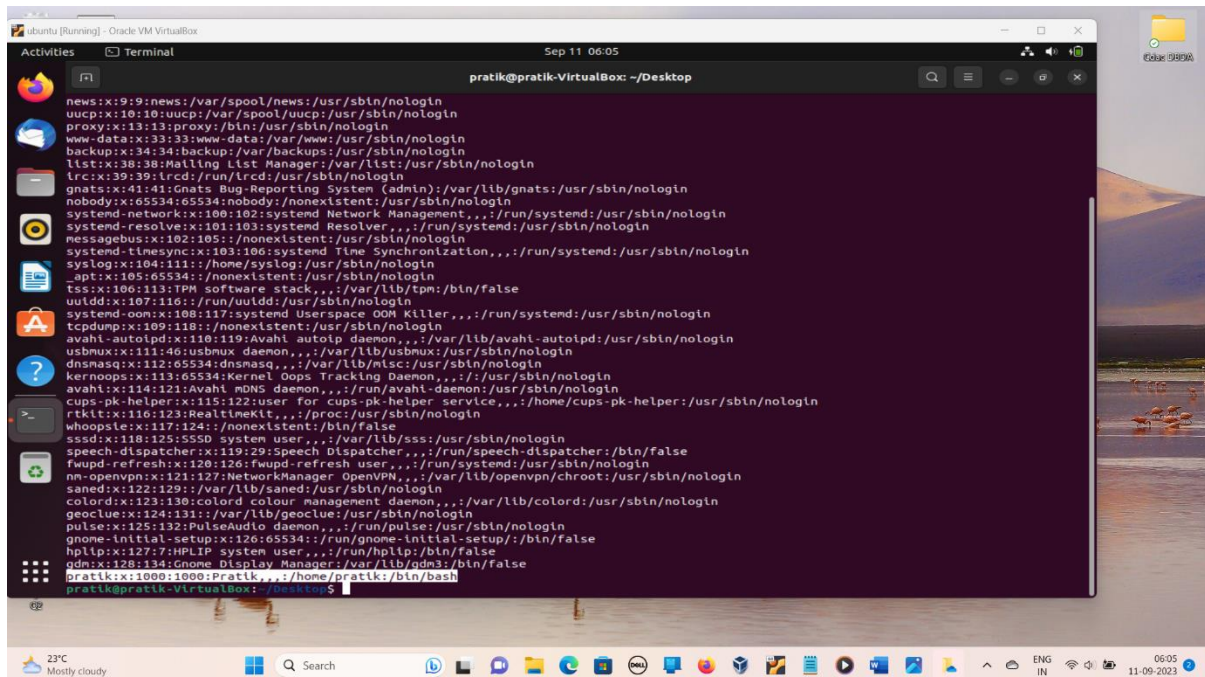


Q1)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mail List Manager:/var/list:/usr/sbin/nologin
lirc:x:39:39:lirc:/run/lircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,:/run/systemd:/usr/sbin/nologin
messagebus:x:102:105:/nonexistent:/usr/sbin/nologin
systemd-timesync:x:103:106:systemd Time Synchronization,,:/run/systemd:/usr/sbin/nologin
syslog:x:104:111:/home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/nonexistent:/usr/sbin/nologin
tss:x:106:113:TPM software stack,,:/var/lib/tpm:/bin/false
uidd:x:107:110:/run/uidd:/usr/sbin/nologin
systemd-oom:x:108:117:systemd Userspace OOM Killer,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:118:/nonexistent:/usr/sbin/nologin
avahi-autoipd:x:110:119:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:111:46:usbmux daemon,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:kernel Oops Tracking Daemon,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,:/home/cups-pk-helper:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,:/proc:/usr/sbin/nologin
whoopie:x:117:124:/nonexistent:/bin/false
sssd:x:118:125:SSSD system user,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,:/run/speech-dispatcher:/bin/false
fwupd-refresh:x:120:126:fwupd-refresh user,,:/run/systemd:/usr/sbin/nologin
nm-openvpn:x:121:127:NetworkManager OpenVPN,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:122:129:/var/lib/saned:/usr/sbin/nologin
colord:x:123:130:colord colour management daemon,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:124:131:/var/lib/geoclue:/usr/sbin/nologin
pulse:x:125:132:PulseAudio daemon,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:126:65534:/run/gnome-initial-setup:/bin/false
hplip:x:127:7:HPLIP system user,,:/run/hplip:/bin/false
qdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
pratik:x:1000:1000:Pratik,,:/home/pratik:/bin/bash
pratik@pratik-VirtualBox:~$
```

The `/etc/passwd` file is a file system in Linux operating systems. It stores essential user account information for each user on the system. Each line in the file represents several data which is following:

- 1) Username :- 'pratik' The name of the user.
- 2) Encrypted password :- which is denoted by 'x'.
- 3) User ID (UID) :- 1000 a numerical identifier for the user.
- 4) GID :- 1000 a numerical identifier for the group.
- 5) User Info :- 'Pratik,,,' has additional user information.
- 6) Home Directory :- /home/pratik
- 7) Shell :- /bin/bash is the default shell for the user.

