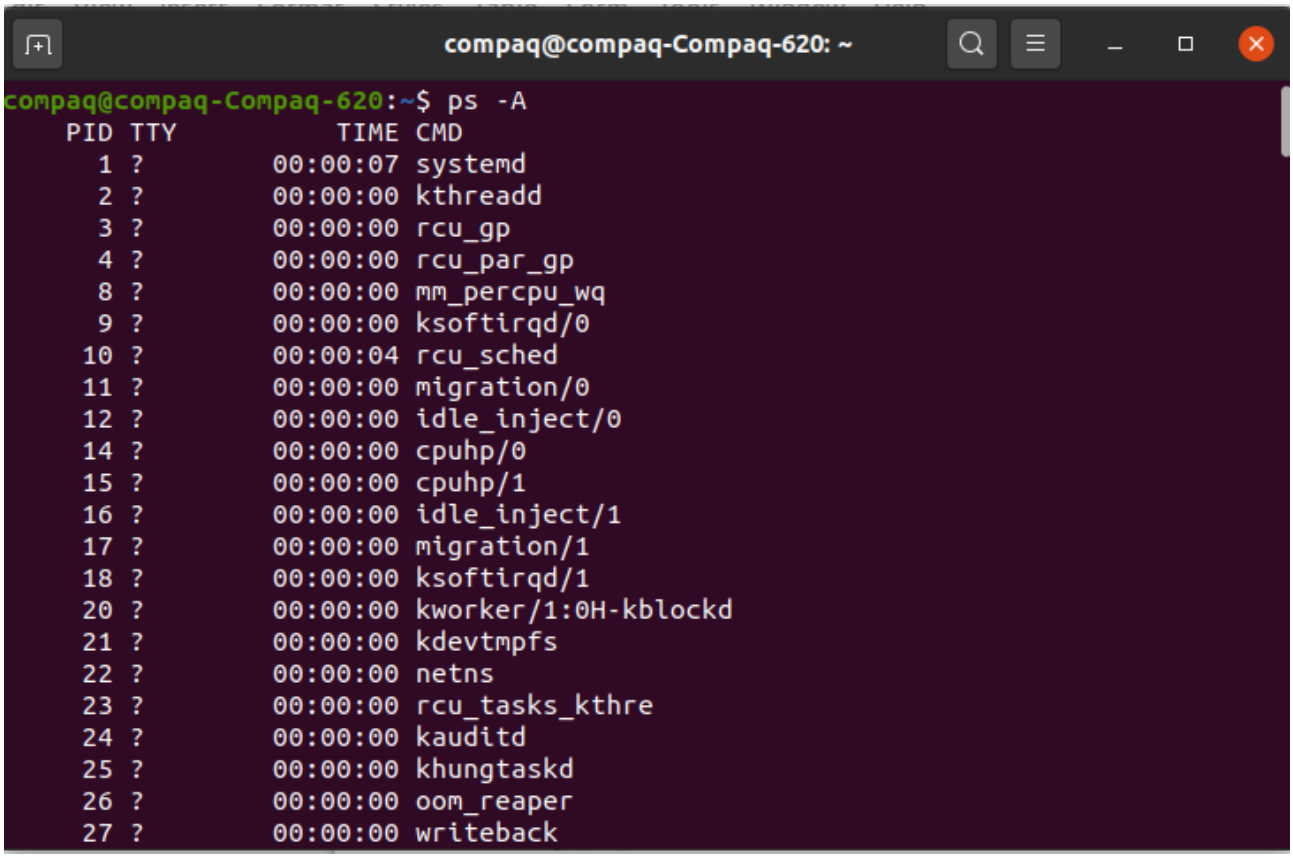
Command	Function
kill	Need to specify PID number
killall	Kill more than one process with a single name
pkill	Need to specify name of the process
xkill	Kill a x server client

How to know PID

To use terminating commands you need to know different PIDs. PID for a process can be find out with the following command,

Syntax:

1. ps -A



Linux kill

The most common command to terminate a process is kill command. You need to know the PID of the process you want to terminate.

kill command sends signal to the specified process. For sending signal either signal name or signal number can be used.

kill -SIGNAL PID

Signal Name	Signal Number	Signal Use
SIGNULL	0	NULL, check access to PID
SIGHUP	1	Hangup
SIGINT	2	Interrupt
SIGQUIT	3	Quit
SIGKILL	9	Kill
SIGTERM	15	Terminate
SIGSTOP	24	Stop
SIGTSTP	25	Stop/pause the process
SIGCONT	26	Continue a stopped process

To list signal names

To see a list of signal names in your system, following command can be used.

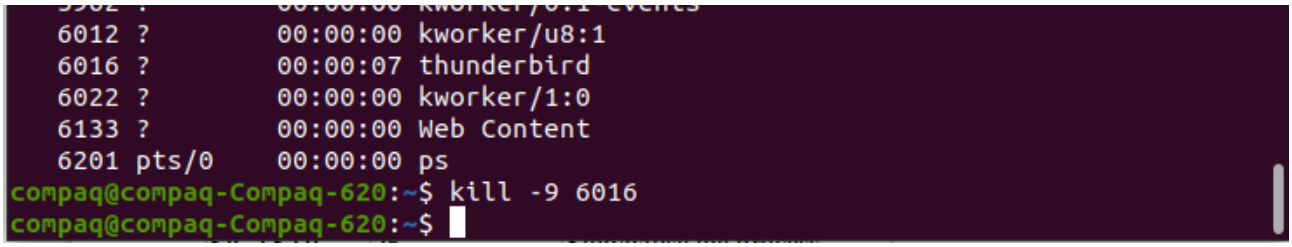
Syntax:

1. kill -l

Example:

To kill a process having PID 2408, use following command

kill -9 2408



Linux killall

The killall command need the process name instead of PID. It kills all the processes with the specified name in the system.

