

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.

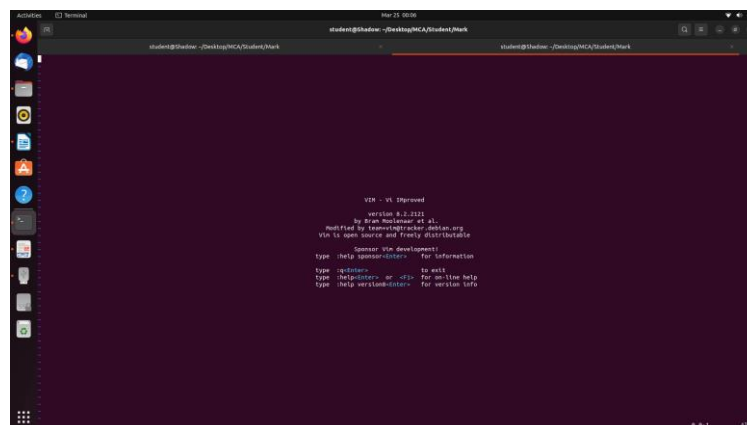
Vim Modes:

There are 4 most important modes in Vim:

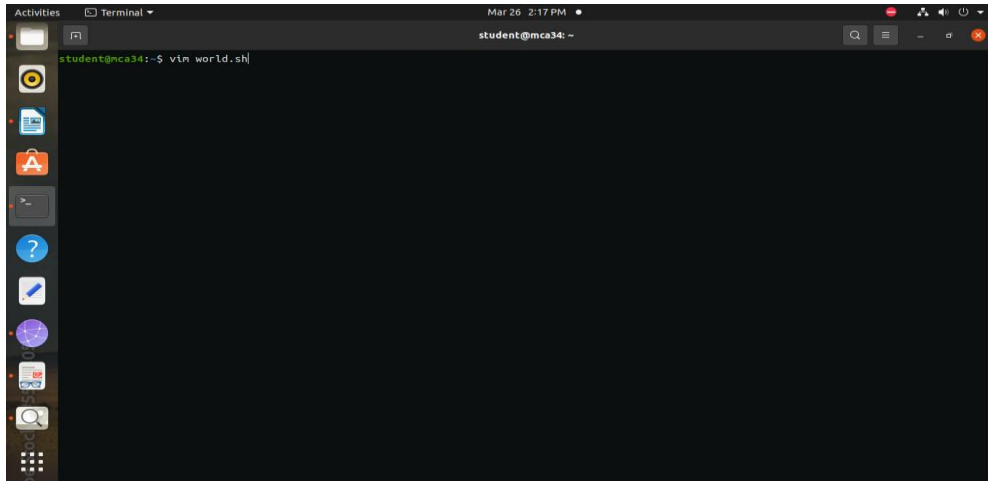
- Command Mode
- Command-Line Mode
- Insert Mode
- Visual Mode

Vim Installation:

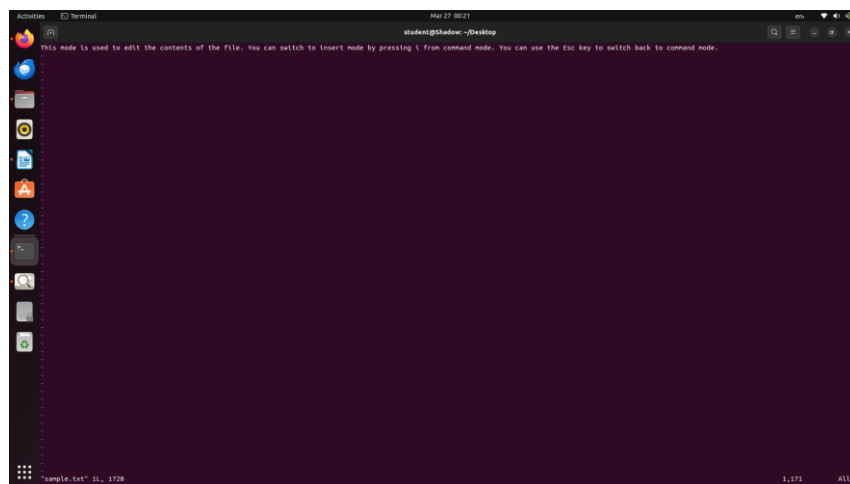
```
mahi@Shadow:~$ sudo apt install vim
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ttf-mscorefonts-installer vim-common vim-runtime vim-tiny
Suggested packages:
  ctags vim-doc vim-scripts indent
The following NEW packages will be installed:
  vim vim-runtime
The following packages will be upgraded:
  ttf-mscorefonts-installer vim-common vim-tiny
3 upgraded, 2 newly installed, 0 to remove and 251 not upgraded.
1 not fully installed or removed.
Need to get 0 B/9,387 kB of archives.
After this operation, 37.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Preconfiguring packages ...
```



