DS ASSIGNMENT-1

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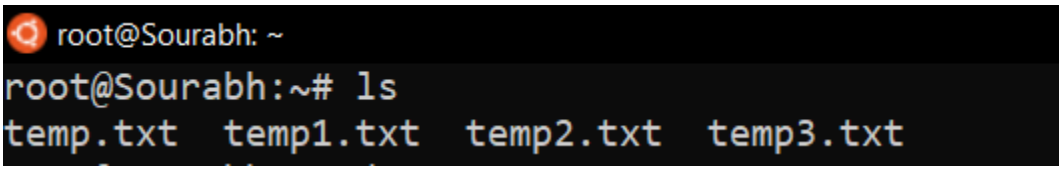
NAMEL: SOURABH PATEL

Execute all commands on Linux terminal and note down the functionality of each.

1. Basic Unix/Linux commands:

ls

The `ls` command lists files and directories within the file system, and shows detailed information about them.



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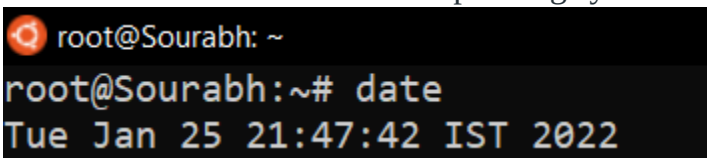
date

date command is used to display the system date and time. date command is also used to set date and time of the system. By default the date command displays the date in the time zone on which unix/linux operating system is configured.



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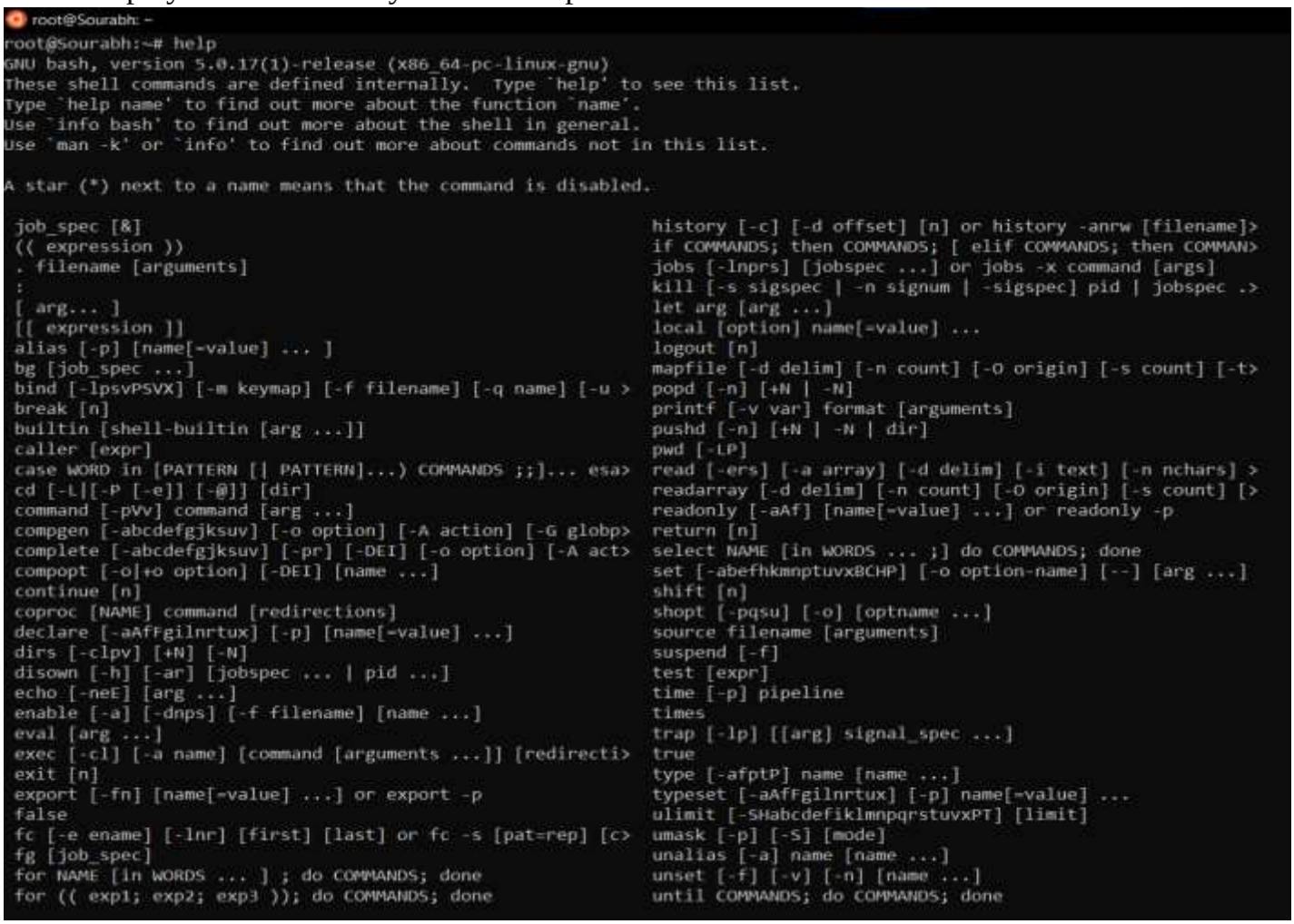
help

If you are new to LINUX operating system and having trouble dealing with the command-line utilities provided by LINUX then you really need to know first of all about the help command which as its name says help you to learn about any built-in command. Help command itself offers three options:

- -d: display only a brief description of the specified command.
- -m: organize the available information just as the man command does.
- -s: display the command syntax of the specified command.