Syntax:

1. killall -<signal name or option> <name>

Linux pkill

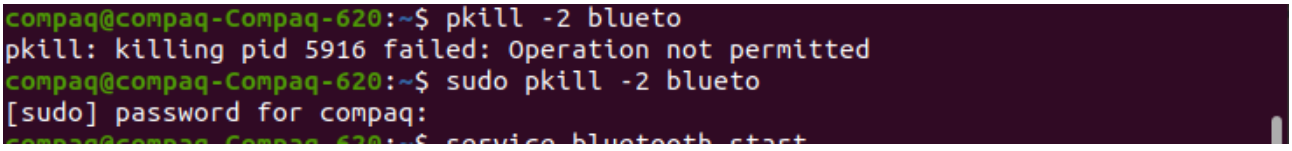
The pkill command uses name of the process instead of PID number. Signal can be send to a process either by typing full name or partial name.

While specifying partial name, the specified name should be within first 15 characters of the process name.

Example:

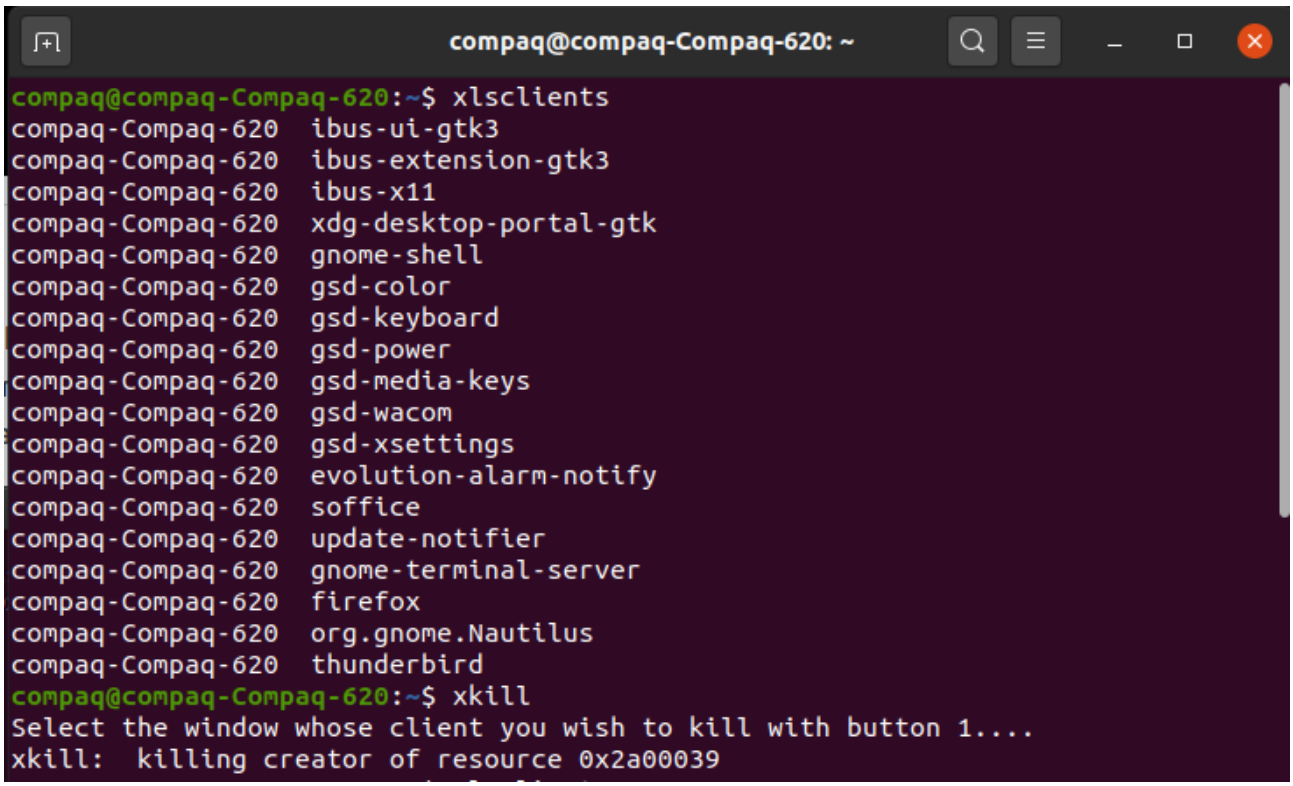
pkill -2 sample

With above example, signal will be sent to all the process which has sample in its name.



xkill

Command xkill is used to kill a process on X server without passing process name or PID. It forces the X server to close the communication with its clients, which ultimately kill its clients by its X resource. In short, xkill instructs X server to terminate client.



To use xkill command

Using xkill command when you want to kill a process, type xkill on the terminal. Your cursor will change in the shape of **x,** click on the window which you want to kill using x cursor. You'll get the following message as shown in below snapshot.

pmap

The command pmap reports memory map of one process or multiple processes. It displays information about memory usage and address space of a process. To check pmap of a process we need PID of the process.

Syntax:

1. pmap PID

Example:

pmap 2390

Memory map of multiple processes

Memory map of multiple processes can also be seen with the same command.

Syntax:

1. pmap PID1 PID2 PID3 . . .

Example:

pmap 1682 2390

ps Command in Linux/Unix with Examples

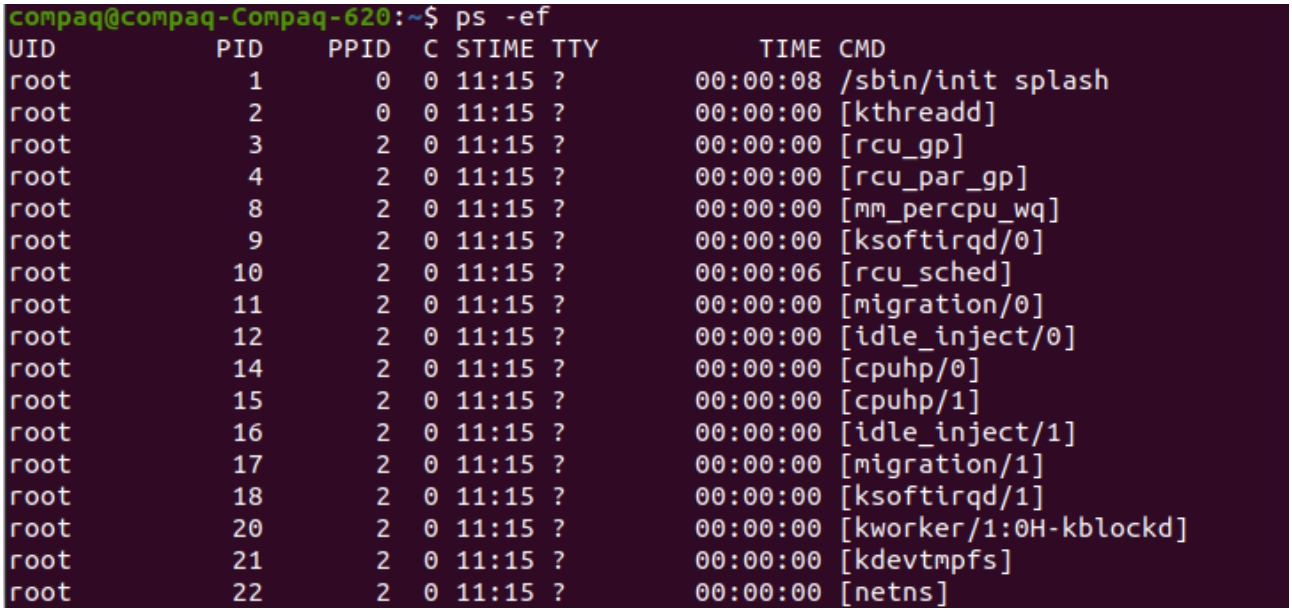
The ps command is used to view currently running processes on the system. It helps us to determine which process is doing what in our system, how much memory it is using, how much CPU space it occupies, user ID, command name, etc .

Introduction to ps Command

The ps command shows details of a selection of the running processes. If we wish repetitive selection updates and displayed information, we can use the top command rather.

This version of the ps command accepts many types of options, which are mentioned below:

ps -ef

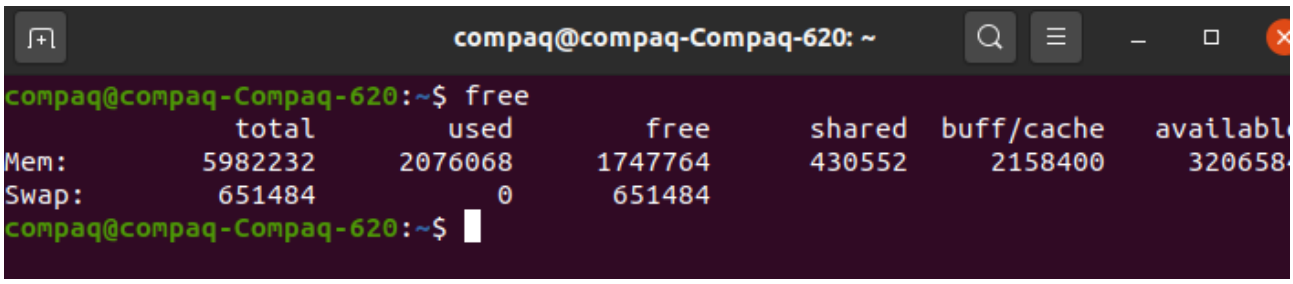


free command

The free command gives information about used and unused memory usage and swap memory of a system. By default, it displays memory in **kb** (kilobytes).

Memory mainly consists of RAM (random access memory) and swap memory.

Swap memory is a part of hard disk drive that acts like a virtual RAM.



Line1tells about the memory details like total RAM available in our system, used RAM, free RAM, shared RAM, buffered RAM and cached RAM.

Line2indicates used and free buffer/cache memory.

Line3indicates total, used and free swap memory.

Top Command in Linux/Unix with Examples

The top command displays all the running process within the environment of your system. It helps in monitoring system usage and performances. It is mainly used to detect load on the server by system administrators.

The top command stands for table of processes. It is a task manager program, detected in several Unix-like operating systems, that shows information about memory and CPU utilization.

ftp and sftp

The ftp stands for **F**ile **T**ransfer **P**rotocol. It connect to the remote host to exchange files and directories from one host to another over a network which can be LAN or any other.

The sftp stands for **S**ecure **ftp.**

ftp prompt

The ftp prompt can be used to perform different ftp functions with ftp commands.

free command

The free command gives information about used and unused memory usage and swap memory of a system. By default, it displays memory in **kb** (kilobytes).

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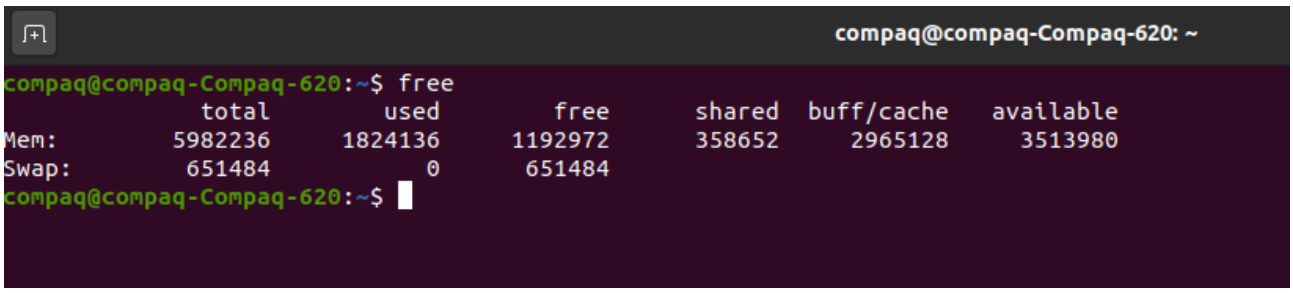


shutdown

The shutdown command brings down system in a secure way. All the logged-in users are notified about the system shutdown.

