

## Assignment No:1

### 1. Explain about etc/passwd file.

**Ans:** The `/etc/passwd` file is a crucial system file found in Unix-like operating systems, including Linux. It plays a fundamental role in user authentication and managing user account information. It is used to keep track of every registered user that has access to a system. Directly editing the `/etc/passwd` file is not recommended, as mistakes can lead to login issues. Instead, Linux provides commands like `useradd`, `usermod`, and `userdel` to manage user accounts. These commands update both the `/etc/passwd` and `/etc/shadow` files appropriately.

The fields found in the `/etc/passwd` file:

1. Username : This field contains the username of the user. It is used to identify users when they log in.
2. User ID (UID): This is a unique numerical identifier associated with the user. Each user on the system must have a unique UID. The root user typically has a UID of 0.
3. Group ID (GID): This field represents the primary group of the user. Each user is a member of at least one group, and this field defines the user's primary group.

### 2. What is the usage of chage command in linux?

**Ans:** The `chage` command in Linux is used to change the password aging settings for a user. Password aging refers to setting restrictions on how long a user can keep their current password before being required to change it.

Here are some common options and their usage with the `chage` command:

`chage -l [username]`: This command is used to view the current password aging information for a specific user.

`chage -M [max] [username]`: This sets the maximum number of days during which the password is valid. After this period, the user will be forced to change their password.

`chage -m [min] [username]`: This sets the minimum number of days before a user can change their password again. This helps prevent users from changing their password too frequently.

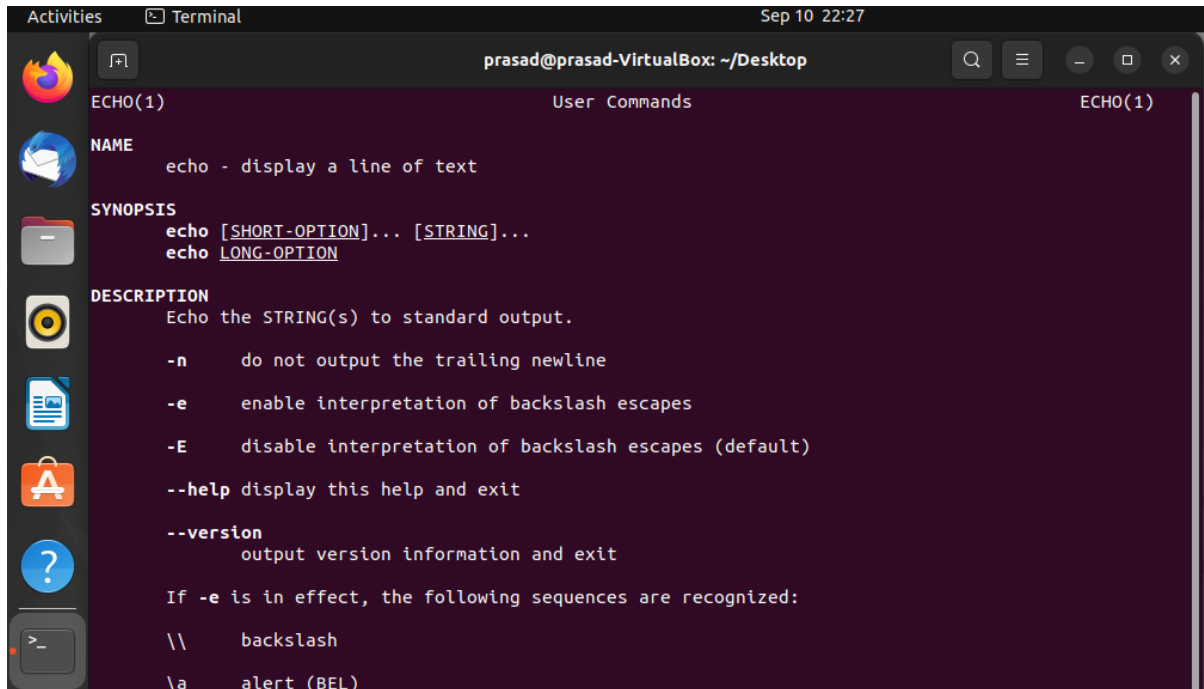
`chage -d [lastday] [username]`: This sets the date of the last password change.

3. Run the following commands in your system and give the output.

man, cd, mkdir, rmdir, echo, history, ls, pwd, cp, mv, touch, cat, who, w, cal, date.