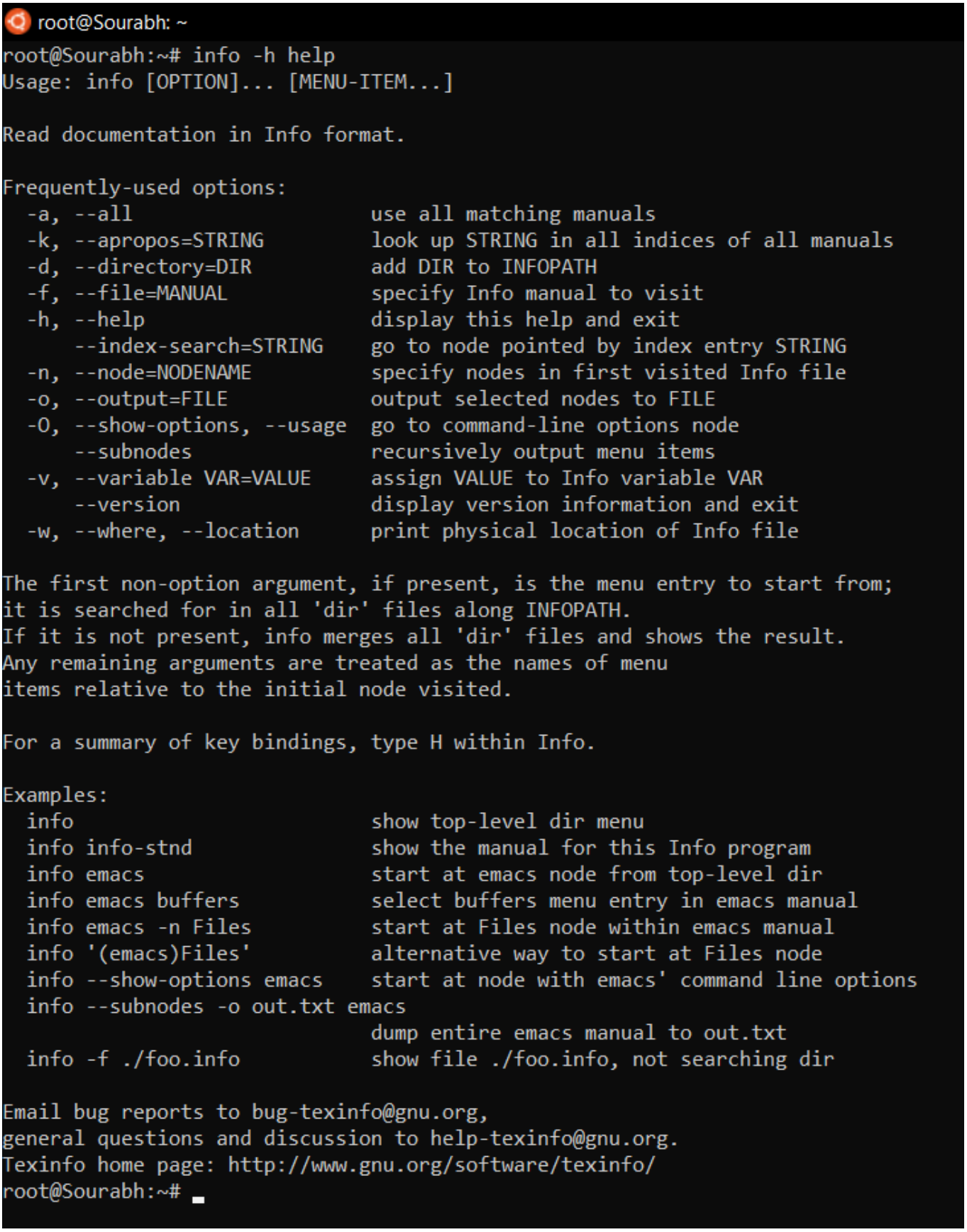
info

info command reads documentation in the info format. It will give detailed information for a command when compared with the man page. The pages are made using the texinfo tools because of which it can link with other pages, create menus and easy navigation.

SYNTAX: info [OPTION]... [MENU-ITEM...]

Options:

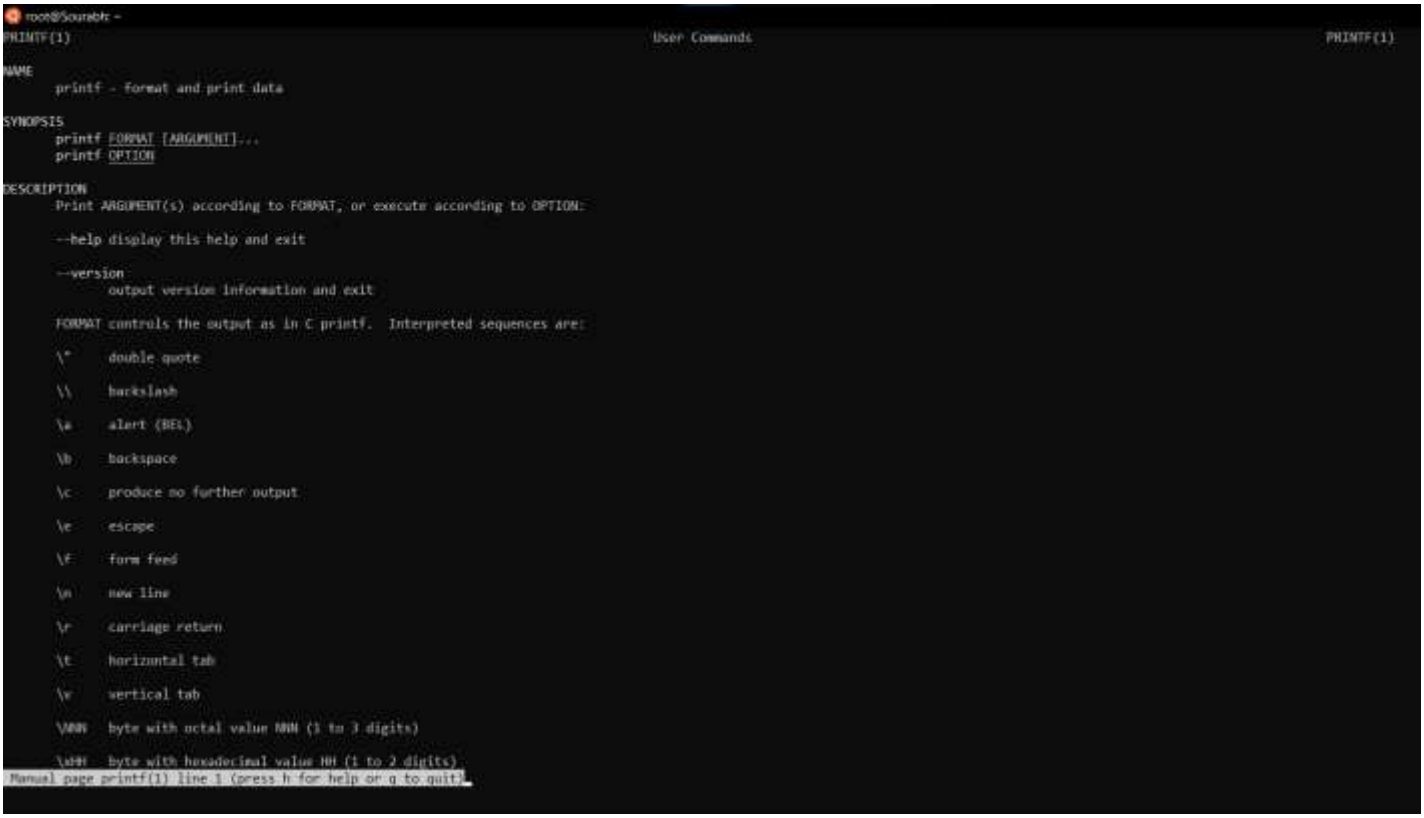
- -a, –all: It use all matching manuals.
- -k, –apropos=STRING: It look up STRING in all indices of all manuals.
- -d, –directory=DIR: It add DIR to INFOPATH.
- -f, –file=MANUAL: It specify Info manual to visit.
- -h, –help: It display this help and exit.
- -n, –node=NODENAME: It specify nodes in first visited Info file.
- -o, –output=FILE: It output selected nodes to FILE.
- -O, –show-options, –usage: It go to command-line options node.
- -v, –variable VAR=VALUE: It assign VALUE to Info variable VAR.
- –version: It display version information and exit.
- -w, –where, –location: It print physical location of Info file.


root@Sourabh: ~
root@Sourabh:~# info -h help
Usage: info [OPTION]... [MENU-ITEM...]
Read documentation in Info format.
Frequently-used options:
-a, --all use all matching manuals
-k, --apropos=STRING look up STRING in all indices of all manuals
-d, --directory=DIR add DIR to INFOPATH
-f, --file=MANUAL specify Info manual to visit
-h, --help display this help and exit
--index-search=STRING go to node pointed by index entry STRING
-n, --node=NODENAME specify nodes in first visited Info file
-o, --output=FILE output selected nodes to FILE
-O, --show-options, --usage go to command-line options node
--subnodes recursively output menu items
-v, --variable VAR=VALUE assign VALUE to Info variable VAR
--version display version information and exit
-w, --where, --location print physical location of Info file
The first non-option argument, if present, is the menu entry to start from;
it is searched for in all 'dir' files along INFOPATH.
If it is not present, info merges all 'dir' files and shows the result.
Any remaining arguments are treated as the names of menu
items relative to the initial node visited.
For a summary of key bindings, type H within Info.
Examples:
info show top-level dir menu
info info-stnd show the manual for this Info program
info emacs start at emacs node from top-level dir
info emacs buffers select buffers menu entry in emacs manual
info emacs -n Files start at Files node within emacs manual
info '(emacs)Files' alternative way to start at Files node
info --show-options emacs start at node with emacs' command line options
info --subnodes -o out.txt emacs
dump entire emacs manual to out.txt
info -f ./foo.info show file ./foo.info, not searching dir
Email bug reports to bug-texinfo@gnu.org,
general questions and discussion to help-texinfo@gnu.org.
Texinfo home page: http://www.gnu.org/software/texinfo/
root@Sourabh:~#

man

man command in Linux is used to display the user manual of any command that we can run on the terminal. It provides a detailed view of the command which includes NAME, SYNOPSIS, DESCRIPTION, OPTIONS, EXIT STATUS, RETURN VALUES, ERRORS, FILES, VERSIONS, EXAMPLES, AUTHORS and SEE ALSO.