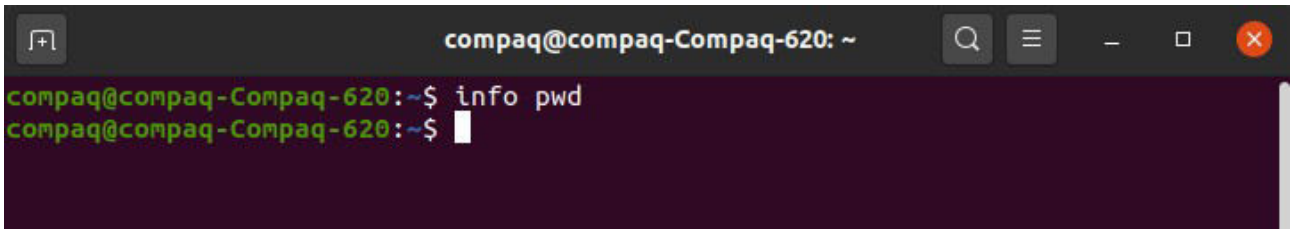
Signal SIGTERM notifies all the processes that the system is going down, so that processes can be saved and exit properly.

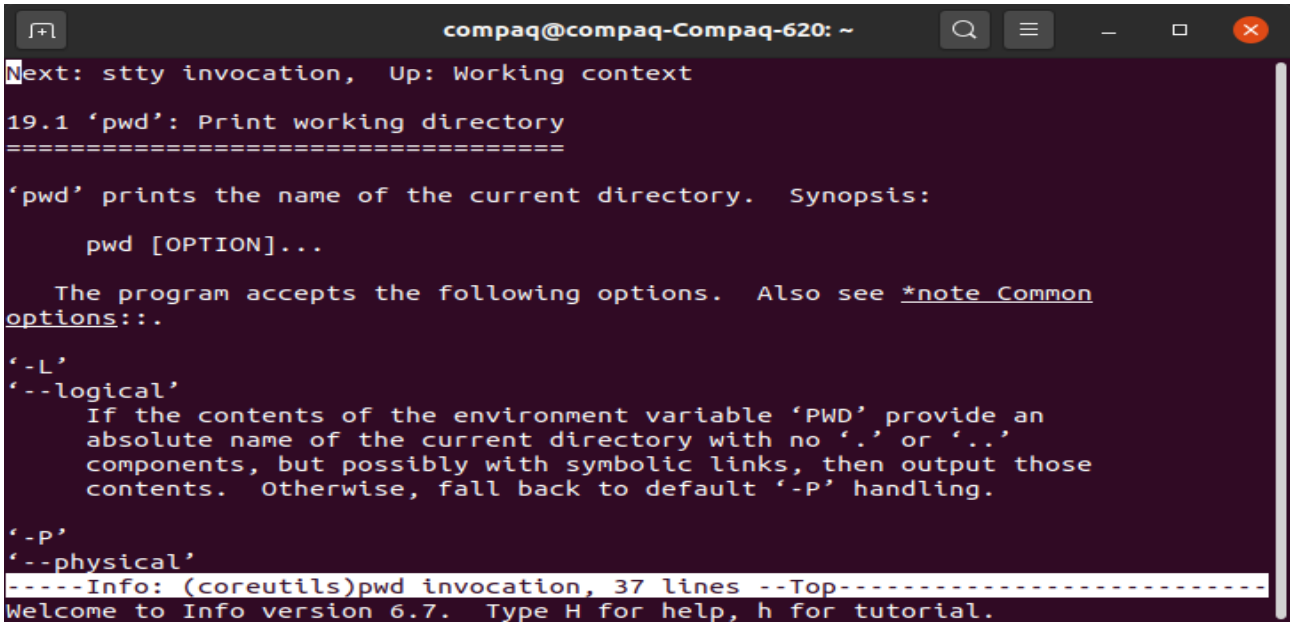
info

Command info display information in the document format. It is similar to man command with more robustness for linking pages together.

Info pages are made with texinfo tools, can link with other pages and create menus.