Ans:

man:



A terminal window titled "prasad@prasad-VirtualBox: ~/Desktop" showing the man page for the 'echo' command. The window has a dark background with light-colored text. The left sidebar shows various application icons. The terminal output is as follows:

```
ECHO(1)                                User Commands                                ECHO(1)

NAME
    echo - display a line of text

SYNOPSIS
    echo [SHORT-OPTION]... [STRING]...
    echo LONG-OPTION

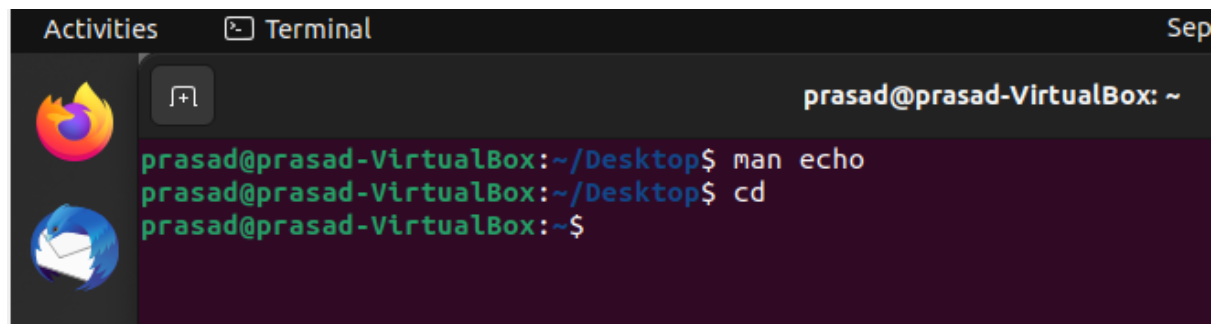
DESCRIPTION
    Echo the STRING(s) to standard output.

    -n      do not output the trailing newline
    -e      enable interpretation of backslash escapes
    -E      disable interpretation of backslash escapes (default)
    --help  display this help and exit
    --version
            output version information and exit

    If -e is in effect, the following sequences are recognized:

    \\      backslash
    \a      alert (BEL)
```

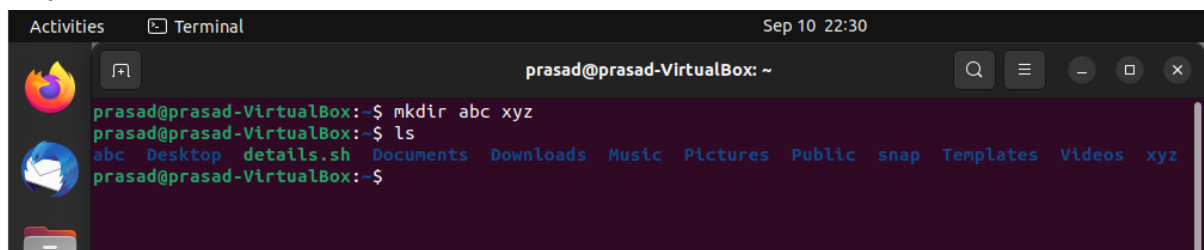
cd:



A terminal window titled "prasad@prasad-VirtualBox: ~" showing the execution of 'man echo' and 'cd' commands. The window has a dark background with light-colored text. The left sidebar shows various application icons. The terminal output is as follows:

```
prasad@prasad-VirtualBox:~/Desktop$ man echo
prasad@prasad-VirtualBox:~/Desktop$ cd
prasad@prasad-VirtualBox:~$
```

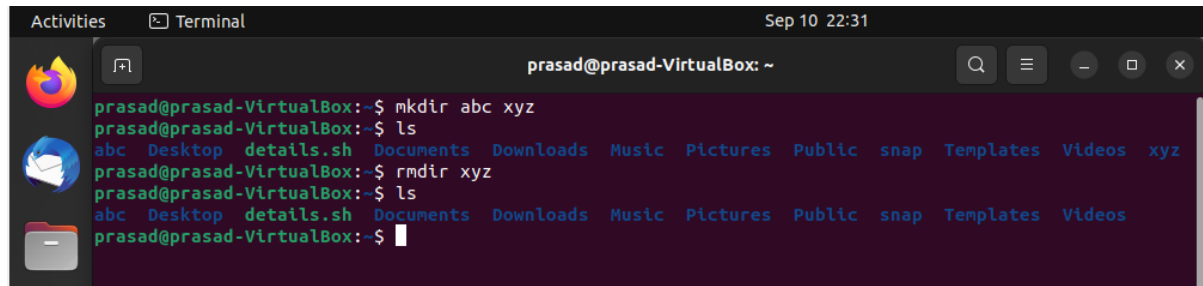
mkdir:



A terminal window titled "prasad@prasad-VirtualBox: ~" showing the execution of 'mkdir' and 'ls' commands. The window has a dark background with light-colored text. The left sidebar shows various application icons. The terminal output is as follows:

```
prasad@prasad-VirtualBox:~$ mkdir abc xyz
prasad@prasad-VirtualBox:~$ ls
abc Desktop details.sh Documents Downloads Music Pictures Public snap Templates Videos xyz
prasad@prasad-VirtualBox:~$
```

### rmkdir:



A terminal window titled 'prasad@prasad-VirtualBox: ~' with a timestamp of 'Sep 10 22:31'. The terminal shows the following commands and output:

```
prasad@prasad-VirtualBox:~$ mkdir abc xyz
prasad@prasad-VirtualBox:~$ ls
abc Desktop details.sh Documents Downloads Music Pictures Public snap Templates Videos xyz
prasad@prasad-VirtualBox:~$ rmdir xyz
prasad@prasad-VirtualBox:~$ ls
abc Desktop details.sh Documents Downloads Music Pictures Public snap Templates Videos
prasad@prasad-VirtualBox:~$
```

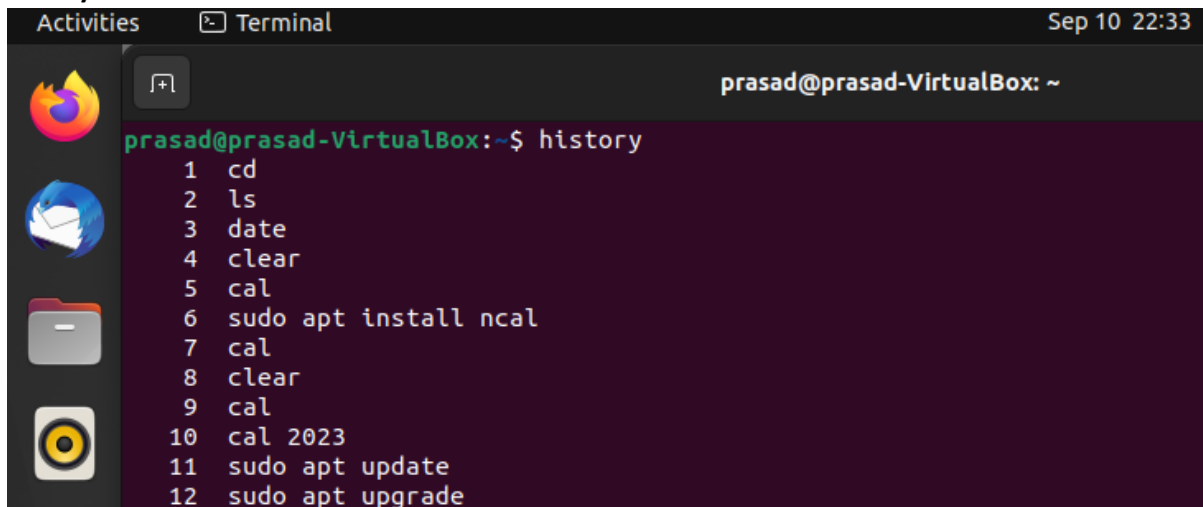
### echo:



A terminal window titled 'prasad@prasad-VirtualBox: ~' with a timestamp of 'Sep 10 22:32'. The terminal shows the following commands and output:

```
prasad@prasad-VirtualBox:~$ echo ""
prasad@prasad-VirtualBox:~$ echo "good night"
good night
prasad@prasad-VirtualBox:~$
```

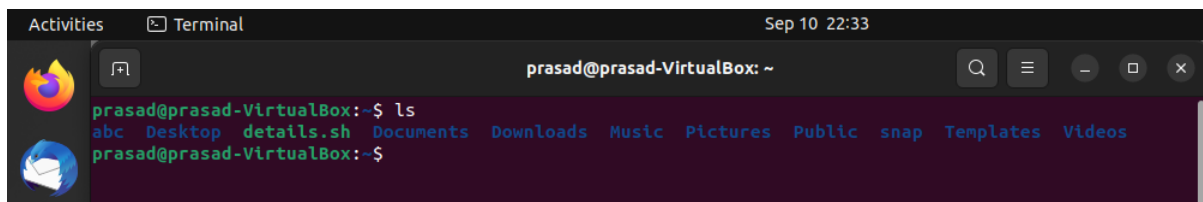
### history:



A terminal window titled 'prasad@prasad-VirtualBox: ~' with a timestamp of 'Sep 10 22:33'. The terminal shows the following command and output:

```
prasad@prasad-VirtualBox:~$ history
1 cd
2 ls
3 date
4 clear
5 cal
6 sudo apt install ncal
7 cal
8 clear
9 cal
10 cal 2023
11 sudo apt update
12 sudo apt upgrade
```