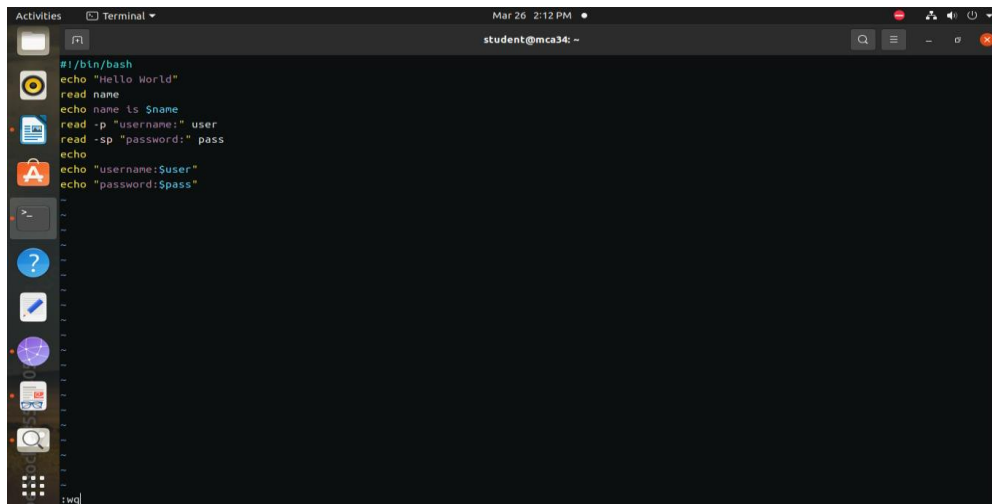
To invoke the vim editor, execute the vim command with the file name:



- **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.



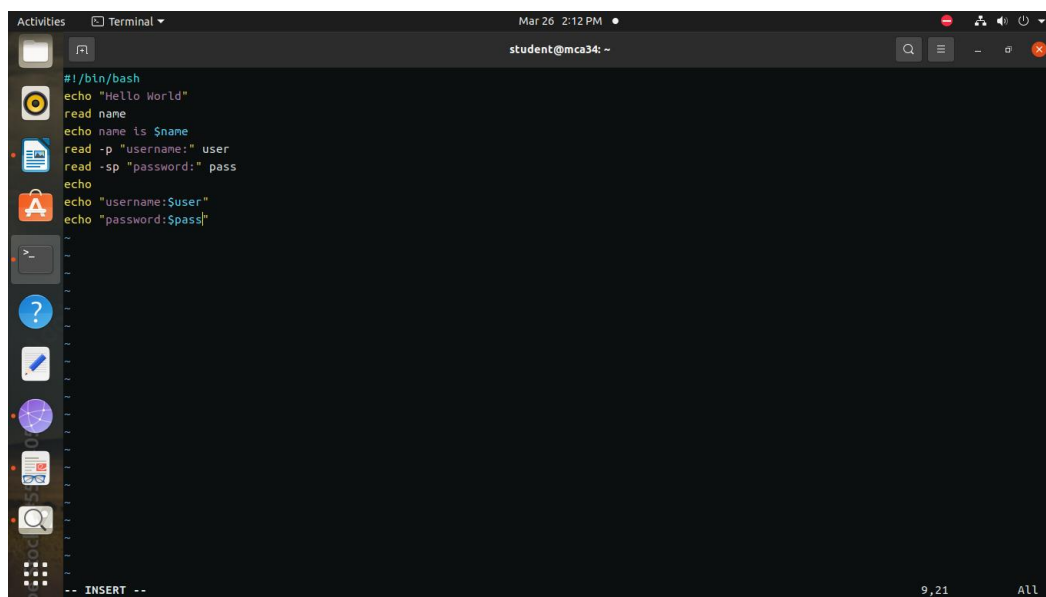
- **Command-Line Mode:** You can use this mode to play around with some commands. But the commands in this mode are prefixed with a colon (:). You can switch to this mode by pressing : (colon) in command mode.

