EXPERIMENT 2

AIM:

Study of a terminal based text editor such as Vim or Emacs. (By the end of the course, students are expected to acquire following skills in using the editor: cursor operations, manipulate text, search for patterns, global search and replace) Basic Linux commands, familiarity with following commands/operations expected

1 man

2 ls, echo, read

3 more, less, cat

4 cd, mkdir, pwd, find

5 mv, cp, rm, tar

6 wc, cut, paste

7 head, tail, grep, expr

8 chmod, chown

9 Redirections & Piping

10 useradd, usermod, userdel, passwd

11 df,top, ps

12 ssh, scp, ssh-keygen, ssh-copy-id

Text Editor

Text editors are software programs used for creating and editing plain text files. They're essential tools for programmers, writers, and anyone who works with text-based documents.

Unix text editors are:

• VIM

• EMACS

• NANO

• PICO

VIM

Vim is an acronym for Vi IMproved. It is a free and open-source cross-platform text editor. It was first released by Bram Moolenaar in 1991 for UNIX variants. Vim is based on the original Vi editor, which was created by Bill Joy in 1976.

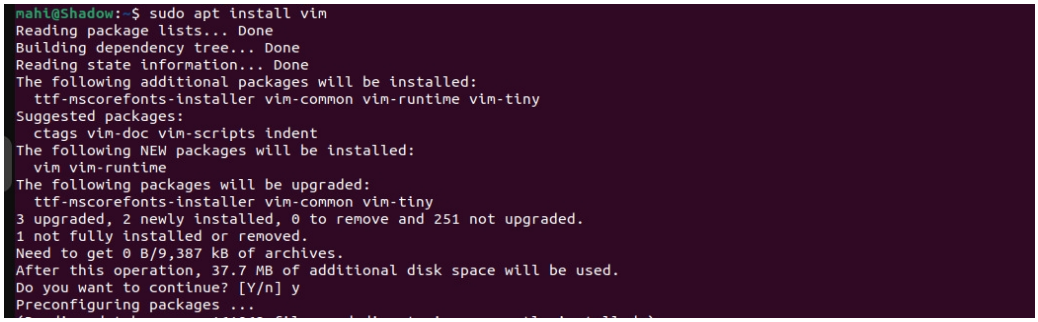
Vim Modes:

There are 4 most important modes in Vim:

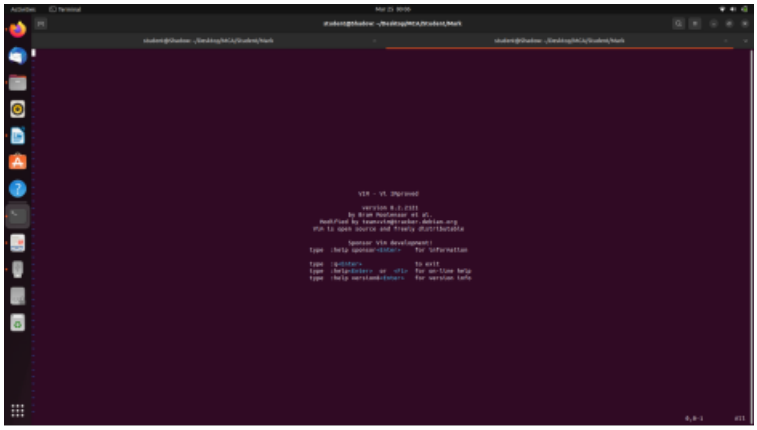
- Command Mode
- Command-Line Mode
- Insert Mode
- Visual Mode

Vim Installation:

- sudo apt-get update
- t-get install vim

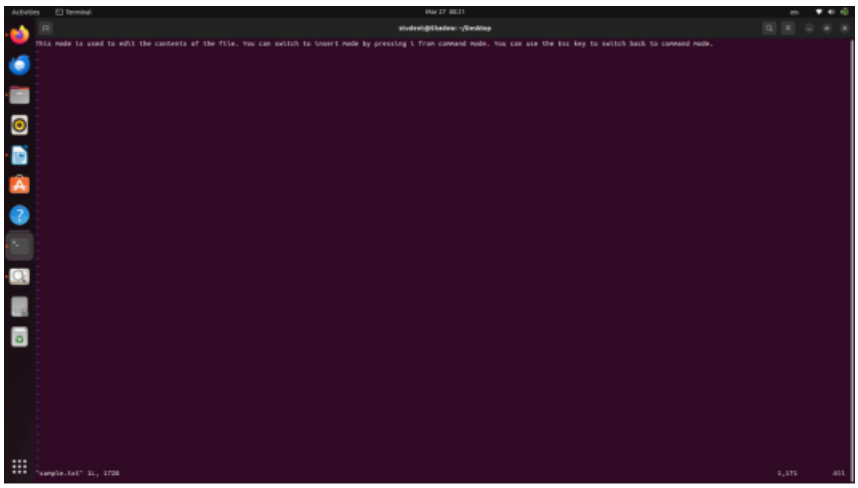


- vim



To invoke the vim editor, execute the vim command with the file name:.

- **Command Mode:** This is the default mode (also called Normal mode) in Vim. Whenever Vim starts, you'll be in this mode. You can switch to any mode from this mode.



- **Command-Line Mode:** You can use this mode to play around with some commands.But the commands in this mode are pefixed with a

colon(:).You can switch to this mode by pressing :(colon) in commaand mode.

- **Insert Mode:** This mode is used to edit the contents of the file. You can switch to insert mode by pressing i from command mode. You can use the Esc key to switch back to command mode.

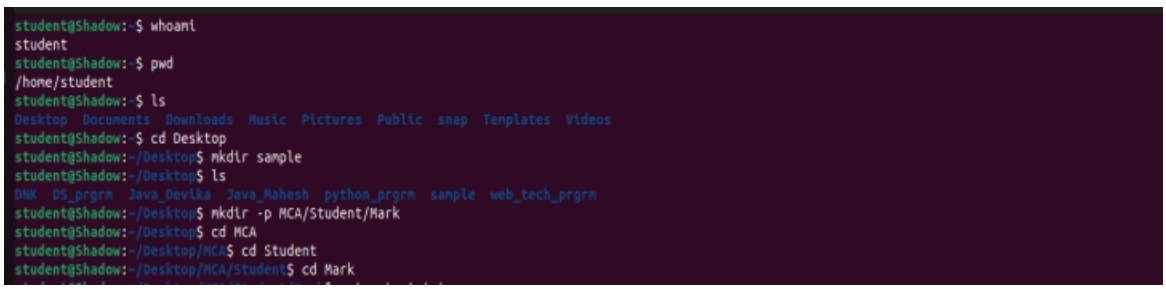
- **Visual Mode:** You use this mode to visually select some text and run commands over that section of code. You can switch to this mode by pressing v from the command mode.

Basic Linux Commands

- whoami : Display the user.
- pwd : Present working directory
- mkdir : Create a new directory (folder).
- cd : It is used to navigate through the linux files and directories.
- ls : List the directory(folder) system.

    ls -a: Will show the hidden file.

ls -l: Will list the file and directory with detailed information like the permission size,owner…etc.



```
student@Shadow:~/Desktop/MCA/Student/Mark$ ls
pgm1.py  pgm2.py  pgm3.py  pgm4.py  pgm5.py  RegistrationForm.html  sum.c  sumodd.c  test1.txt  test.txt  WebPage.html
student@Shadow:~/Desktop/MCA/Student/Mark$ ls -a
.  ..  pgm1.py  pgm2.py  pgm3.py  pgm4.py  pgm5.py  RegistrationForm.html  sum.c  sumodd.c  test1.txt  test.txt  WebPage.html
student@Shadow:~/Desktop/MCA/Student/Mark$ ls -l
total 44
-rwxr-xr-x 1 student student  281 Dec 24 09:56 pgm1.py
-rwxr-xr-x 1 student student  813 Dec 25 12:19 pgm2.py
-rwxr-xr-x 1 student student  229 Dec 25 12:41 pgm3.py
-rwxr-xr-x 1 student student  335 Dec 25 12:41 pgm4.py
-rwxr-xr-x 1 student student  310 Dec 25 12:42 pgm5.py
-rwxr-xr-x 1 student student 1959 Jan  3 19:52 RegistrationForm.html
-rwxr-xr-x 1 student student  143 Nov 14 05:38 sum.c
-rwxr-xr-x 1 student student  230 Nov 14 05:44 sumodd.c
-rw-rw-r-- 1 student student  159 Mar 25 00:01 test1.txt
-rw-rw-r-- 1 student student  128 Mar 24 23:50 test.txt
-rwxr-xr-x 1 student student 1205 Nov  5 10:01 WebPage.html
student@Shadow:~/Desktop/MCA/Student/Mark$
```

```
student@Shadow:~$ cd Desktop/MCA/Student/Mark
student@Shadow:~/Desktop/MCA/Student/Mark$ cd ..
student@Shadow:~/Desktop/MCA/Student$ cd ~
student@Shadow:~$
```

- echo: echo "Hello, World!" - Prints "Hello, World!" to the command line

```
student@mca34: ~/Desktop
student@mca34:~$ cd Desktop
student@mca34:~/Desktop$ echo "Hello World"
Hello World
student@mca34:~/Desktop$ read a
welcome
student@mca34:~/Desktop$ read b
CEV
student@mca34:~/Desktop$ echo $a $b
welcome CEV
student@mca34:~/Desktop$
```

- read:Reads a line from standard input into the variables.
- more: Displays text files one page at a time, waiting for user input to continue to the next page.
- less: Similar to more, but with additional features such as backward scrolling and searching within the displayed text.
- cat : The cat command in Unix-like operating systems stands for "concatenate".cat can concatenate the contents of multiple filesdisplay them. Its also used to create, modify, or display the contents of files.

```
student@Shadow:~/Desktop/MCA/Student/Mark$ cat > test.txt
used to create, modify, or display the contents of files.
cat can concatenate the contents of multiple files and display then.
^Z
[1]+  Stopped                 cat > test.txt
student@Shadow:~/Desktop/MCA/Student/Mark$ cat test.txt
used to create, modify, or display the contents of files.
cat can concatenate the contents of multiple files and display then.
student@Shadow:~/Desktop/MCA/Student/Mark$ cat > test1.txt
The cat command in Unix-like operating systems stands for "concatenate".
^Z
[2]+  Stopped                 cat > test1.txt
student@Shadow:~/Desktop/MCA/Student/Mark$ cat test.txt test1.txt
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cat can concatenate the contents of multiple files and display then.
The cat command in Unix-like operating systems stands for "concatenate".
```
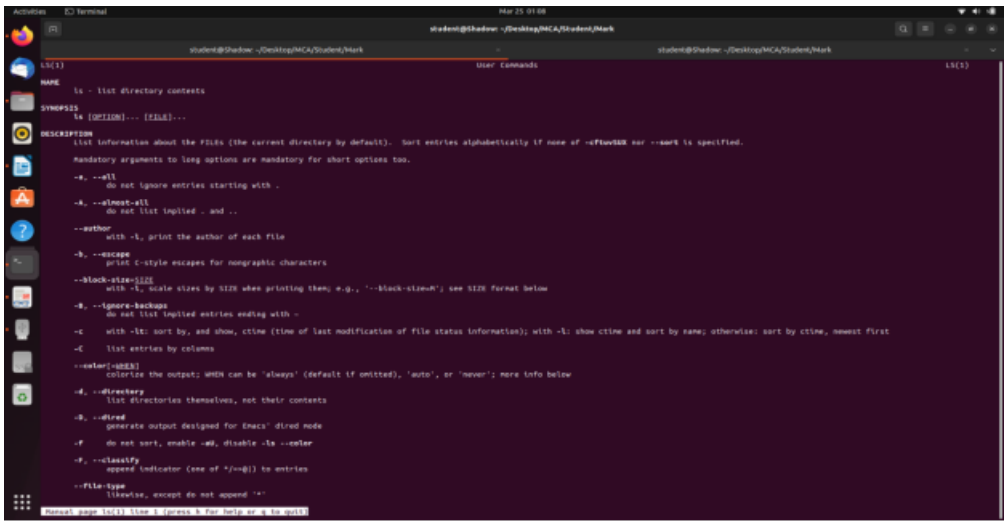

```
student@Shadow:~/Desktop/MCA/Student/Mark$ cat >> test1.txt
cat can be used to append text to an existing file by using output redirection (>>).
^Z
[6]+  Stopped                 cat >> test1.txt
student@Shadow:~/Desktop/MCA/Student/Mark$ cat test1.txt
The cat command in Unix-like operating systems stands for "concatenate".
cat can be used to append text to an existing file by using output redirection (>>).
```