man printf



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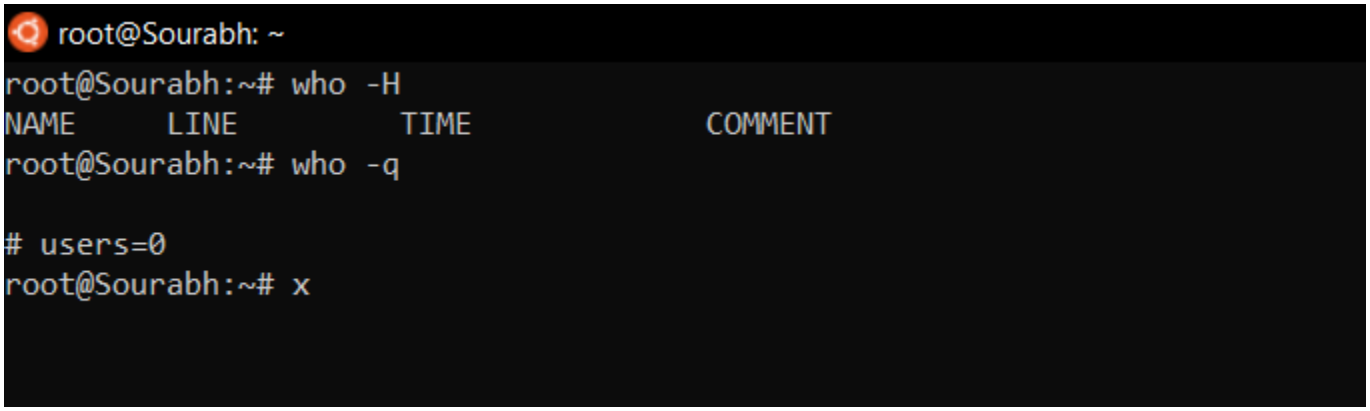
who

who command is used to find out the following information :

1. Time of last system boot
2. Current run level of the system 3. List of logged in users and more.

who –H: To print the heading of the columns displayed.

who –q: To print the login names and total number of logged on users.



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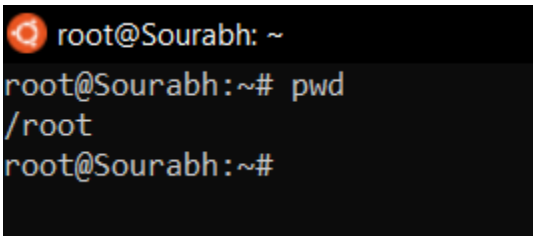
pwd

pwd stands for Print Working Directory. It prints the path of the working directory, starting from the root.



Cat

It reads data from the file and gives their content as output. It helps us to create, view, concatenate files.

In case of reading an existing file:

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more

more command is used to view the text files in the command prompt, displaying one screen at a time in case the file is large (For example log files). The more command also allows the user do scroll up and down through the page.

```
root@Sourabh: /mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2# more -d Q1.sh
#! /bin/bash

read -p "Enter a character: " CHAR
case "$CHAR" in
[aeiouAEIOU])
echo "Vowel" ;;
[A-Z])
echo "Upper Case" ;;
[a-z])
echo "Lower Case" ;;
[0-9])
echo "Digit" ;;
['!@#\$%^\&*()_+'])
echo "Special Character" ;;
*)
echo "None" ;;
esac
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2#
```

---

mv

mv stands for move. mv is used to move one or more files or directories from one place to another in a file system like UNIX. It has two distinct functions:

(i) It renames a file or folder.

(ii) It moves a group of files to a different directory.

```
root@Sourabh: /mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ls
Q1.sh   Q11.sh  Q13.sh  Q15.sh  Q2.sh  Q4.sh  Q6.sh  Q8.sh  Q9.sh.save    temp.sh
Q10.sh  Q12.sh  Q14.sh  Q16.sh  Q3.sh  Q5.sh  Q7.sh  Q9.sh  U19CS082.pdf  temp.txt
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2# mv Q1.sh new.sh
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2# ls
Q10.sh  Q12.sh  Q14.sh  Q16.sh  Q3.sh  Q5.sh  Q7.sh  Q9.sh       U19CS082.pdf  temp.sh
Q11.sh  Q13.sh  Q15.sh  Q2.sh   Q4.sh  Q6.sh  Q8.sh  Q9.sh.save  new.sh        temp.txt
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2#
```

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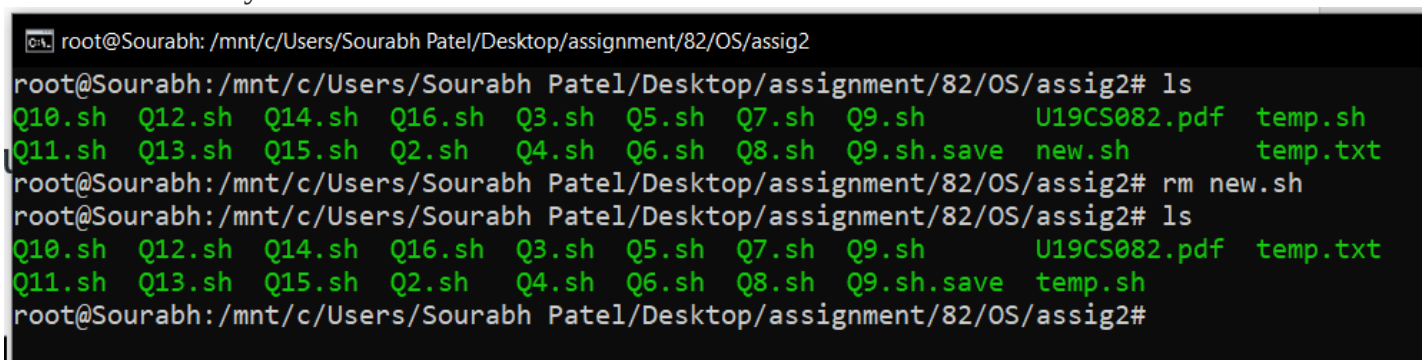
rm

rm command is used to remove objects such as files, directories, symbolic links and so on from the file system.



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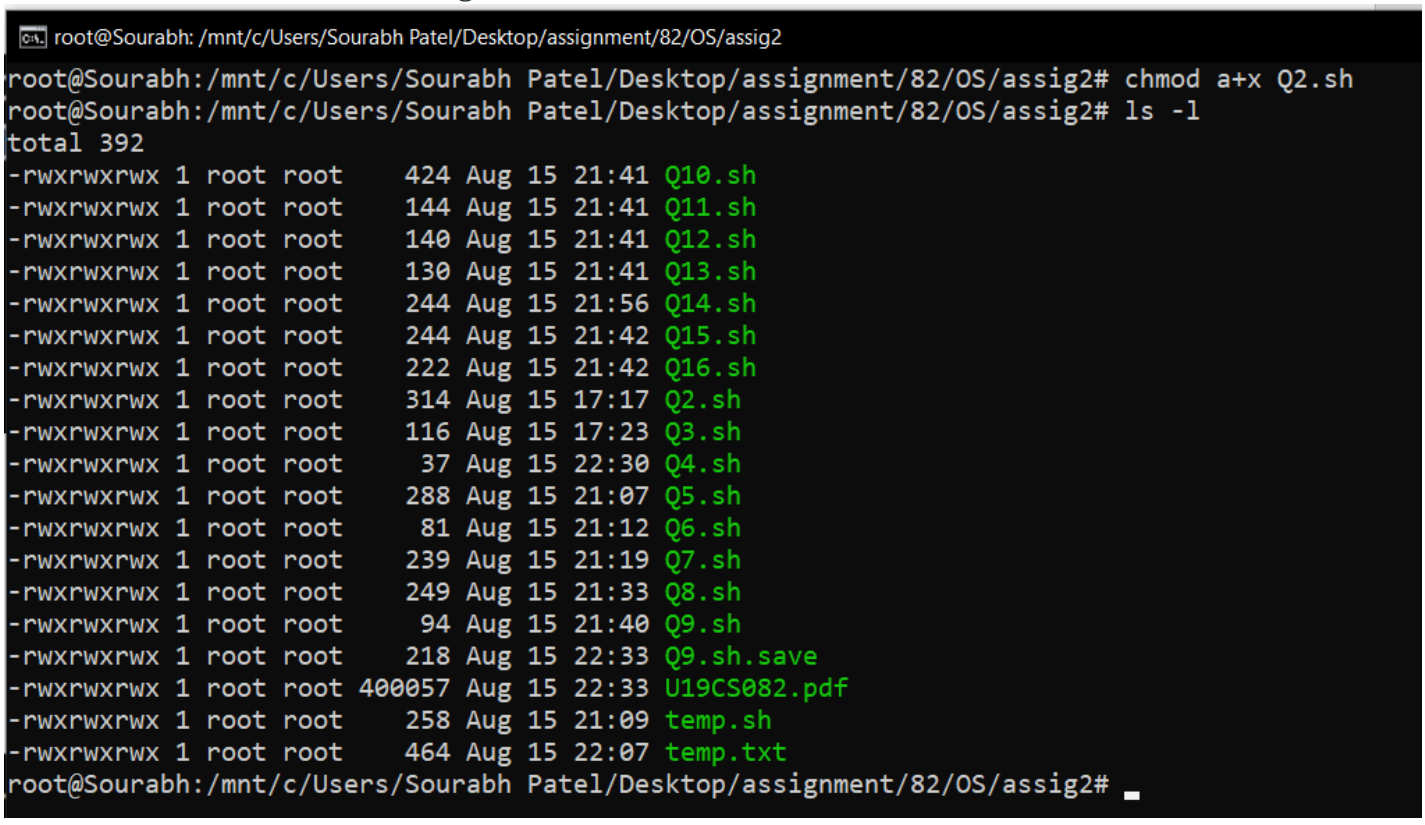
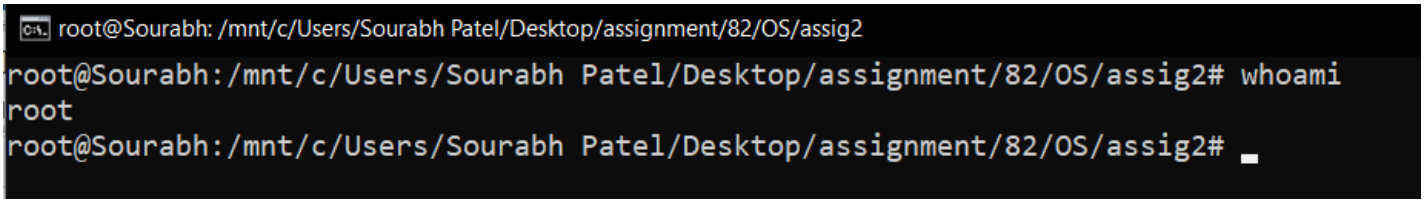
chmod