The info document's default location is **/usr/share/info.**

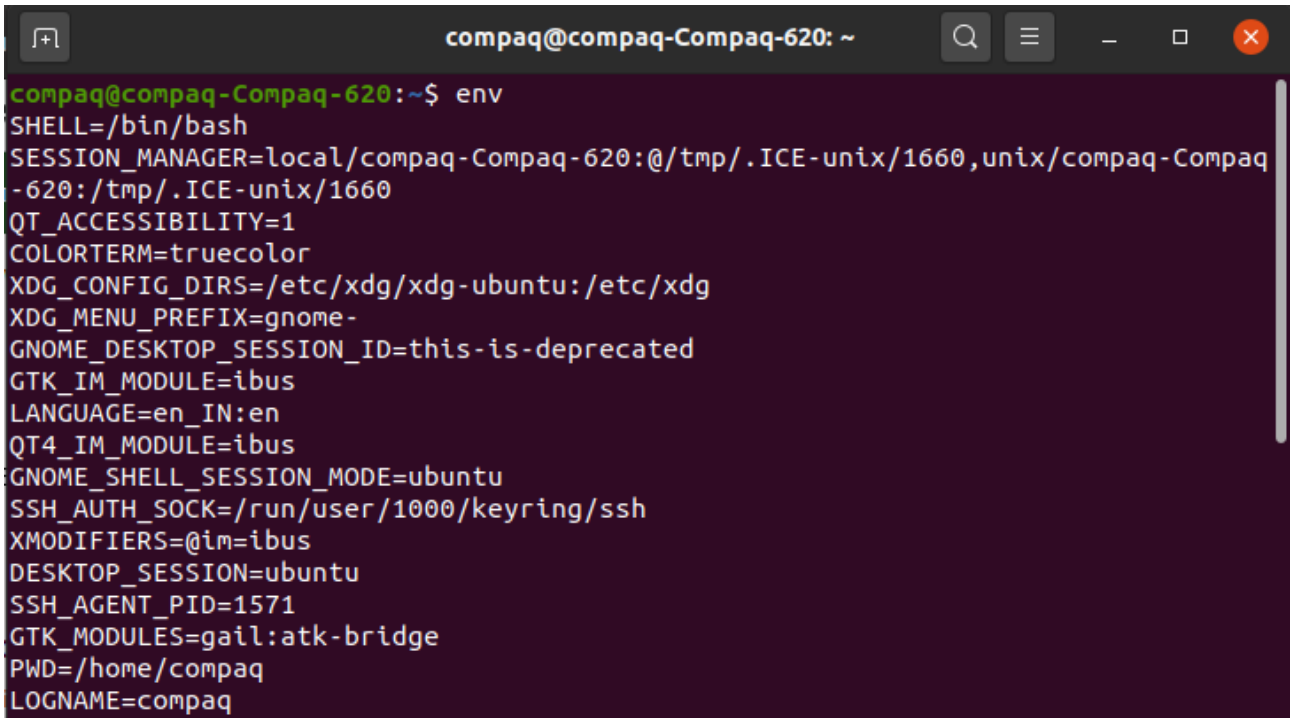




env

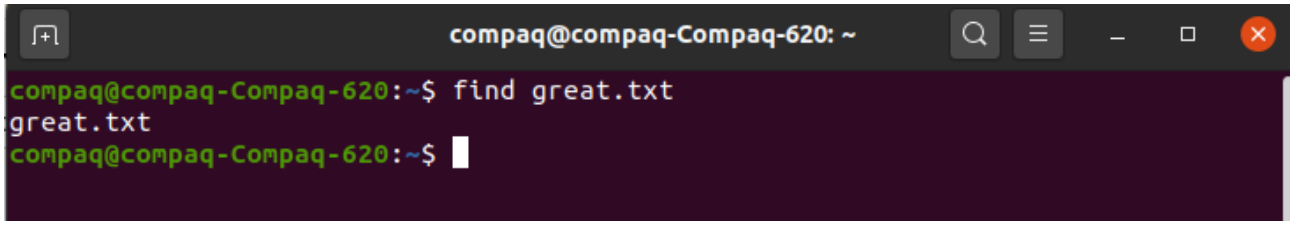
The env command is a shell command used to display and manipulate environment variables. It is used to either list down environment variables or run a program in a modified environment.

With the help of env, commands can be added or removed, you can assign new values to the existing variables.



Find Command

The find command helps us to find a particular file within a directory.

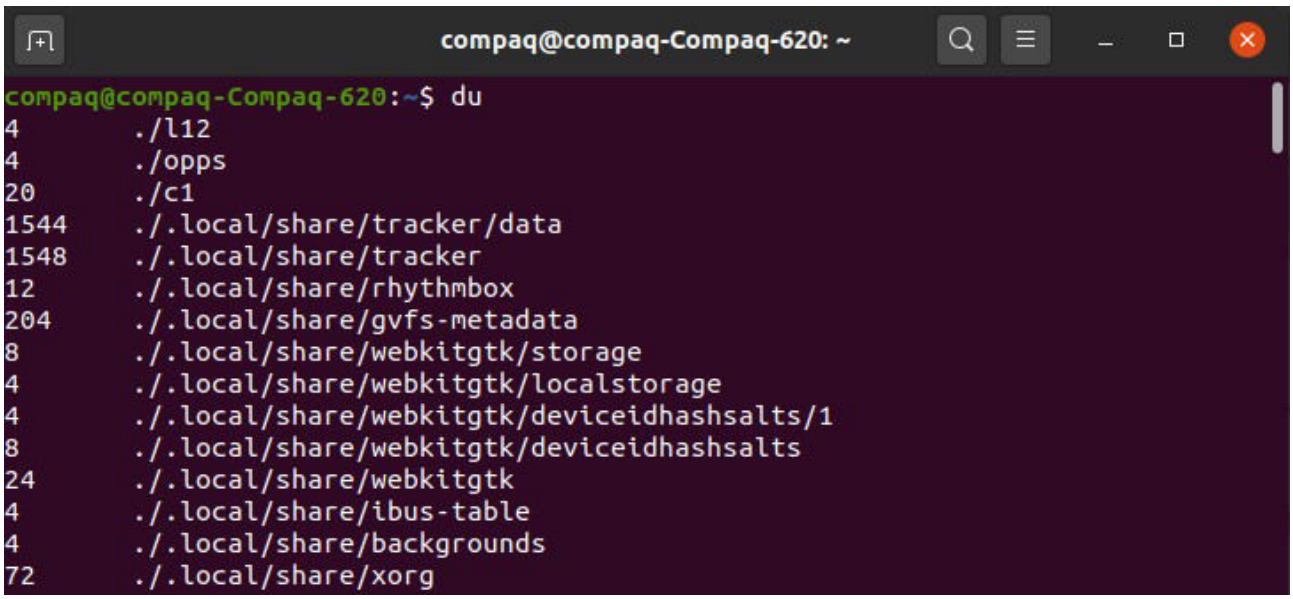


du Command

Command du stands for **D**isk **U**sage. It is used to check the information of disk usage of files and directories on a system.

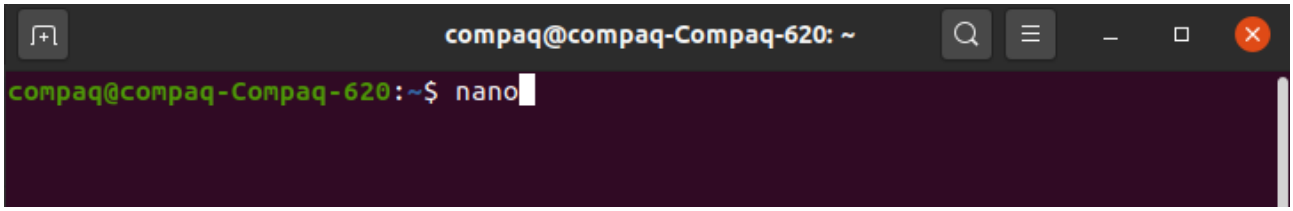
Command du display a list of all the files along with their respective sizes. By default, size given is in kilobytes.