Q2)

Ans=

The screenshot shows an Ubuntu VM running in Oracle VM VirtualBox. The terminal window displays the following user information:

```
tss:x:106:113:TPM software stack,,,:/var/lib/tpm:/bin/false
uidd:x:107:116:,:/run/uidd:/usr/sbin/nologin
systemd-oom:x:108:117:systemd Userspace OOM Killer,,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:118:,:/nonexistent:/usr/sbin/nologin
avahi-autotpd:x:110:119:Avahi autoip daemon,,,:/var/lib/avahi-autotpd:/usr/sbin/nologin
usbmux:x:111:40:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin
whoopsie:x:117:124:,:/nonexistent:/bin/false
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
fwupd-refresh:x:120:126:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:122:129:,:/var/lib/saned:/usr/sbin/nologin
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:124:131:,:/var/lib/geoclue:/usr/sbin/nologin
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:126:65534:,:/run/gnome-initial-setup:/bin/false
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false
pratik:x:1000:1000:Pratik,,,:/home/pratik:/bin/bash
```

The user then enters the command `chage -M`, which results in an error message:

```
chage: option requires an argument -- 'M'
Usage: chage [options] LOGIN
```

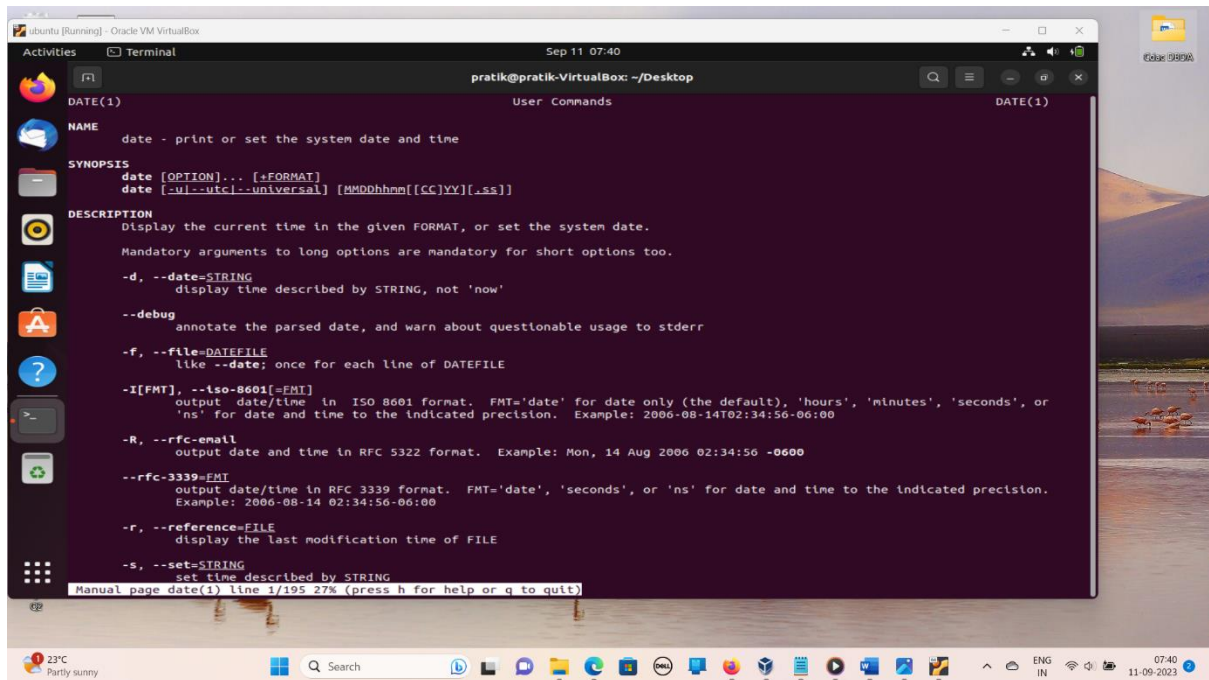
The terminal also displays the help for the `chage` command:

```
Options:
  -d, --lastday LAST_DAY      set date of last password change to LAST_DAY
  -E, --expiredate EXPIRE_DATE set account expiration date to EXPIRE_DATE
  -h, --help                  display this help message and exit
  -i, --iso8601               use YYYY-MM-DD when printing dates
  -I, --inactive INACTIVE     set password inactive after expiration
                               to INACTIVE
  -l, --list                  show account aging information
  -m, --mindays MIN_DAYS      set minimum number of days before password
                               change to MIN_DAYS
  -M, --maxdays MAX_DAYS     set maximum number of days before password
                               change to MAX_DAYS
```

Q3)

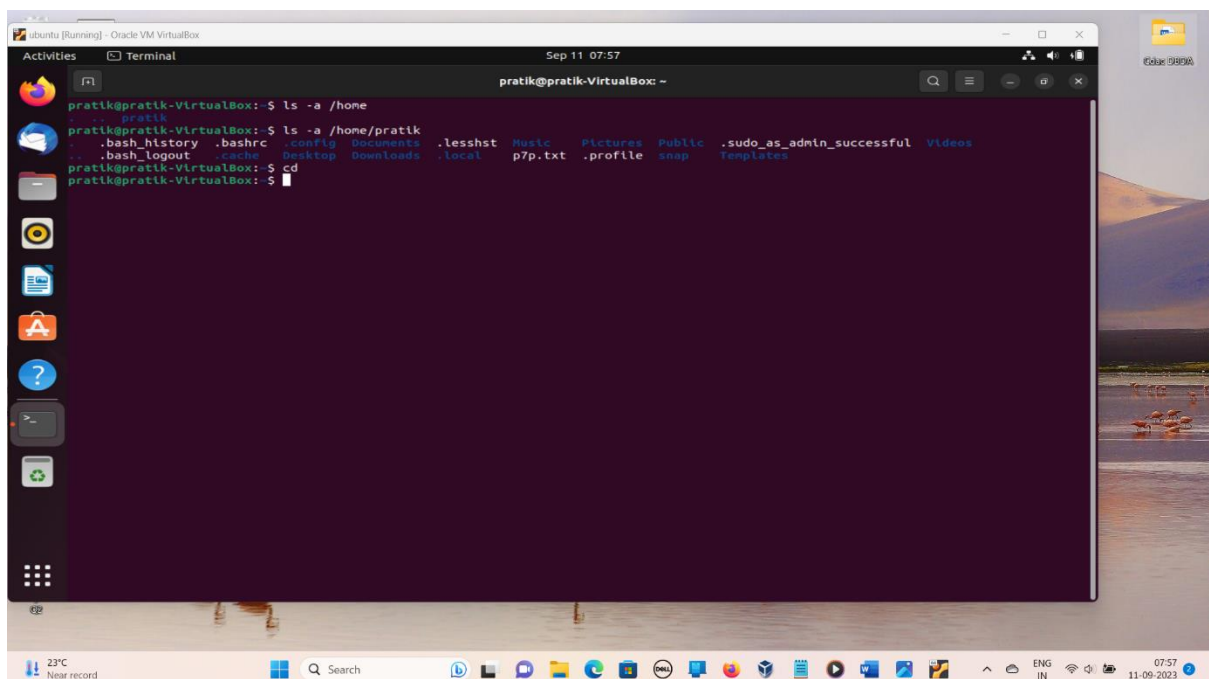
Ans=

- a) `$man` :- Displays the manual page for a specified command eg-`$man date`, which give detail manual of date command



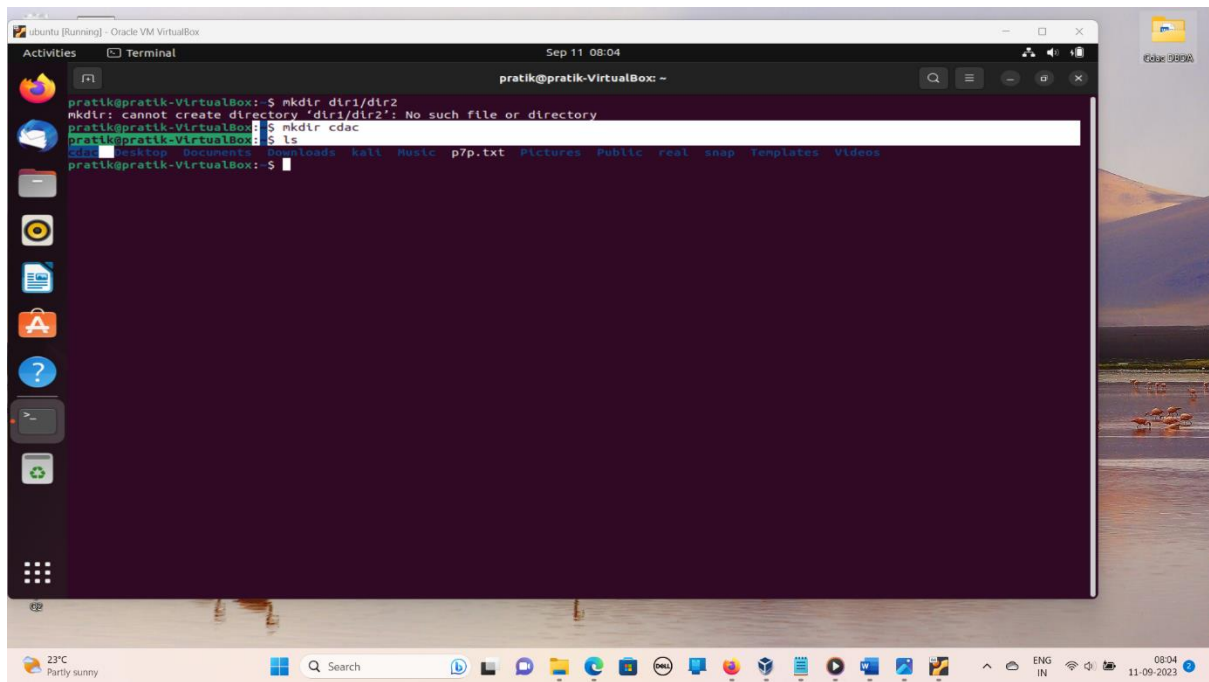
```
pratik@pratik-VirtualBox: ~/Desktop
DATE(1)                                User Commands                                DATE(1)
NAME
    date - print or set the system date and time
SYNOPSIS
    date [OPTION]... [+FORMAT]
    date [-u|--utc|--universal] [MMDDhhmm[[CC]YY][.ss]]
DESCRIPTION
    Display the current time in the given FORMAT, or set the system date.