chmod command is used to change the access mode of a file.



whoami



It displays the username of the current user when this command is invoked. logout

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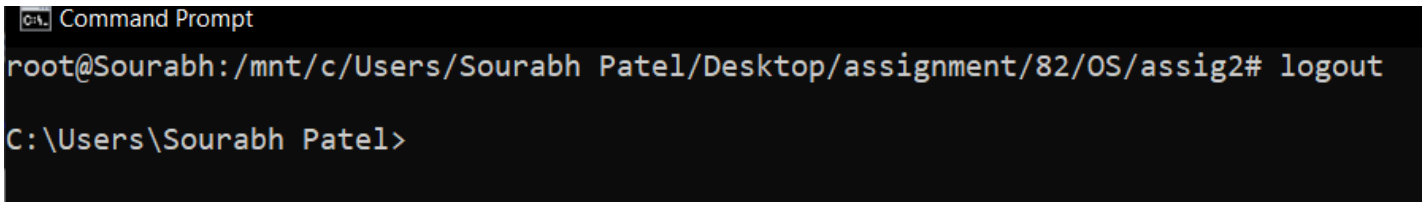
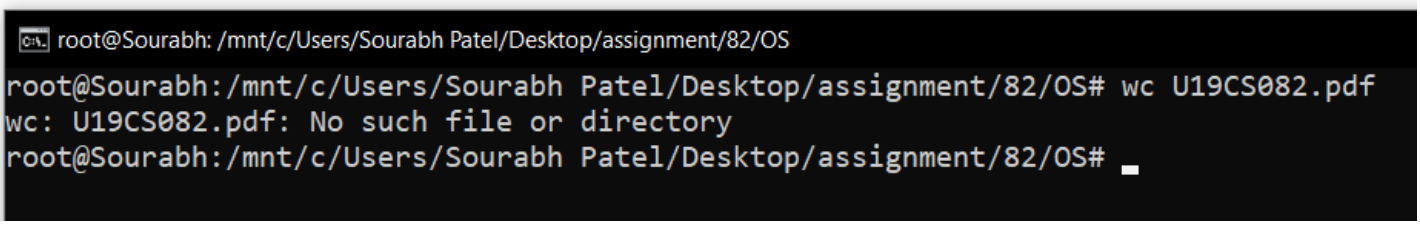
logout command allows you to programmatically logout from your session. causes the session manager to take the requested action immediately.



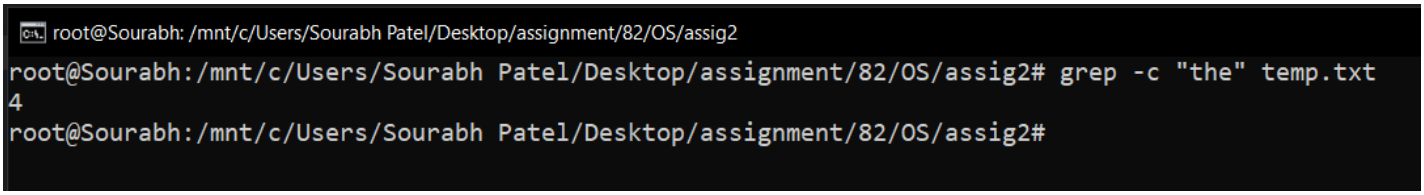


wc

grep

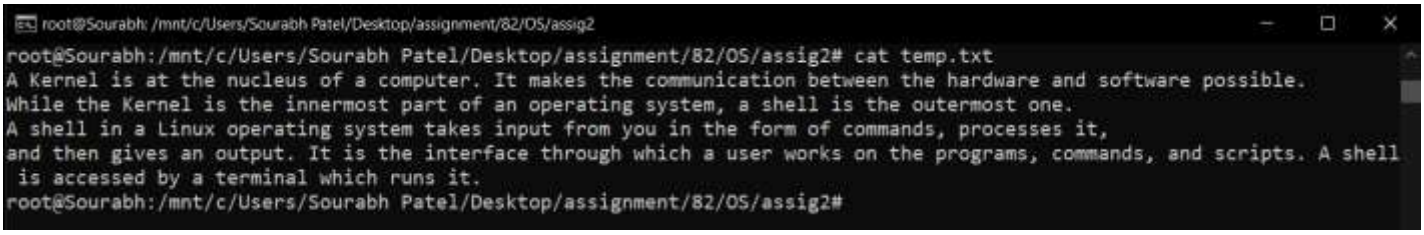
wc stands for word count. It is used to find out number of lines, word count, byte and characters count in the files specified in the file arguments.

The grep filter searches a file for a particular pattern of characters, and displays all lines that contain that pattern. The pattern that is searched in the file is referred to as the regular expression (grep stands for global search for regular expression and print out).



sort

SORT command is used to sort a file, arranging the records in a particular order. By default, the sort command sorts file assuming the contents are ASCII.



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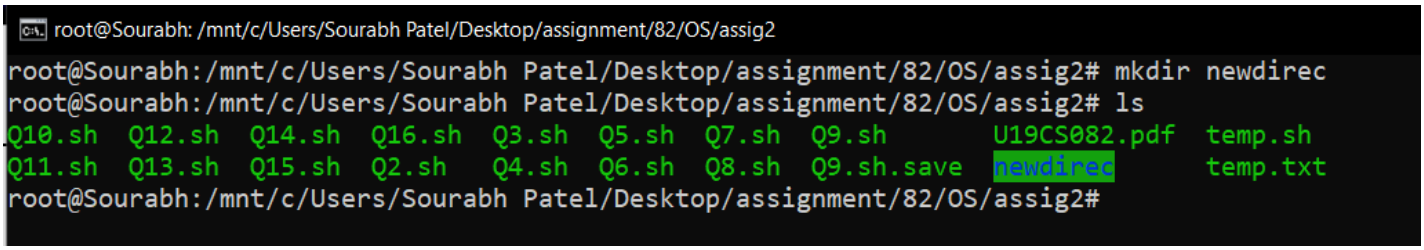
mkdir

mkdir command in Linux allows the user to create directories (also referred to as folders in some operating systems). This command can create multiple directories at once as well as set the permissions for the directories.