A terminal window titled 'Terminal' with a dark background. The prompt is 'student@mca34: ~'. The script being executed is:

```
#!/bin/bash
echo "Hello World"
read name
echo name is $name
read -p "username:" user
read -sp "password:" pass
echo
echo "username:$user"
echo "password:$pass"
```

 The output shows 'Hello World', a blank line, and then 'username:user' and 'password:\$pass' on separate lines. The terminal has a sidebar on the left with various application icons and a top bar with system status icons.

- **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.

A terminal window similar to the first one, showing the same script. The cursor is now at the end of the last line of the script, 'echo "password:\$pass"'. The terminal status bar at the bottom shows '-- INSERT --' on the left, '9,21' in the center, and 'All' on the right.

- **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.

To copy the line (yy) -

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:~$ whoami
student
student@Shadow:~$ pwd
/home/student
student@Shadow:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
student@Shadow:~$ cd Desktop
student@Shadow:~/Desktop$ mkdir sample
student@Shadow:~/Desktop$ ls
DNK_DS_prgrm Java_Devika Java_Mahesh python_prgrm sample web_tech_prgrm
student@Shadow:~/Desktop$ mkdir -p MCA/Student/Mark
student@Shadow:~/Desktop$ cd MCA
student@Shadow:~/Desktop/MCA$ cd Student
student@Shadow:~/Desktop/MCA/Student$ cd Mark

student@Shadow:~/Desktop/MCA/Student/Mark$ ls
pgm1.py pgm2.py pgm3.py pgm4.py pgm5.py RegistrationForm.html sun.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 sun.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 sun.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 variable.
- 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 files and display 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 them.
^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 them.
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
used to create, modify, or display the contents of files.
cat can concatenate the contents of multiple files and display them.
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_prgm/C01/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.

```

student@Shadow: ~/Desktop
student@Shadow: ~/Desktop$ cd python_prgrn/CO1
student@Shadow: ~/Desktop/python_prgrn/CO1$ ls
pgn10.py pgn11.py pgn12.py pgn13.py pgn14.py pgn15.py pgn16.py pgn17.py pgn18.py pgn19.py pgn1.py pgn2.py pgn3.py pgn4.py pgn5.py pgn6.py pgn7.py pgn8.py pgn9.py
student@Shadow: ~/Desktop/python_prgrn/CO1$ mv pgn3.py /home/student/Desktop
student@Shadow: ~/Desktop/python_prgrn/CO1$ ls
pgn10.py pgn11.py pgn12.py pgn13.py pgn14.py pgn15.py pgn16.py pgn17.py pgn18.py pgn19.py pgn1.py pgn2.py pgn4.py pgn5.py pgn6.py pgn7.py pgn8.py pgn9.py
student@Shadow: ~/Desktop/python_prgrn/CO1$ cp pgn10.py /home/student/Desktop
student@Shadow: ~/Desktop/python_prgrn/CO1$ ls
pgn10.py pgn11.py pgn12.py pgn13.py pgn14.py pgn15.py pgn16.py pgn17.py pgn18.py pgn19.py pgn1.py pgn2.py pgn4.py pgn5.py pgn6.py pgn7.py pgn8.py pgn9.py
student@Shadow: ~/Desktop/python_prgrn/CO1$ cd ~/Desktop
student@Shadow: ~/Desktop$ ls
DMK_DS_prgrn Java_Devika Java_Mahesh MCA pgn10.py pgn3.py python_prgrn sample web_tech_prgrn
student@Shadow: ~/Desktop$ rm pgn10.py
student@Shadow: ~/Desktop$ ls
DMK_DS_prgrn Java_Devika Java_Mahesh MCA pgn3.py python_prgrn sample web_tech_prgrn
  
```

- 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.

```

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 them.
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 (>>).
student@Shadow: ~/Desktop/MCA/Student/Mark$ wc -l test.txt
2 test.txt
student@Shadow: ~/Desktop/MCA/Student/Mark$ cut -b 1,2,3 test.txt
use
cat
student@Shadow: ~/Desktop/MCA/Student/Mark$ paste test1.txt test.txt
The cat command in Unix-like operating systems stands for "concatenate".      used to create, modify, or display the contents of files.
cat can be used to append text to an existing file by using output redirection (>>).  cat can concatenate the contents of multiple files and display them.
student@Shadow: ~/Desktop/MCA/Student/Mark$
  
```

- head: `head -n 5 file.txt` - Displays the first 5 lines of `file.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`


```

student@shadow: ~/Desktop/MCA/Student/Mark
pgm1.py pgm2.py pgm3.py pgm4.py pgm5.py RegistrationForm.html sum.c sunodd.c test1.txt test.txt WebPage.html
student@shadow: ~/Desktop/MCA/Student/Mark$ cat pgm1.py
#Display future leap years from current year to a final year entered by the User
c=int(input("Enter the current year:"))
f=int(input("Enter the final year:"))
print("The future Leap years are:")
for x in range(c,f):
    if(x%4==0 and x%100!=0) or (x%400==0):
        print(x)
student@shadow: ~/Desktop/MCA/Student/Mark$ head -n 5 pgm1.py
#Display future leap years from current year to a final year entered by the User
c=int(input("Enter the current year:"))
f=int(input("Enter the final year:"))
print("The future Leap years are:")
for x in range(c,f):
    if(x%4==0 and x%100!=0) or (x%400==0):
        print(x)
student@shadow: ~/Desktop/MCA/Student/Mark$ grep "Leap" pgm1.py
print("The future Leap years are:")
student@shadow: ~/Desktop/MCA/Student/Mark$
student@shadow: ~/Desktop/MCA/Student/Mark$ expr 5 + 3
8
student@shadow: ~/Desktop/MCA/Student/Mark$ expr 5 - 3
2
student@shadow: ~/Desktop/MCA/Student/Mark$ expr 10 / 2
5
student@shadow: ~/Desktop/MCA/Student/Mark$ expr 10 \* 2
20
student@shadow: ~/Desktop/MCA/Student/Mark$

```

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

```

student@shadow: ~/Desktop/MCA/Student$ ls -l
total 24
-rw-rw-r-- 1 student student 8 Mar 25 07:19 linux.txt
drwxrwxr-x 2 student student 4096 Mar 25 07:19 mark
-rwxr-xr-x 1 student student 281 Dec 24 09:56 pgm1.py
-rwxr-xr-x 1 student student 143 Nov 14 05:38 sum.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
student@shadow: ~/Desktop/MCA/Student$ chmod u+x linux.txt
student@shadow: ~/Desktop/MCA/Student$ ls -l
total 24
-rwxrwxr-x 1 student student 8 Mar 25 07:19 linux.txt
drwxrwxr-x 2 student student 4096 Mar 25 07:19 mark
-rwxr-xr-x 1 student student 281 Dec 24 09:56 pgm1.py
-rwxr-xr-x 1 student student 143 Nov 14 05:38 sum.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
student@shadow: ~/Desktop/MCA/Student$ chmod g+x linux.txt
student@shadow: ~/Desktop/MCA/Student$ ls -l
total 24
-rwxrwxr-x 1 student student 8 Mar 25 07:19 linux.txt
drwxrwxr-x 2 student student 4096 Mar 25 07:19 mark
-rwxr-xr-x 1 student student 281 Dec 24 09:56 pgm1.py
-rwxr-xr-x 1 student student 143 Nov 14 05:38 sum.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
student@shadow: ~/Desktop/MCA/Student$ chmod -x *
student@shadow: ~/Desktop/MCA/Student$ ls -l
total 24
-rwxrwxr-x 1 student student 8 Mar 25 07:19 linux.txt
drwxrwxr-x 2 student student 4096 Mar 25 07:19 mark
-rwxr-xr-x 1 student student 281 Dec 24 09:56 pgm1.py
-rwxr-xr-x 1 student student 143 Nov 14 05:38 sum.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
student@shadow: ~/Desktop/MCA/Student$ chmod +x *
student@shadow: ~/Desktop/MCA/Student$ ls -l
total 24
-rwxrwxr-x 1 student student 8 Mar 25 07:19 linux.txt
drwxrwxr-x 2 student student 4096 Mar 25 07:19 mark
-rwxr-xr-x 1 student student 281 Dec 24 09:56 pgm1.py
-rwxr-xr-x 1 student student 143 Nov 14 05:38 sum.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
student@shadow: ~/Desktop/MCA/Student$

```

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

```

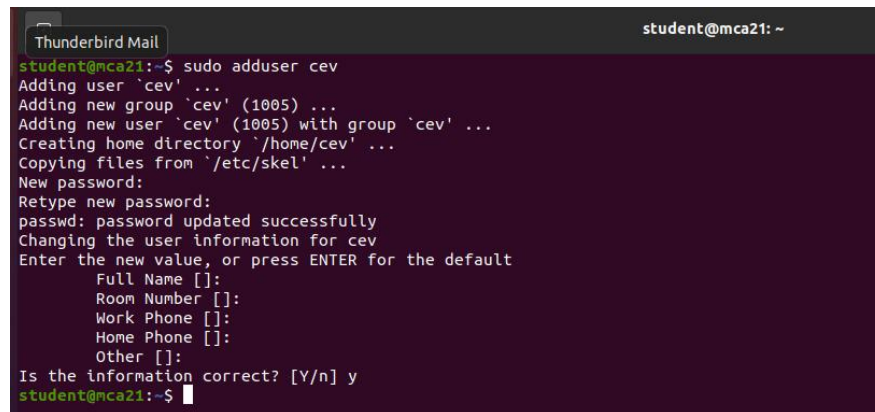
student@mca21: ~
student@mca21:~$ cat >file3.txt
Hello,Good Morning
student@mca21:~$ ls -l file3.txt
-rw-rw-r-- 1 student student 19 Mar 25 11:42 file3.txt
student@mca21:~$ sudo chown -v mca file3.txt
changed ownership of 'file3.txt' from student to mca
student@mca21:~$

```

- **redirection and piping:** Pipe is used to combine two or more commands and in this the output of one command and act as input to the another command, and

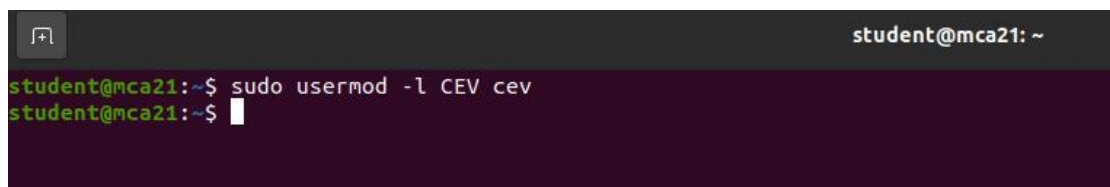
this command output may cut as input to the next command. Redirection in linux command refers to the ability of the linux operating system that allows as to change the standard input and standard output when executing a command on the terminal.

- **useradd:** It is used to for adding /creating user accounts in linux and other unix-like operating systems.



```
Thunderbird Mail student@mca21: ~
student@mca21:~$ sudo adduser cev
Adding user 'cev' ...
Adding new group 'cev' (1005) ...
Adding new user 'cev' (1005) with group 'cev' ...
Creating home directory '/home/cev' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for cev
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
student@mca21:~$
```

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



```
student@mca21: ~
student@mca21:~$ sudo usermod -l CEV cev
student@mca21:~$
```

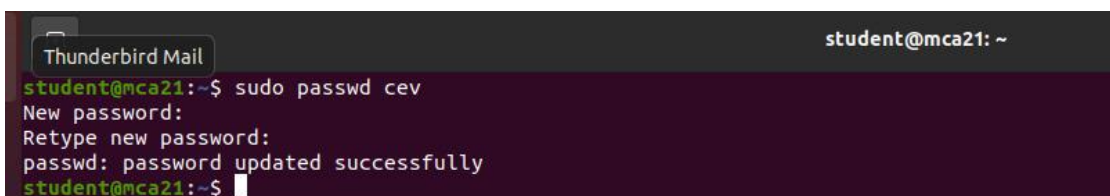
- **rdel:** It is used to delete a user account and related files.



```
Thunderbird Mail student@mca21: ~
student@mca21:~$ sudo userdel cev1
student@mca21:~$
```

S

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



```
Thunderbird Mail student@mca21: ~
student@mca21:~$ sudo passwd cev
New password:
Retype new password:
passwd: password updated successfully
student@mca21:~$
```

- 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”

```
student@mca-Veriton-M200-H81:~$ sudo apt install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ncurses-term openssh-sftp-server ssh-import-id
Suggested packages:
  molly-guard monkeysphere ssh-askpass
The following NEW packages will be installed:
```

```
student@mca-Veriton-M200-H81:~$ ifconfig
enp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.5.210 netmask 255.255.254.0 broadcast 172.16.5.255
    inet6 fe80::7f81:251d:4476:e182 prefixlen 64 scopeid 0x20<link>
    ether f4:4d:30:f3:cf:92 txqueuelen 1000 (Ethernet)
    RX packets 660 bytes 432816 (432.8 KB)
    RX errors 0 dropped 8 overruns 0 frame 0
    TX packets 374 bytes 34224 (34.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 81 bytes 7839 (7.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 81 bytes 7839 (7.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
student@mca-Veriton-M200-H81:~$ ping 172.16.5.79
PING 172.16.5.79 (172.16.5.79) 56(84) bytes of data.
64 bytes from 172.16.5.79: icmp_seq=1 ttl=64 time=0.232 ms
64 bytes from 172.16.5.79: icmp_seq=2 ttl=64 time=0.181 ms
64 bytes from 172.16.5.79: icmp_seq=3 ttl=64 time=0.175 ms
64 bytes from 172.16.5.79: icmp_seq=4 ttl=64 time=0.168 ms
64 bytes from 172.16.5.79: icmp_seq=5 ttl=64 time=0.171 ms
64 bytes from 172.16.5.79: icmp_seq=6 ttl=64 time=0.178 ms
64 bytes from 172.16.5.79: icmp_seq=7 ttl=64 time=0.180 ms
64 bytes from 172.16.5.79: icmp_seq=8 ttl=64 time=0.185 ms
```

```
student@mca-Veriton-M200-H81:~$ ssh student@172.16.5.79
The authenticity of host '172.16.5.79 (172.16.5.79)' can't be established.
ECDSA key fingerprint is SHA256:76ajFyLbdJEXxY8FHT154PJZYFRT31zCv3wZummAN8.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.16.5.79' (ECDSA) to the list of known hosts.
student@172.16.5.79's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-101-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

https://ubuntu.com/pro
```

- **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-Verlton-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-Verlton-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-Verlton-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.

```
top - 00:07:40 up 1:02, 1 user, load average: 0.32, 0.26, 0.20
Tasks: 287 total, 2 running, 284 sleeping, 3 stopped, 0 zombie
Mem: 31.2 G, 6.6 G, 24.6 G, 18.9 G; 0 B swp, 0 B ds; 0 B dt, 0 B st
Mem Mem: 7260 M total, 3384.2 free, 2132.1 used, 1620.5 buffer/cache
Mem Swap: 10000 M total, 10000.0 free, 0.0 used, 4796.6 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR   S   CPU    MEM COMMAND
 1566 student  20   0 5676244 343512 166840  S   7.0   4.6   2:22.50 gnome-shell
 3255 student  20   0 5688932 37224  44748  S   3.2   0.8   0:12.34 gnome-terminal
 3521 root      20   0 0 0 0 0 0 0.1 1.3 0.0 0:02.38 kworker/u2:1-phy0
 172 root     -SI  0 0 0 0 0 0 0 0.1 0.6 0.0 0:11.38 irq/59-GLAN0F1A:00
 721 root     -2  0 0 0 0 0 0 0 0.1 0.6 0.0 0:02.25 gfs_high
 3955 student  20   0 22040 4224 3328  S   0.6   0.1   0:00.00 top
 1 root      20   0 106764 11472 8144  S   0.2   0.1   0:01.30 systemd
 2 root      20   0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 kthreadd
 3 root      0 -20 0 0 0 0 0 0.1 0.0 0.0 0:00.00 rcu_gp
 4 root      0 -20 0 0 0 0 0 0.1 0.0 0.0 0:00.00 rcu_par_gp
 5 root      0 -20 0 0 0 0 0 0.1 0.0 0.0 0:00.00 slab_flushdq
 6 root      0 -20 0 0 0 0 0 0.1 0.0 0.0 0:00.00 netns
 8 root      0 -20 0 0 0 0 0 0.1 0.0 0.0 0:00.00 kworker/0:0-events_highpri
 10 root     0 -20 0 0 0 0 0 0.1 0.0 0.0 0:00.00 mcpower_mq
 11 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 rcu_tasks_kthread
 12 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 rcu_tasks_rude_kthread
 13 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 rcu_tasks_trace_kthread
 14 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.07 ksoftirqd/0
 15 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:02.38 rcu_preempt
 16 root     RT  0 0 0 0 0 0 0.1 0.0 0.0 0:00.01 migration/0
 17 root     -SI  0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 idle_inject/0
 18 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.43 kworker/0:1-events_freezable
 19 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 cpupower
 20 root     20  0 0 0 0 0 0 0.1 0.0 0.0 0:00.00 cpupower
```