    Mandatory arguments to long options are mandatory for short options too.
    -d, --date=STRING
        display time described by STRING, not 'now'
    --debug
        annotate the parsed date, and warn about questionable usage to stderr
    -f, --file=DATEFILE
        like --date; once for each line of DATEFILE
    -I[FMT], --iso-8601[=FMT]
        output date/time in ISO 8601 format. FMT='date' for date only (the default), 'hours', 'minutes', 'seconds', or 'ns' for date and time to the indicated precision. Example: 2006-08-14T02:34:56-06:00
    -R, --rfc-850
        output date and time in RFC 5322 format. Example: Mon, 14 Aug 2006 02:34:56 -0600
    --rfc-3339[=FMT]
        output date/time in RFC 3339 format. FMT='date', 'seconds', or 'ns' for date and time to the indicated precision. Example: 2006-08-14 02:34:56-06:00
    -r, --reference=FILE
        display the last modification time of FILE
    -s, --set=STRING
        set time described by STRING
Manual page date(1) line 1/195 27% (press h for help or q to quit)
```

- b) `$cd` :- Changes directory command `cd` which changes the current working directory.

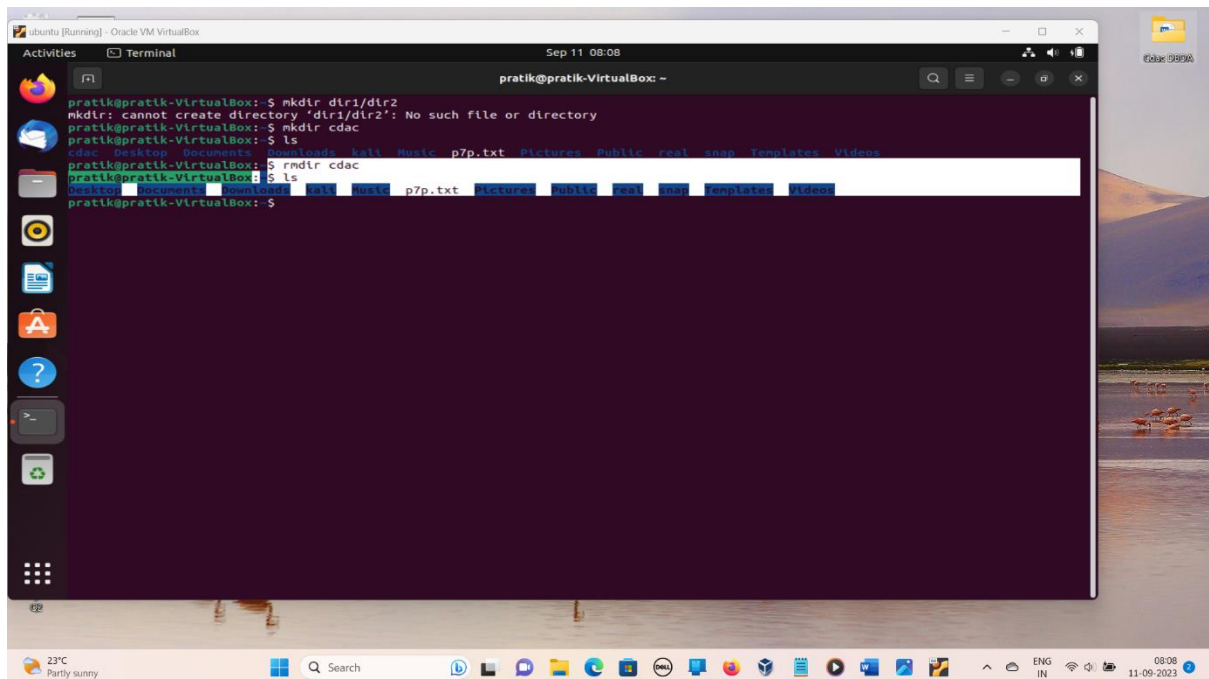


```
pratik@pratik-VirtualBox: ~
pratik$ ls -a /home
pratik$ cd /home/pratik
pratik@pratik-VirtualBox: ~$ ls -a /home/pratik
. .bash_history .bashrc .config Desktop Downloads .local Music Pictures Public .sudo_as_admin_successful Videos
. .bash_logout .cache .local p7p.txt .profile snap Templates
pratik@pratik-VirtualBox: ~$ cd
pratik@pratik-VirtualBox: ~$
```

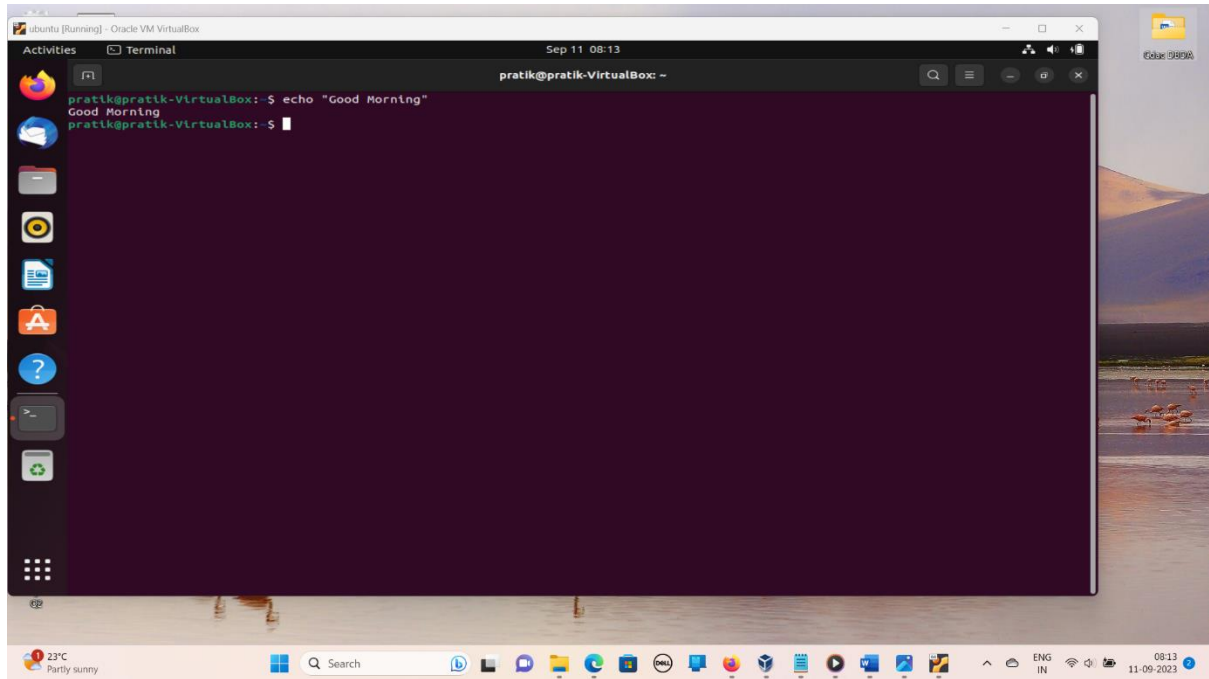
- c) `$mkdi` :- Creates a new directory.



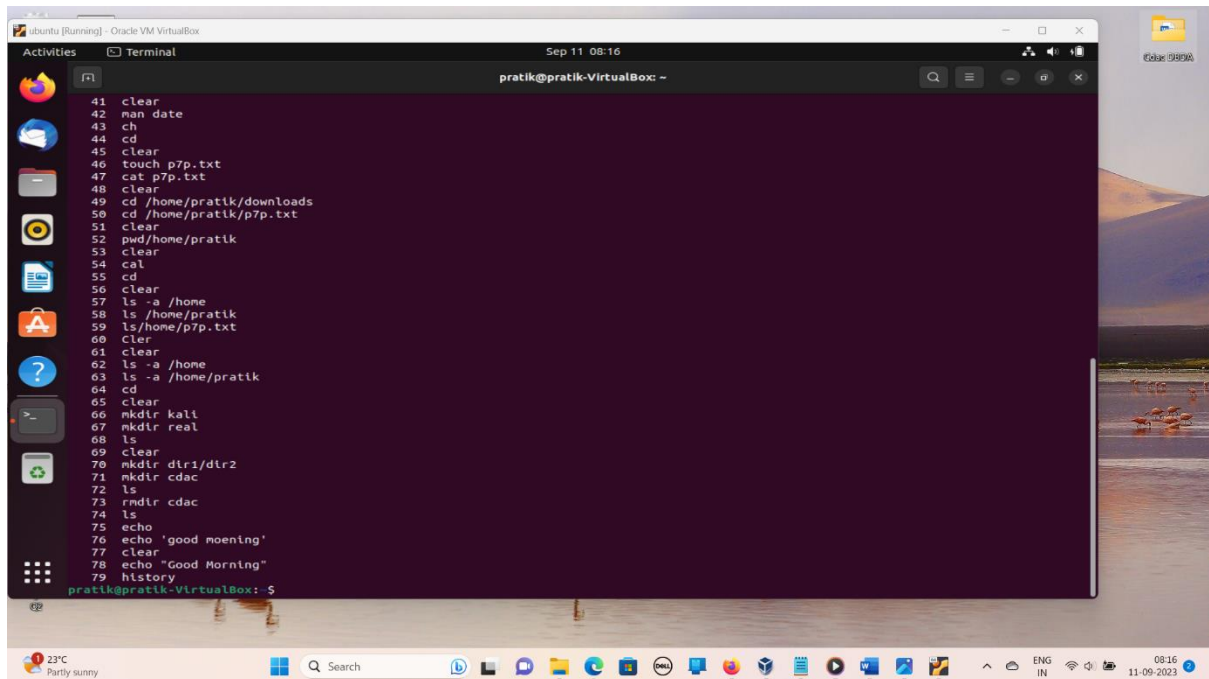
d) \$ rmdir :-



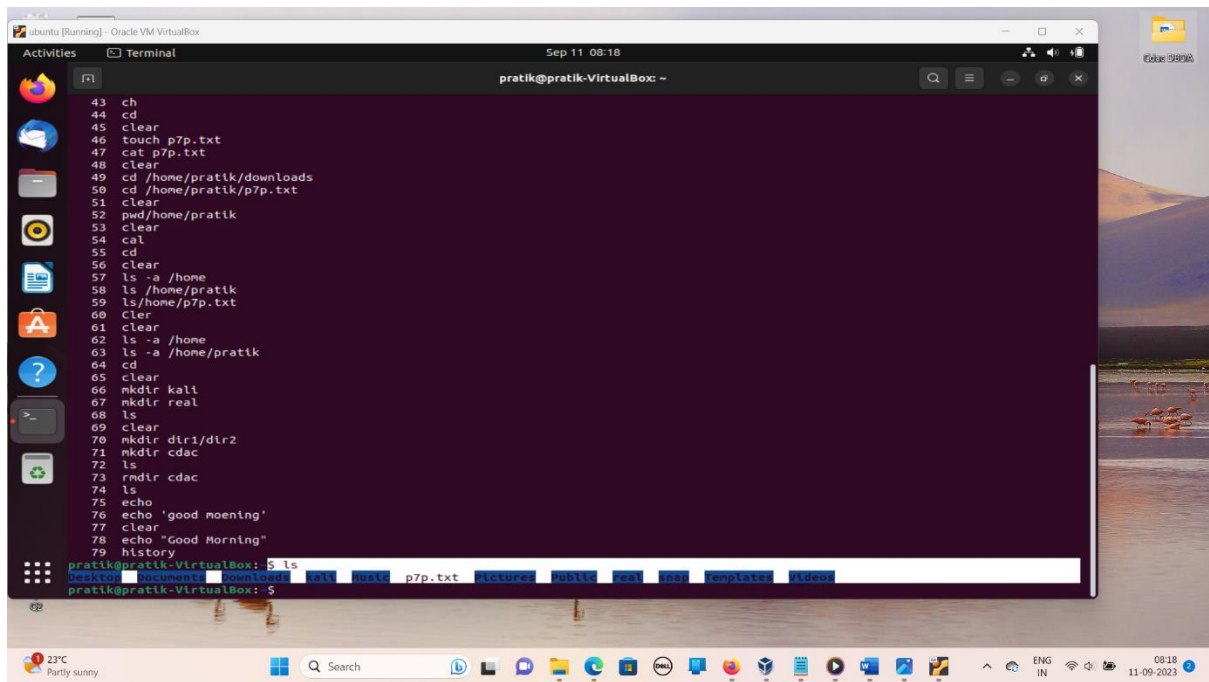
e) \$ echo :- Prints a message



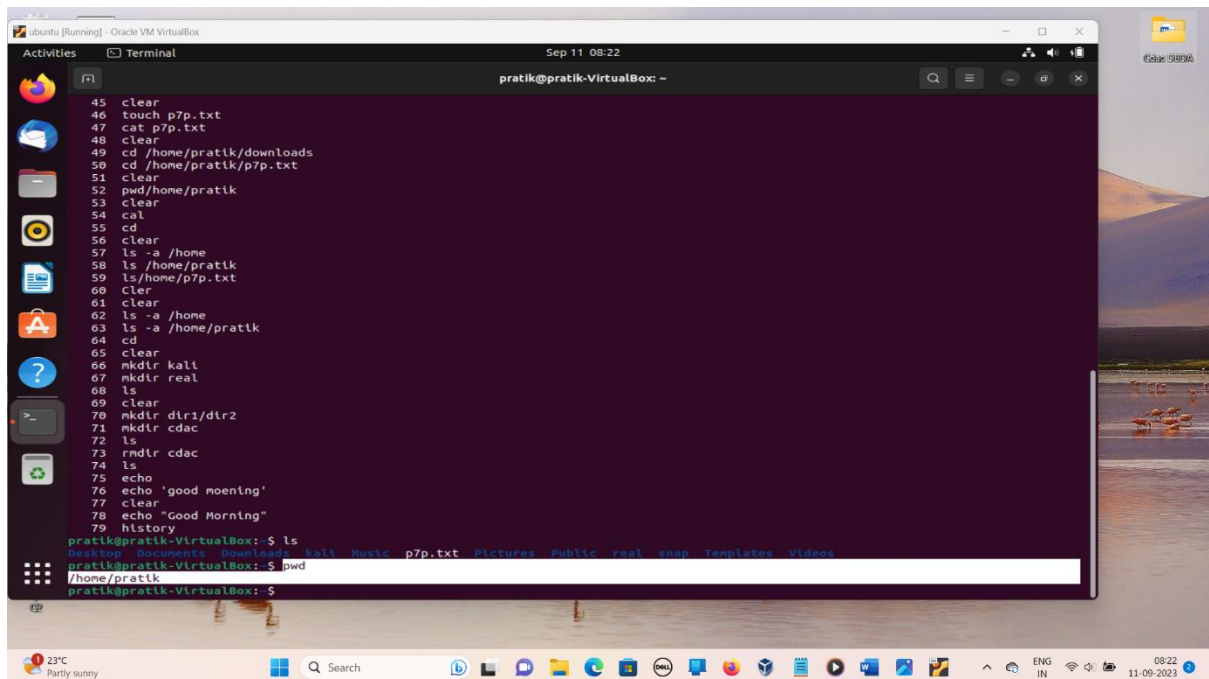
f) \$ history :- Displays a list of previously executed commands.



g) \$ ls :- Lists files and directories in the system.



h) \$ pwd :- Prints the current working directory.



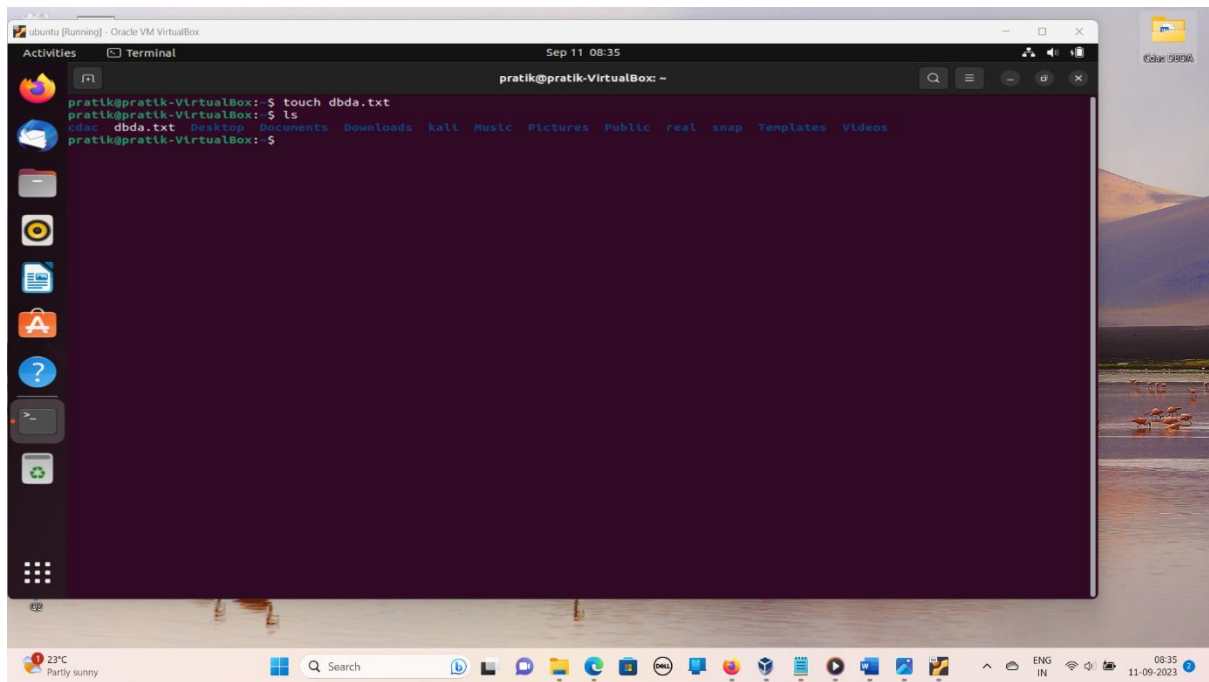
i) \$ cp :- Copies files.

```
pratik@pratik-VirtualBox: ~  
60 clear  
61 clear  
62 ls -a /home  
63 ls -a /home/pratik  
64 cd  
65 clear  
66 mkdir kall  
67 mkdir real  
68 ls  
69 clear  
70 mkdir dir1/dir2  
71 mkdir cdac  
72 ls  
73 rmdir cdac  
74 ls  
75 echo  
76 echo 'good moening'  
77 clear  
78 echo "Good Morning"  
79 history  
pratik@pratik-VirtualBox: $ ls  
Desktop Documents Downloads kall Music p7p.txt Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ pwd  
/home/pratik  
pratik@pratik-VirtualBox: $ cp p7p.txt  
cp: missing destination file operand after 'p7p.txt'  
Try 'cp --help' for more information.  
pratik@pratik-VirtualBox: $ cp kall  
cp: missing destination file operand after 'kall'  
Try 'cp --help' for more information.  
pratik@pratik-VirtualBox: $ cat p7p.txt  
pratik@pratik-VirtualBox: $ mkdir cdac  
pratik@pratik-VirtualBox: $ ls  
cdac Desktop Documents Downloads kall Music p7p.txt Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ cp p7p.txt cdac  
pratik@pratik-VirtualBox: $ ls  
cdac Desktop Documents Downloads kall Music p7p.txt Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ ls cdac  
p7p.txt  
pratik@pratik-VirtualBox: $
```

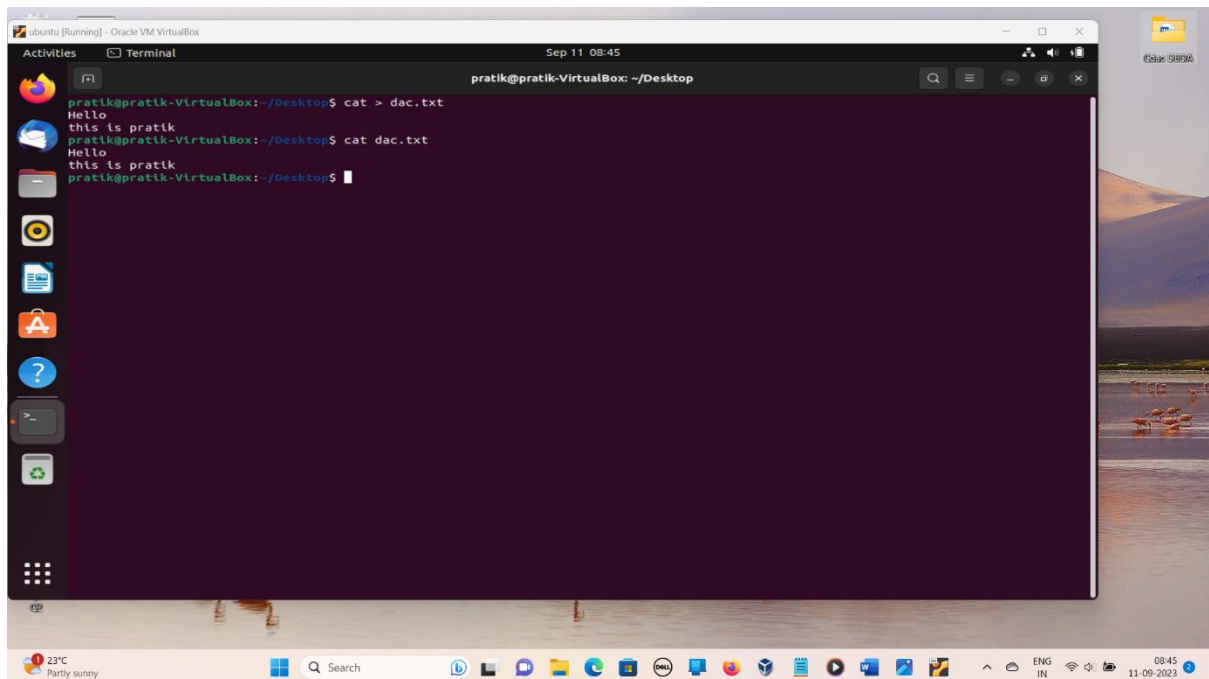
j) \$ mv :- Moves files.

```
pratik@pratik-VirtualBox: ~  
65 clear  
66 mkdir kall  
67 mkdir real  
68 ls  
69 clear  
70 mkdir dir1/dir2  
71 mkdir cdac  
72 ls  
73 rmdir cdac  
74 ls  
75 echo  
76 echo 'good moening'  
77 clear  
78 echo "Good Morning"  
79 history  
pratik@pratik-VirtualBox: $ ls  
Desktop Documents Downloads kall Music p7p.txt Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ pwd  
/home/pratik  
pratik@pratik-VirtualBox: $ cp p7p.txt  
cp: missing destination file operand after 'p7p.txt'  
Try 'cp --help' for more information.  
pratik@pratik-VirtualBox: $ cp kall  
cp: missing destination file operand after 'kall'  
Try 'cp --help' for more information.  
pratik@pratik-VirtualBox: $ cat p7p.txt  
pratik@pratik-VirtualBox: $ mkdir cdac  
pratik@pratik-VirtualBox: $ ls  
cdac Desktop Documents Downloads kall Music p7p.txt Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ cp p7p.txt cdac  
pratik@pratik-VirtualBox: $ ls  
cdac Desktop Documents Downloads kall Music p7p.txt Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ ls cdac  
p7p.txt  
pratik@pratik-VirtualBox: $ mv p7p.txt real  
pratik@pratik-VirtualBox: $ ls  
cdac Desktop Documents Downloads kall Music Pictures Public real snap Templates Videos  
pratik@pratik-VirtualBox: $ ls real  
p7p.txt  
pratik@pratik-VirtualBox: $
```

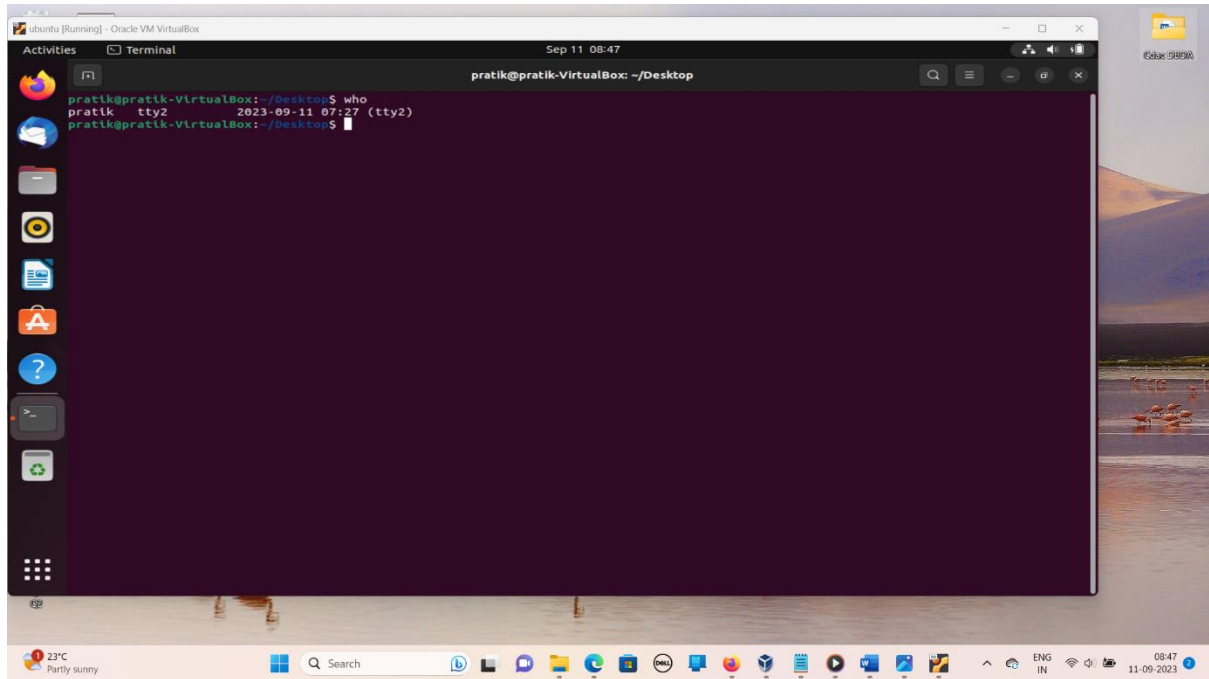
K) \$ touch:_ Creates an empty file



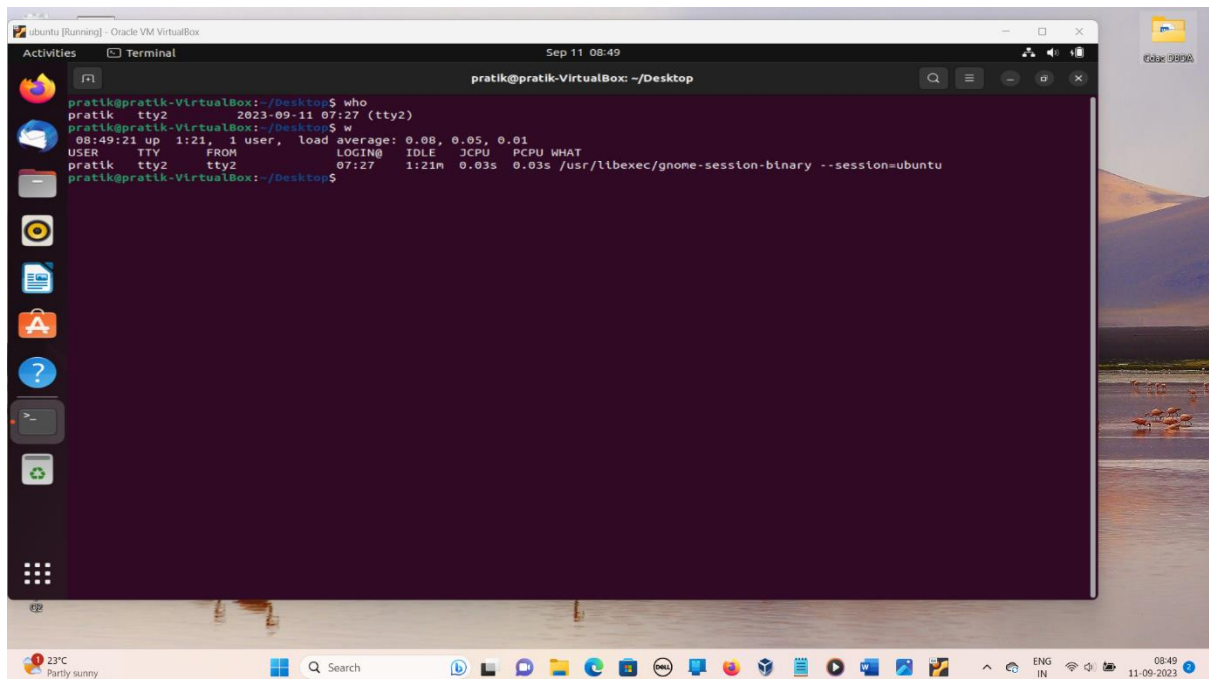
l) \$ cat :- displays the content of files



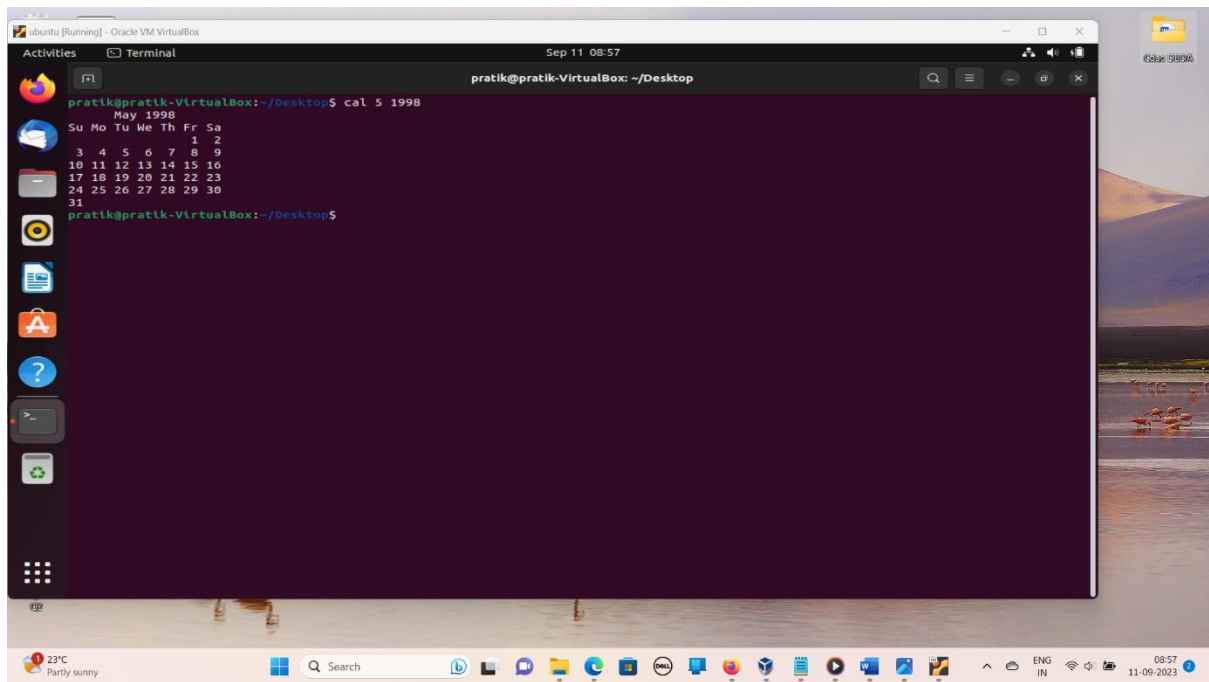
m) \$ who :- Displays about currently logged in users.



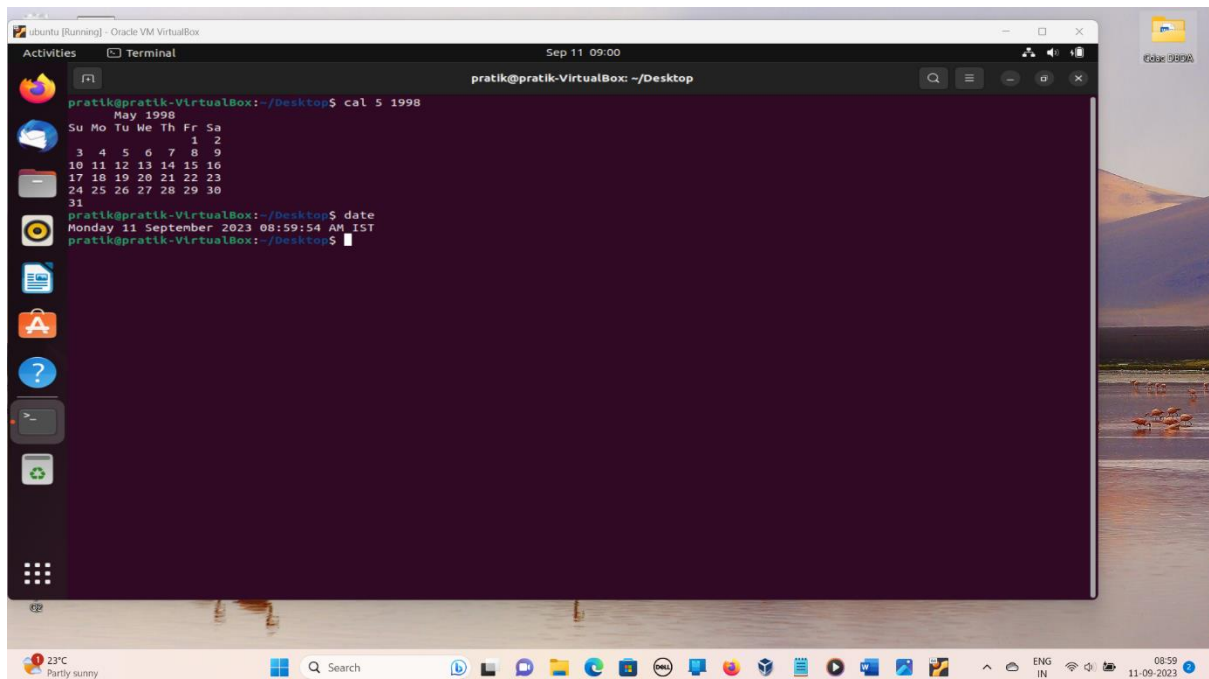
n) \$ w :- Provides information users and their activities.



o) \$ cal :- Displays a calendar for a specific month or year.

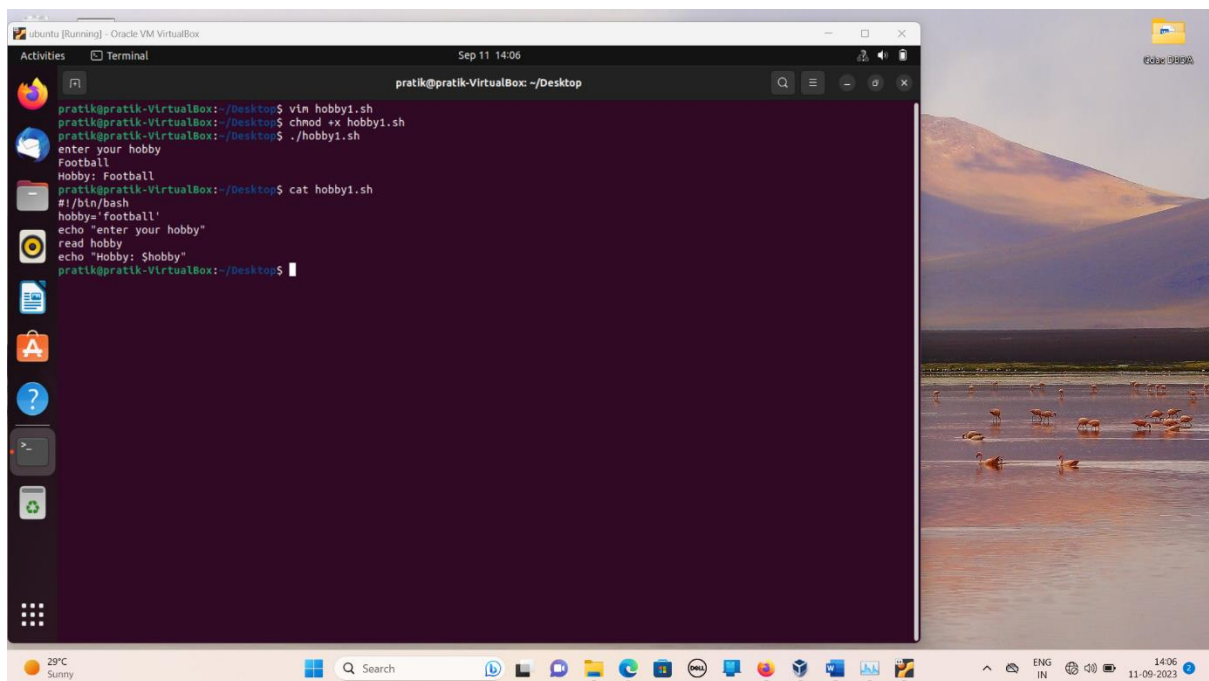


p) `$ date` :- It displays current date and time



Q4)

Ans=



```
pratik@pratik-VirtualBox: ~/Desktop
pratik@pratik-VirtualBox:~/Desktop$ vi hobby1.sh
pratik@pratik-VirtualBox:~/Desktop$ chmod +x hobby1.sh
pratik@pratik-VirtualBox:~/Desktop$ ./hobby1.sh
enter your hobby
Football
Hobby: Football
pratik@pratik-VirtualBox:~/Desktop$ cat hobby1.sh
#!/bin/bash
hobby="football"
echo "enter your hobby"
read hobby
echo "Hobby: $hobby"
pratik@pratik-VirtualBox:~/Desktop$
```

Q5)

Ans= **1) Root Directory (/):** The top level directory in the Linux file system hierarchy. Everything in the file system is located under this directory. The root directory is represented by a forward slash (/). For example, /home,

2) Folders or directories: Directories themselves are also files in the file system, but they serve as containers for organizing data.

3) Files: Files represent data, programs, and documents. They are stored within directories. File also contain paths which are,

a) Absolute path- specify the full path to a file

b) Relative path- Start from the current working directory and specify a path relative to that location

4) Permissions: file permission system to control who can access and manipulate files and directories. Permissions are assigned to users, groups, and others, and they determine whether a user can read, write, or execute a file.

5) Symbolic Links:- They provide a flexible way to reference and access files and directories without copying or moving them physically.

6) Mount Points:- When a device is mounted, its contents become accessible as if they were part of the file system hierarchy.

7) Special Files:- In Linux, everything is treated as a file, including hardware devices, system information, and communication channels.