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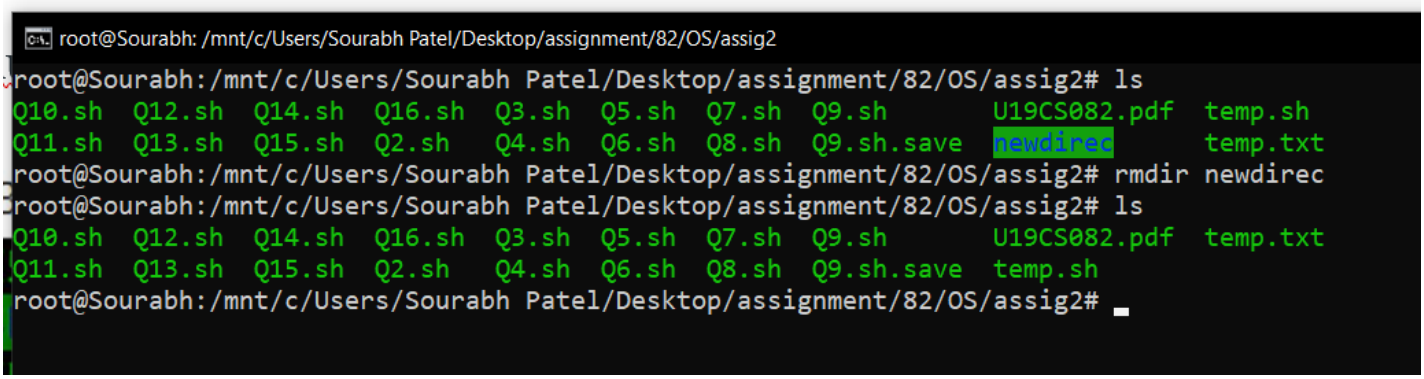
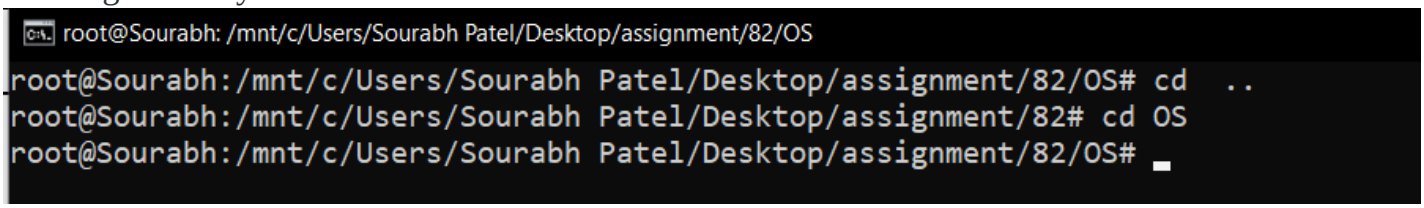
rmdir

rmdir command is used remove empty directories from the filesystem in Linux. The rmdir command removes each and every directory specified in the command line only if these directories are empty. S



cd

cd command in linux known as change directory command. It is used to change current working directory.



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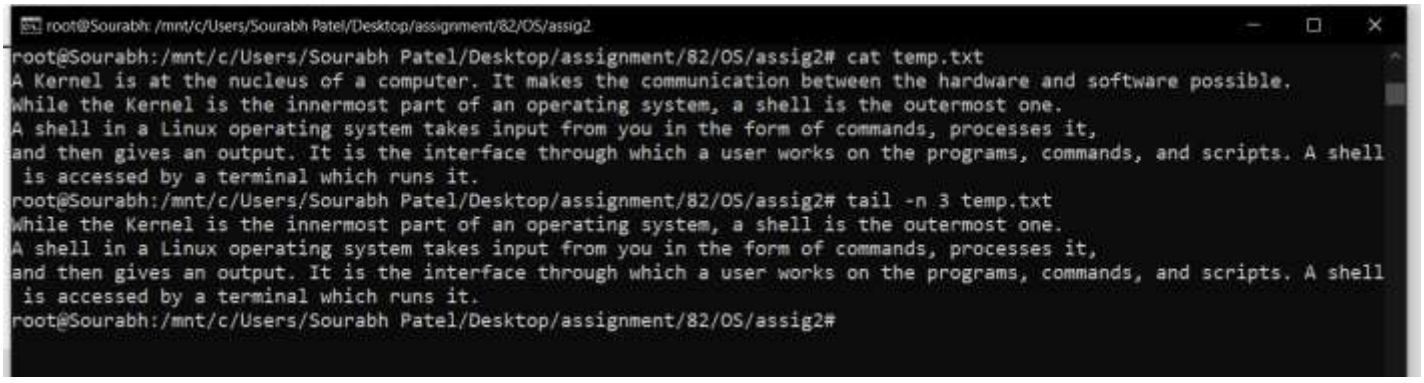
tail

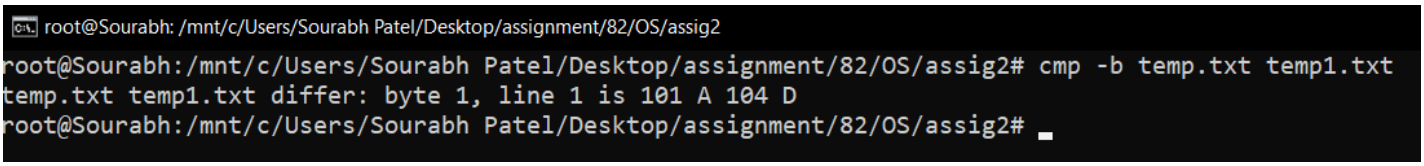
The tail command, as the name implies, print the last N number of data of the given input. By default it prints the last 10 lines of the specified files. If more than one file name is provided then data from each file is precedes by its file name.



Cmp

cmp command in Linux/UNIX is used to compare the two files byte by byte and helps you to find out whether the two files are identical or not.

- When cmp is used for comparison between two files, it reports the location of the first mismatch to the screen if difference is found and if no difference is found i.e the files compared are identical.
- cmp displays no message and simply returns the prompt if the the files compared are identical.



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diff

diff stands for difference. This command is used to display the differences in the files by comparing the files line by line.

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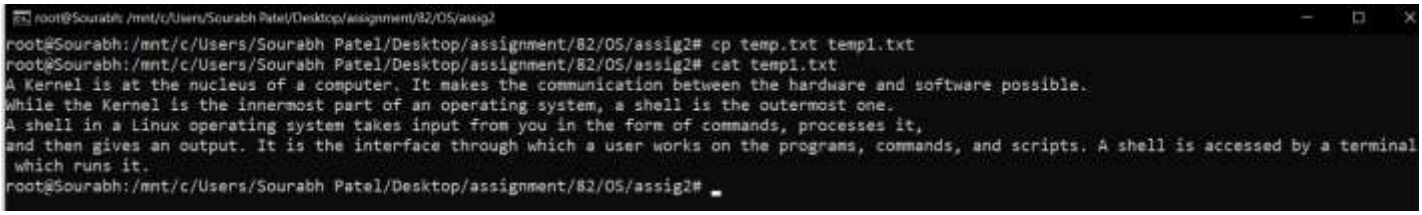
cp

cp stands for copy. This command is used to copy files or group of files or directory. It creates an exact image of a file on a disk with different file name. cp command require at least two filenames in its arguments



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clear clear is a standard Unix computer operating system command that is used to clear the terminal screen.