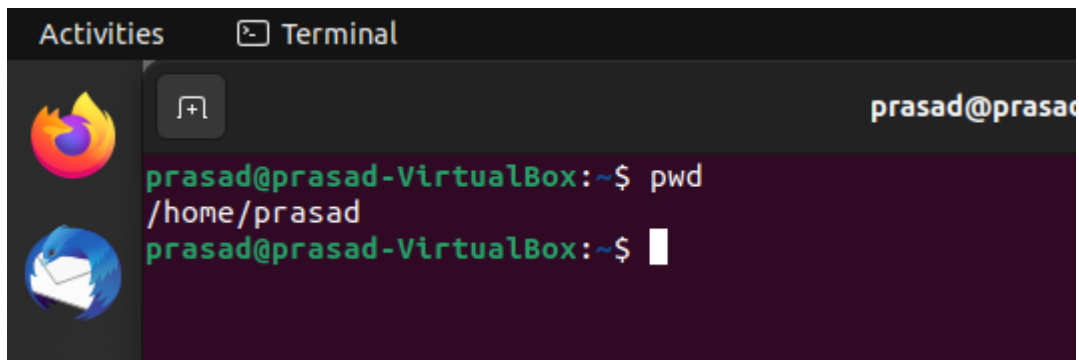
### ls:



A terminal window titled 'prasad@prasad-VirtualBox: ~' with a timestamp of 'Sep 10 22:33'. The terminal shows the following command and output:

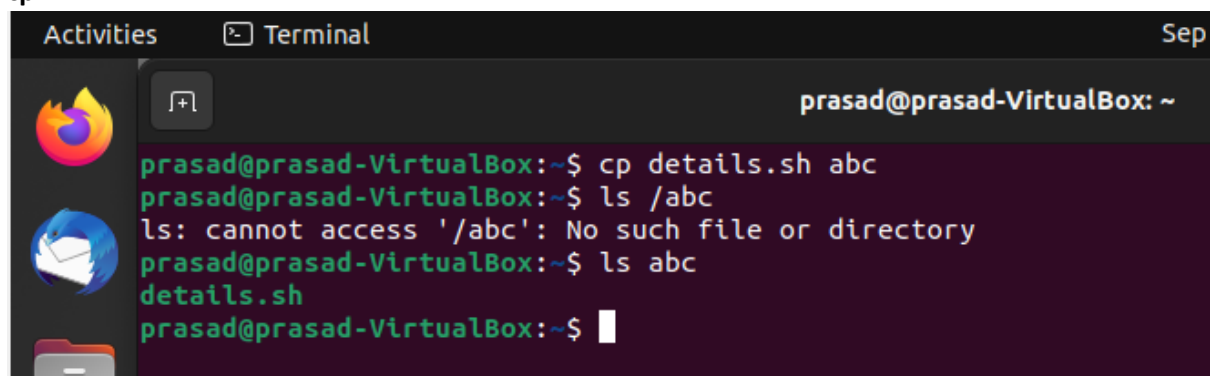
```
prasad@prasad-VirtualBox:~$ ls
abc Desktop details.sh Documents Downloads Music Pictures Public snap Templates Videos
prasad@prasad-VirtualBox:~$
```

pwd:

A terminal window titled 'Terminal' with a dark background. The prompt is 'prasad@prasad-VirtualBox:~\$'. The user enters 'pwd' and the output is '/home/prasad'. The prompt then changes to 'prasad@prasad-VirtualBox:~\$' with a cursor.

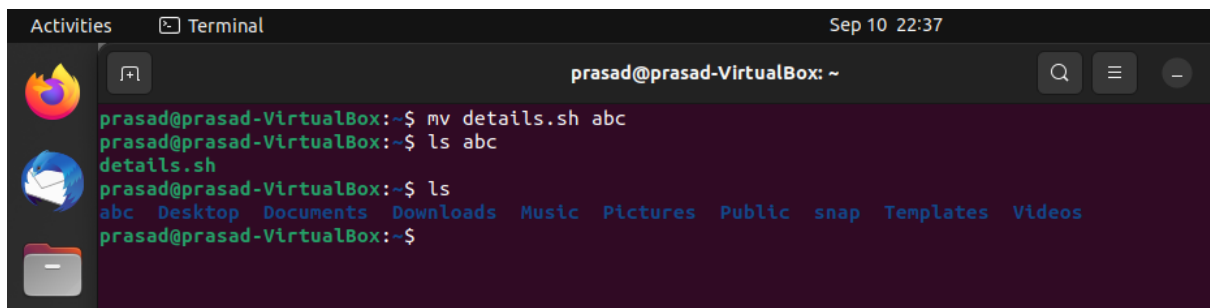
```
prasad@prasad-VirtualBox:~$ pwd
/home/prasad
prasad@prasad-VirtualBox:~$
```

cp:

A terminal window titled 'Terminal' with a dark background. The prompt is 'prasad@prasad-VirtualBox:~\$'. The user enters 'cp details.sh abc'. The prompt changes to 'prasad@prasad-VirtualBox:~\$'. The user enters 'ls /abc' and the output is 'ls: cannot access '/abc': No such file or directory'. The prompt changes to 'prasad@prasad-VirtualBox:~\$'. The user enters 'ls abc' and the output is 'details.sh'. The prompt then changes to 'prasad@prasad-VirtualBox:~\$' with a cursor.

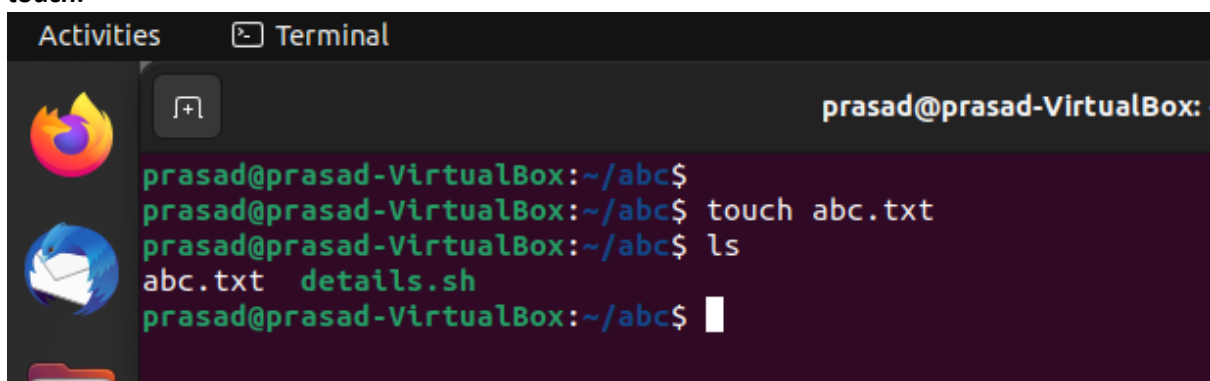
```
prasad@prasad-VirtualBox:~$ cp details.sh abc
prasad@prasad-VirtualBox:~$ ls /abc
ls: cannot access '/abc': No such file or directory
prasad@prasad-VirtualBox:~$ ls abc
details.sh
prasad@prasad-VirtualBox:~$
```

mv:

A terminal window titled 'Terminal' with a dark background. The prompt is 'prasad@prasad-VirtualBox:~\$'. The user enters 'mv details.sh abc'. The prompt changes to 'prasad@prasad-VirtualBox:~\$'. The user enters 'ls abc' and the output is 'details.sh'. The prompt changes to 'prasad@prasad-VirtualBox:~\$'. The user enters 'ls' and the output is 'abc Desktop Documents Downloads Music Pictures Public snap Templates Videos'. The prompt then changes to 'prasad@prasad-VirtualBox:~\$' with a cursor.

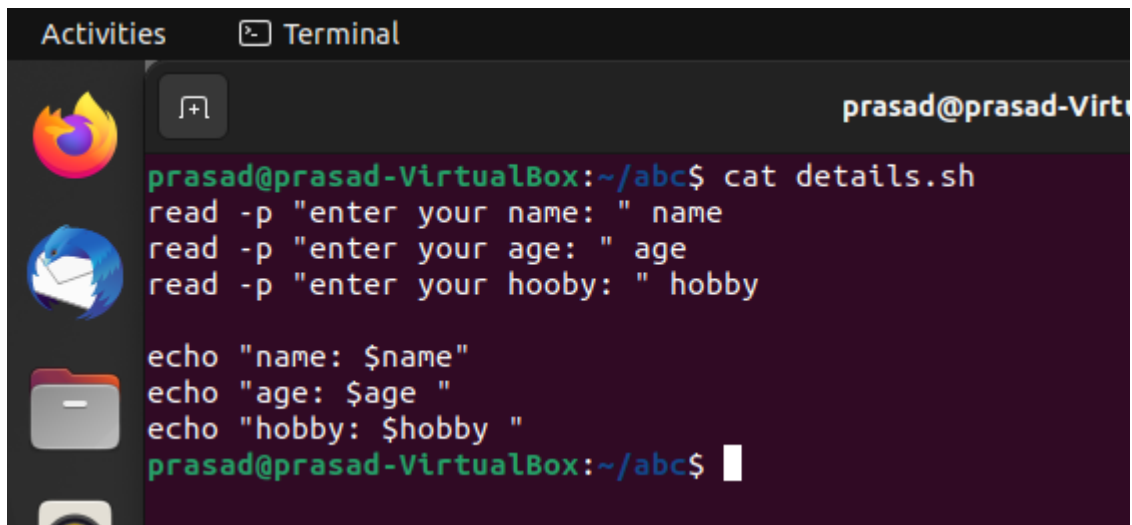
```
prasad@prasad-VirtualBox:~$ mv details.sh abc
prasad@prasad-VirtualBox:~$ ls abc
details.sh
prasad@prasad-VirtualBox:~$ ls
abc Desktop Documents Downloads Music Pictures Public snap Templates Videos
prasad@prasad-VirtualBox:~$
```

touch:

A terminal window titled 'Terminal' with a dark background. The prompt is 'prasad@prasad-VirtualBox:~/abc\$'. The user enters 'touch abc.txt'. The prompt changes to 'prasad@prasad-VirtualBox:~/abc\$'. The user enters 'ls' and the output is 'abc.txt details.sh'. The prompt then changes to 'prasad@prasad-VirtualBox:~/abc\$' with a cursor.

```
prasad@prasad-VirtualBox:~/abc$ touch abc.txt
prasad@prasad-VirtualBox:~/abc$ ls
abc.txt details.sh
prasad@prasad-VirtualBox:~/abc$
```

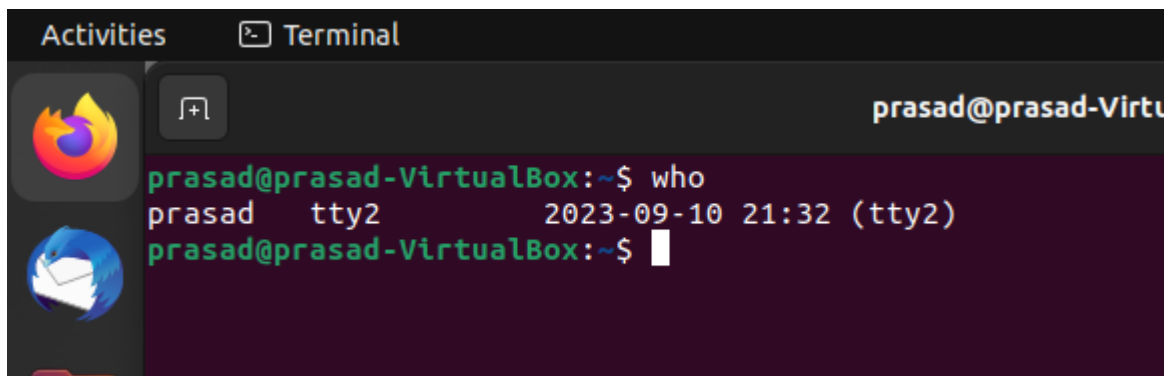
cat:



```
prasad@prasad-VirtualBox:~/abc$ cat details.sh
read -p "enter your name: " name
read -p "enter your age: " age
read -p "enter your hooby: " hobby

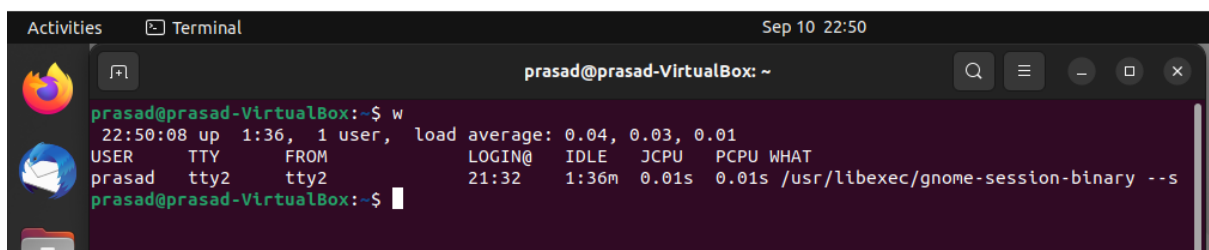
echo "name: $name"
echo "age: $age "
echo "hobby: $hobby "
```

who:



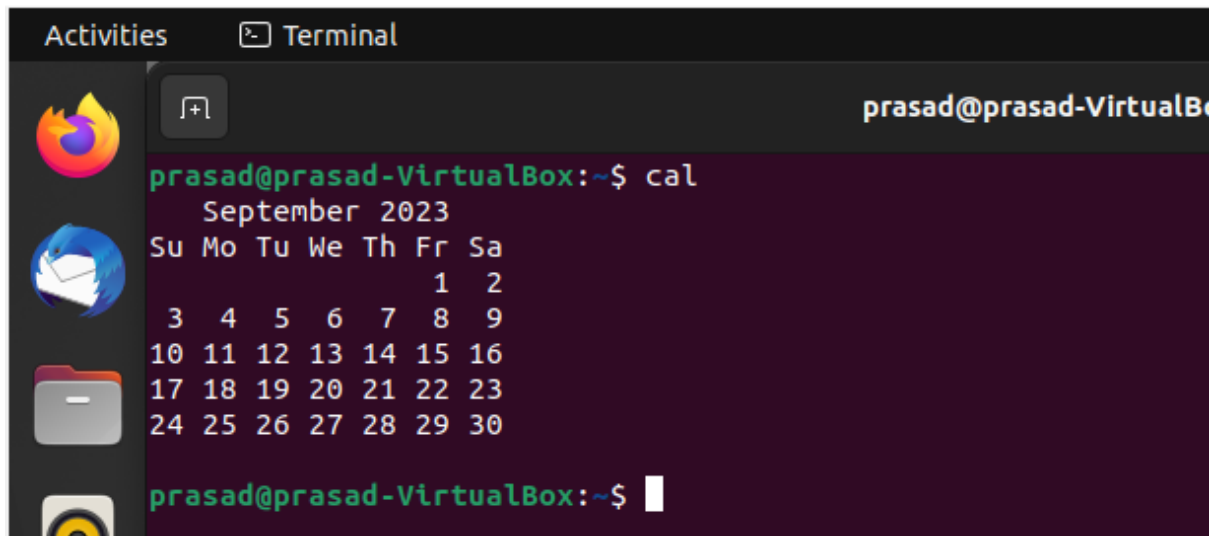
```
prasad@prasad-VirtualBox:~$ who
prasad  tty2          2023-09-10 21:32 (tty2)
prasad@prasad-VirtualBox:~$
```

w:



```
prasad@prasad-VirtualBox:~$ w
22:50:08 up 1:36, 1 user, load average: 0.04, 0.03, 0.01
USER      TTY      FROM          LOGIN@      IDLE   JCPU   PCPU   WHAT
prasad    tty2     tty2          21:32       1:36m  0.01s  0.01s  /usr/libexec/gnome-session-binary --s
prasad@prasad-VirtualBox:~$
```

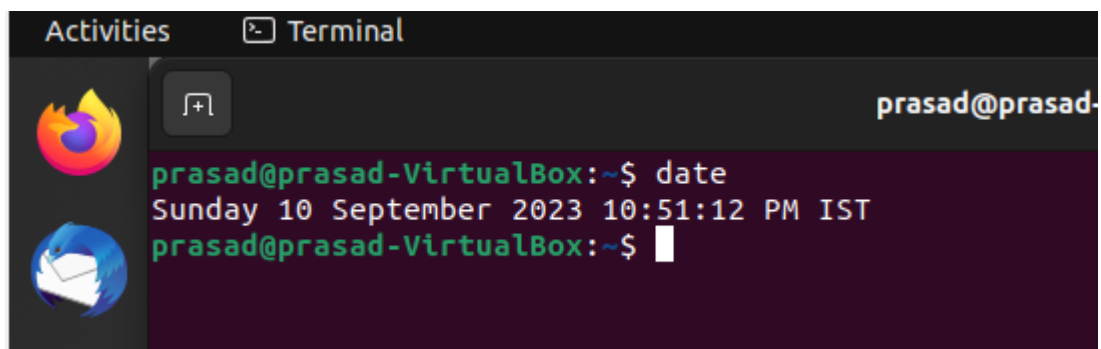
cal:



A terminal window titled 'Terminal' showing the output of the 'cal' command. The output displays the calendar for September 2023. The days of the week are abbreviated as Su, Mo, Tu, We, Th, Fr, Sa. The dates are arranged in a grid. The terminal prompt is 'prasad@prasad-VirtualBox:~\$'.

```
prasad@prasad-VirtualBox:~$ cal
    September 2023
Su Mo Tu We Th Fr Sa
                1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
prasad@prasad-VirtualBox:~$
```

date:



A terminal window titled 'Terminal' showing the output of the 'date' command. The output displays the current date and time: 'Sunday 10 September 2023 10:51:12 PM IST'. The terminal prompt is 'prasad@prasad-VirtualBox:~\$'.

```
prasad@prasad-VirtualBox:~$ date
Sunday 10 September 2023 10:51:12 PM IST
prasad@prasad-VirtualBox:~$
```

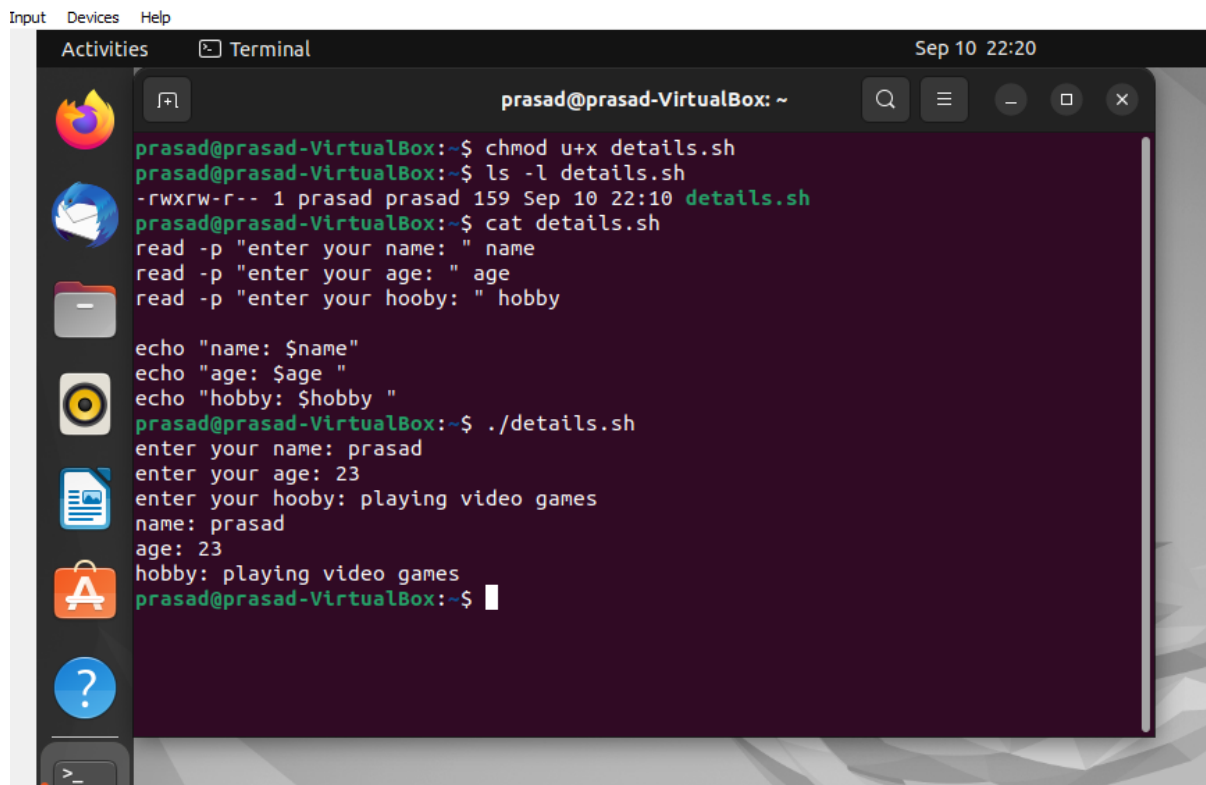
**4. Write a shell program to display your details read hobby from keyboard.**

**Ans:**

```
read -p "Enter your name: " name
read -p "Enter your age: " age
read -p "Enter your hobby: " hobby
```

```
echo "Name: $name"
echo "Age: $age"
echo "Hobby: $hobby"
```

output:



```
prasad@prasad-VirtualBox:~$ chmod u+x details.sh
prasad@prasad-VirtualBox:~$ ls -l details.sh
-rwxrwx-r-- 1 prasad prasad 159 Sep 10 22:10 details.sh
prasad@prasad-VirtualBox:~$ cat details.sh
read -p "enter your name: " name
read -p "enter your age: " age
read -p "enter your hooby: " hobby

echo "name: $name"
echo "age: $age "
echo "hobby: $hobby "
prasad@prasad-VirtualBox:~$ ./details.sh
enter your name: prasad
enter your age: 23
enter your hooby: playing video games
name: prasad
age: 23
hobby: playing video games
prasad@prasad-VirtualBox:~$
```

## 5. Explain about Linux file system.

**Ans:** The Linux file system is the structure in which files, directories, and other data are organized and managed on a Linux-based operating system. It is responsible for how data is stored, retrieved, and managed on a Linux system.

The Linux file system follows a hierarchical directory structure, also known as a tree structure. It starts from the root directory and branches out into subdirectories. The top-level directory in the Linux file system. Everything on the system is organized under the root directory.

A file's location in the file system is identified by its path. There are two types of paths:

**Absolute Path:** This starts from the root directory and specifies the full path to a file or directory e.g., /home/user/documents/file.txt.

**Relative Path:** This specifies the path of a file or directory relative to the current directory e.g., documents/file.txt.

Linux implements a file permission system to control who can read, write, and execute files and directories. These permissions are assigned to the owner, group, and others.