- man : Used to display the manual pages for other commands.

Eg: man ls



- find : Searches for files and directories in a directory hierarchy.

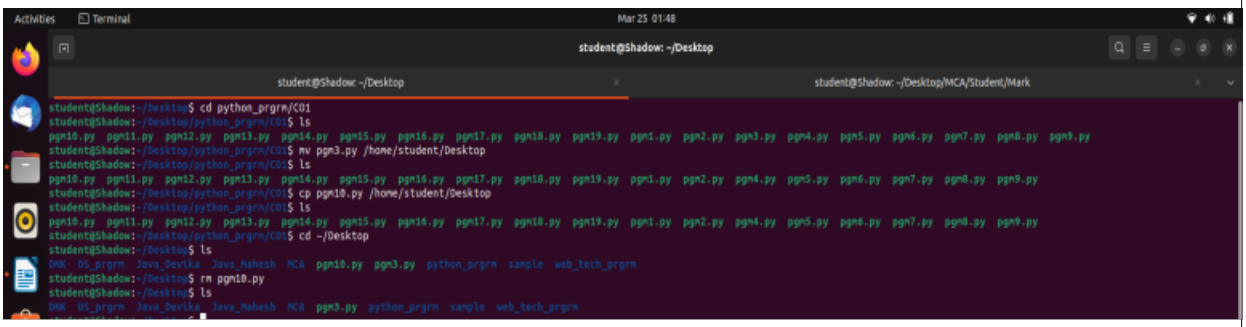
```
student@Shadow:~$ find . -name pgm1.py;
./Desktop/MCA/Student/Mark/pgm1.py
./Desktop/python_prgrm/CO1/pgm1.py
student@Shadow:~$
```

- mv: Moves a file or directory from one location to another.
  For example, mv file1.txt /path/to/new/location/ moves file1.txt to /path/to/new/location/.

- cp: Copies a file or directory from one location to another.
  For example, cp file1.txt file2.txt copies file1.txt to file2.txt.

- rm: Deletes (removes) a file or directory.
  For example, rm file.txt deletes file.txt.

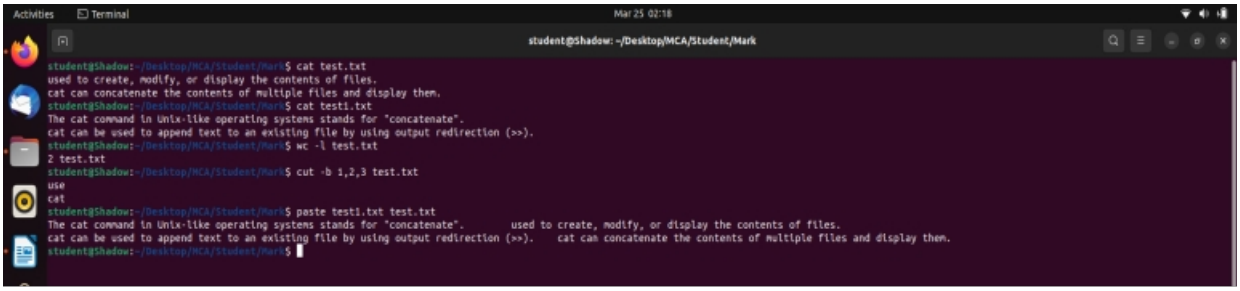
- tar: Creates an archive of files and directories.



- `wc: wc -l file.txt - Counts the number of lines in file.txt.`

- cut: Extracts specific fields from lines in a file based on a delimiter.

- paste: Merges lines from multiple files.

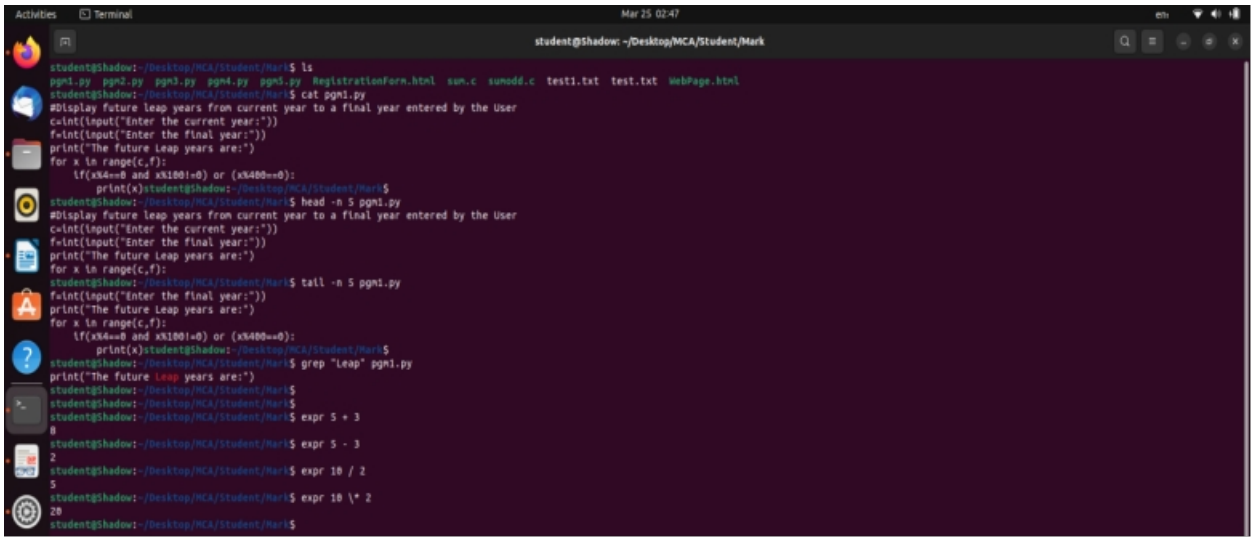


- `head: head -n 5 file.txt - Displays the first 5 lines offile.txt.`
- `tail: tail -n 5 file.txt - Displays the last 5 lines of file.txt.`
- `grep: Grep command is used to search through all the text in a given file.`

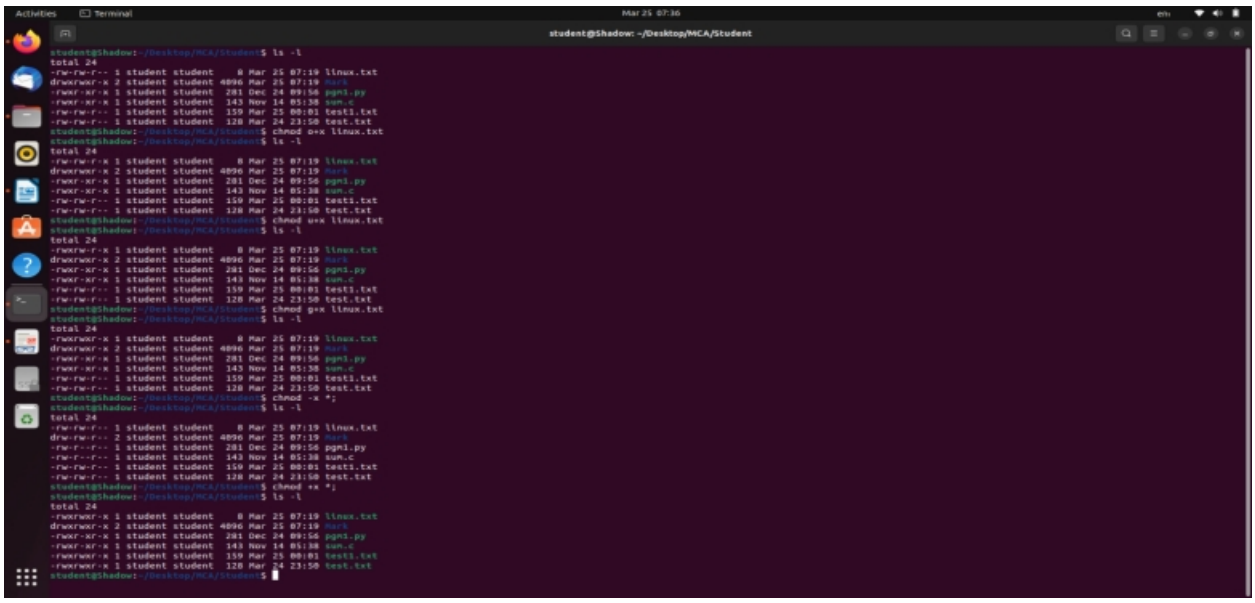
`Eg: grep "pattern" file.txt - Searches for lines containing "pattern" in file.txt`

- `expr: It was used to evaluate a given expression and display its corresponding output.`

Eg: expr 5 + 3 - Evaluates the expression 5 + 3



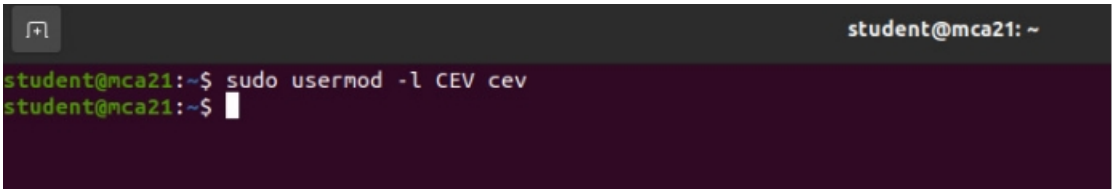
- chmod: It is used to change the access permissions of files and directories.



- chown: It is used to change the files ownership, directory,orsymbolic link for a user or group.

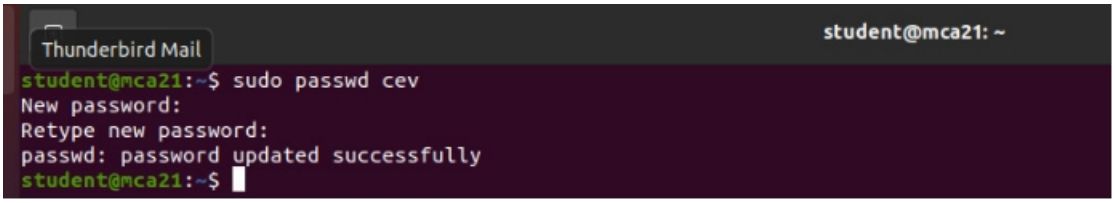
- redirection and piping: Pipe is used to combine two or more commends and in this the output of one command and act as input to the another command, and this command output may cut as input to the next command. Redirection in linux command refers to the ability of the linux operating system that allows as to change the standard input and standard output when executing a command on the terminal.
- useradd: It is used to for adding /creating user accounts in linux and other unix-like operating systems.

- usermod: It is used to modify existing user account details, such as username,password,home directory location,default shell,and more.



- rdel: It is used to delete a user account and related files.

- swd: Passwd command used to change password for user accounts.



- ssh : It instructs the system to establish an encrypted secure connection with the host machine.

To check the system containing ssh using the command:

$ “ssh”

The installation command on ssh is:

$ “sudo apt-get install open ssh-server”

To check the system IP address using the command:

$ “ifconfig”

Ping command using to check working:

$ “ping second system IP”

To login second system using the given command:

$ “ssh second system user@second system IP

$ “cd Desktop”

$ “ls”

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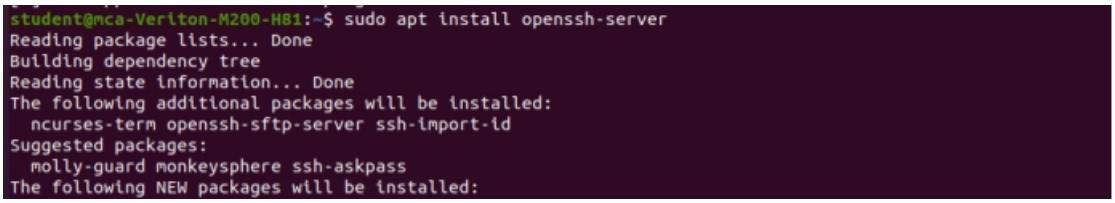
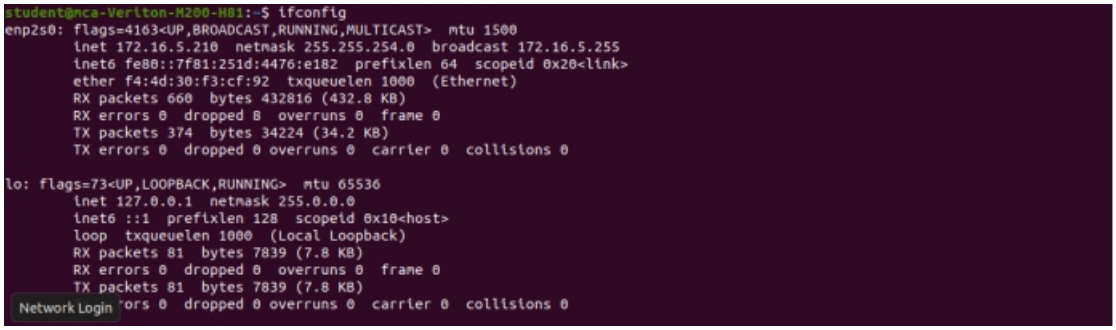
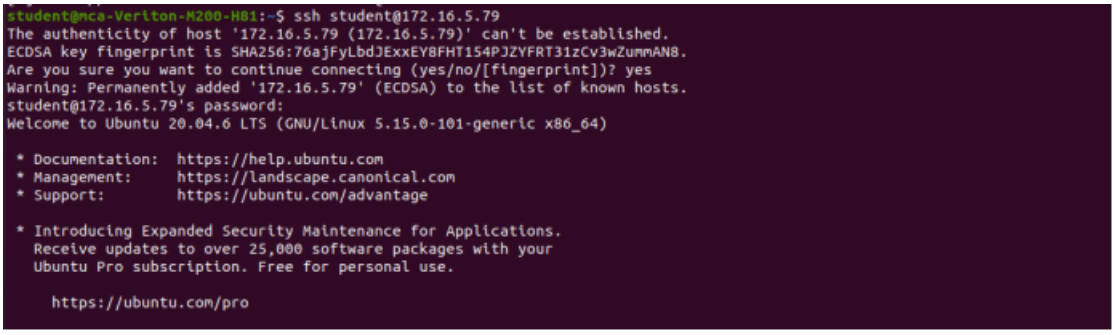






- scp : It is used to copy files between servers in a secure way.

Command:

$ ”scp 2nd system file path 1st system user@1st system IP:2nd system path”

To logout the connection using:

$ “logout/cntrl+D”

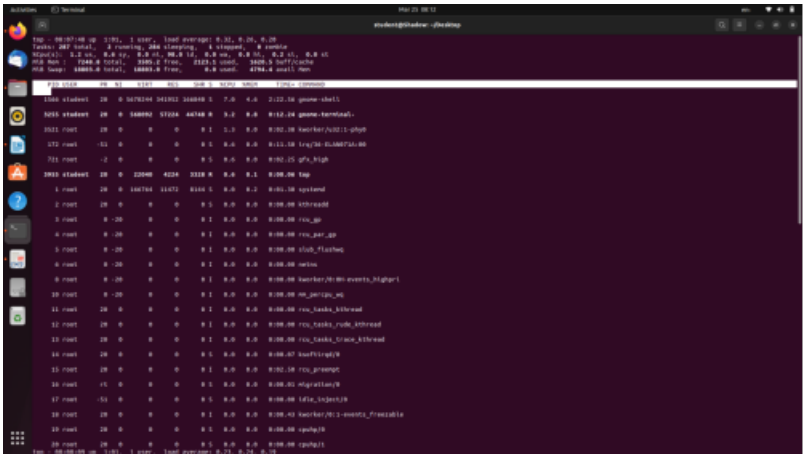
```
student@nca-Veriton-M200-H81:~/Desktop$ scp student@172.16.5.79:/home/student/Desktop/1.txt /home/student/Desktop/
student@172.16.5.79's password:
1.txt                                                                                    100%    7     2.4KB/s   00:00
```

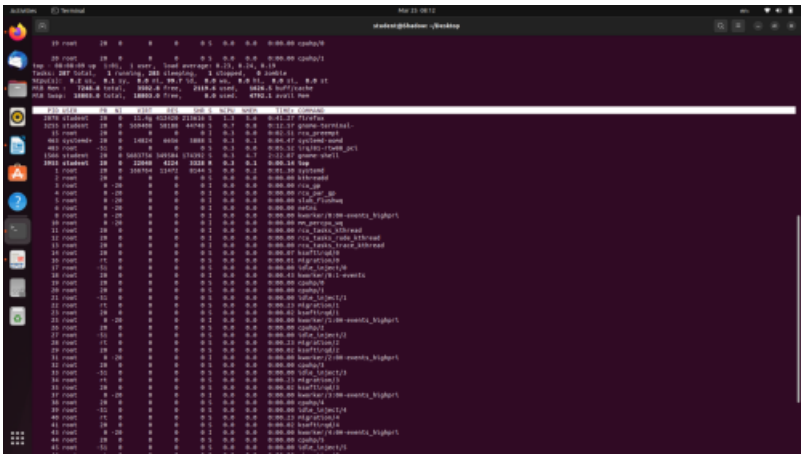
```
student@nca-Veriton-M200-H81:~/Desktop$ scp /home/student/Desktop/share.txt student@172.16.5.79:/home/student/Desktop
student@172.16.5.79's password:
share.txt                                                                                100%    4     2.6KB/s   00:00
student@nca-Veriton-M200-H81:~/Desktop$
```

- ssh-keygen :It is used to generate,manage,and convert authentication keys for “ssh"
- ssh-copy-id : It uses the “ssh” protocol to connect to the target host and upload the “ssh” user key.
- df: It is used to display the disk space used in the file system

```
student@Shadow:~/Desktop$ df;
Filesystem     1K-blocks     Used Available Use% Mounted on
tmpfs             742280     2120    740160   1% /run
/dev/nvme0n1p5  76319516 10790016  61606864  15% /
tmpfs            3711392        0   3711392   0% /dev/shm
tmpfs               5120        4      5116   1% /run/lock
/dev/nvme0n1p6 105149208  1348284  98413456   2% /home
/dev/nvme0n1p1    262144    94384    167760  37% /boot/efi
tmpfs             742276      104    742172   1% /run/user/1001
```

- top: It shows the real-time view of running process in linux and displays and kernel managed tasks.





- ps: It is used to list the currently running processes and their PIDs along with some other information depends on different option.

```
student@Shadow:~/Desktop$ ps;
    PID TTY          TIME CMD
   3273 pts/0    00:00:00 bash
   3326 pts/0    00:00:00 cat
   3955 pts/0    00:00:00 top
   4109 pts/0    00:00:00 ps
```