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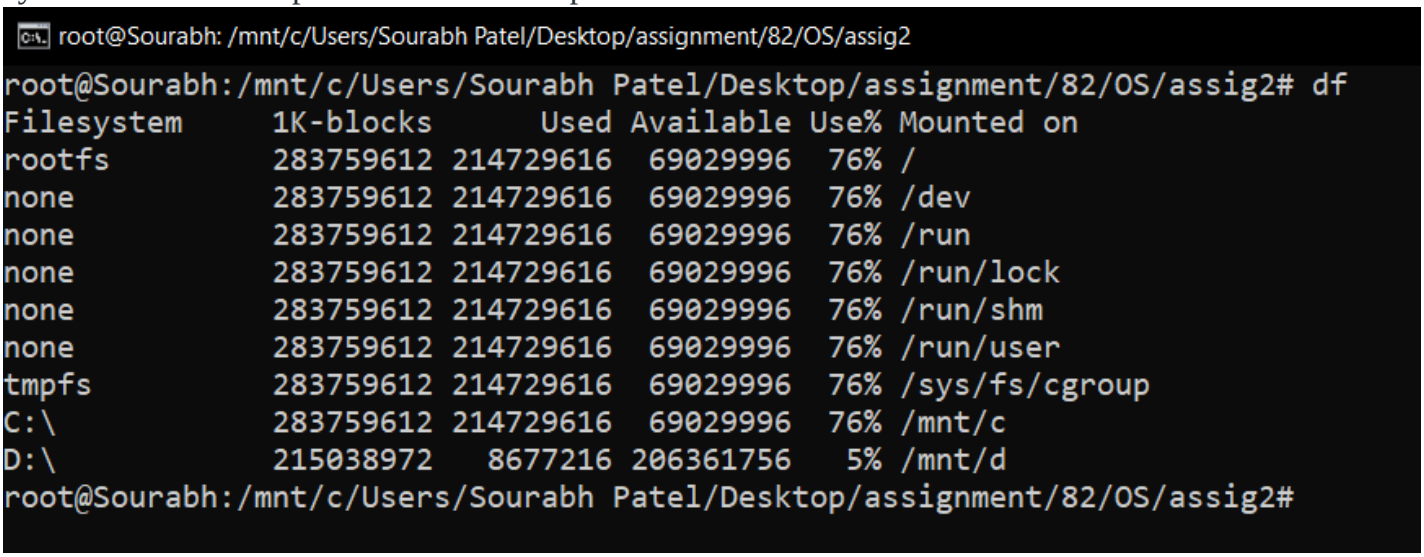
df

The df command (short for disk free), is used to display information related to file systems about total space and available space.



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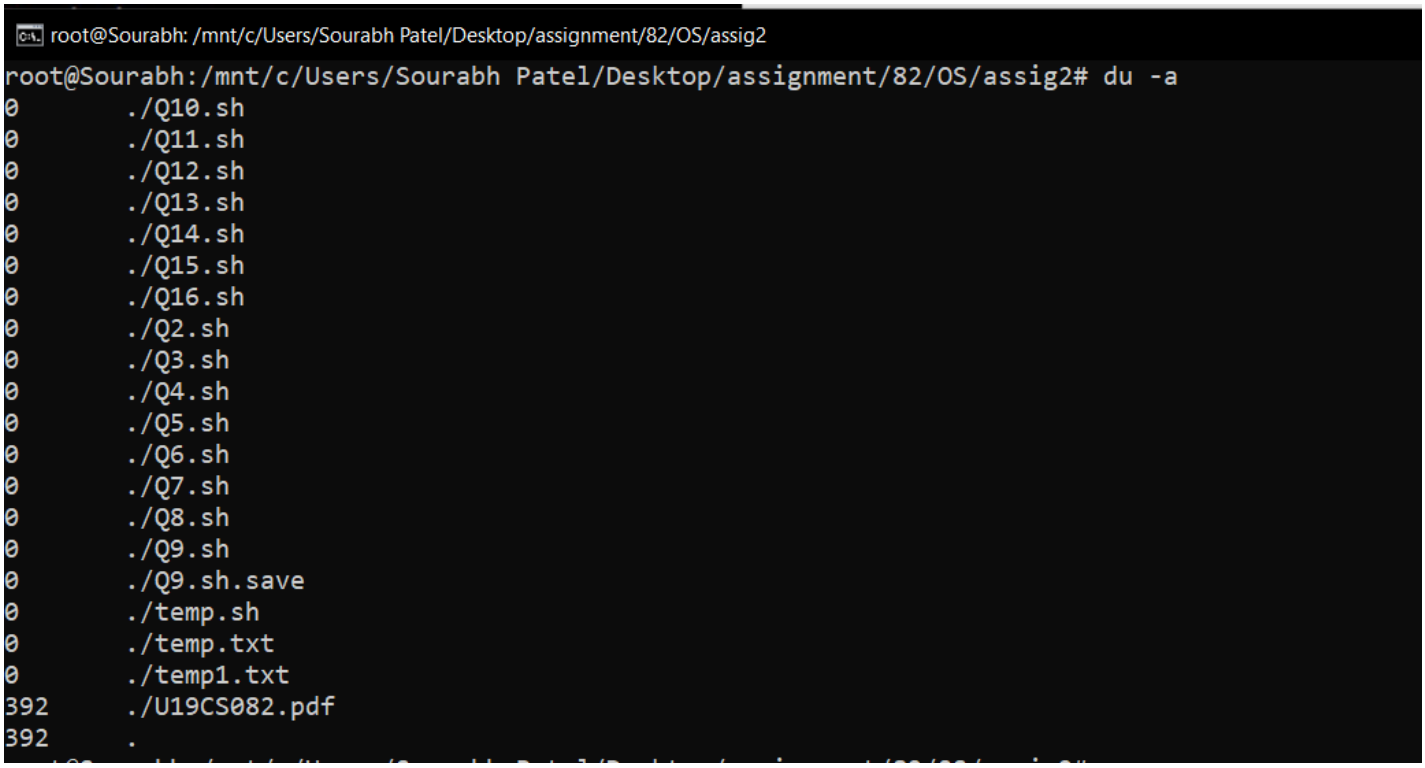
du

du command, short for disk usage, is used to estimate file space usage. The du command can be used to track the files and directories which are consuming excessive amount of space on hard disk drive. du –a : List all files and directories size.



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uname

The command ‘uname‘displays the information about the system.

-a option: It prints all the system information in the following order: Kernel name, network node hostname, kernel release date, kernel version, machine hardware name, hardware platform, operating system

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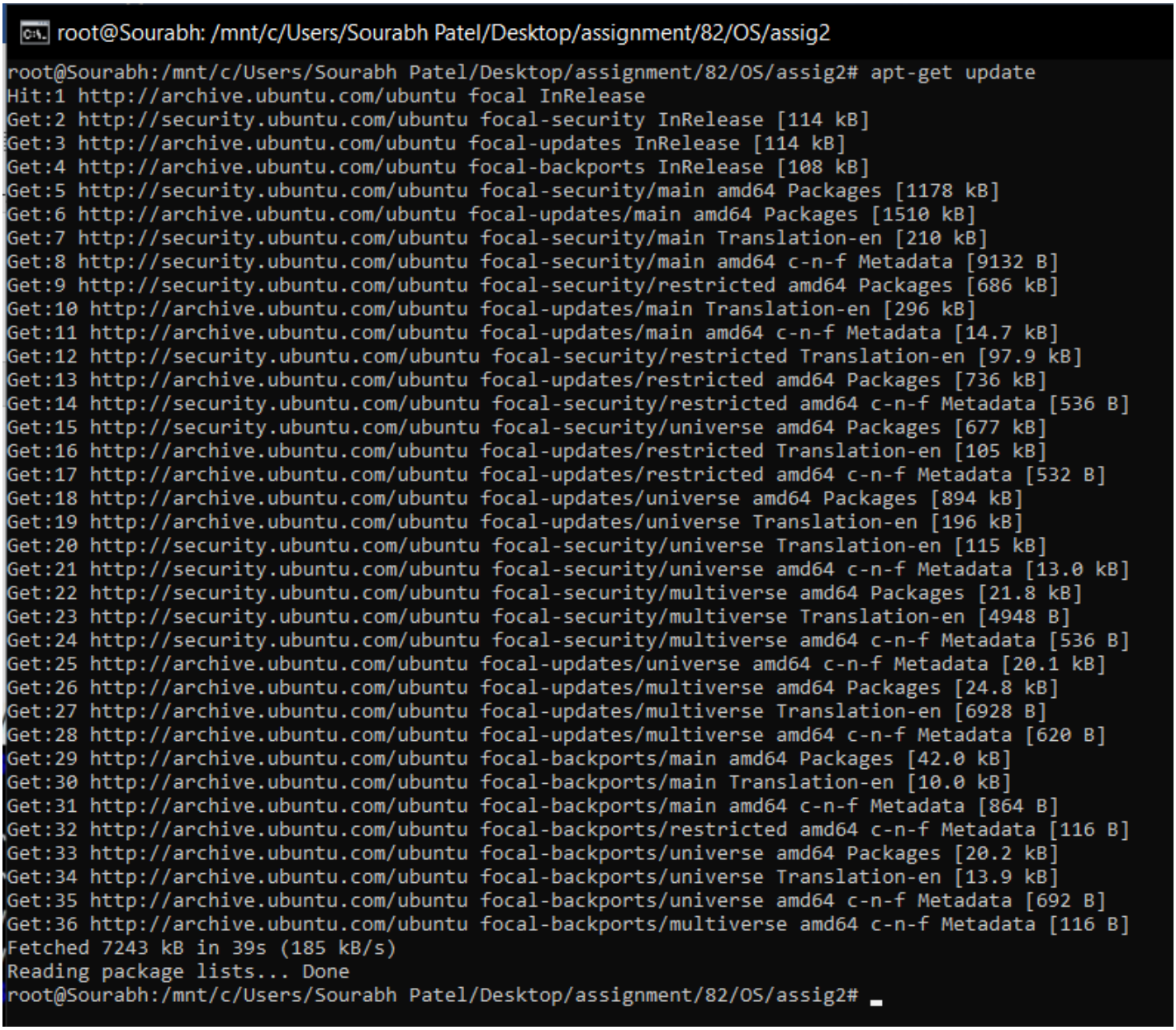
apt-get