File names are used as arguments to get the file size.



Nano editor

GNU nano is a friendly and convenient text editor like vi and emac. It offers many other extra features like word searching, replacing, jump to a line or column, filename tab completion, auto-indentation, etc.

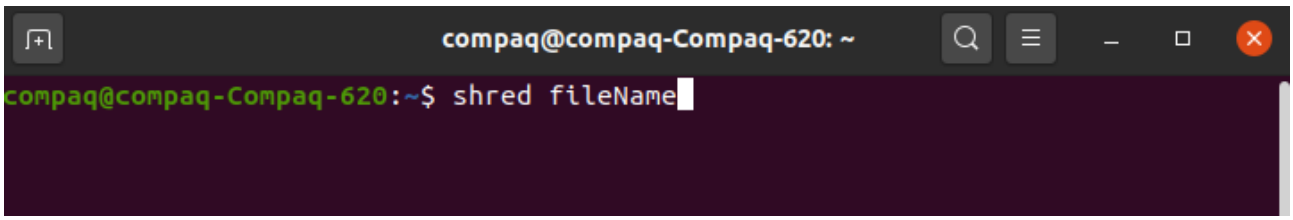


shred

The shred command allows us to delete our files securely making it very much difficult to recover that file by anyone.

Erasing a file with rm command only erases the file system entry and keeps the content of the file intact. It is quite easy to recover removed files content using some softwares.

To prevent from data recovering, shred **overwrite** the data multiple times by doing maximum destruction of the data.



Linux mount

The mount command attaches the filesystem of an external device to the filesystem of a system.

It instructs the operating system that filesystem is ready to use and associate it with a particular point in the system's hierarchy. Mounting will make files, directories and devices available to the users.

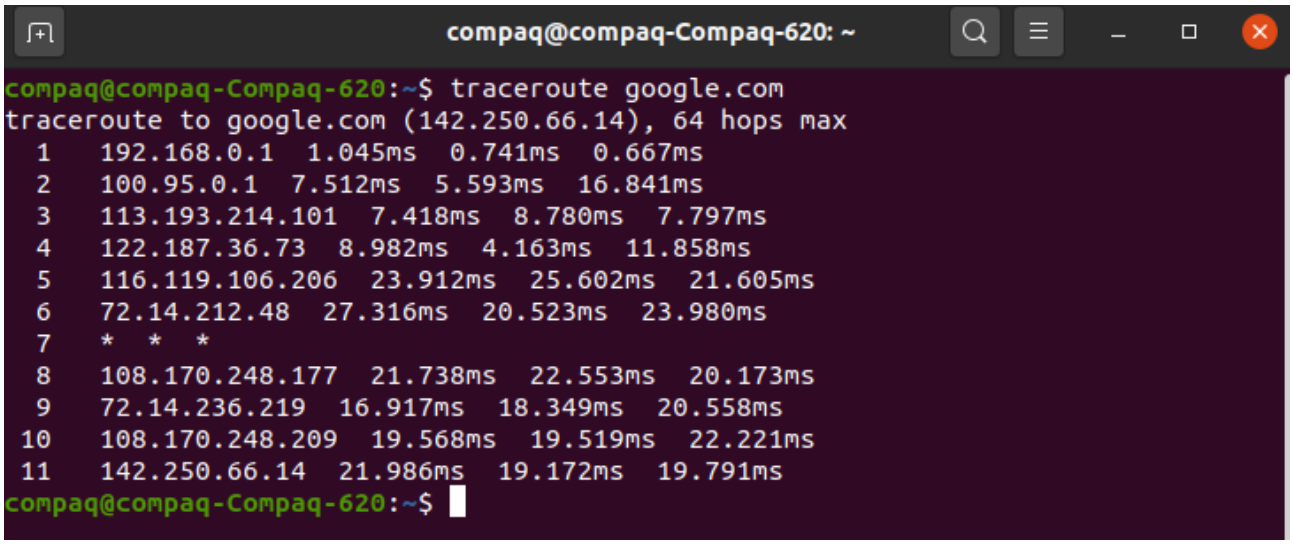
It mounts the external storage devices like hard disks, pen drives, USBs etc.

Conversely, **umount** command unmount the mount point and detach the device from the system.

```
compaq@compaq-Compaq-620:~$ mount /dev/sdb1 /mnt
mount: only root can do that
compaq@compaq-Compaq-620:~$ sudo mount /dev/sdb1 /mnt
compaq@compaq-Compaq-620:~$ cd /mnt
compaq@compaq-Compaq-620:/mnt$ mkdir preeti
compaq@compaq-Compaq-620:/mnt$ ls -l
total 33056
-rw-r--r-- 1 compaq compaq    10563 Mar 20 20:17 'Hardware Specification in MPL
 Jan June 2022.xlsx'
-rw-r--r-- 1 compaq compaq    11380 Feb 27 19:14  lab_schedule.docx
drwxr-xr-x 2 compaq compaq    32768 May  7 19:31  preeti
-rw-r--r-- 1 compaq compaq 33218362 Sep  4  2019  SanDiskMemoryZone_AppInstalle
r.apk
-rw-r--r-- 1 compaq compaq   497832 Sep  4  2019  SanDiskMemoryZone_QuickStartG
uide.pdf
compaq@compaq-Compaq-620:/mnt$ sudo unmount /dev/sdb1
sudo: unmount: command not found
compaq@compaq-Compaq-620:/mnt$ sudo umount /dev/sdb1
umount: /mnt: target is busy.
compaq@compaq-Compaq-620:/mnt$ cd ..
compaq@compaq-Compaq-620:/$ sudo umount /dev/sdb1
```

traceroute

Linux traceroute command is a network troubleshooting utility that helps us determine the number of hops and packets traveling path required to reach a destination. It is used to display how the data transmitted from a local machine to a remote machine. The traceroute can display the routes, IP addresses, and hostnames of routers over a network. It can be useful for diagnosing network issues.

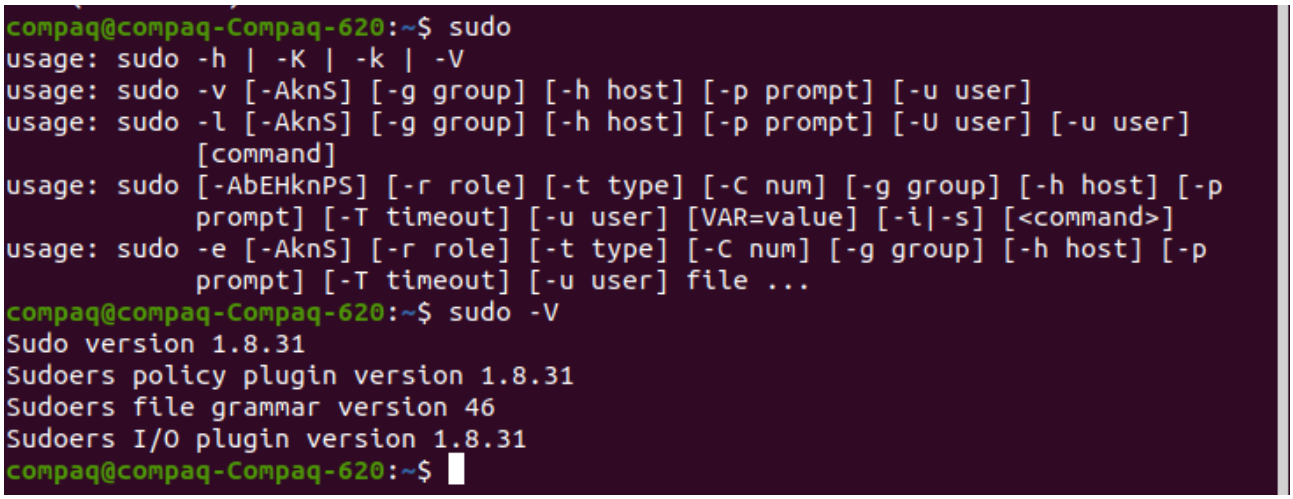


Linux sudo

The Linux sudo command stands for **Super User Do**. Generally, it is applied as a prefix of a few commands that superuser is allowed to execute.

If we prefix the command along with other commands, it would execute that command with high privileges. In other words, it will permit user along with proper authorization eating a command as other users like the superuser.

It is equal to the option **"run as administrator"** in Windows.



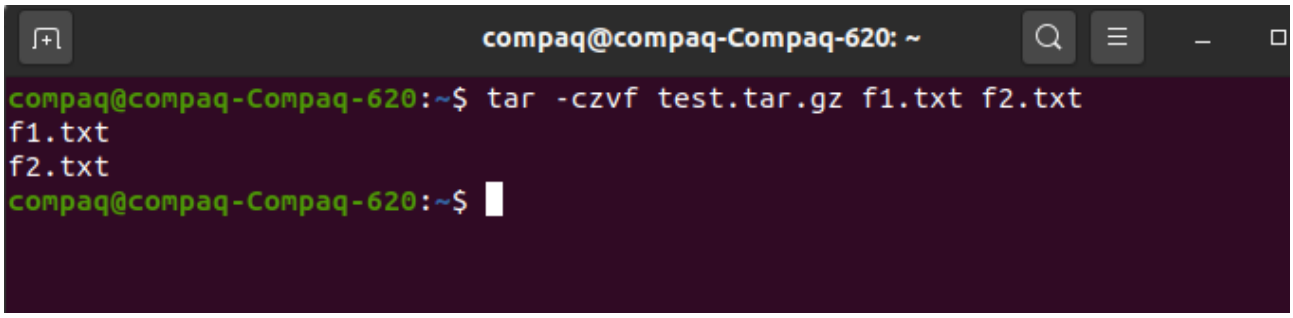
Tar Command

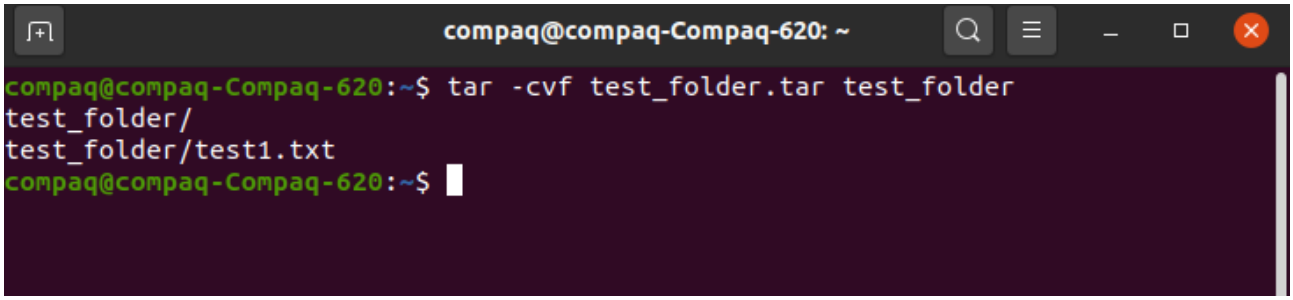
It is short for Tape Archive and is used to create and extract archive files. An archive file is a compressed file that contains one or more files bundled together for more accessible storage and portability.

tar command options

The **tar** command provides the following options −

- -c − This creates an archive file.
- -x − The option extracts the archive file.
- -f − Specifies the filename of the archive file.
- -v − This prints verbose information for any tar operation on the terminal.
- -t − This lists all the files inside an archive file.
- -u − This archives a file and then adds it to an existing archive file.
- -r − This updates a file or directory located inside a .tar file
- -z − Creates a tar file using gzip compression
- -j − Create an archive file using the bzip2 compression
- -W − The -w option verifies an archive file.

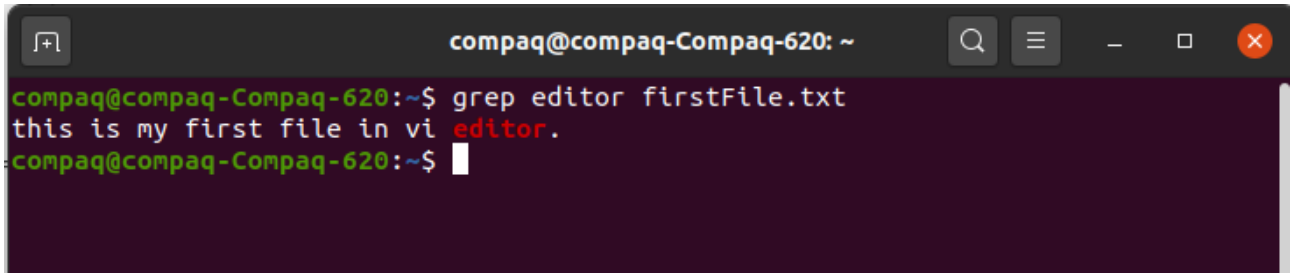




Grep Command

The 'grep' command stands for **"global regular expression print"**. grep command filters the content of a file which makes our search easy.

It is a command-line utility to search plain-text data groups for lines that are the same as a regular expression.



AWK Command

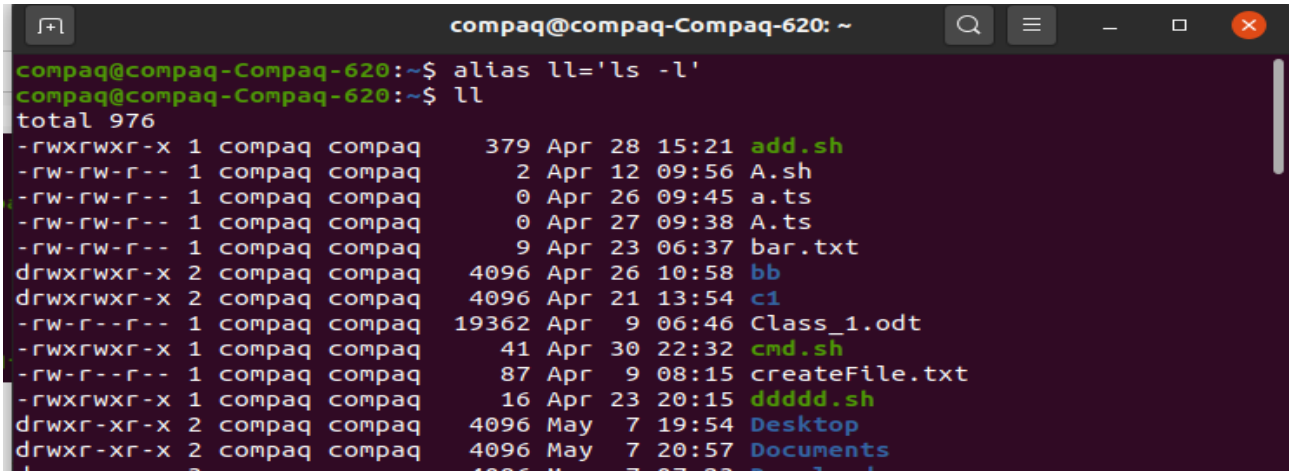
The **awk command** is used for **text processing** in Linux. Although, the sed command is also used for text processing, but it has some limitations, so the awk command becomes a handy option for text processing. It provides powerful control to the data.

The Awk is a powerful scripting language used for **text scripting**. It searches and replaces the texts and sorts, validates, and indexes the database.

```
compaq@compaq-Compaq-620:~$ cat record.txt
Karan CS
Ashish CS
Roshni IT
Sandeep IT
Kirti ECE
Rahul ECEcompaq@compaq-Compaq-620:~$ awk '/CS/{print}' record.txt
Karan CS
Ashish CS
compaq@compaq-Compaq-620:~$
```

Linux aliases

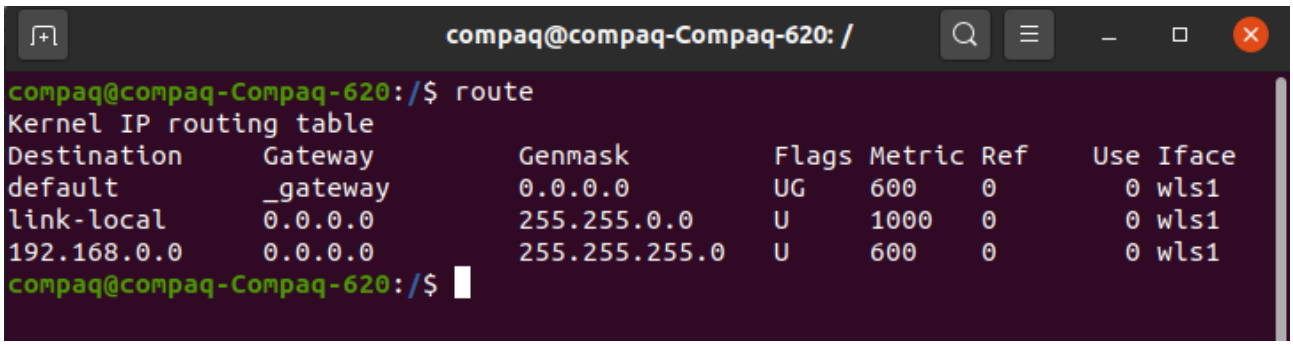
Linux 'alias' command replaces one string from the shell with another string. It is a shell built-in command. It converts a complicated command into a simpler command or in other words, it creates a shortcut by replacing it with the simpler one.



Linux route

The route command displays and manipulate IP routing table for your system.

A router is a device which is basically used to determine the best way to route packets to a destination.



compaq@compaq-Compaq-620:~$ service –status-all
https://file-examples.com/storage/fe0d875dfd645260e96b346/2017/10/
file_example_PNG_500kB.png