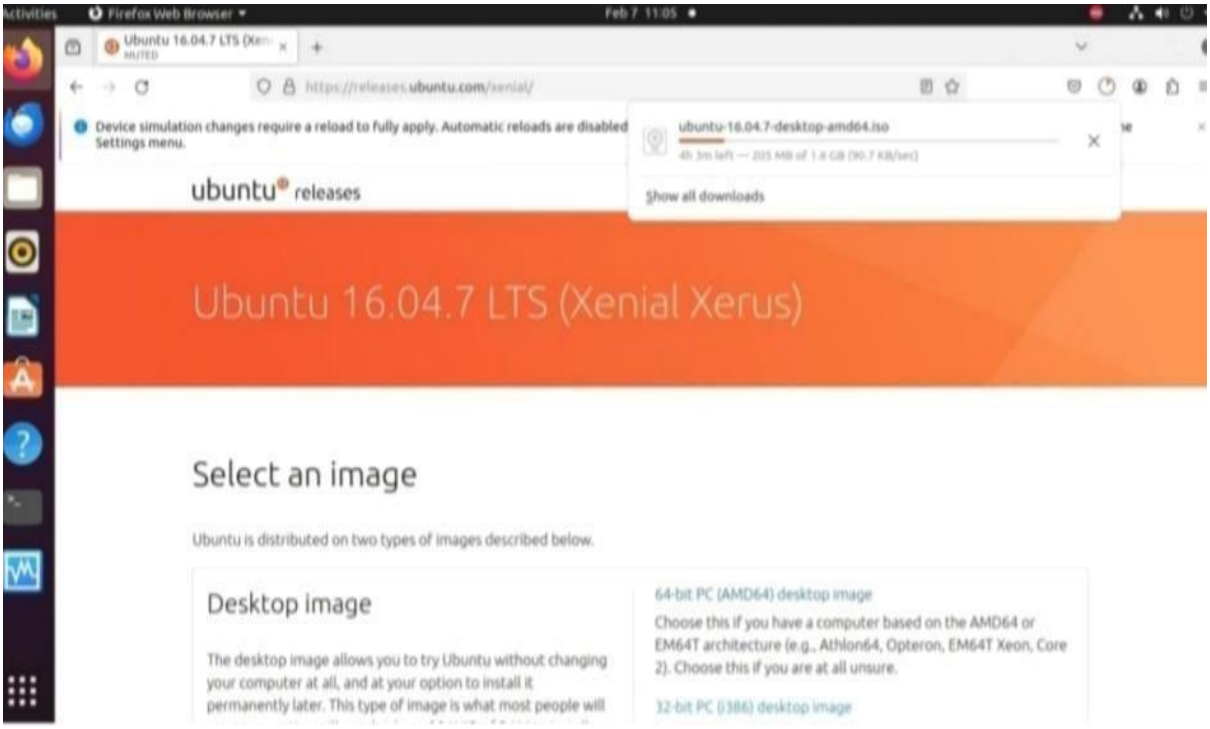
INSTALLING UBUNTU ON VIRTUAL BOX

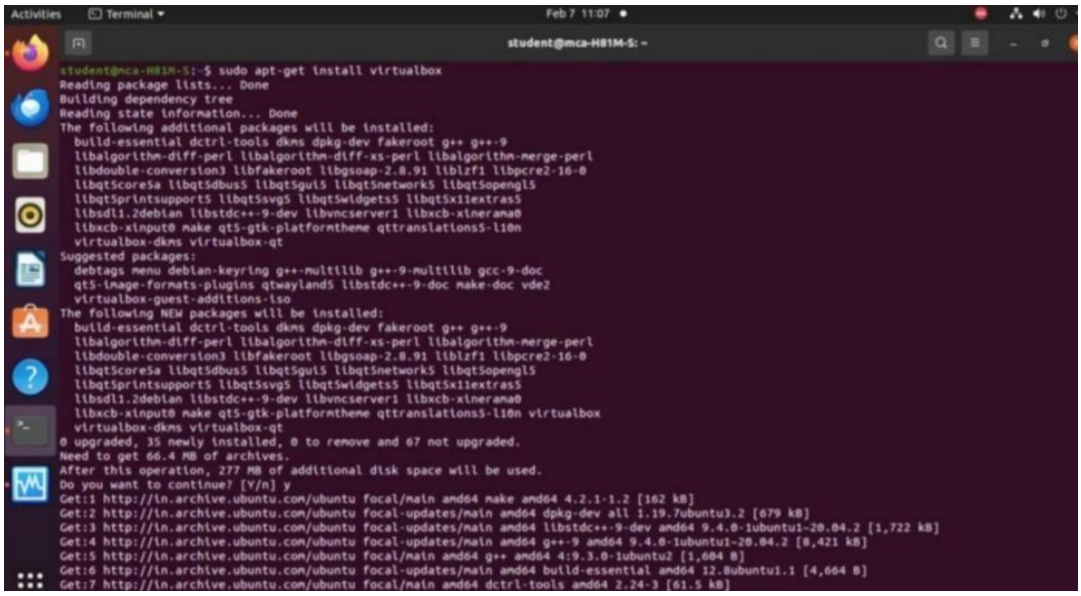
Virtual box by Oracle is a powerful virtualization software that allows users to run Multiple operating system onone physical computer. VirtualBox is an open-source Software for virtualizing the x86 computing architecture. Itacts as a hypervisor creating A VM (Virtual machine) where the user can run another OS (operating system).Thesystem where the VirtualBox runs is called the “host” OS. The operating system Running in the VM is called the “guest” OS. VirtualBox supports windows, Linux and Mac OS as it’s host OS

Before we begin with installation process, we need to download ISO for Ubuntu

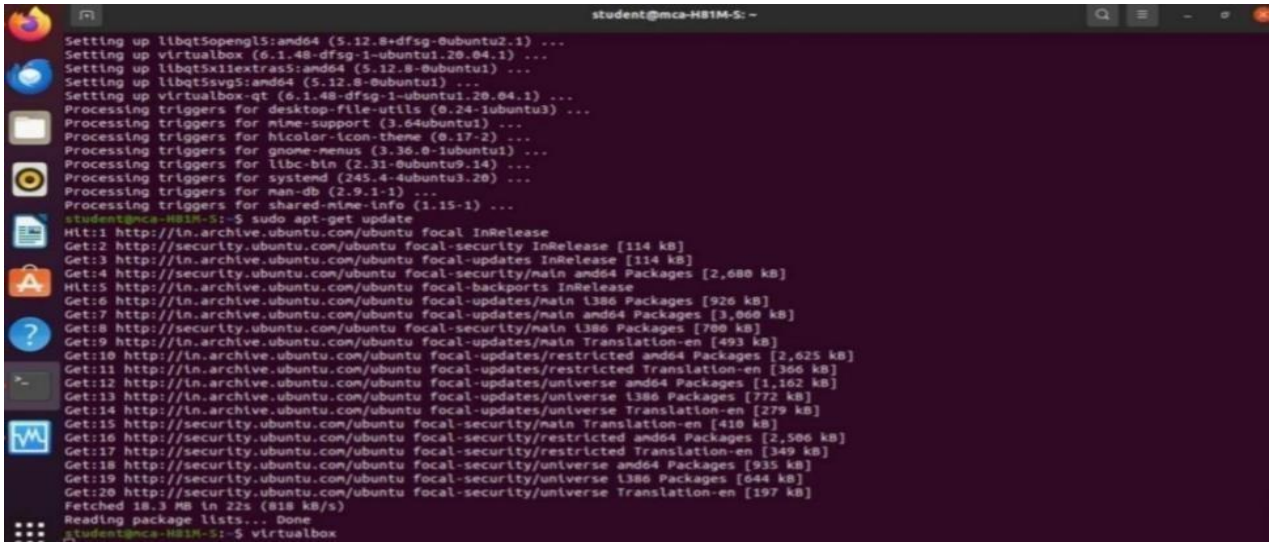


VIRTUAL BOX INSTALLATION :

Sudo apt -get install virtualbox

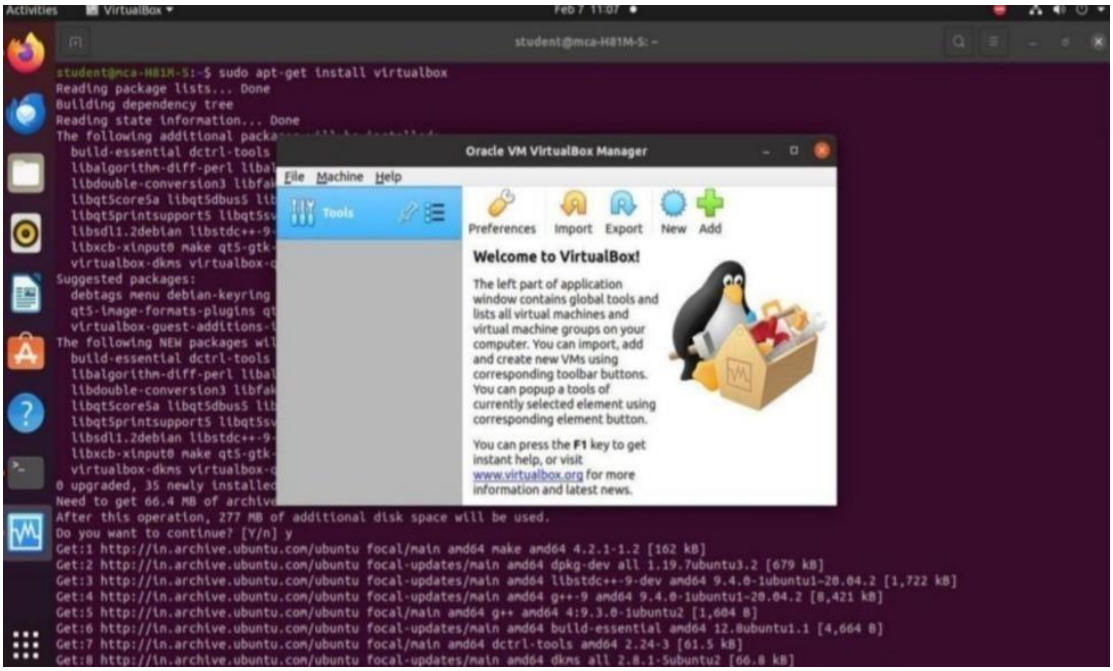


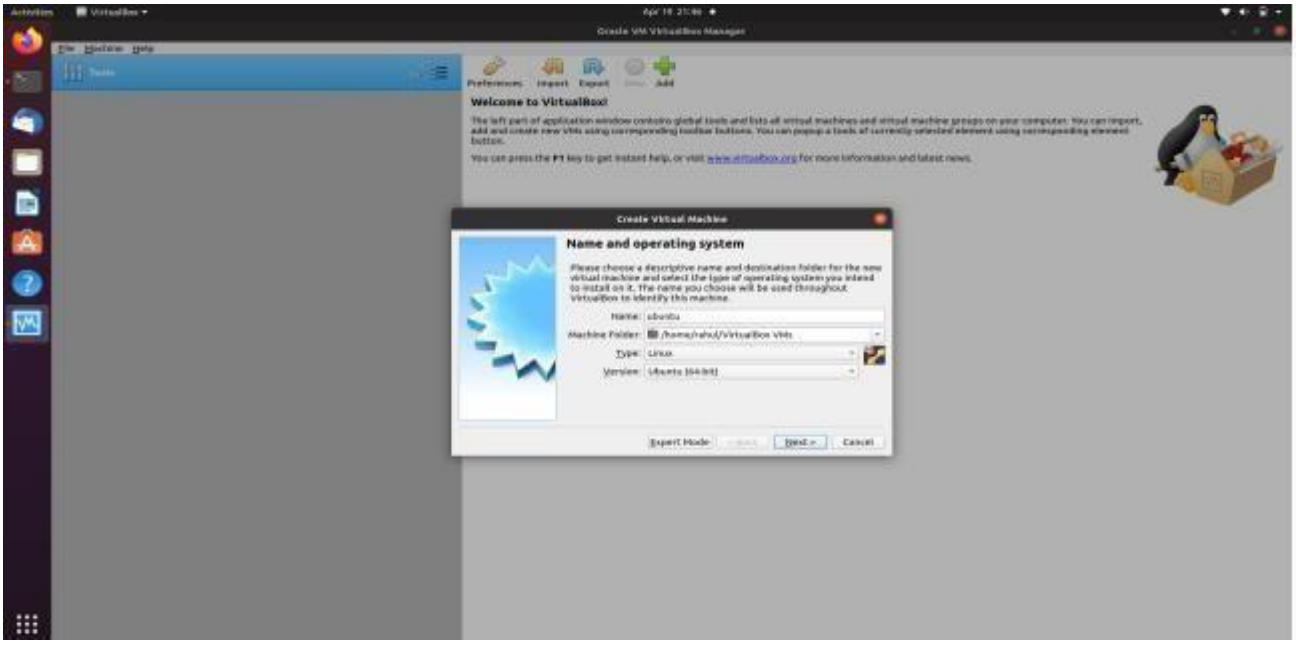
Sudo apt -get update



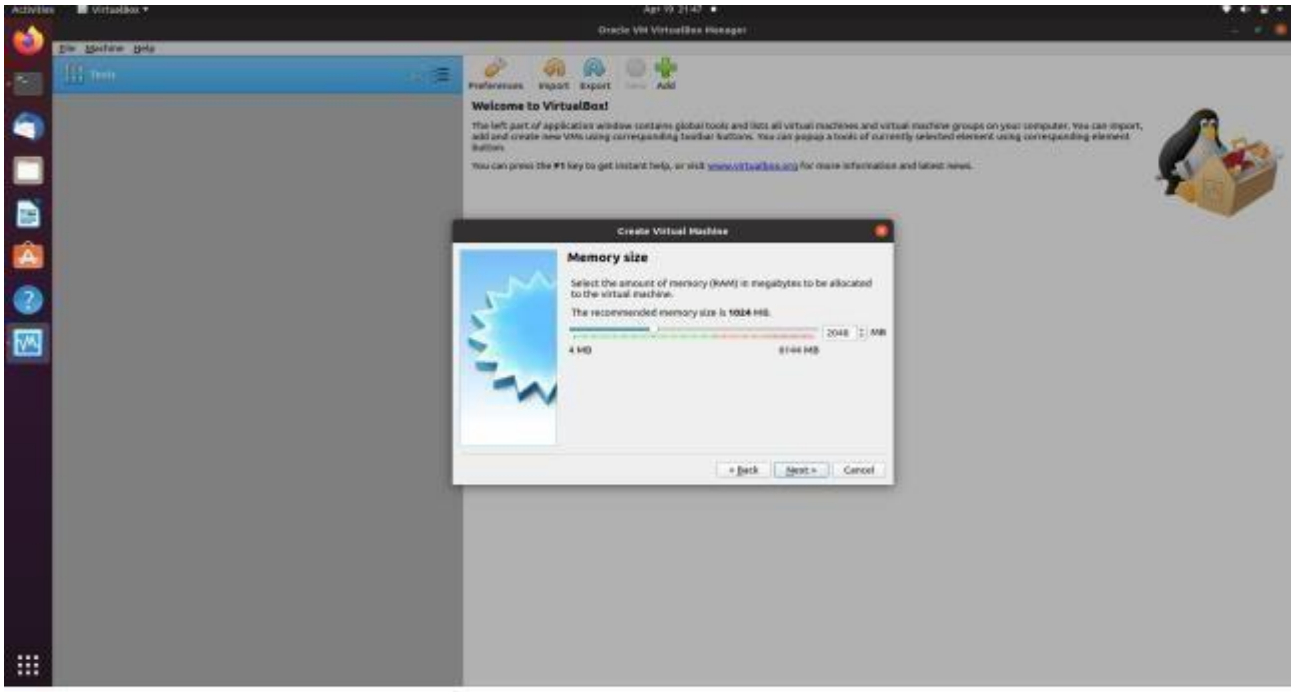
Create virtual machine by just clicking on this new Click -> new

We can install Ubuntu so type Ubuntu and choose the type.

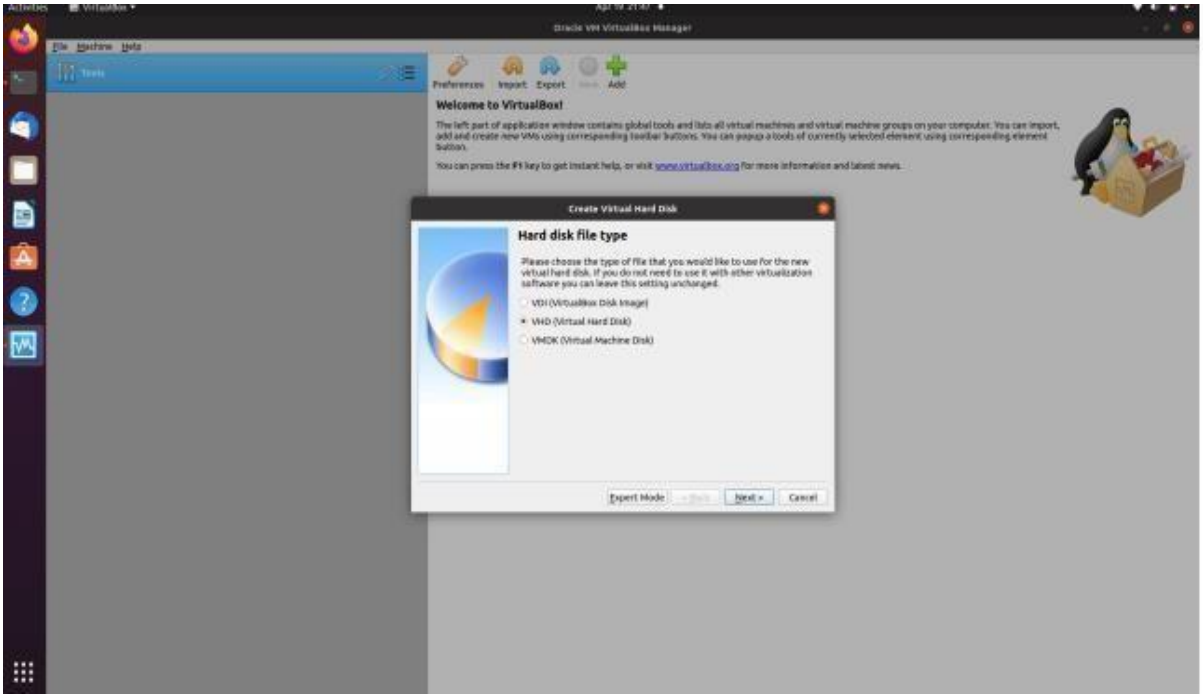




Click Next

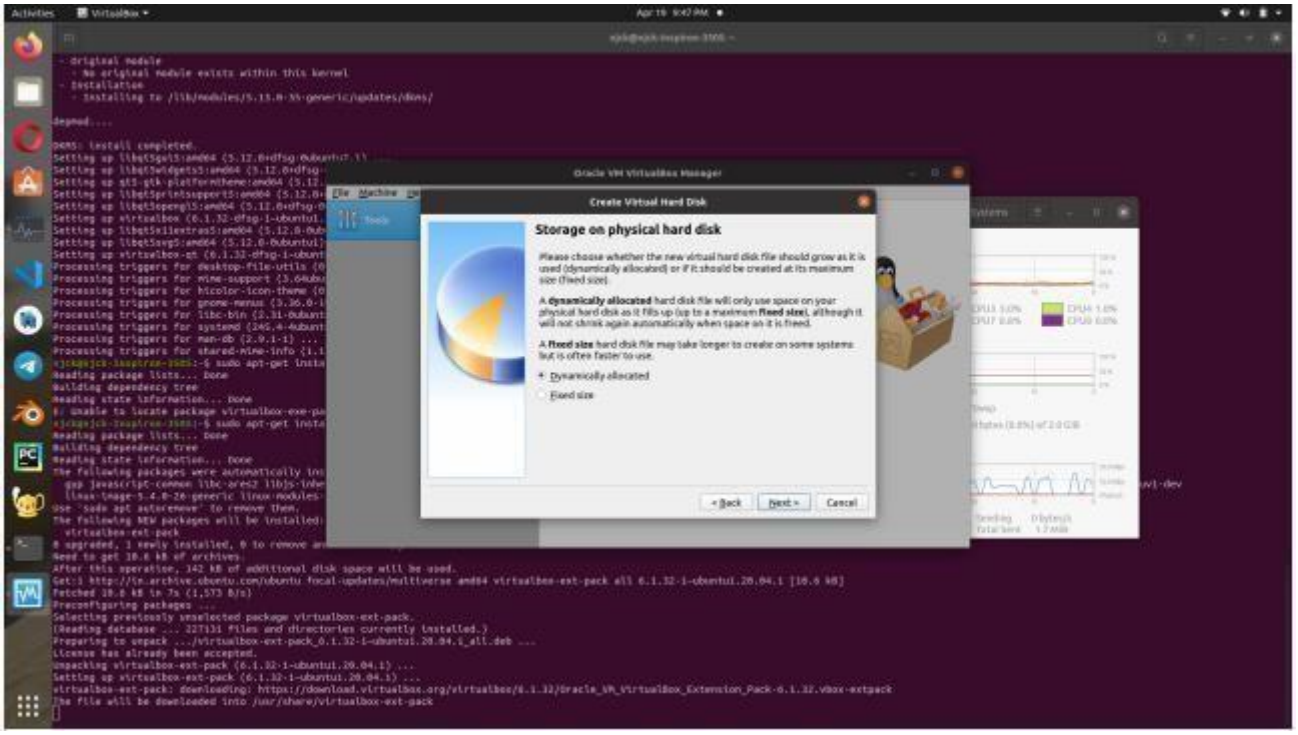


Click next



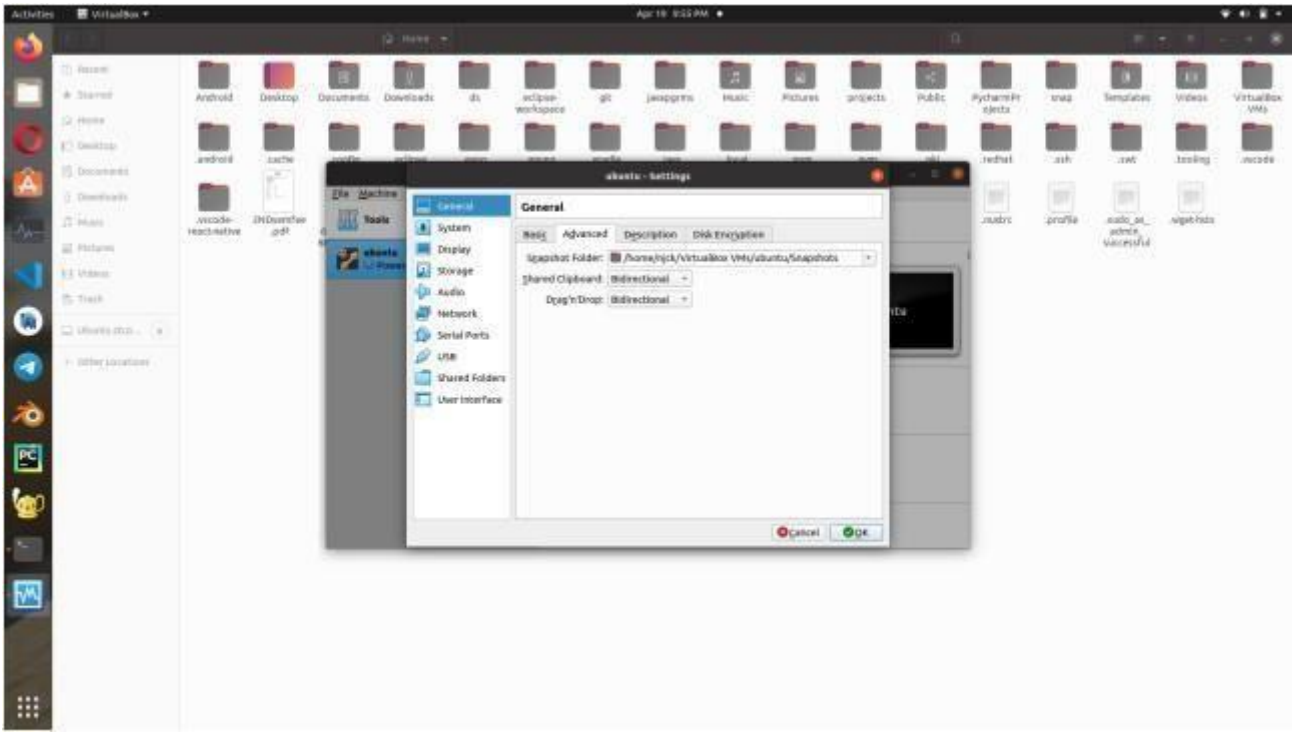
Select the Virtual hard disk

Click-> Next



Select Dynamically allocated memory.

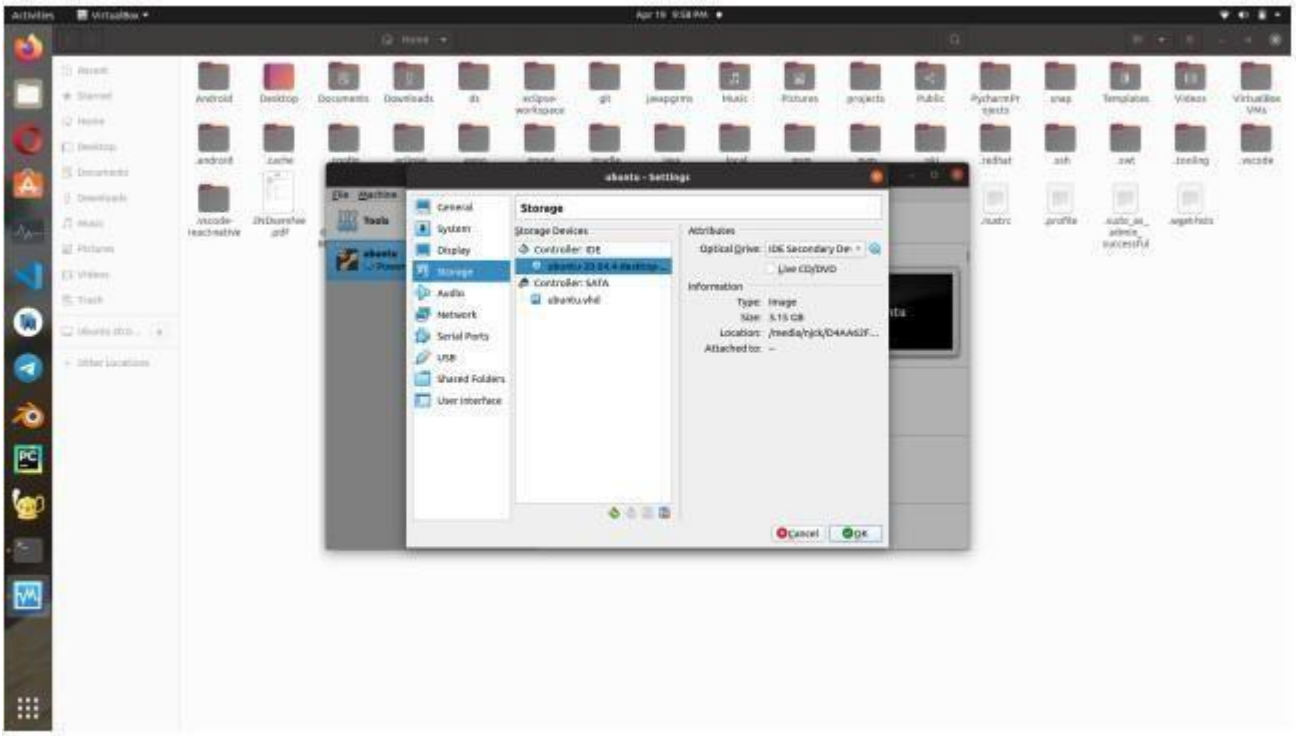
Click->Next



Settings - > General-> Advanced

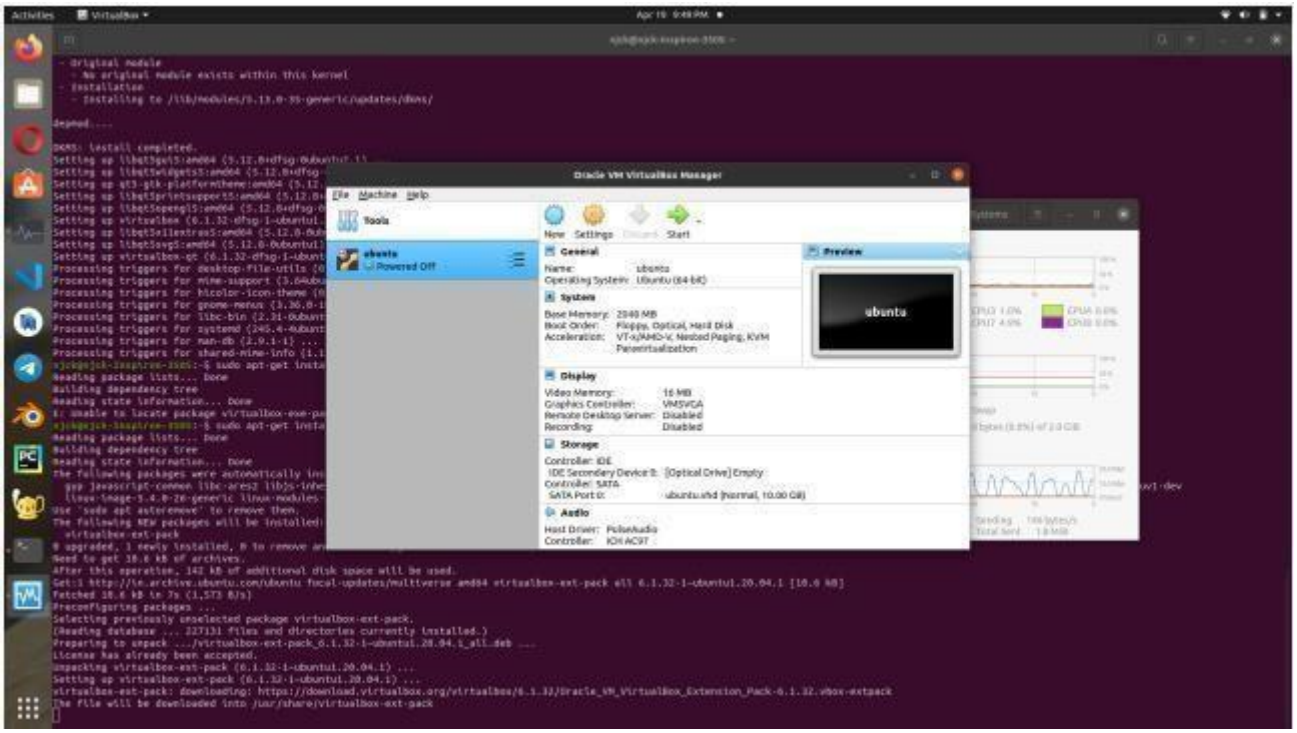
Set Shared clipboard and Drag 'n' Drop as Bidirectional. Click -> ok

Download Ubuntu from https://ubuntu.com/download/desktop/ this site.

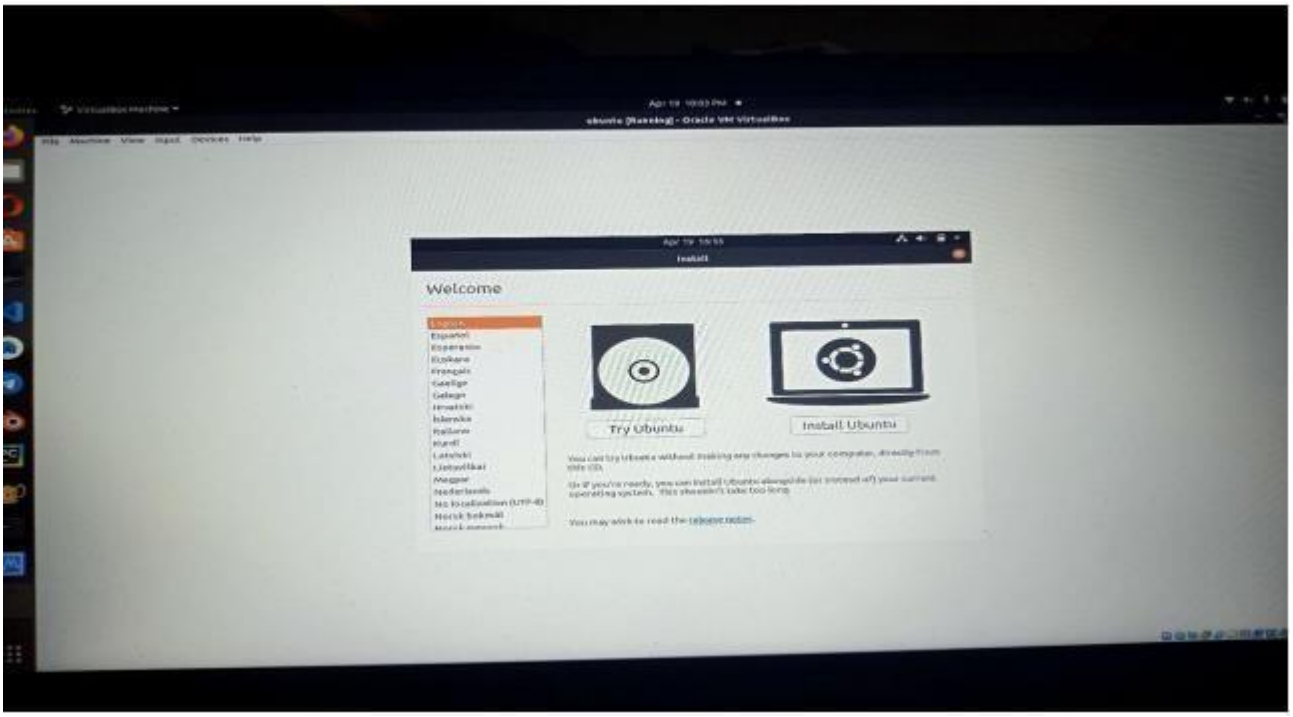


Settings->Storage->Attributes->optical Drive select downloaded ubuntu iso file.

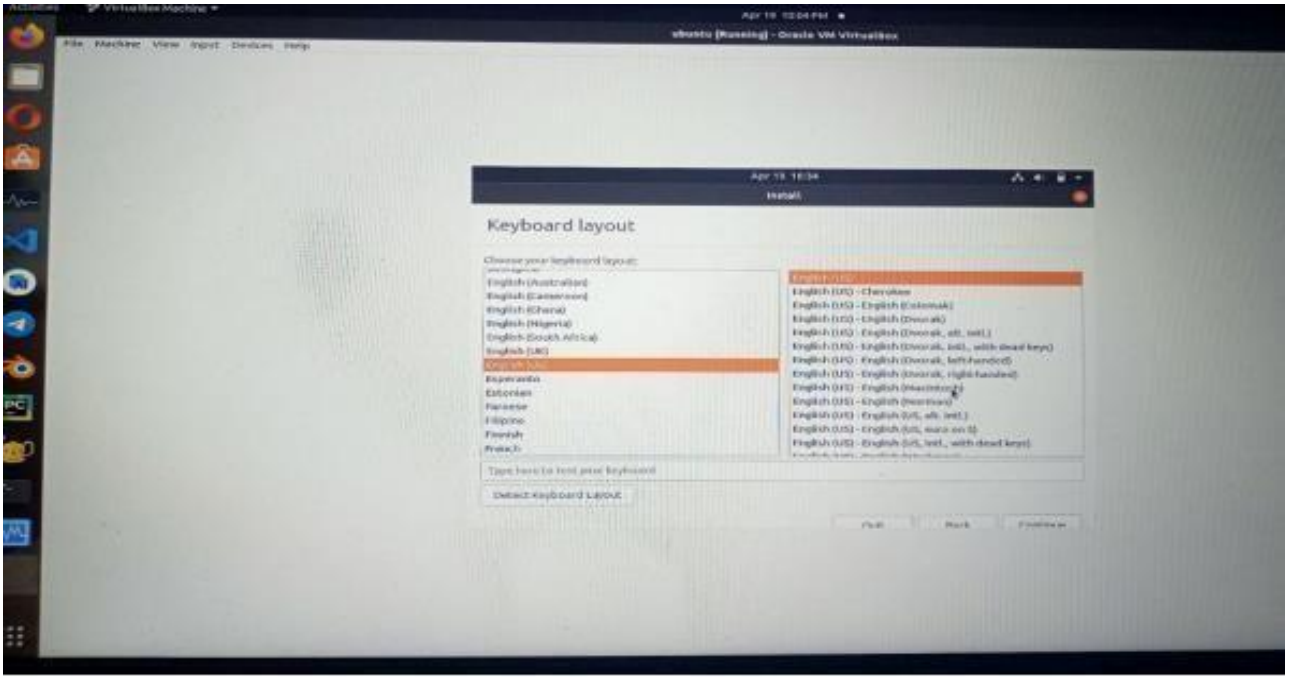
Click -> ok



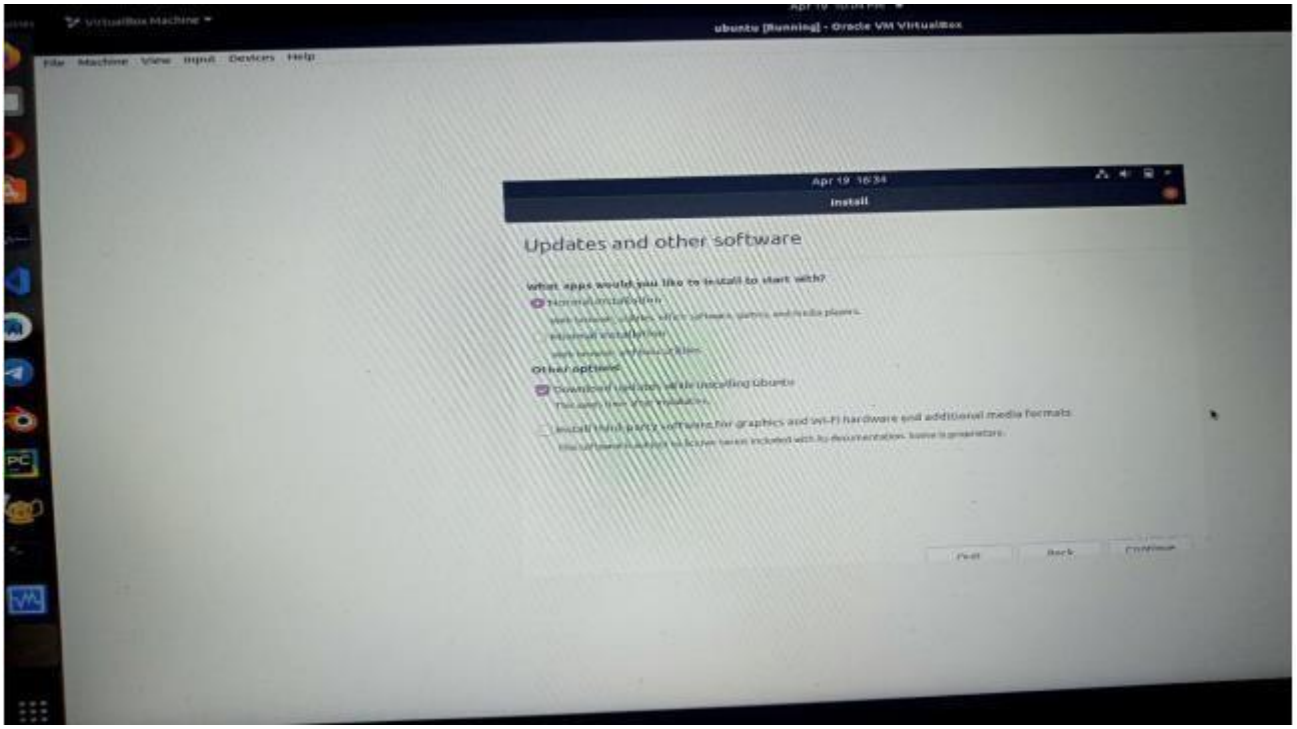
Click-> Start



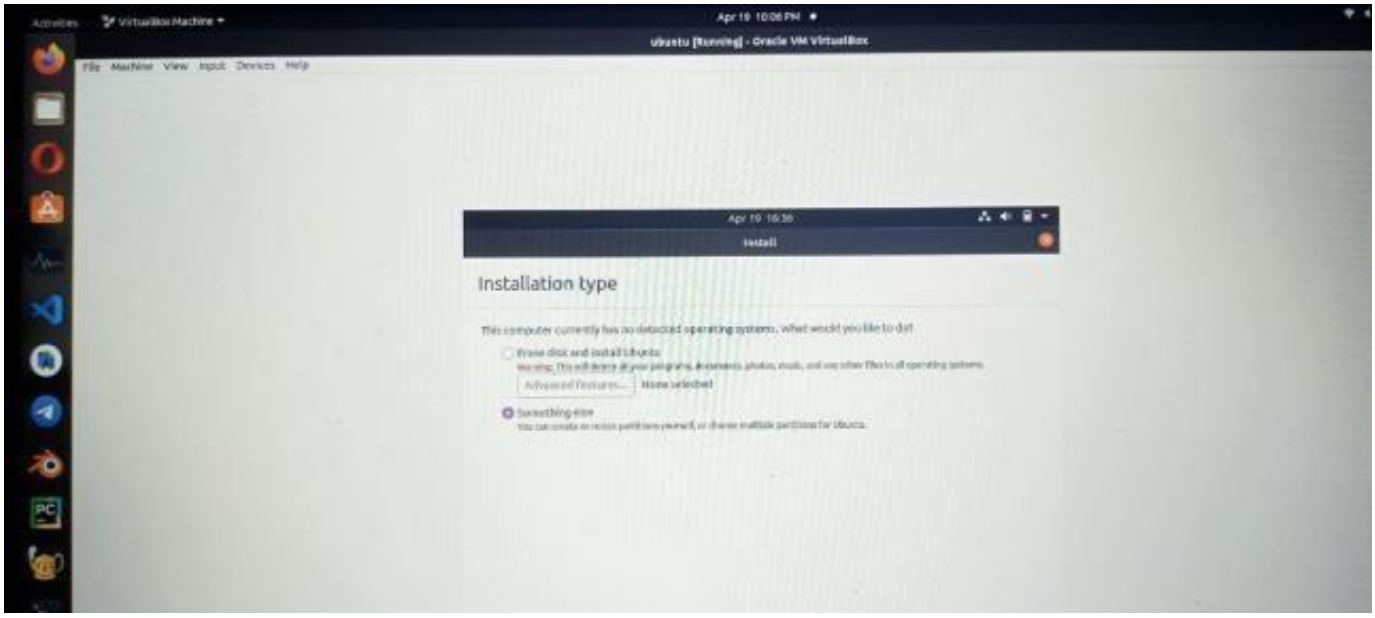
Click Install Ubuntu



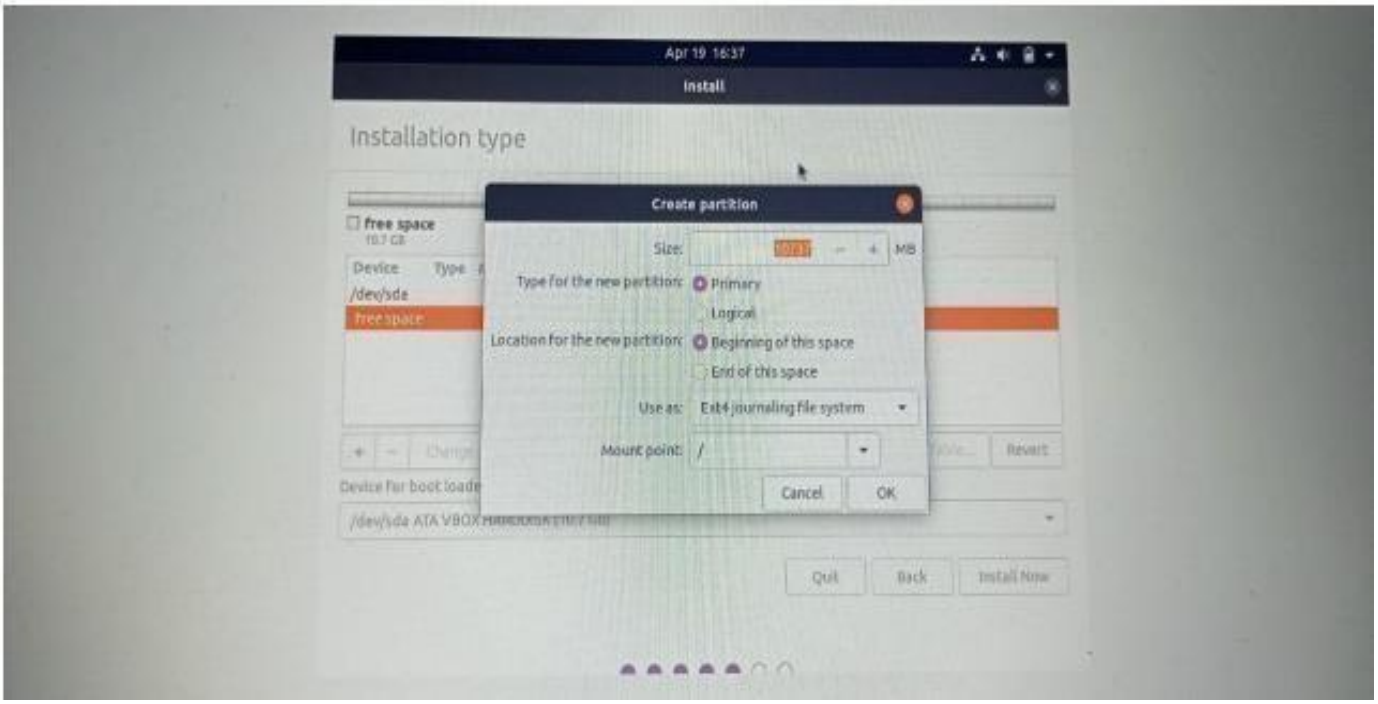
Click - > Continue



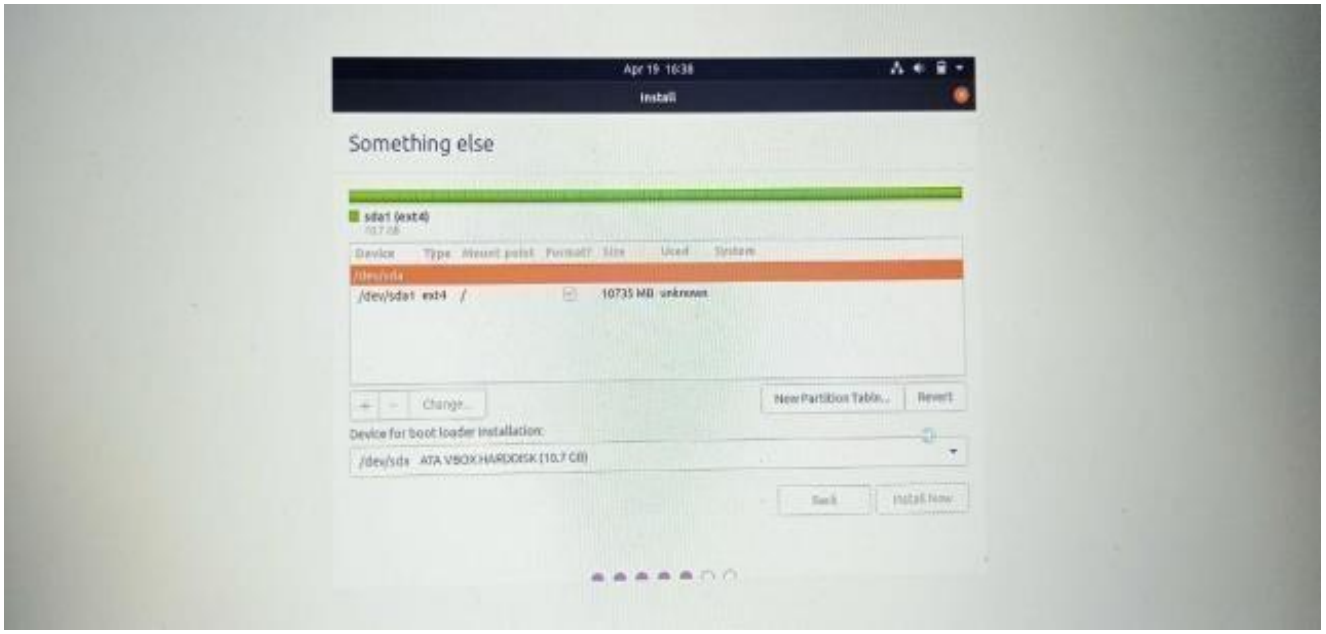
Select Normal installation and Download updates while installing ubuntu. Click->continue



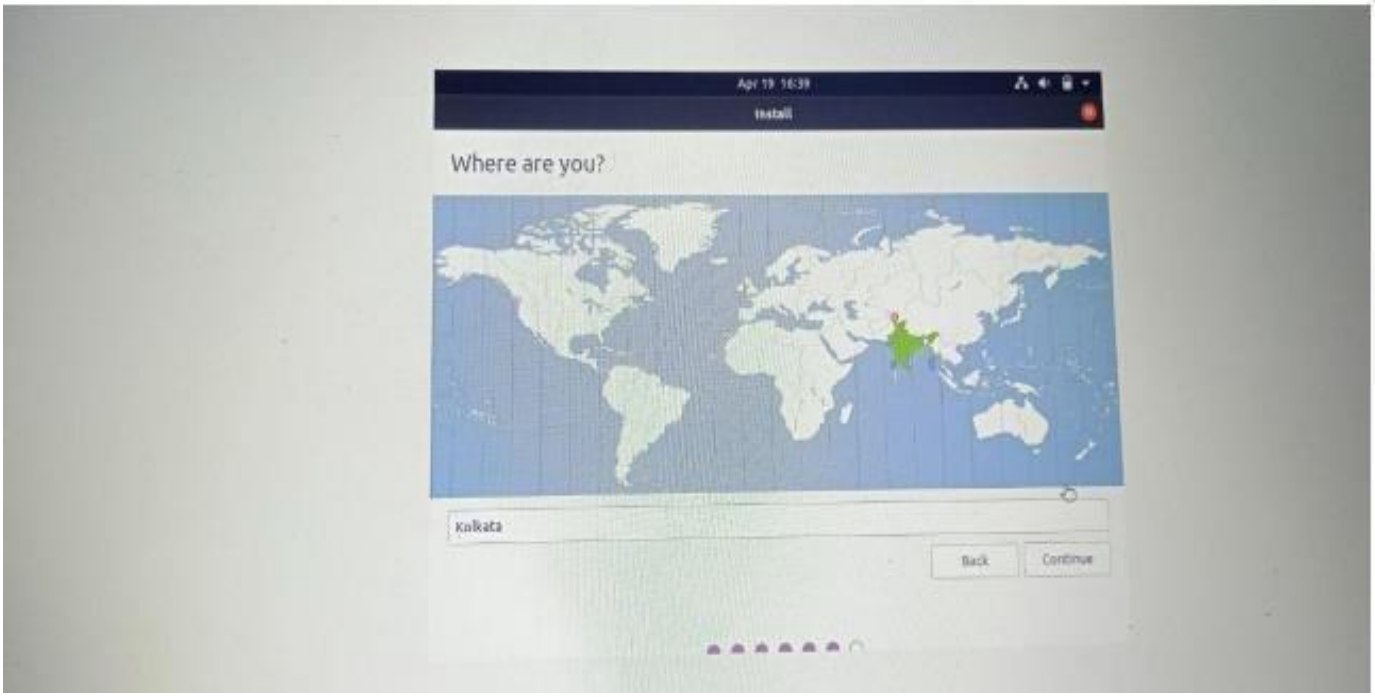
Select installation type something else.
Click->continue



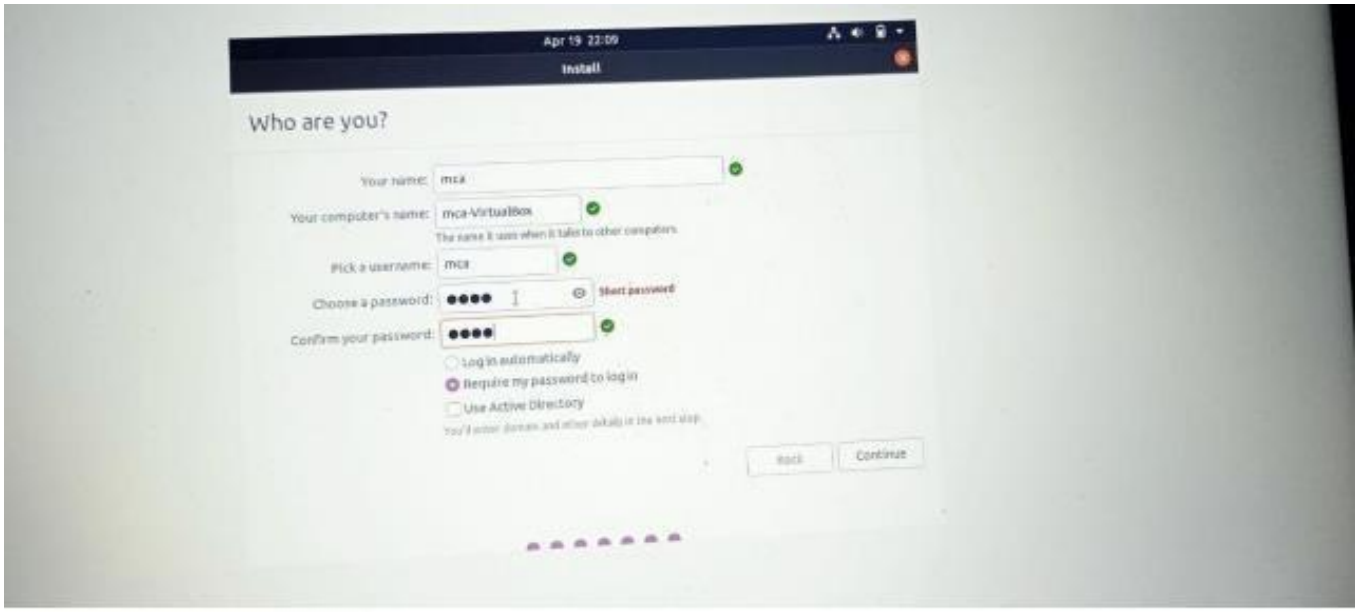
Select disk then create partition and set mount point as ‘/’ click ->
ok



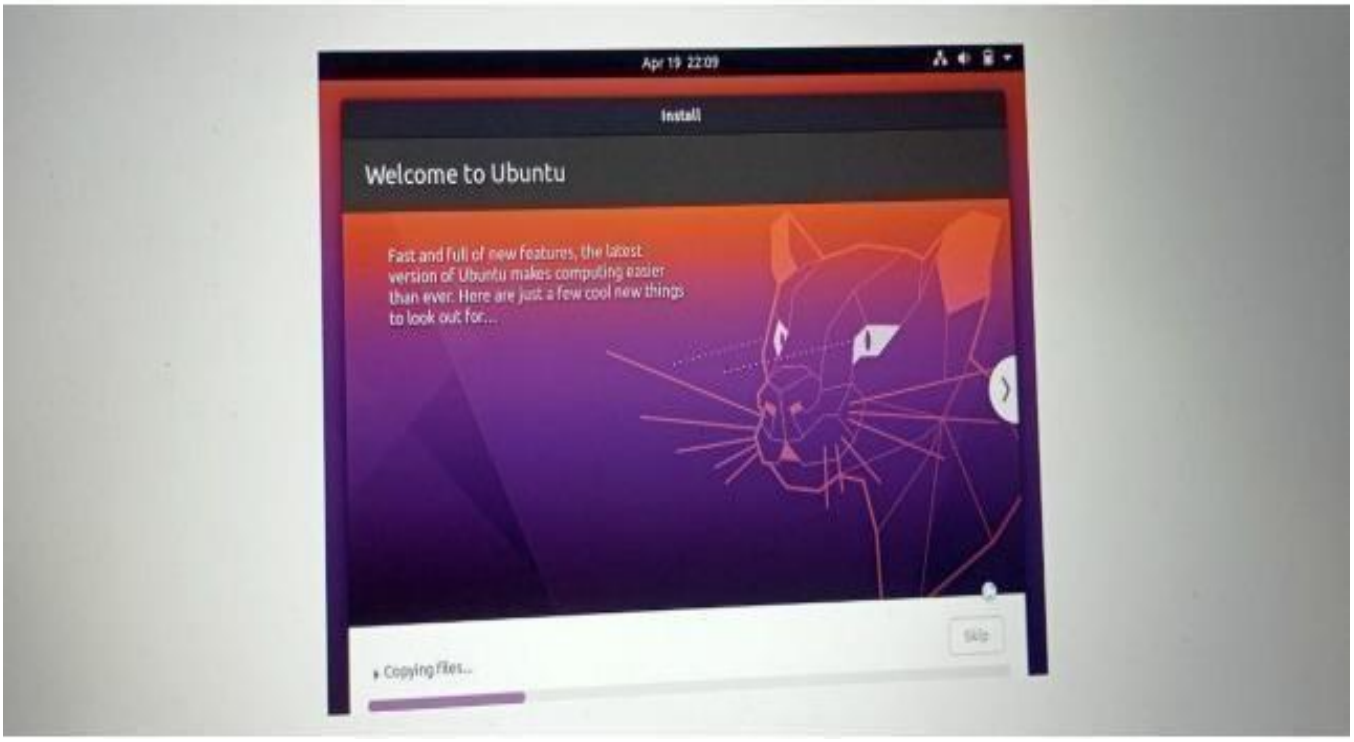
click -> install now



click -> continue



Set Your name and Password
click -> continue




Apr 19 22:39
Installation Complete
Installation is complete. You need to restart the computer in order to use the new installation.
Restart Now


ubuntu

Experiment:2 Date:26/

AIM:

Study of a terminal based text editor such as Vim or search andreplace) Basic Linux commands, familiarity with following commands/operations expected .

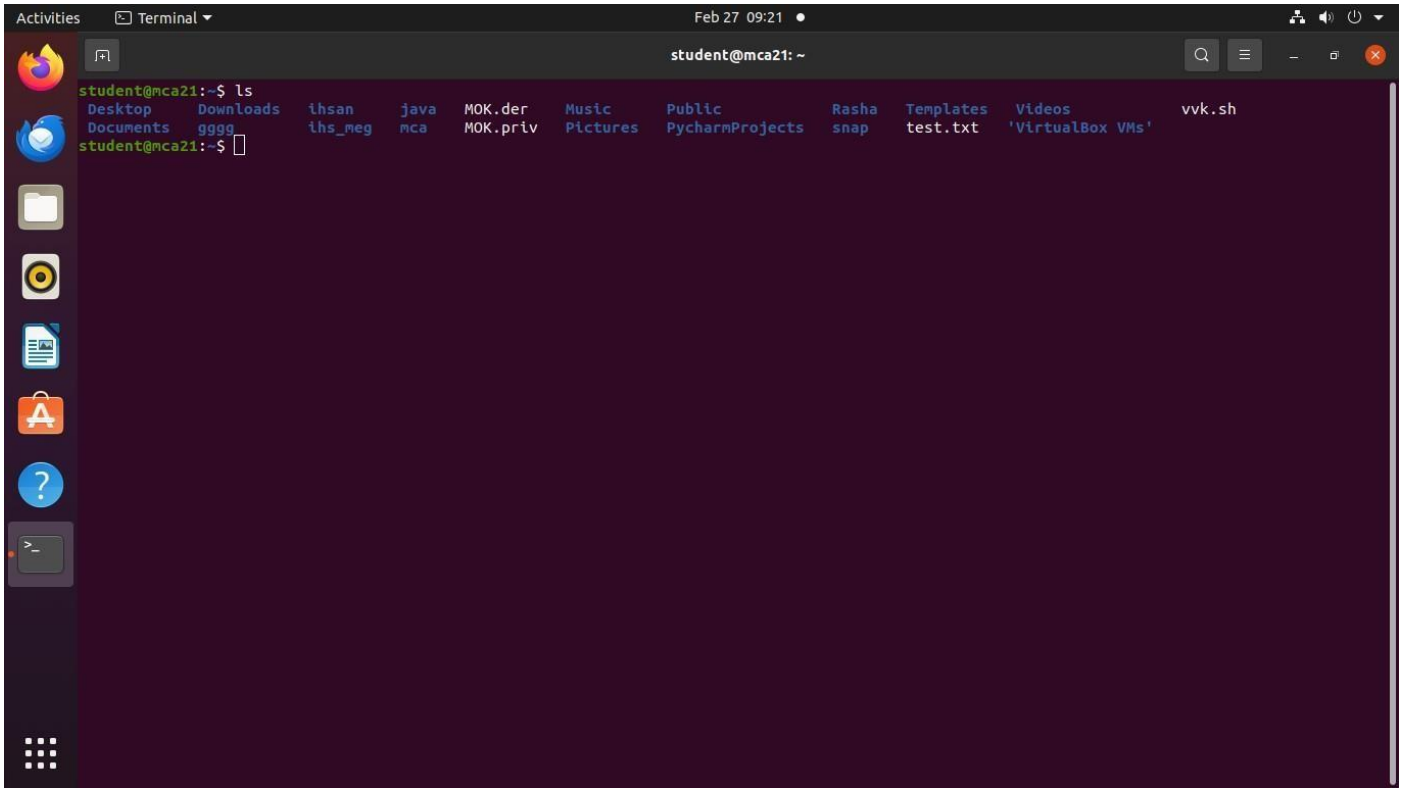
1. man
2. ls, echo, read
3. more, less, cat,
4. cd, mkdir, pwd, find
5. mv, cp, rm ,tar
6. wc, cut, paste
7. head, tail, grep, expr
8. chmod, chown
9. Redirections & Piping
10. useradd, usermod, userdel, passwd
11. df,top, ps
12. ssh, scp, ssh-keygen, ssh-copy-id

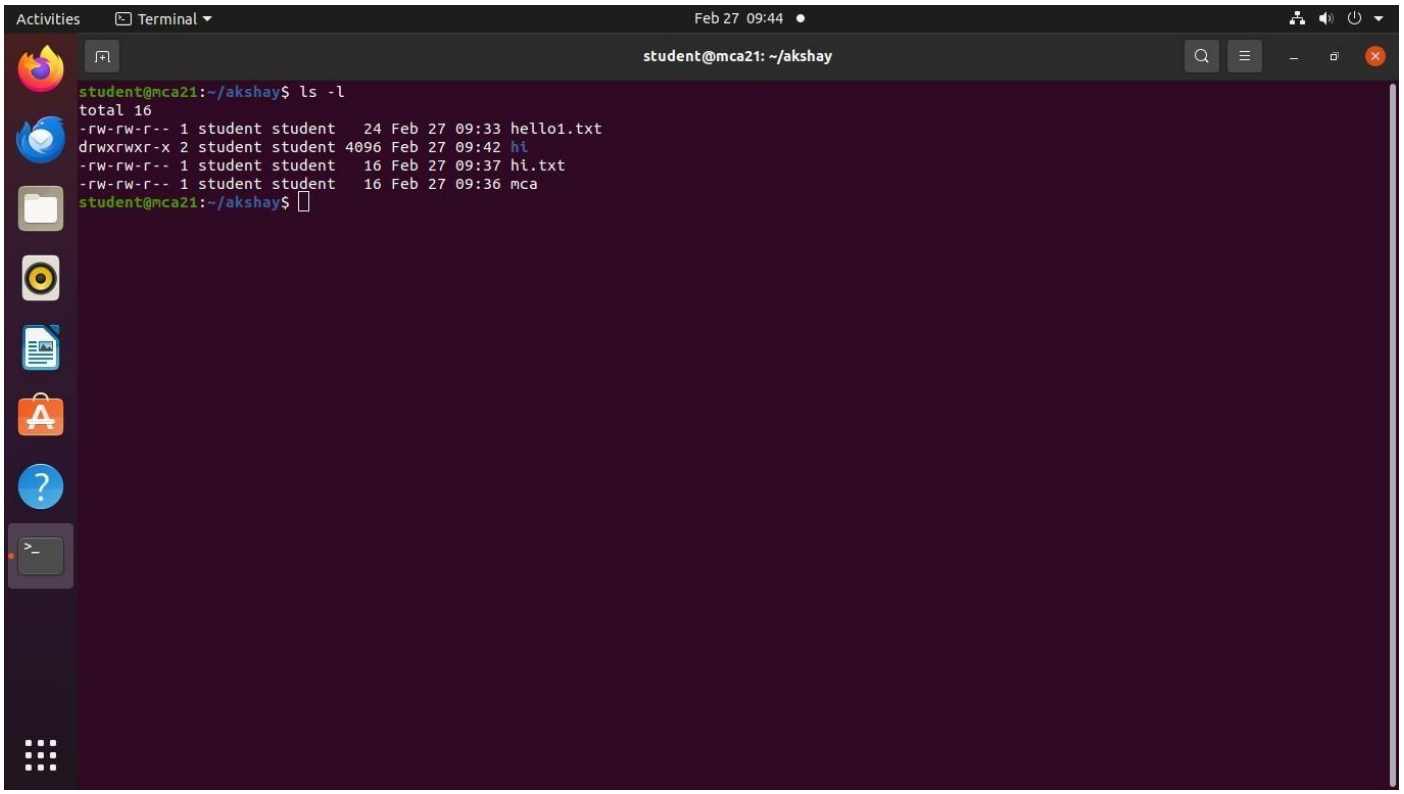
BASIC LINUX COMMANDS

ls:
List the directory(folder) system.

ls -a: Will show the hidden file.

ls -al: Will list the file and directory with detailed information like thepermission size,owner...etc.

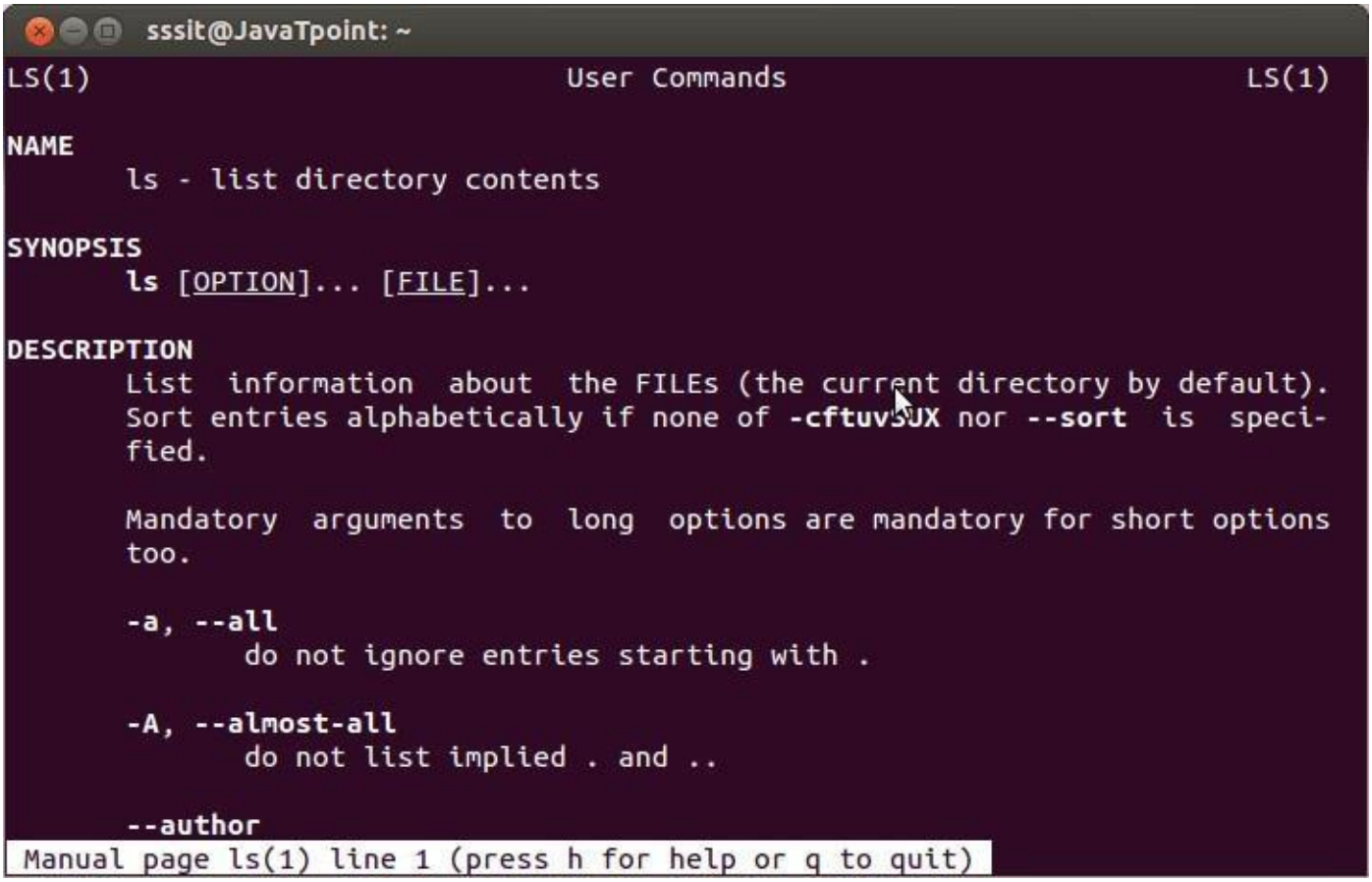




man:

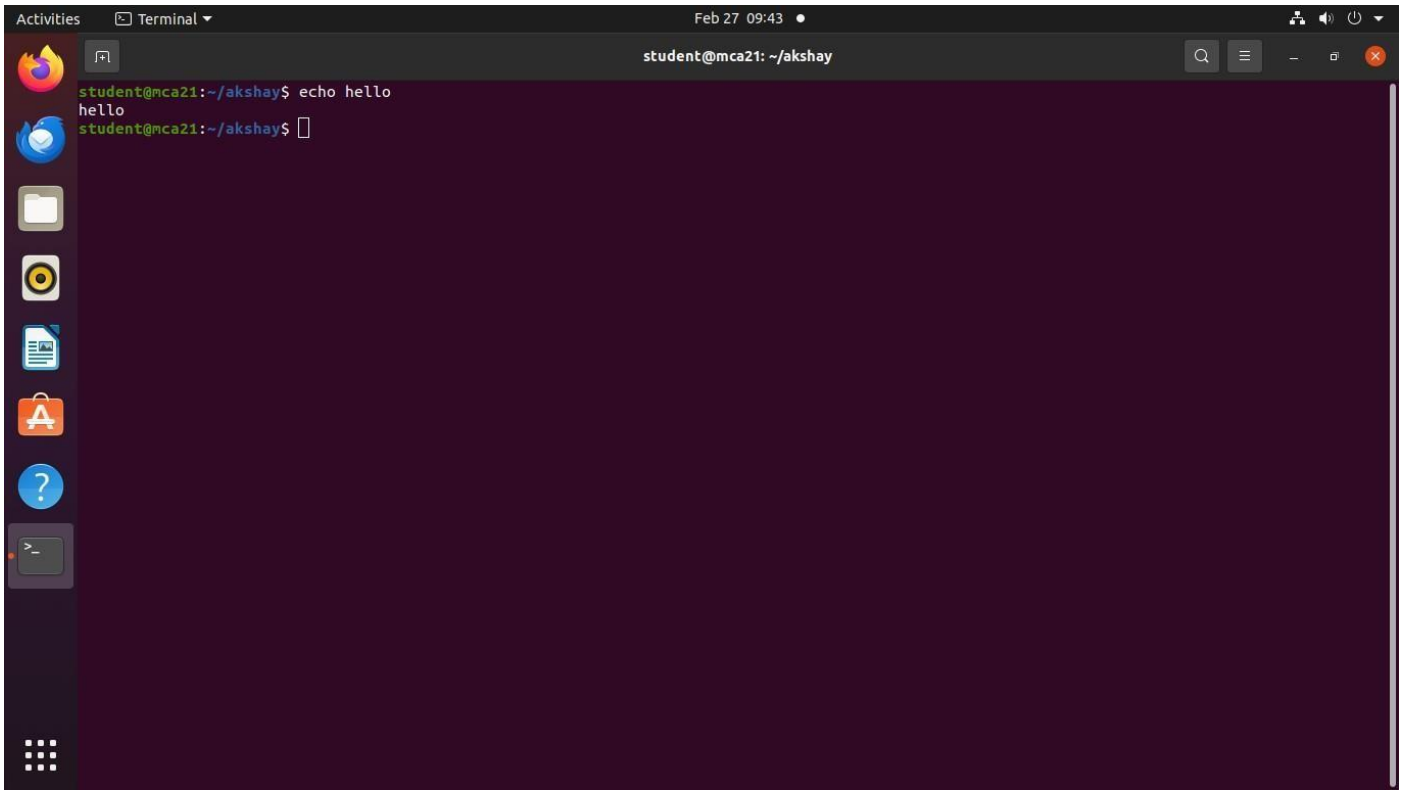
Show the manual for a given command.Eg:

man ls



echo :

It is built in linux feature that print out arguments as the standard output.

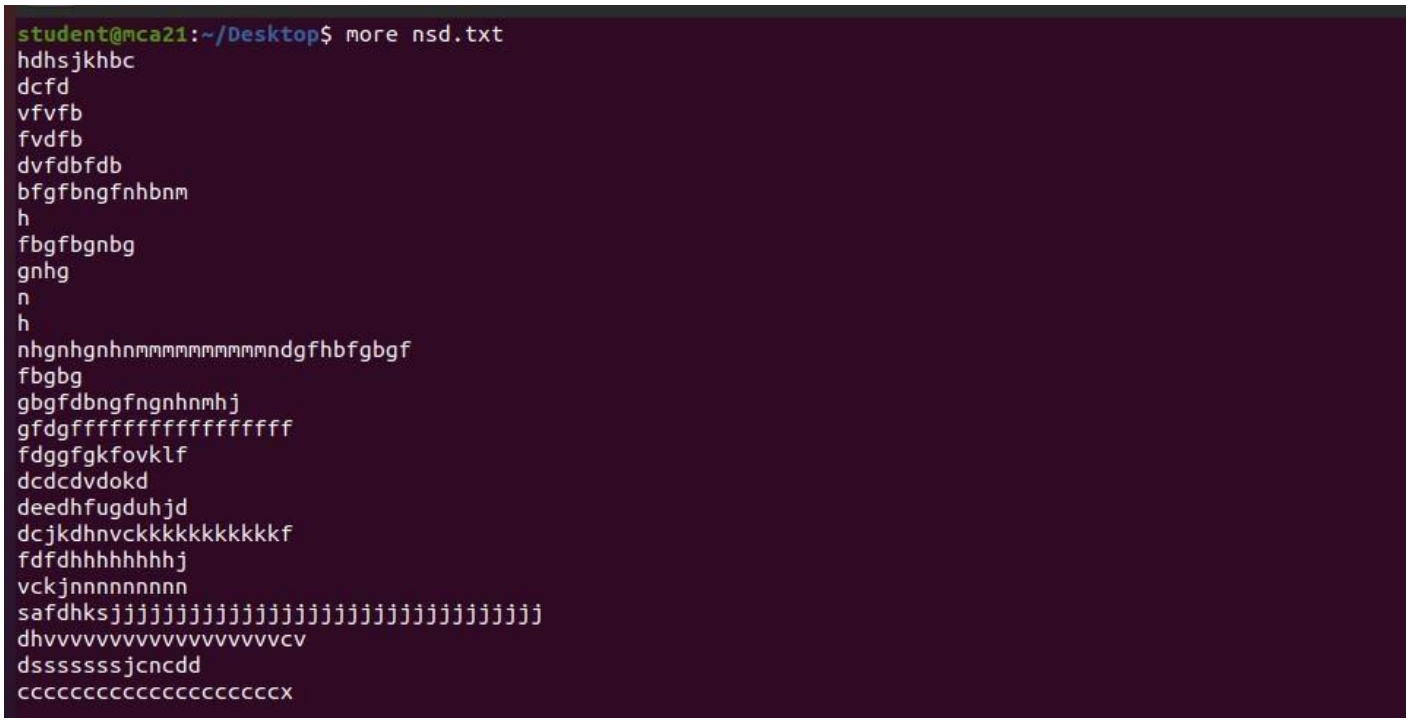


Read :

It is used to read the contents of a line into a variable.

More:

It is used to view the text files in the command prompt,displaying onescreen at a time in case the file is large.

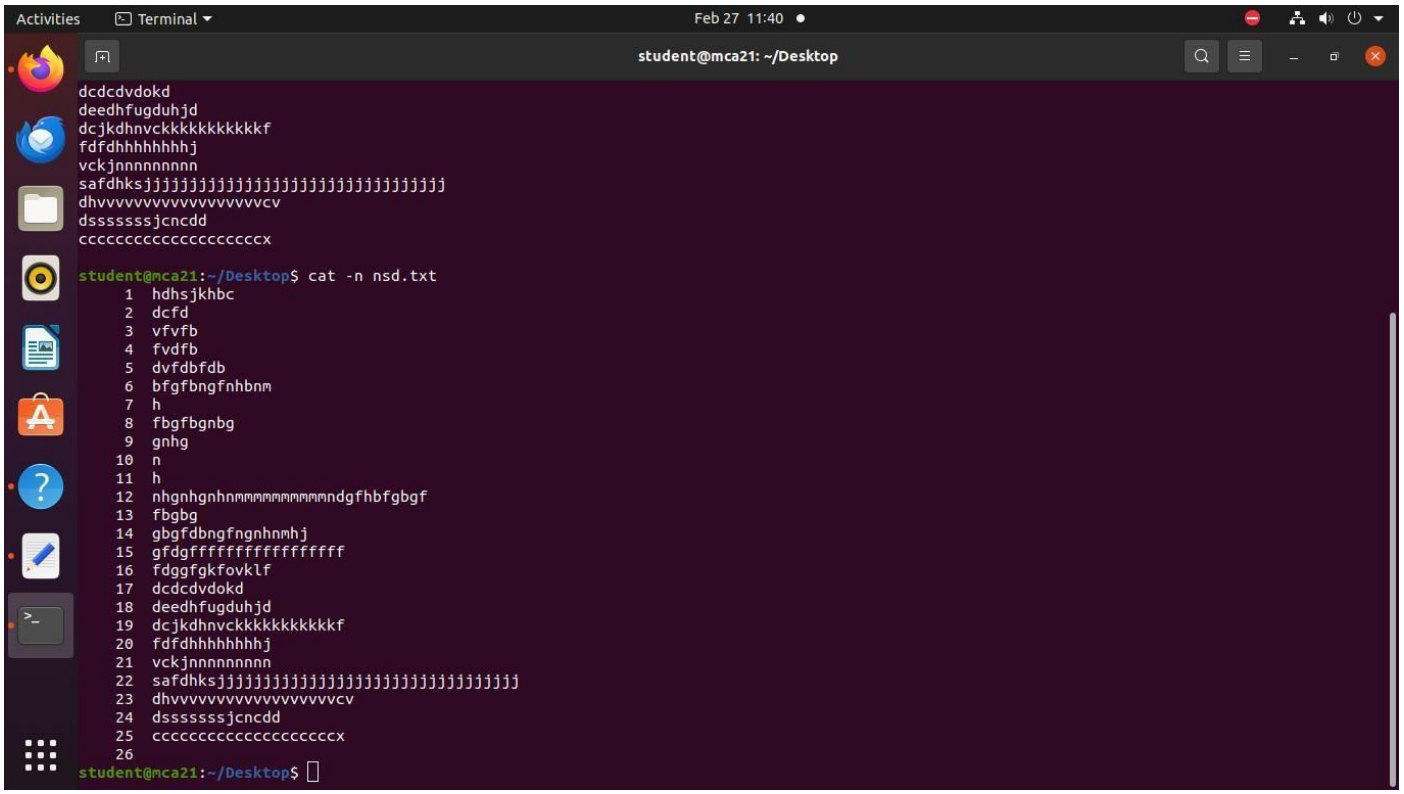


Less :

Less command is a linux utility that can be used to read the contents of a textfile one page(one screen) at a time.

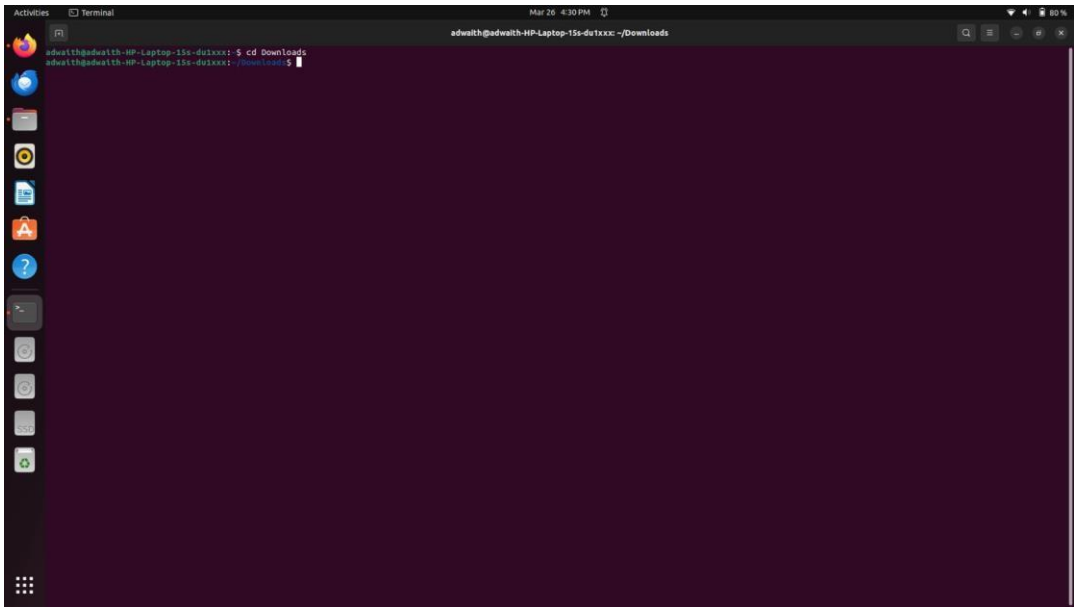
Cat :

It is used to list the contents of a file on the standard output.



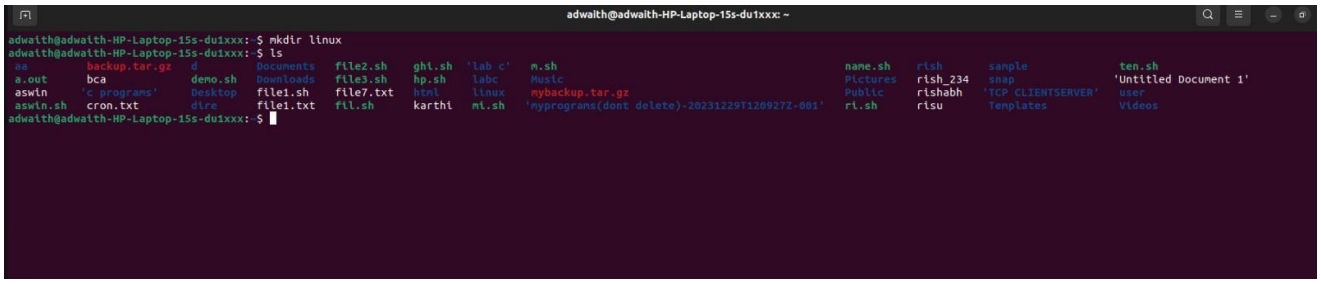
cd :

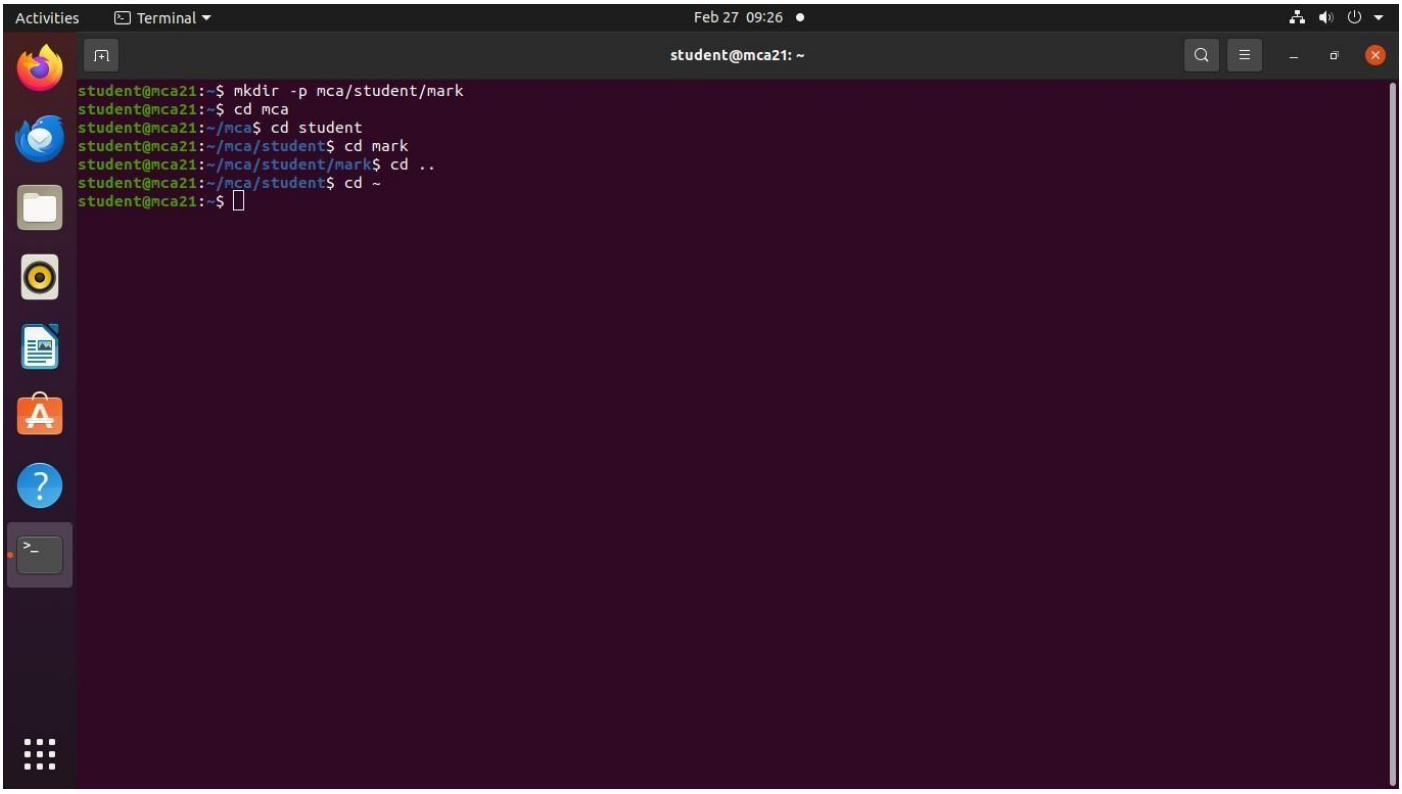
It is used to navigate through the linux files and directories.



mkdir :

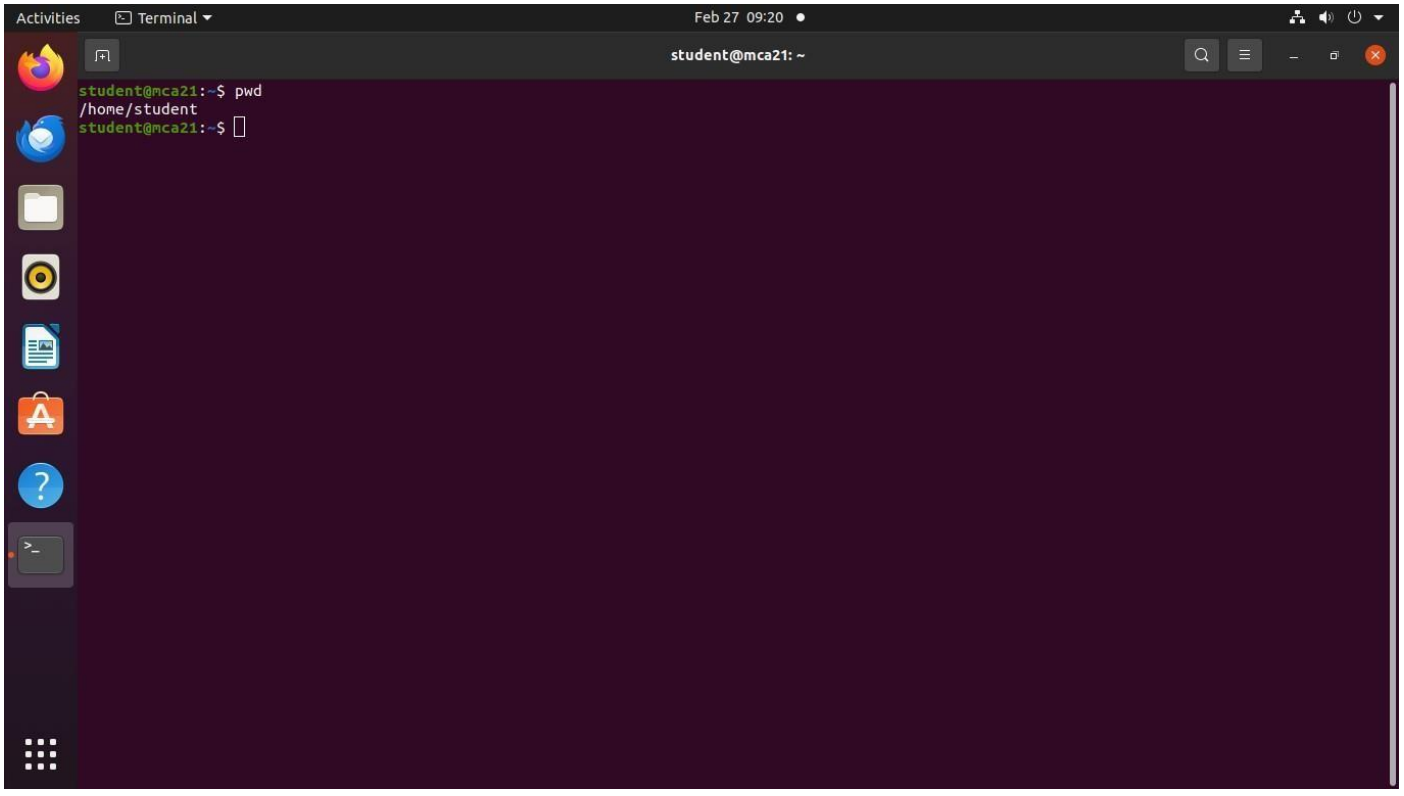
Create a new directory (folder).





pwd :

It print the current working directory path,starting from the root(/).



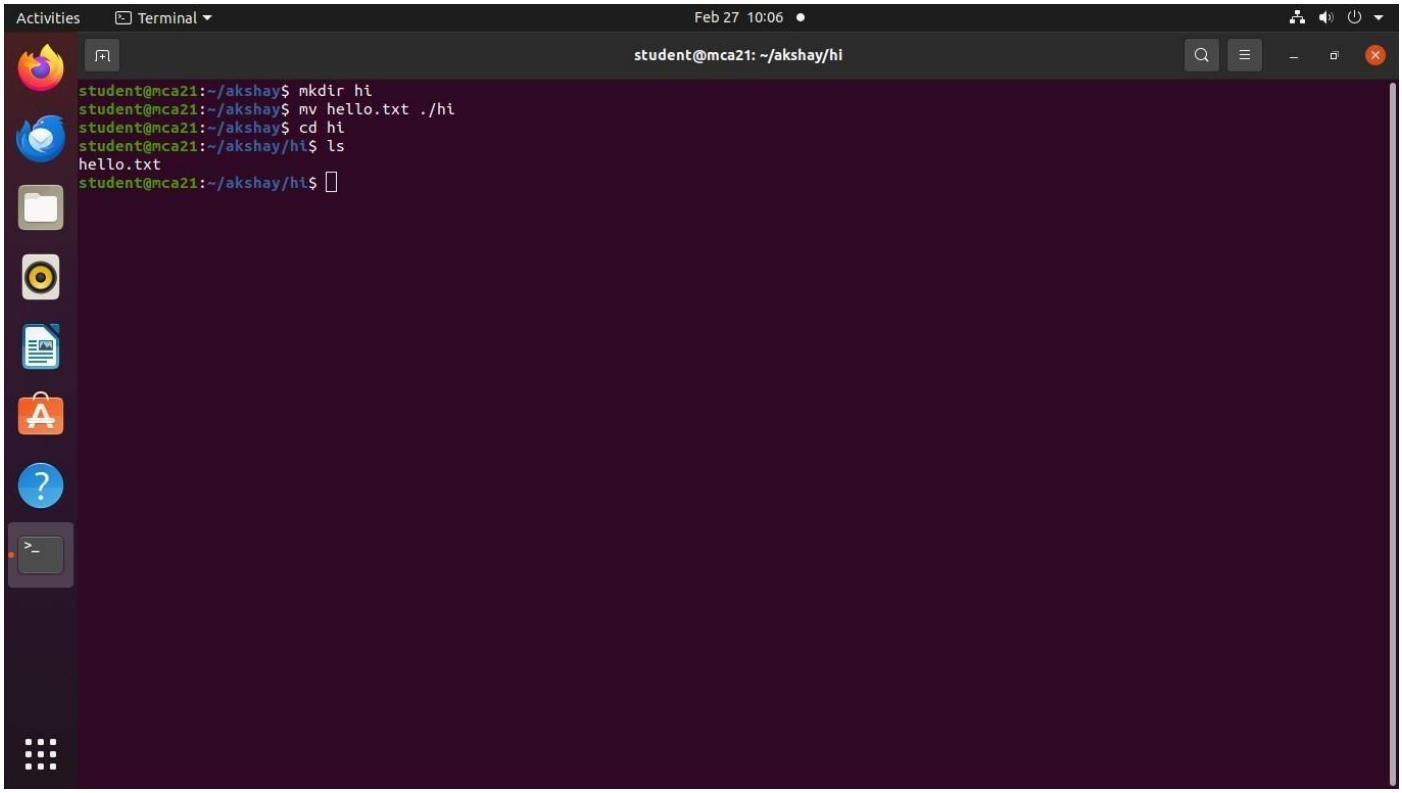
find :

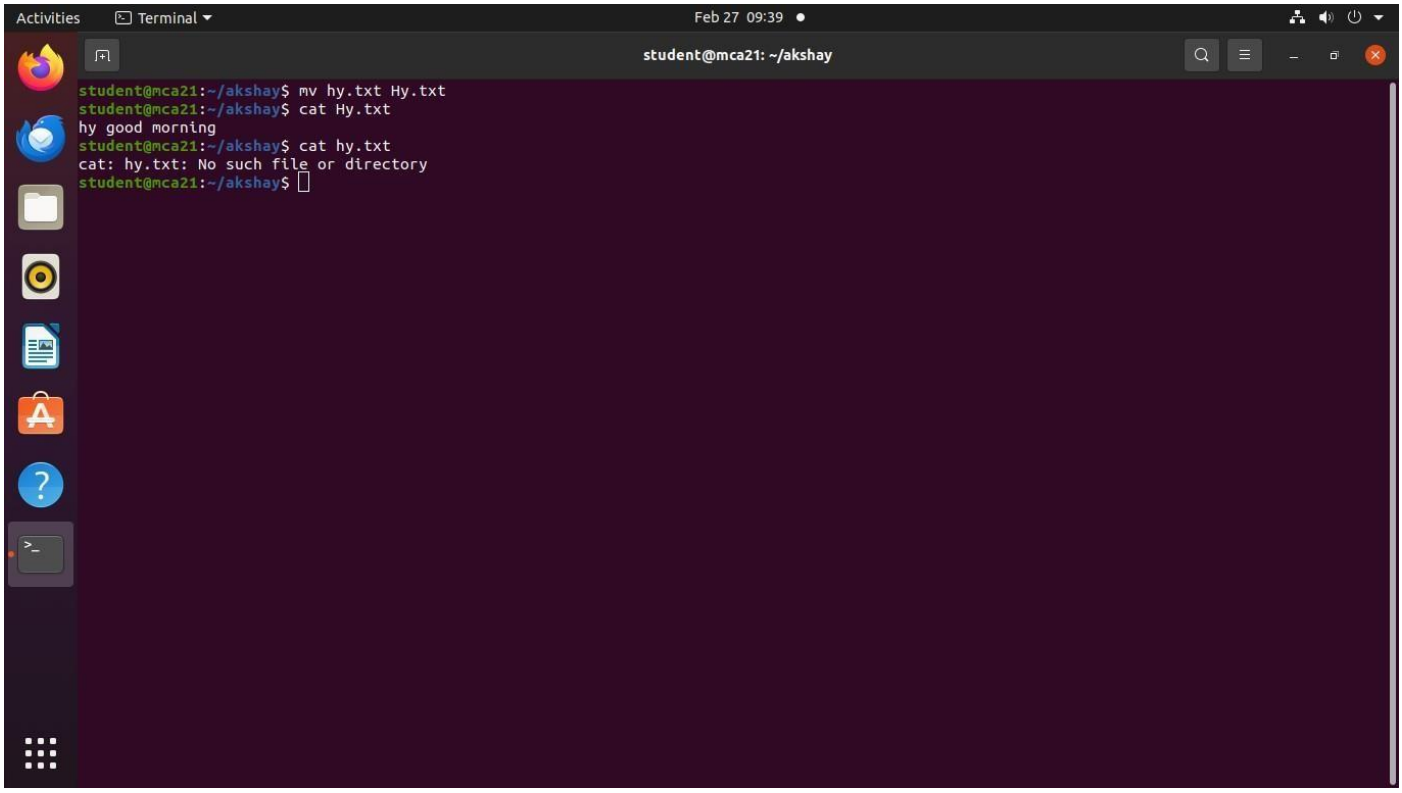
It is used to search and locate the list of files and directories based on conditions you specify for files that match the arguments.

```
mca@mca-H81M-S:~$ find . -name text.txt;
./text.txt
./.local/share/Trash/files/text.txt
mca@mca-H81M-S:~$
```

mv :

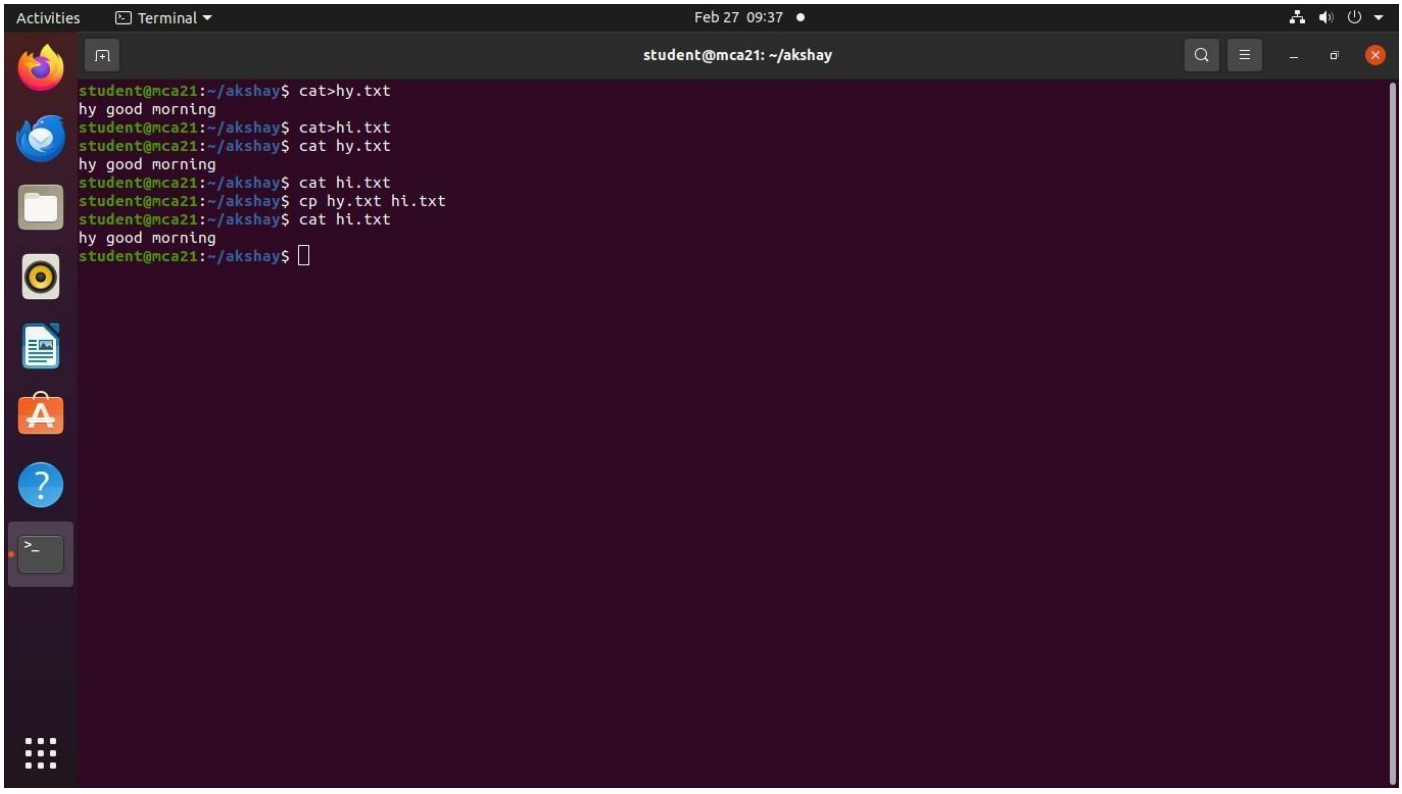
It is used to move one or more files or directories from one place to anotherin a file system like unix.





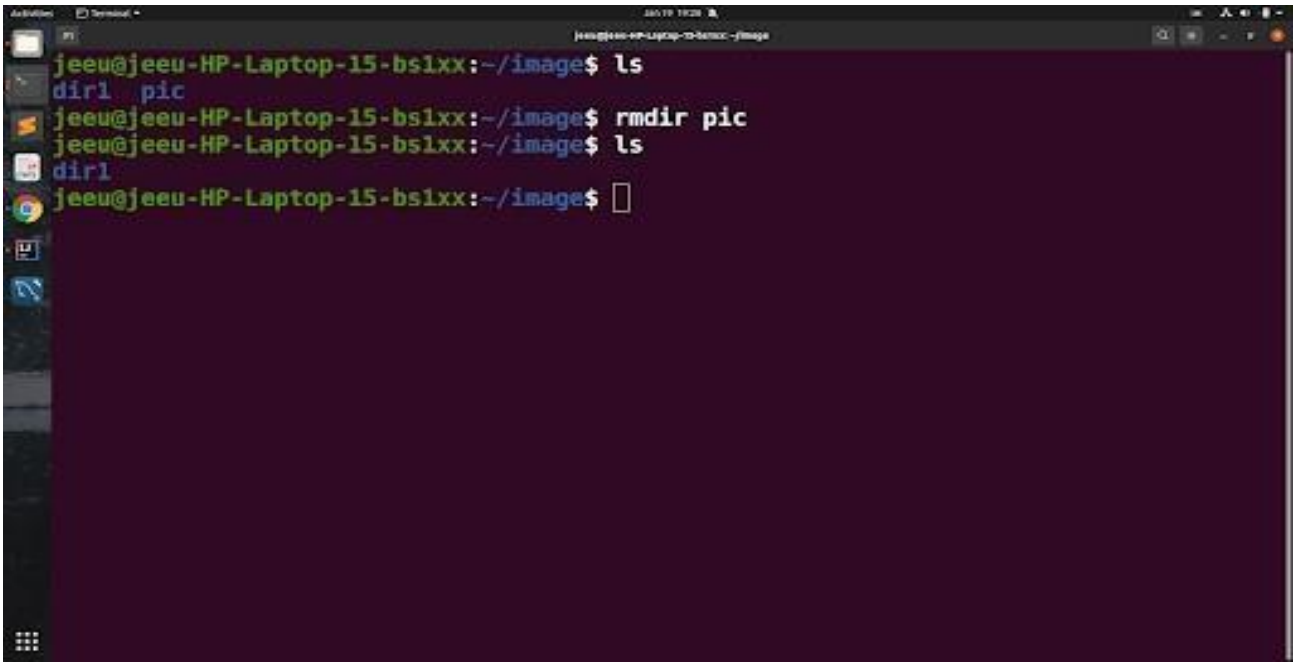
cp :

This command used to copy files or group of files or directory.



rm :

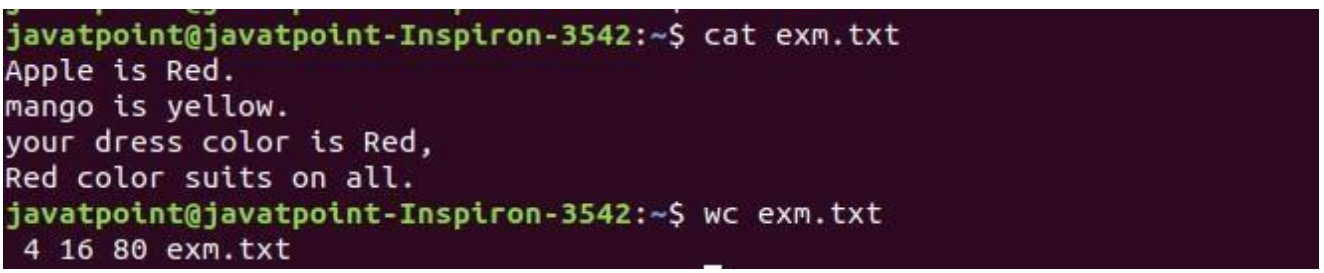
It is used to remove objects such as files, directories, symbolic, links and soon from the file system.



tar :

It is used for saving several files into an archieve file.

wc : word count. It is mainly used for counting purpose.



cut :

It is used for cutting out the sections from each line of files and writing theresult to standard output.

paste :

It is used to join horizondally by outputting lines consisting of lines fromeach file specified,separated by tab as delimiter, to standard output.

head :

It present in all major linux distributions which are used to print out datafrom the start of a file.

```
student@mca21:~/Desktop$ head nsd.txt
hdhsjkhbc
dcfd
vfvfb
fvdfb
dvfdbfdb
bfgfbngfnhbnm
h
fbgfbgnbg
gnhg
n
```

```
student@mca21:~/Desktop$ head -n 3 nsd.txt
hdhsjkhbc
dcfd
vfvfb
```

tail :

The basic functionality of linux tail commands is to output the end of a file.

```
student@mca21:~/Desktop$ tail nsd.txt
dcdcdvdokd
deedhfugduhjd
dcjkdhnvckkkkkkkkkkf
fdfdhhhhhhhhj
vckjnnnnnnnnn
safdhksjjjjjjjjjjjjjjjjjjjjjjjjjjjjjj
dhvvvvvvvvvvvvvvvvvvcv
dsssssssjcncdd
ccccccccccccccccccccx
```

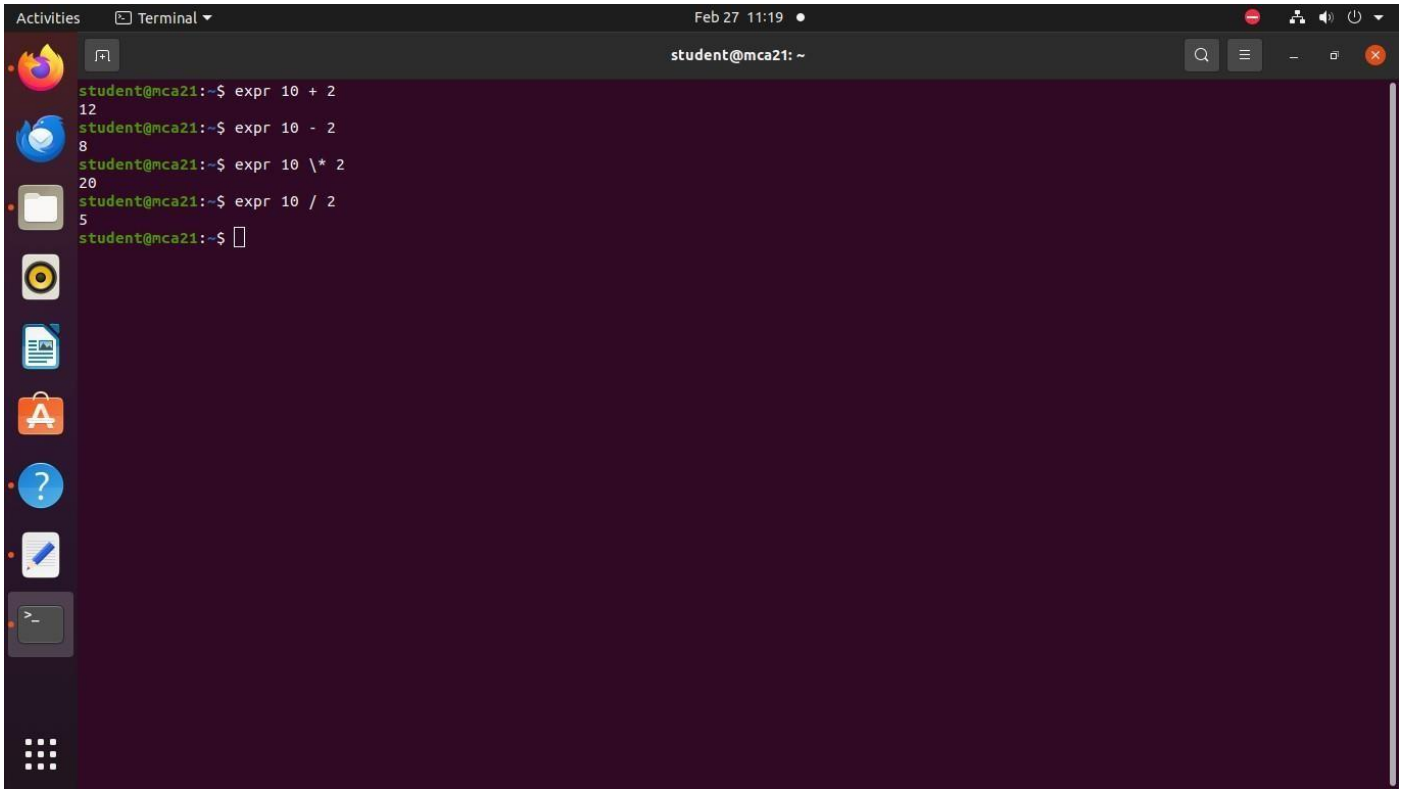
grep :

Grep command is used to search through all the text in a given file.

```
sssit@JavaTpoint: ~
sssit@JavaTpoint:~$ cat marks.txt
Priya-66
Suman-91
Abhi-78
Soumya-72
Ankit-95
Gaurav-90
Sumit-98
sssit@JavaTpoint:~$ cat marks.txt | grep 9
Suman-91
Ankit-95
Gaurav-90
Sumit-98
sssit@JavaTpoint:~$
```

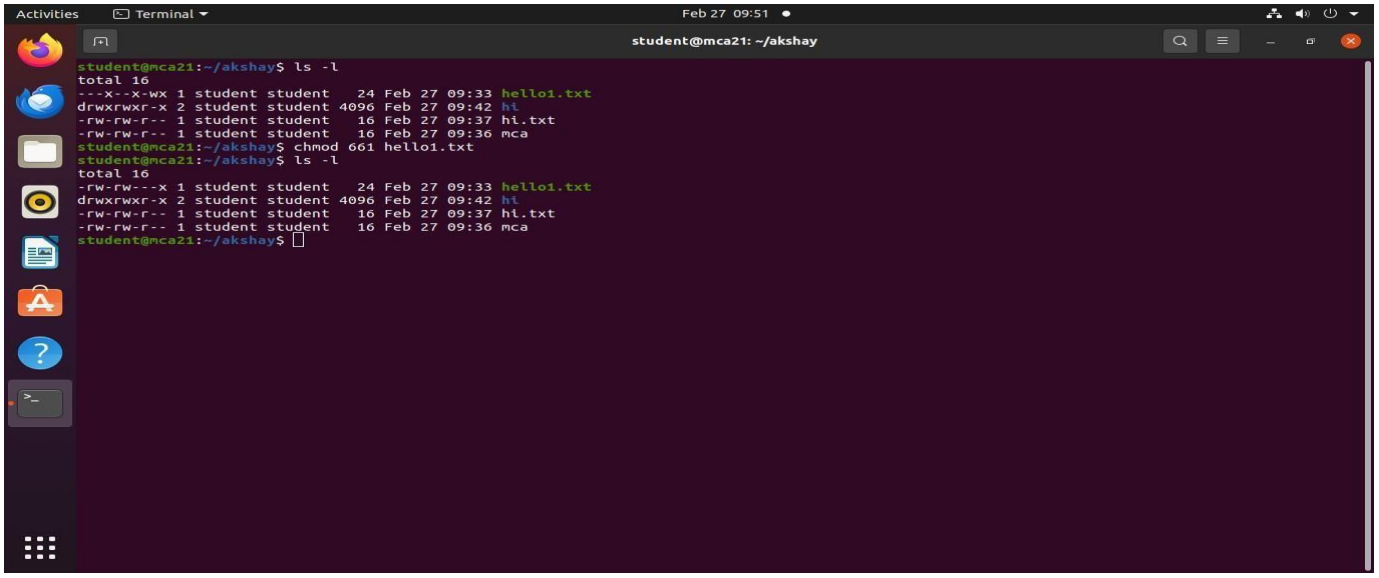
expr :

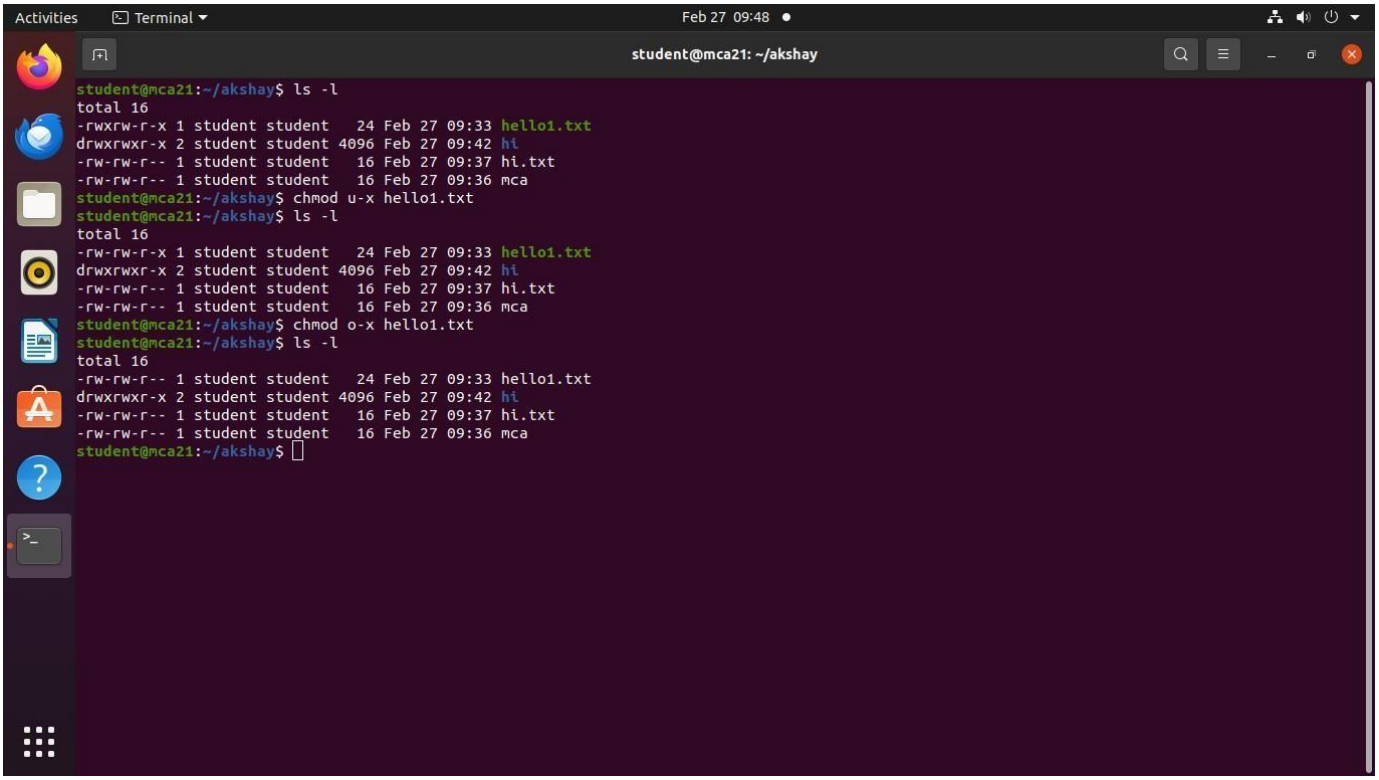
It was used to evaluate a given expression and display its correspondingoutput.

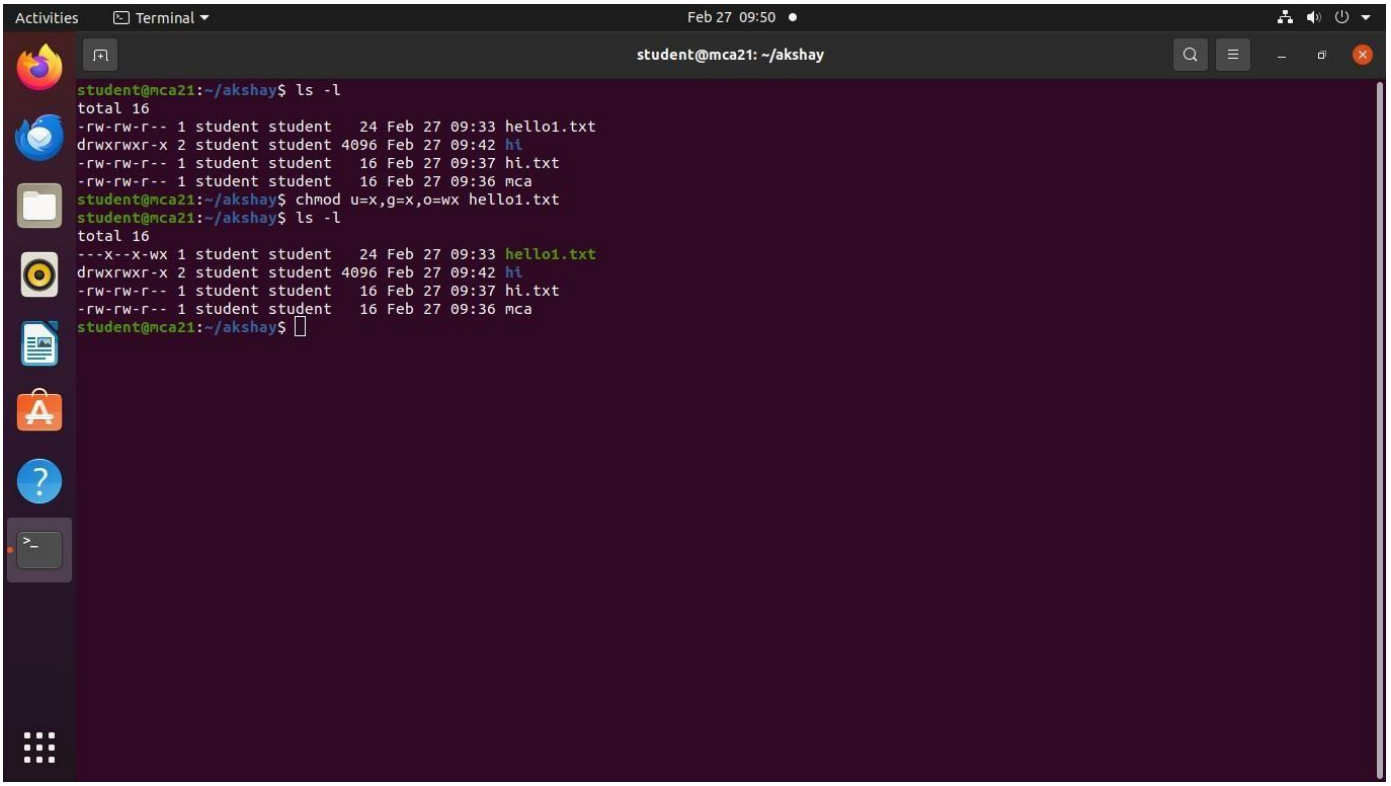


chmod :

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




Activities
Terminal
Feb 27 09:48
student@mca21: ~/akshay
student@mca21:~/akshay$ ls -l
total 16
-rwxrw-r-x 1 student student 24 Feb 27 09:33 hello1.txt
drwxrwxr-x 2 student student 4096 Feb 27 09:42 hi
-rw-rw-r-- 1 student student 16 Feb 27 09:37 hi.txt
-rw-rw-r-- 1 student student 16 Feb 27 09:36 mca
student@mca21:~/akshay$ chmod u-x hello1.txt
student@mca21:~/akshay$ ls -l
total 16
-rw-rw-r-x 1 student student 24 Feb 27 09:33 hello1.txt
drwxrwxr-x 2 student student 4096 Feb 27 09:42 hi
-rw-rw-r-- 1 student student 16 Feb 27 09:37 hi.txt
-rw-rw-r-- 1 student student 16 Feb 27 09:36 mca
student@mca21:~/akshay$ chmod o-x hello1.txt
student@mca21:~/akshay$ ls -l
total 16
-rw-rw-r-- 1 student student 24 Feb 27 09:33 hello1.txt
drwxrwxr-x 2 student student 4096 Feb 27 09:42 hi
-rw-rw-r-- 1 student student 16 Feb 27 09:37 hi.txt
-rw-rw-r-- 1 student student 16 Feb 27 09:36 mca
student@mca21:~/akshay$


Activities
Terminal
Feb 27 09:50
student@mca21: ~/akshay
student@mca21:~/akshay$ ls -l
total 16
-rw-rw-r-- 1 student student 24 Feb 27 09:33 hello1.txt
drwxrwxr-x 2 student student 4096 Feb 27 09:42 hi
-rw-rw-r-- 1 student student 16 Feb 27 09:37 hi.txt
-rw-rw-r-- 1 student student 16 Feb 27 09:36 mca
student@mca21:~/akshay$ chmod u=x,g=x,o=wx hello1.txt
student@mca21:~/akshay$ ls -l
total 16
---x--x-wx 1 student student 24 Feb 27 09:33 hello1.txt
drwxrwxr-x 2 student student 4096 Feb 27 09:42 hi
-rw-rw-r-- 1 student student 16 Feb 27 09:37 hi.txt
-rw-rw-r-- 1 student student 16 Feb 27 09:36 mca
student@mca21:~/akshay$

chown :

It is used to change the files ownership, directory,or symbolic link for auser or group.

Redirections & 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 thiscommand 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.

```
mca@mca-VirtualBox:~$ ls -l | more;
total 56
drwxr-xr-x 3 mca mca 4096 Mar 14 15:21 Desktop
drwxr-xr-x 2 mca mca 4096 Mar 14 15:22 Documents
drwxr-xr-x 2 mca mca 4096 Mar 17 18:45 Downloads
-rwxr-xr-x 1 mca mca 8980 Nov 16 13:29 examples.desktop
-rwxrwxr-x 1 mca mca    6 May  7 14:42 file1.txt
-rwxrwxr-x 1 mca mca    0 May  7 14:24 file.txt
-rwxrwxr-x 1 mca mca  779 May  7 14:49 linux.txt
drwxr-xr-x 2 mca mca 4096 Nov 16 13:36 Music
-rwxrwxr-x 1 mca mca    0 May  7 14:21 new1.txt
-rwxrwxr-x 1 mca mca    0 May  7 14:21 new.txt
drwxr-xr-x 2 mca mca 4096 Mar 10 12:04 Pictures
drwxr-xr-x 2 mca mca 4096 Nov 16 13:36 Public
drwxr-xr-x 2 mca mca 4096 Mar 10 12:05 Templates
drwxr-xr-x 2 mca mca 4096 Nov 16 13:36 Videos
drwxrwxr-x 2 mca mca 4096 Mar 14 15:26 vismaya
-rwxrwxr-x 1 mca mca    0 May  7 14:25 vis.txt
mca@mca-VirtualBox:~$ cat linux.txt | head -2 | tail -3;
total 52
drwxr-xr-x 3 mca mca 4096 Mar 14 15:21 Desktop
mca@mca-VirtualBox:~$
```

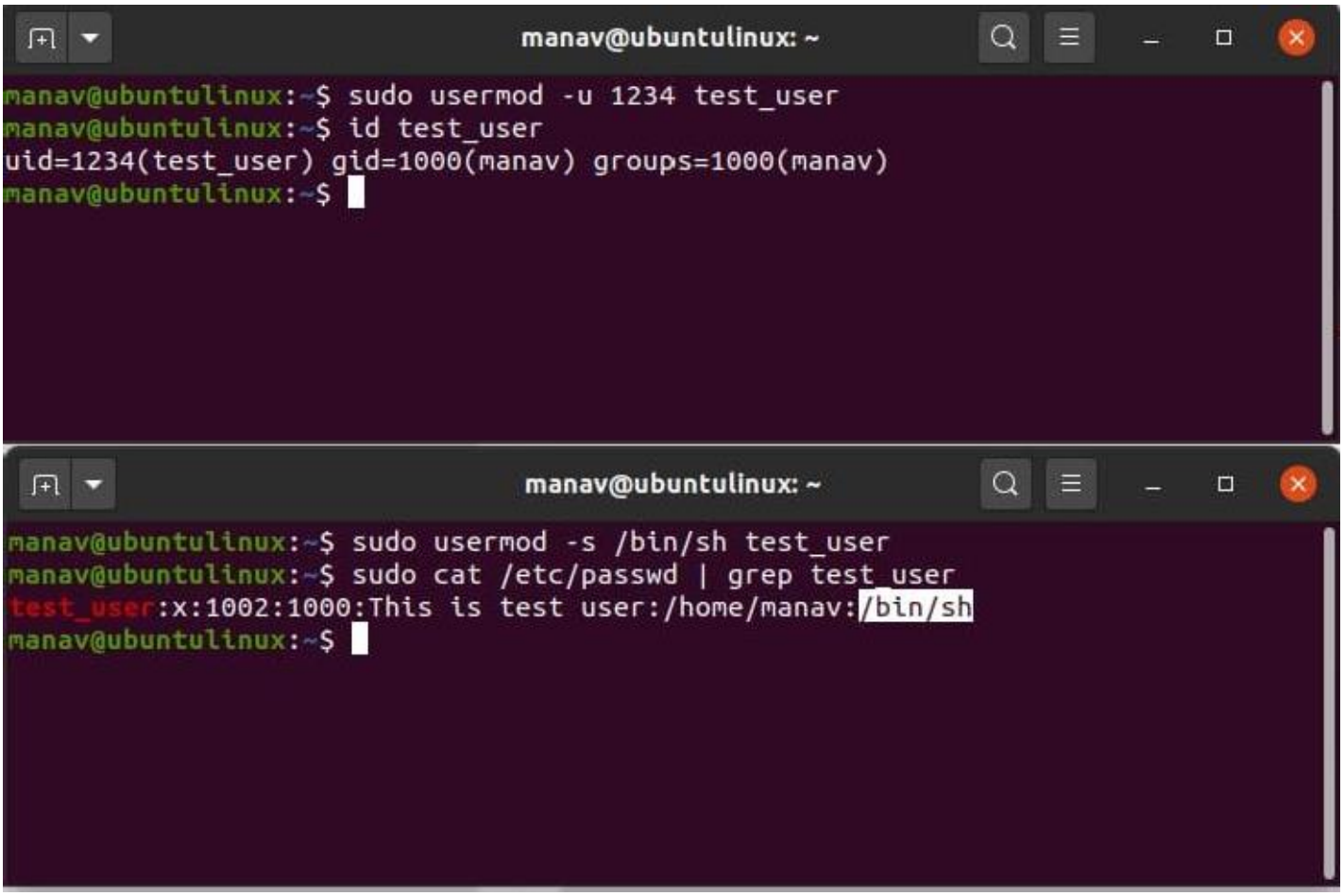
```
mca@mca-VirtualBox:~$ ls -l > linux.txt
mca@mca-VirtualBox:~$ cat linux.txt
total 52
drwxr-xr-x 3 mca mca 4096 Mar 14 15:21 Desktop
drwxr-xr-x 2 mca mca 4096 Mar 14 15:22 Documents
drwxr-xr-x 2 mca mca 4096 Mar 17 18:45 Downloads
-rwxr-xr-x 1 mca mca 8980 Nov 16 13:29 examples.desktop
-rwxrwxr-x 1 mca mca    6 May  7 14:42 file1.txt
-rwxrwxr-x 1 mca mca    0 May  7 14:24 file.txt
-rwxrwxr-x 1 mca mca    0 May  7 14:49 linux.txt
drwxr-xr-x 2 mca mca 4096 Nov 16 13:36 Music
-rwxrwxr-x 1 mca mca    0 May  7 14:21 new1.txt
-rwxrwxr-x 1 mca mca    0 May  7 14:21 new.txt
drwxr-xr-x 2 mca mca 4096 Mar 10 12:04 Pictures
drwxr-xr-x 2 mca mca 4096 Nov 16 13:36 Public
drwxr-xr-x 2 mca mca 4096 Mar 10 12:05 Templates
drwxr-xr-x 2 mca mca 4096 Nov 16 13:36 Videos
drwxrwxr-x 2 mca mca 4096 Mar 14 15:26 vismaya
-rwxrwxr-x 1 mca mca    0 May  7 14:25 vis.txt
mca@mca-VirtualBox:~$
```

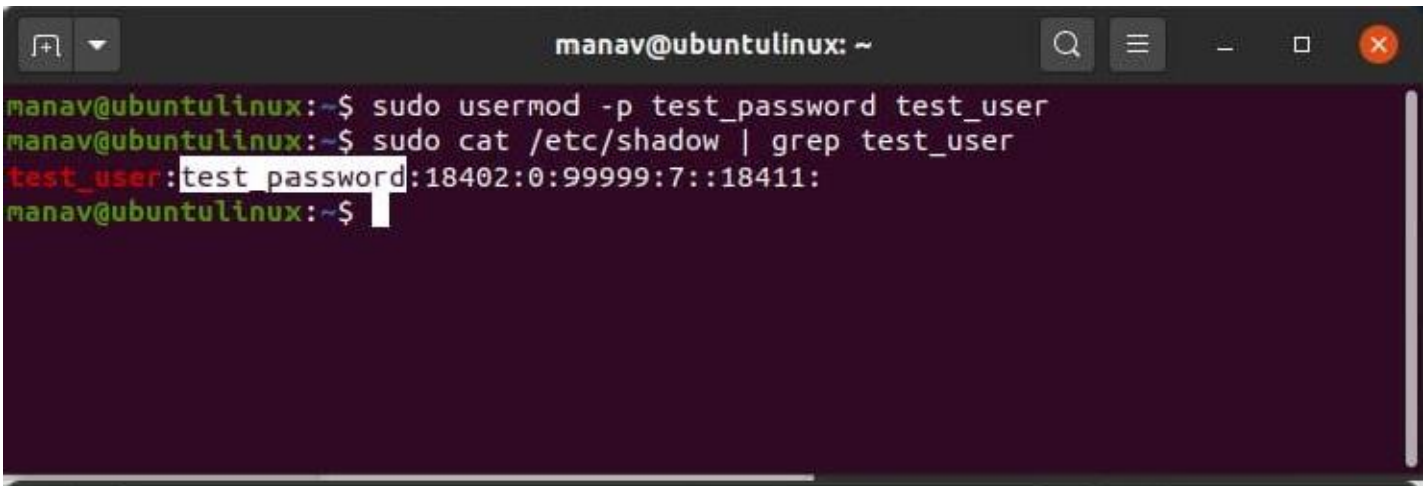
Useradd :

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.

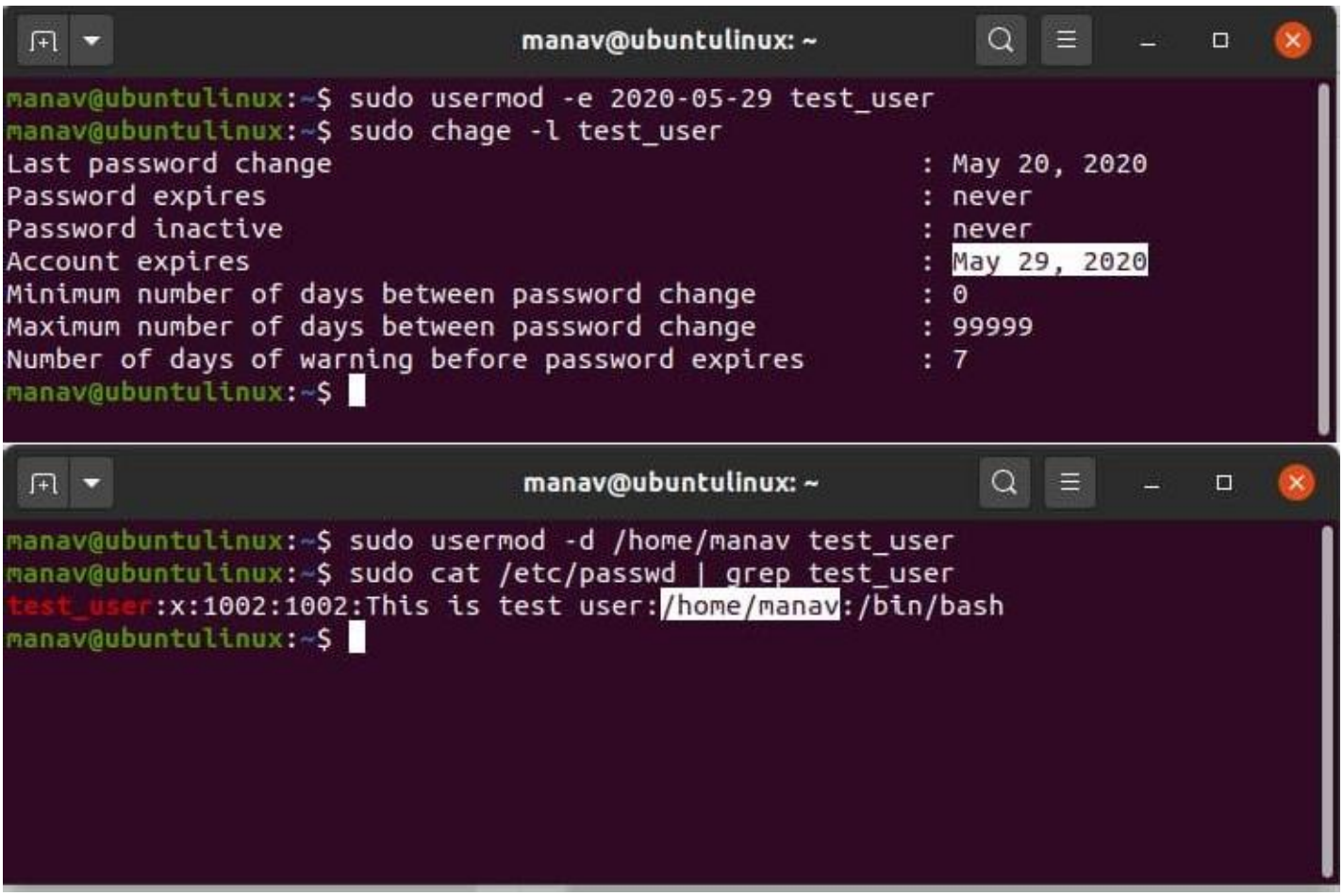

manav@ubuntulinux: ~
manav@ubuntulinux:~$ sudo usermod -u 1234 test_user
manav@ubuntulinux:~$ id test_user
uid=1234(test_user) gid=1000(manav) groups=1000(manav)
manav@ubuntulinux:~$
manav@ubuntulinux: ~
manav@ubuntulinux:~$ sudo usermod -s /bin/sh test_user
manav@ubuntulinux:~$ sudo cat /etc/passwd | grep test_user
test_user:x:1002:1000:This is test user:/home/manav:/bin/sh
manav@ubuntulinux:~$


manav@ubuntulinux: ~
manav@ubuntulinux:~$ sudo usermod -p test_password test_user
manav@ubuntulinux:~$ sudo cat /etc/shadow | grep test_user
test_user:test_password:18402:0:99999:7::18411:
manav@ubuntulinux:~$


manav@ubuntulinux: ~
manav@ubuntulinux:~$ sudo usermod -L test_user
manav@ubuntulinux:~$ sudo usermod -U test_user
manav@ubuntulinux:~$


manav@ubuntulinux: ~
manav@ubuntulinux:~$ sudo usermod -l test_account test_user
manav@ubuntulinux:~$ id test_account
uid=1002(test_account) gid=1000(manav) groups=1000(manav)
manav@ubuntulinux:~$ id test_user
id: ‘test_user’: no such user
manav@ubuntulinux:~$


manav@ubuntulinux: ~
manav@ubuntulinux:~$ sudo usermod -g manav test_user
manav@ubuntulinux:~$ id test_user
uid=1002(test_user) gid=1000(manav) groups=1000(manav)
manav@ubuntulinux:~$



Userdel :

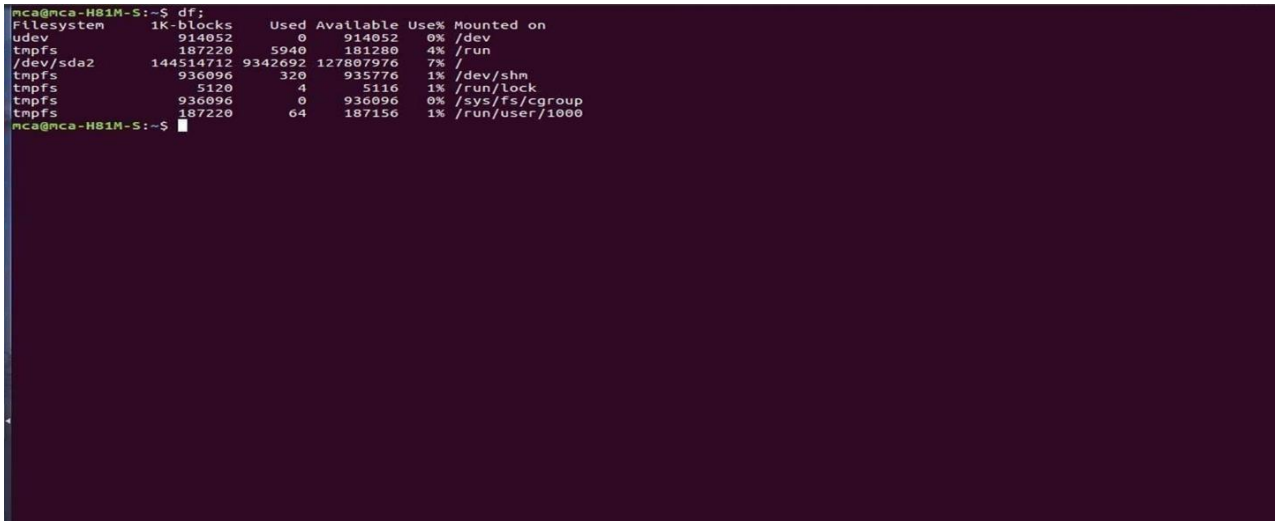
It is used to delete a user account and related files.

Passwd :

Passwd command used to change password for user accounts.

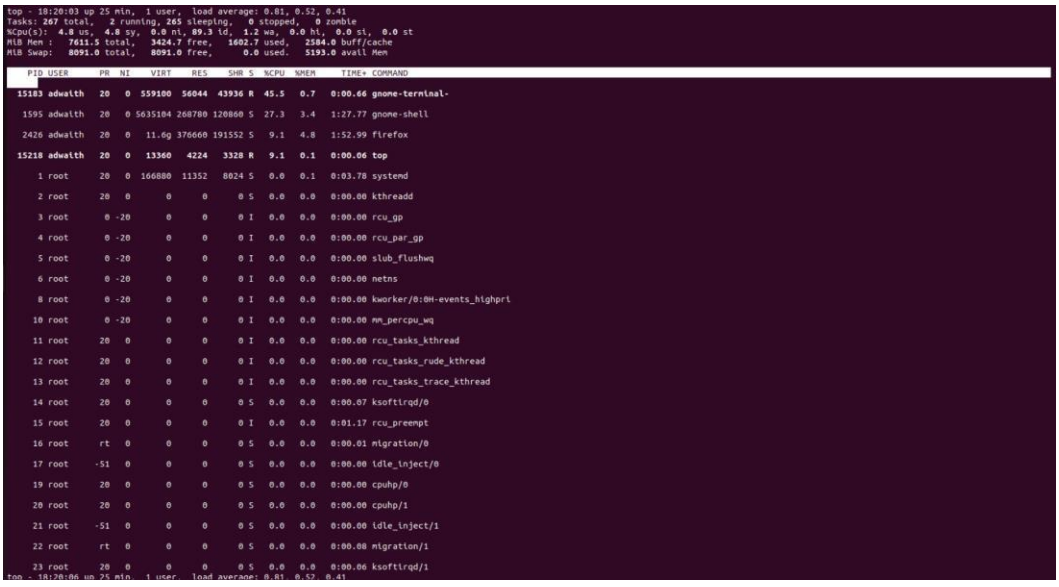
df :

It is used to display the disk space used in the file system



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 withsome other information depends on different option.

ssh :

It instructs the system to establish an encrypted secure connection with thehost 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:

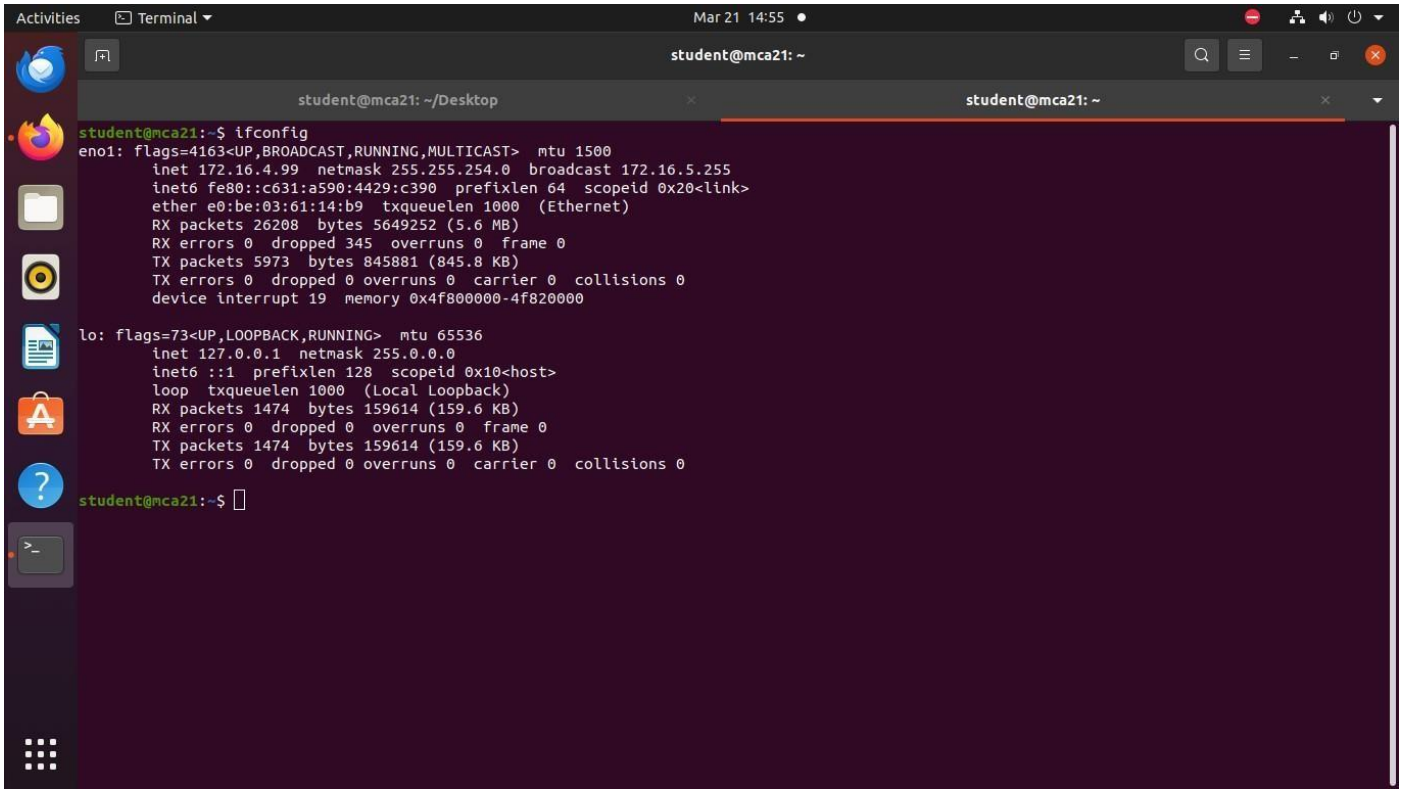
$ "ping second system IP"

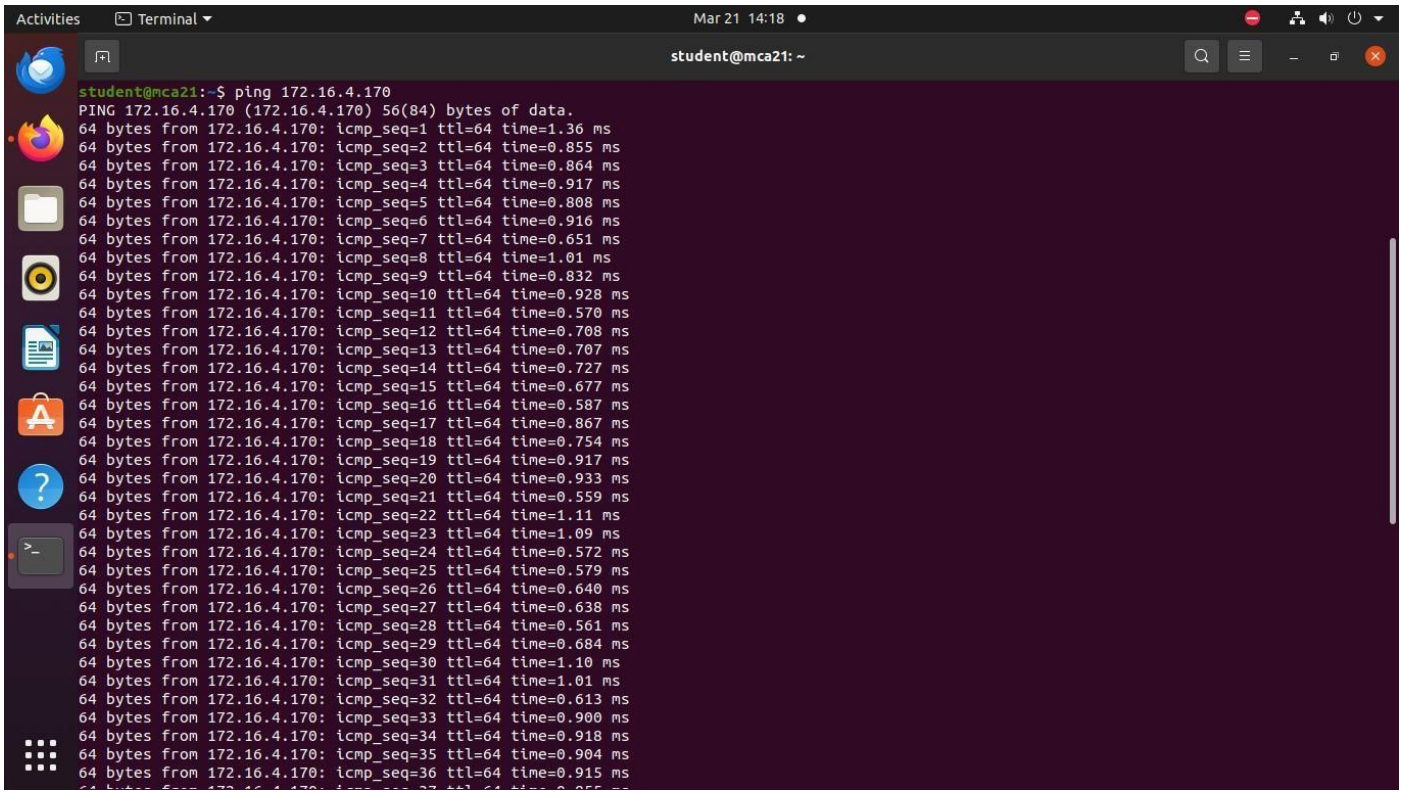
To login second system using the given command:

$ "ssh second system user@second system IP

$ "cd Desktop"

$ "ls"


Activities
Terminal
Mar 21 14:55
student@mca21: ~
student@mca21: ~/Desktop
student@mca21: ~
student@mca21:~$ ifconfig
eno1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 172.16.4.99 netmask 255.255.254.0 broadcast 172.16.5.255
inet6 fe80::c631:a590:4429:c390 prefixlen 64 scopeid 0x20<link>
ether e0:be:03:61:14:b9 txqueuelen 1000 (Ethernet)
RX packets 26208 bytes 5649252 (5.6 MB)
RX errors 0 dropped 345 overruns 0 frame 0
TX packets 5973 bytes 845881 (845.8 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
device interrupt 19 memory 0x4f800000-4f820000
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 1474 bytes 159614 (159.6 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 1474 bytes 159614 (159.6 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
student@mca21:~$


Activities
Terminal
Mar 21 14:18
student@mca21: ~
student@mca21:~$ ping 172.16.4.170
PING 172.16.4.170 (172.16.4.170) 56(84) bytes of data.
64 bytes from 172.16.4.170: icmp_seq=1 ttl=64 time=1.36 ms
64 bytes from 172.16.4.170: icmp_seq=2 ttl=64 time=0.855 ms
64 bytes from 172.16.4.170: icmp_seq=3 ttl=64 time=0.864 ms
64 bytes from 172.16.4.170: icmp_seq=4 ttl=64 time=0.917 ms
64 bytes from 172.16.4.170: icmp_seq=5 ttl=64 time=0.808 ms
64 bytes from 172.16.4.170: icmp_seq=6 ttl=64 time=0.916 ms
64 bytes from 172.16.4.170: icmp_seq=7 ttl=64 time=0.651 ms
64 bytes from 172.16.4.170: icmp_seq=8 ttl=64 time=1.01 ms
64 bytes from 172.16.4.170: icmp_seq=9 ttl=64 time=0.832 ms
64 bytes from 172.16.4.170: icmp_seq=10 ttl=64 time=0.928 ms
64 bytes from 172.16.4.170: icmp_seq=11 ttl=64 time=0.570 ms
64 bytes from 172.16.4.170: icmp_seq=12 ttl=64 time=0.708 ms
64 bytes from 172.16.4.170: icmp_seq=13 ttl=64 time=0.707 ms
64 bytes from 172.16.4.170: icmp_seq=14 ttl=64 time=0.727 ms
64 bytes from 172.16.4.170: icmp_seq=15 ttl=64 time=0.677 ms
64 bytes from 172.16.4.170: icmp_seq=16 ttl=64 time=0.587 ms
64 bytes from 172.16.4.170: icmp_seq=17 ttl=64 time=0.867 ms
64 bytes from 172.16.4.170: icmp_seq=18 ttl=64 time=0.754 ms
64 bytes from 172.16.4.170: icmp_seq=19 ttl=64 time=0.917 ms
64 bytes from 172.16.4.170: icmp_seq=20 ttl=64 time=0.933 ms
64 bytes from 172.16.4.170: icmp_seq=21 ttl=64 time=0.559 ms
64 bytes from 172.16.4.170: icmp_seq=22 ttl=64 time=1.11 ms
64 bytes from 172.16.4.170: icmp_seq=23 ttl=64 time=1.09 ms
64 bytes from 172.16.4.170: icmp_seq=24 ttl=64 time=0.572 ms
64 bytes from 172.16.4.170: icmp_seq=25 ttl=64 time=0.579 ms
64 bytes from 172.16.4.170: icmp_seq=26 ttl=64 time=0.640 ms
64 bytes from 172.16.4.170: icmp_seq=27 ttl=64 time=0.638 ms
64 bytes from 172.16.4.170: icmp_seq=28 ttl=64 time=0.561 ms
64 bytes from 172.16.4.170: icmp_seq=29 ttl=64 time=0.684 ms
64 bytes from 172.16.4.170: icmp_seq=30 ttl=64 time=1.10 ms
64 bytes from 172.16.4.170: icmp_seq=31 ttl=64 time=1.01 ms
64 bytes from 172.16.4.170: icmp_seq=32 ttl=64 time=0.613 ms
64 bytes from 172.16.4.170: icmp_seq=33 ttl=64 time=0.900 ms
64 bytes from 172.16.4.170: icmp_seq=34 ttl=64 time=0.918 ms
64 bytes from 172.16.4.170: icmp_seq=35 ttl=64 time=0.904 ms
64 bytes from 172.16.4.170: icmp_seq=36 ttl=64 time=0.915 ms

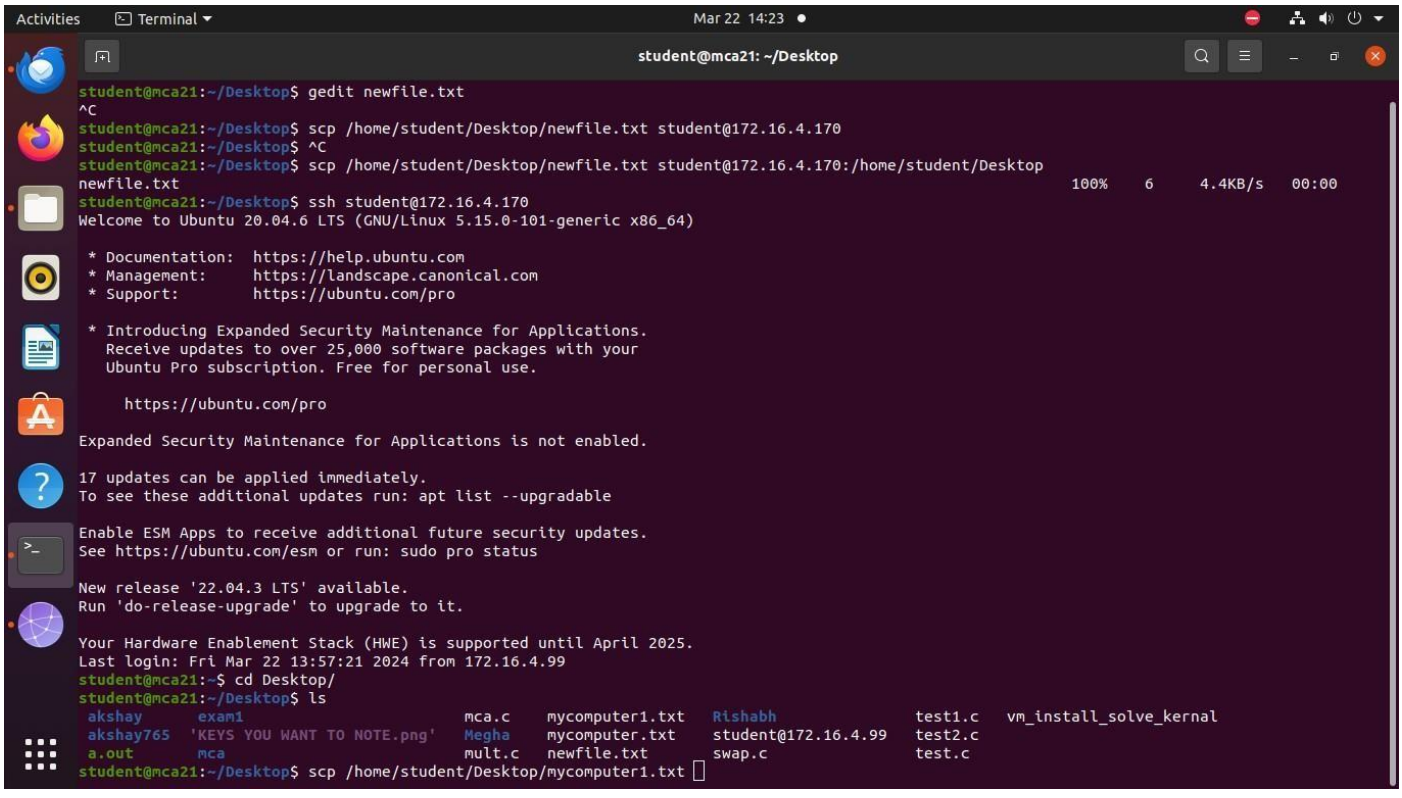
```
student@mca21:~/Desktop$ ssh student@172.16.4.170
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-101-generic x86_64)

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

 * 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

Expanded Security Maintenance for Applications is not enabled.

17 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Fri Mar 22 13:57:21 2024 from 172.16.4.99
```

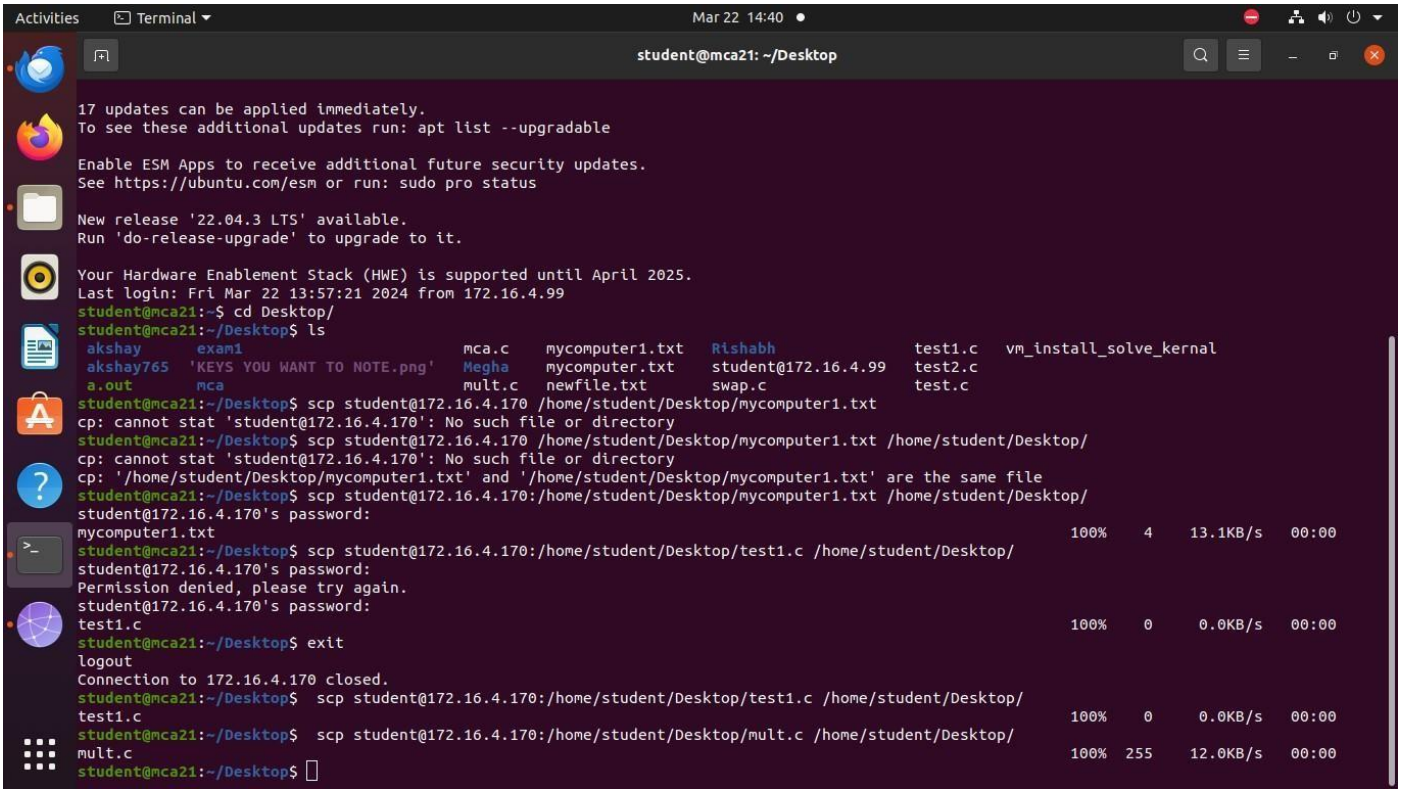
scp :

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"





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 uploadthe "ssh" user key.

TEXT EDITOR

Text editors can be used for editing text files, writing codes, updating userinstruction files, and more. A Linux system supports multiple text editors.

A text editor plays an important role while coding. So, it is important to select thebest text editor. A text editor should not only be simple but also functional and should be good to work with.

Unix text editors are:

- VIM
- EMACS
- NANO
- PICO

VIM

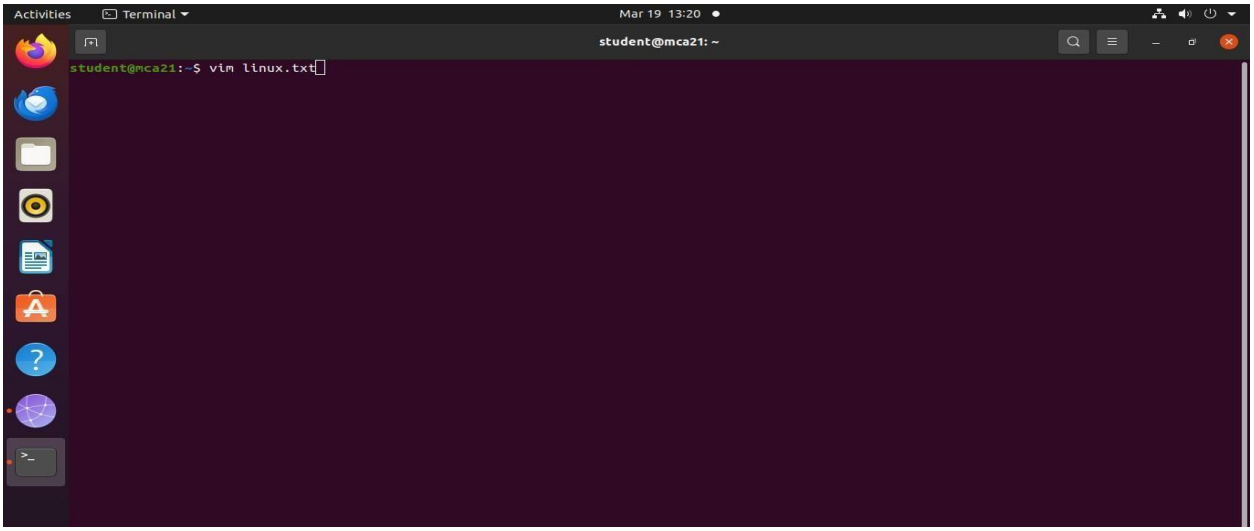
Vim editor is one of the most used and powerful command-line based editor of the Linux system. By default, it is supported by most Linux distros. It has enhanced functionalities of the old unix vi editor. It is a user-friendly editor and provides the same environment for all the Linux distros. It is also termed as programmer's editor because most programmers prefer Vi editor.

Vi editor has some special features such as Vi modes and syntax highlighting that makes it powerful than other text editors. Generally, it has two modes:

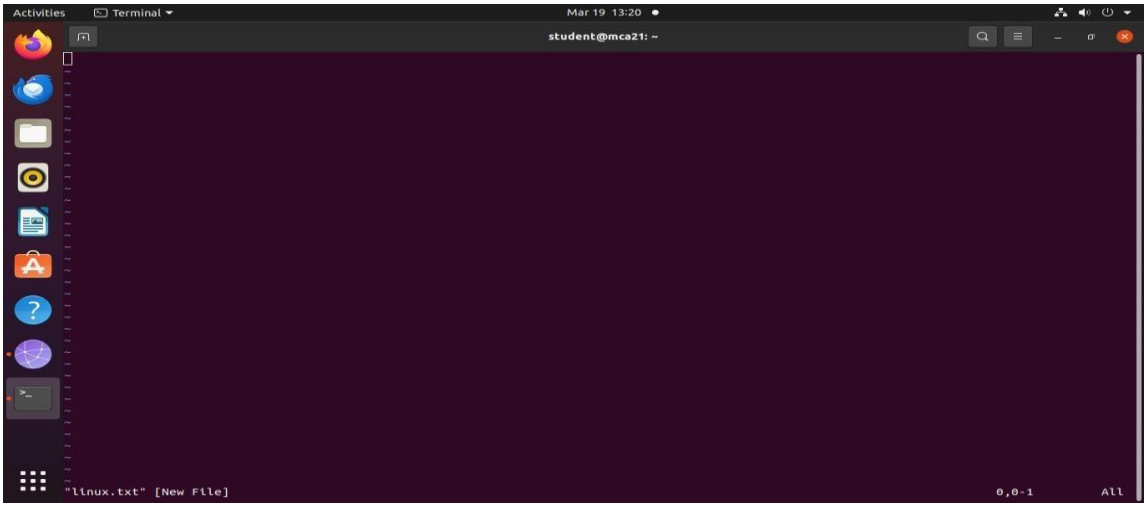
Command Mode: The command mode allows us to perform actions on files. By default, it starts in command mode. In this mode, all types of words are considered as commands. We can execute commands in this mode.

Insert Mode :
The insert mode allows to insert text on files.To switch from command mode to insert mode ,press the Esc key to exit fromactive mode and 'I' key.

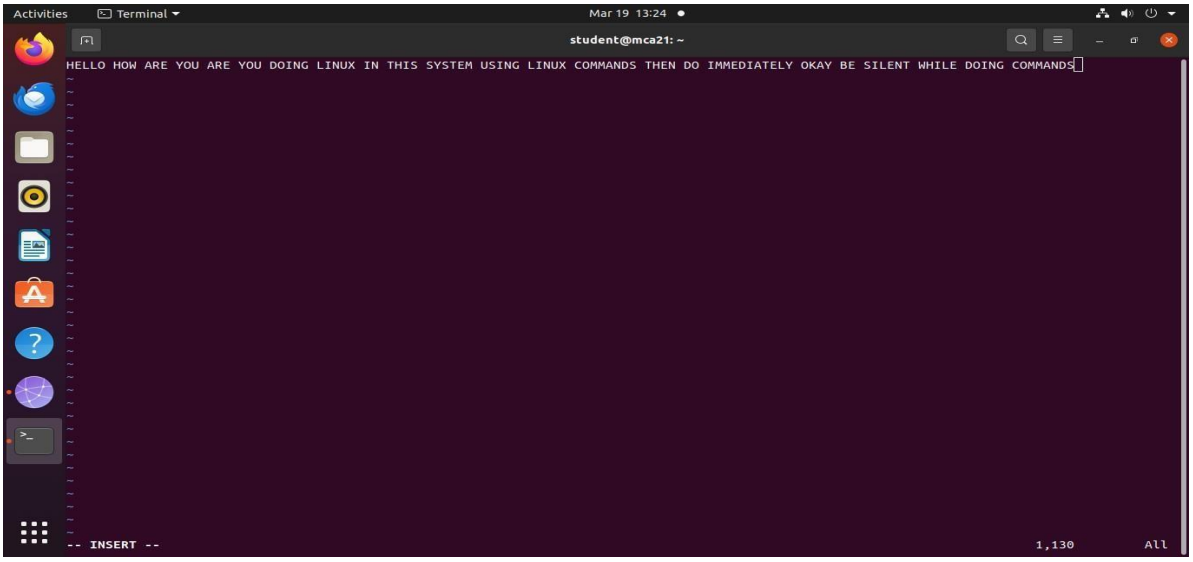
To invoke the vim editor,execute the vim command with the file name :



The file linux.txt is opened.

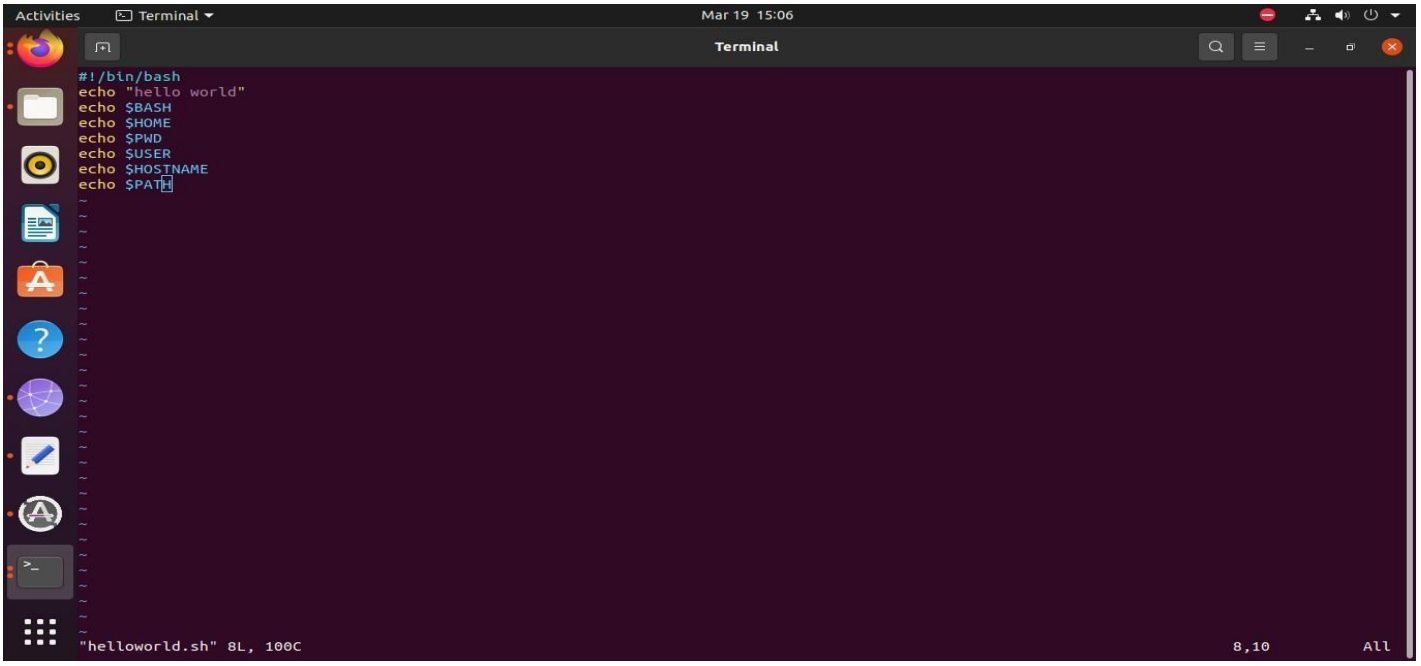


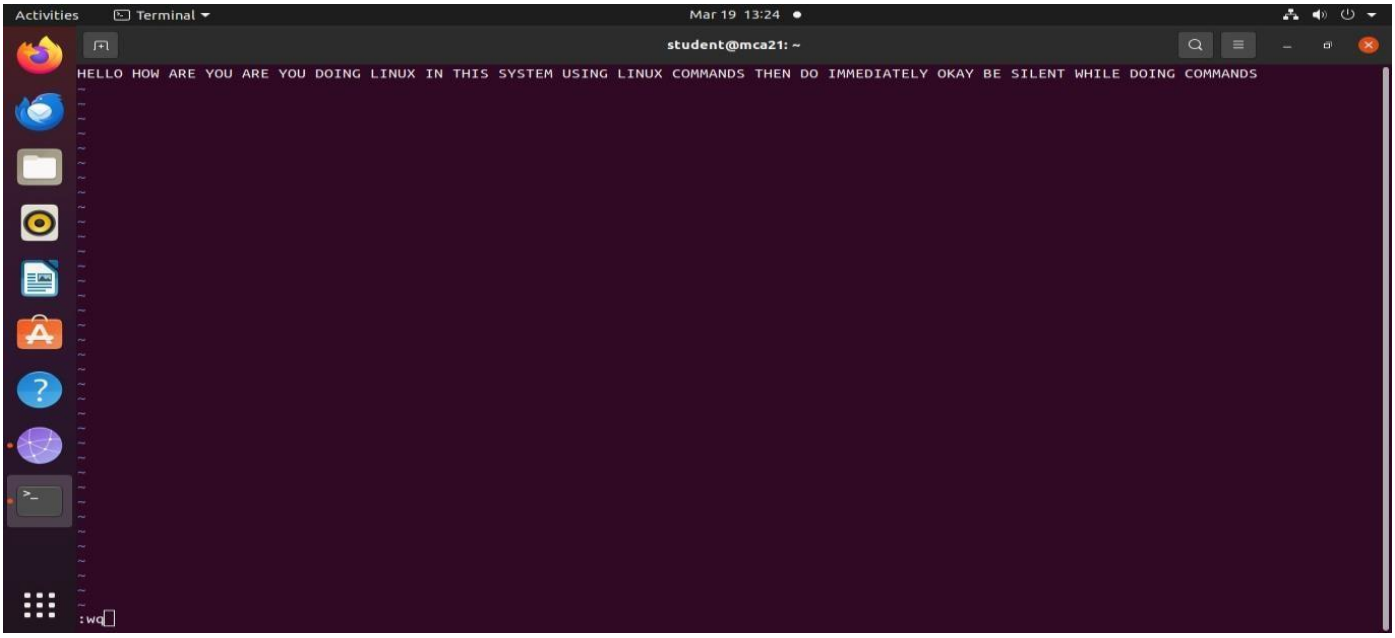
Insert mode activated by pressing key 'I' and content is added.



ESCAPE : wq [Save and Exit]

To quit without saving press ESC :q


Activities
Terminal
Mar 19 15:06
Terminal
#!/bin/bash
echo "hello world"
echo $BASH
echo $HOME
echo $PWD
echo $USER
echo $HOSTNAME
echo $PATH
"helloworld.sh" 8L, 100C
8,10
All


Activities
Terminal
Mar 19 13:24
student@mca21: ~
HELLO HOW ARE YOU ARE YOU DOING LINUX IN THIS SYSTEM USING LINUX COMMANDS THEN DO IMMEDIATELY OKAY BE SILENT WHILE DOING COMMANDS
:wq

W

We can view the file by using cat command