apt-get is a command-line tool which helps in handling packages in Linux. Its main task is to retrieve the information and packages from the authenticated sources for installation, upgrade and removal of packages along with their dependencies. Here APT stands for the Advanced Packaging Tool.



Find

The find command in UNIX is a command line utility for walking a file hierarchy. It can be used to find files and directories and perform subsequent operations on them. It supports searching by file, folder, name, creation date, modification date, owner and permissions. By using the '-exec' other UNIX commands can be executed on files or folders found.

```
root@Sourabh: /mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2# find ./ -name temp1.txt
./temp1.txt
root@Sourabh:/mnt/c/Users/Sourabh Patel/Desktop/assignment/82/OS/assig2#
```

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wget

Wget is the non-interactive network downloader which is used to download files from the server even when the user has not logged on to the system and it can work in the background without hindering the current process.

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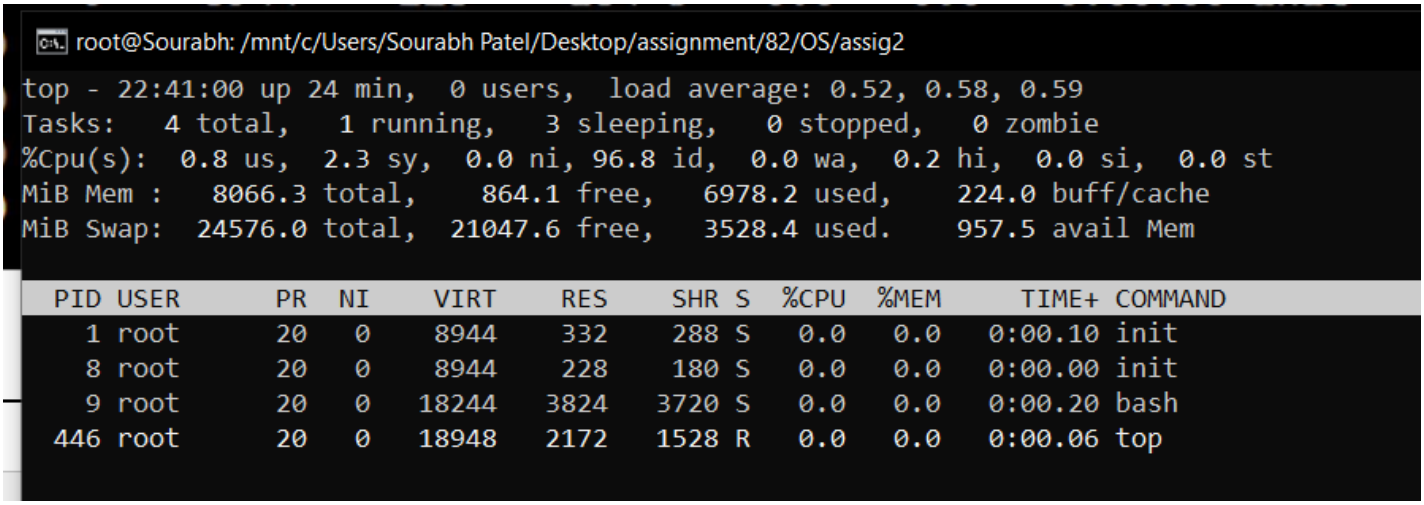
top

top command is used to show the Linux processes. It provides a dynamic realtime view of the running system. Usually, this command shows the summary information of the system and the list of processes or threads which are currently managed by the Linux Kernel.



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mpstat

mpstat is a command that is used to report processor related statistics. It accurately displays the statistics of the CPU usage of the system. It displays information about CPU utilization and performance. It initializes the first processor with CPU 0, the second one with CPU 1, and so on.

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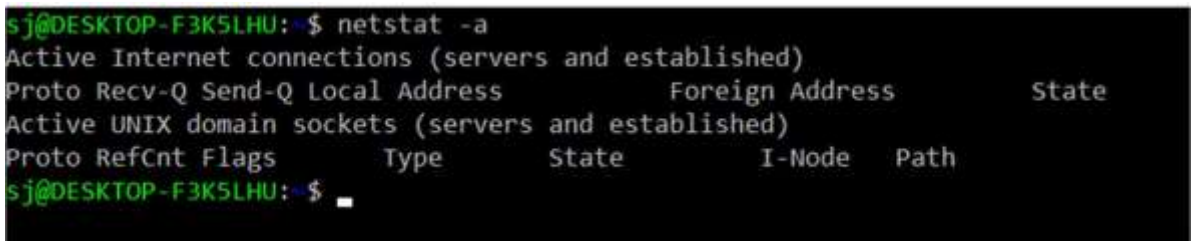
netstat

Netstat command displays various network related information such as network connections, routing tables, interface statistics, masquerade connections, multicast memberships etc.



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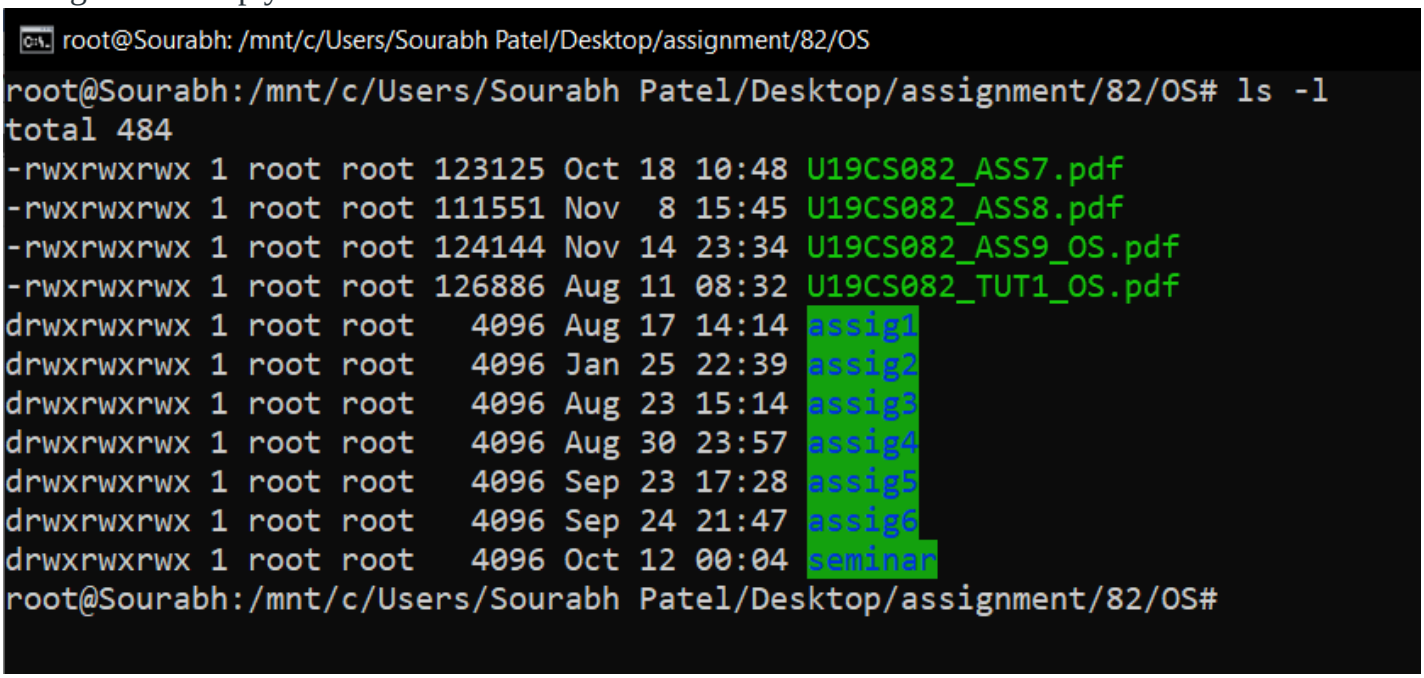
sar sar : System Activity

Report

It can be used to monitor Linux system's resources like CPU usage, Memory utilization, I/O devices consumption, Network monitoring, Disk usage, process and thread allocation, battery performance, Plug and play devices, Processor performance, file system and more.

Chown

chown command is used to change the file Owner or group. Whenever you want to change ownership you can use chown command.



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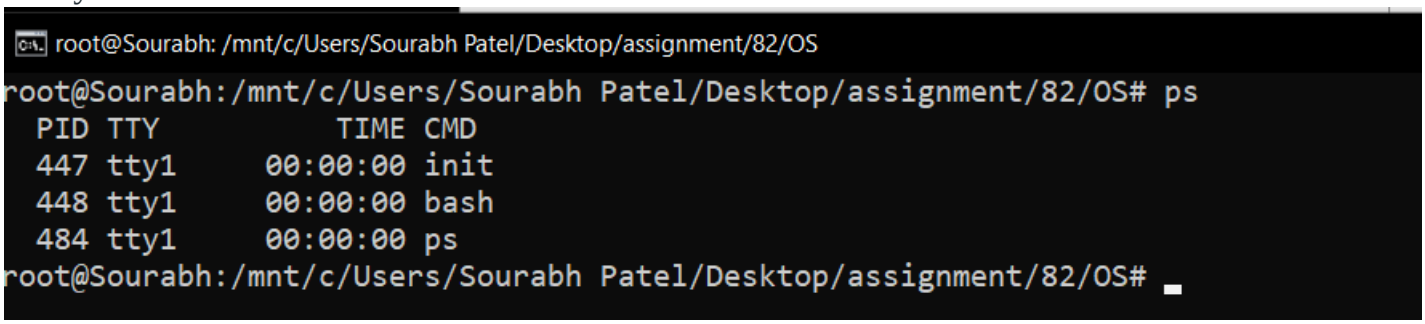
2. Linux commands related with process:

ps

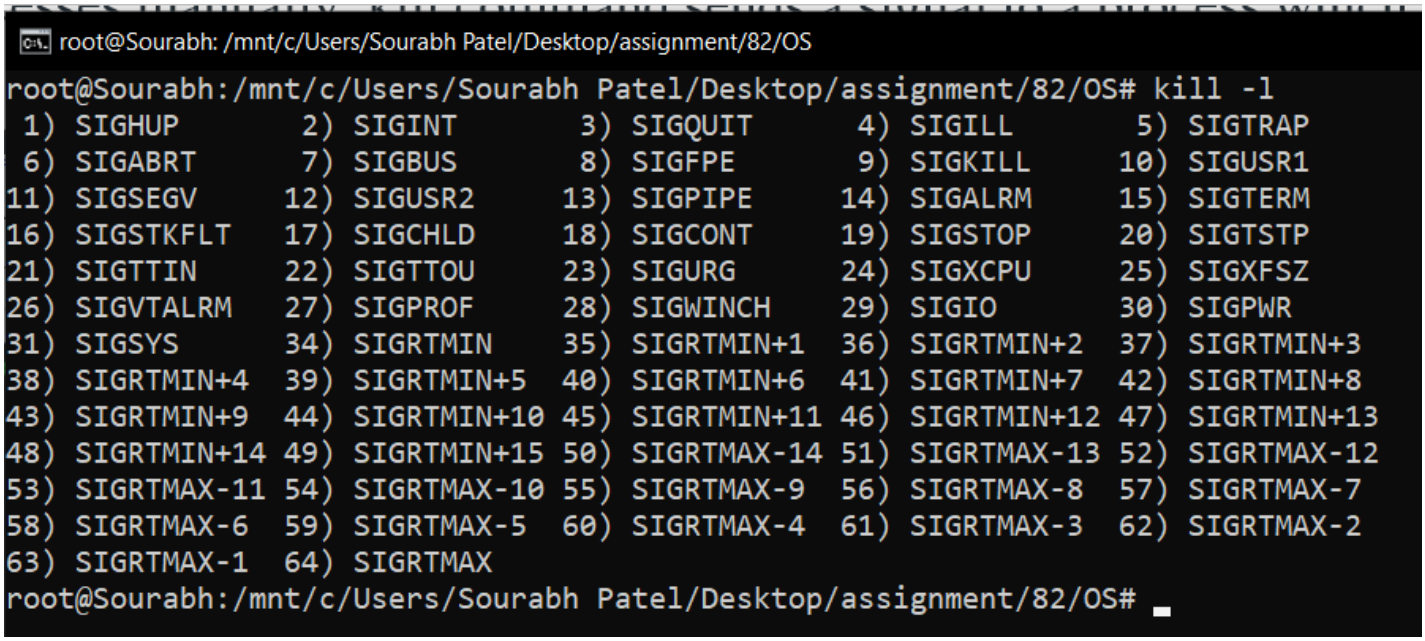
Linux provides us a utility called ps for viewing information related with the processes on a system which stands as abbreviation for "Process Status". ps command is used to list the currently running processes and their PIDs along with some other information

depends on different options. It reads the process information from the virtual files in /proc file-system. /proc contains virtual files, this is the reason it’s referred as a virtual file system.

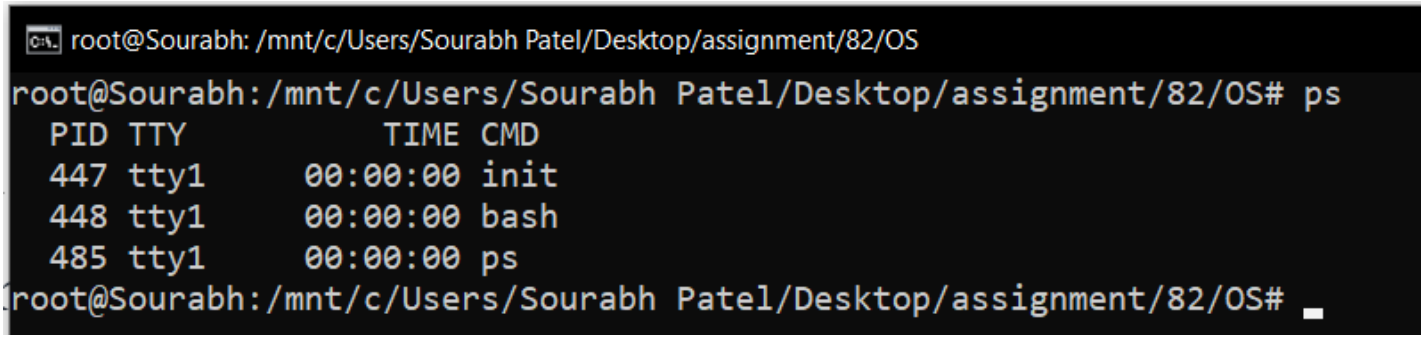


kill

kill command in Linux (located in /bin/kill), is a built-in command which is used to terminate processes manually. kill command sends a signal to a process which terminates the process. If the user doesn’t specify any signal which is to be sent along with kill command then default TERM signal is sent that terminates the process. kill -l :To display all the available signals



To display a list of running processes use the command ps and this will show you running processes with their PID number. To specify which process should receive the kill signal we need to provide the PID.



background processing (with &)

To run a command in the background, add the ampersand symbol (&) at the end of the command:

The shell job ID (surrounded with brackets) and process ID will be printed on the terminal: