

**St. Francis Institute of Technology, Mumbai-400 103**  
**Department of Information Technology**

A.Y. 2023-2024  
 Class: SE-ITA/B, Semester: IV

Subject: **UNIX LAB**

**Experiment – 2: Study and Implementation of UNIX general purpose utility commands.**

1. **Aim:** To Study and implement UNIX general purpose utility commands.
2. **Objectives:** After study of this experiment, the student will be able to
  - Apply UNIX general purpose utility commands.
3. **Outcomes:** After study of this experiment, the student will be able to
  - Understand and apply UNIX general purpose utility commands. (L402.1)
4. **Prerequisite:** UNIX Shell.
1. **Requirements:** Personal Computer, Ubuntu OS, Internet Connection, LibreOffice.

**2. Pre-Experiment Exercise:**

**Brief Theory:**

**UNIX CLI**

Command Line Interpreter(CLI) is a command line program that accepts text input to execute operating system functions. In UNIX, the CLI is called as **terminal**. We can type our commands and get them executed in the terminal. When multiple command line interfaces are provided by a single operating system, each of them is referred to as **shell**. The default shell in UNIX is **Bourne shell**, whereas the default shell in Ubuntu is **Bash shell**.

**3. Laboratory Exercise**

**A. Procedure**

Explain the following UNIX commands with syntax and example:

cd, mkdir, rmdir, pwd, gedit, cat, mv, rm, ls, cp, ps, man, who, whoami, echo, date, time, kill, cal, history, more, less, bc, man, finger, clear, logout, reboot, halt, shutdown, poweroff.

**B. Result/Observation/Program code**

**4. Post-Experiments Exercise**

**A. Extended Theory:**

None.

**B. Questions:**

Write the commands and output of those for the following:

1. To display file size in human readable form.
2. To order files based on Last Modified Time in Descending Order.
3. To display files Recursively.
4. To display Weekday name in full short (like Monday, Tuesday).
5. To display Current Date; shown in MM/DD/YY.
6. To display time; shown as HH:MM:SS. Note: Hours in 24 Format
7. To displays week number of year, with Sunday as first day of week (00..53).

8. To display Julian calendar and Julian days.
9. To add a specified number of months before or after the current one in output.
10. To list Processes in a Hierarchy.

**C. Conclusion:**

1. Write what was performed in the experiment.
2. Mention few applications of what was studied.
3. Write the significance of the topic studied in the experiment.

**D. References:**

1. Sumitabha Das, UNIX Concepts and Applications, 3<sup>rd</sup> Ed., Tata McGraw Hill.
2. Yashwant Kanetkar, UNIX Shell Programming, BPB Publications.

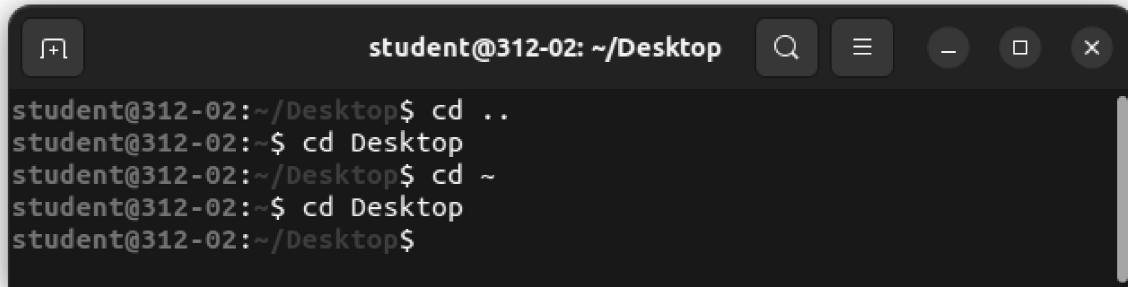


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Class: SE INFT A

Roll No:63  
EXP No.: 2

## LAB-EXERCISE:

### 1.Command : cd

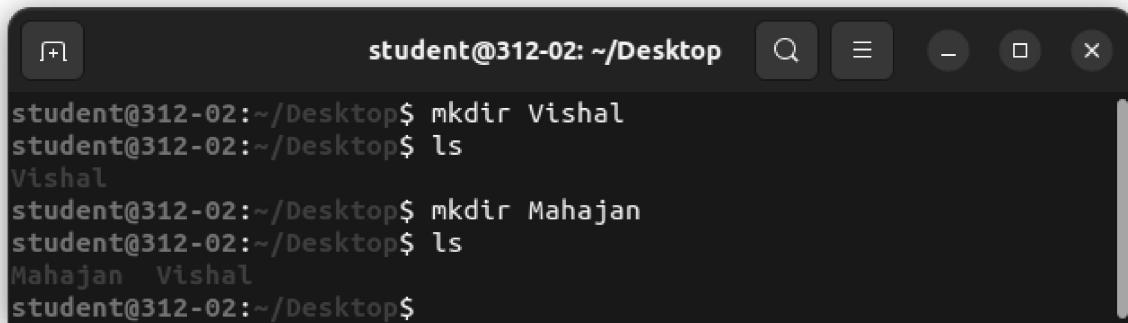


A screenshot of a terminal window titled "student@312-02: ~/Desktop". The window has standard Linux-style window controls at the top right. The terminal output shows the following sequence of commands and responses:

```
student@312-02:~/Desktop$ cd ..
student@312-02:~$ cd Desktop
student@312-02:~/Desktop$ cd ~
student@312-02:~$ cd Desktop
student@312-02:~/Desktop$
```

Observation:When I use the cd Command in Ubuntu, I can change my current working directory. By providing a specific path as an argument, I navigate to that directory.If i use cd without any arguments, It takes me to my home directory.

### 2.Command: mkdir

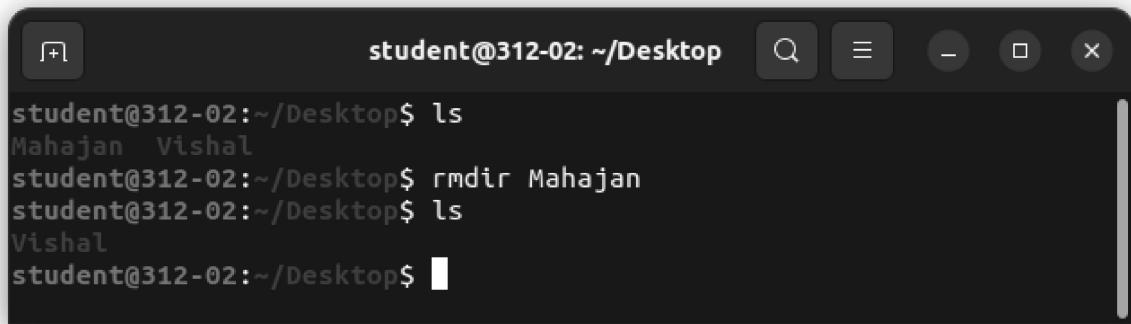


A screenshot of a terminal window titled "student@312-02: ~/Desktop". The window has standard Linux-style window controls at the top right. The terminal output shows the following sequence of commands and responses:

```
student@312-02:~/Desktop$ mkdir Vishal
student@312-02:~/Desktop$ ls
Vishal
student@312-02:~/Desktop$ mkdir Mahajan
student@312-02:~/Desktop$ ls
Mahajan Vishal
student@312-02:~/Desktop$
```

Observation:When I used the mkdir command in ubuntu,I was able to create a new directory.By specifying the directory name (Vishal, Mahajan) as an argument, I was able to quickly make a new folder with Vishal and Mahjan as their name in the current directory.

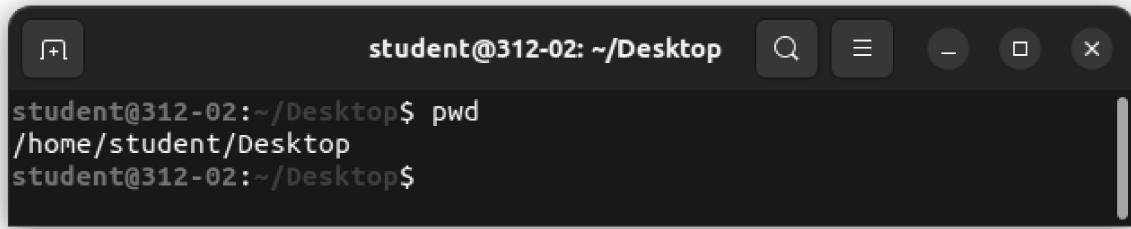
### 3.Command: rmdir



```
student@312-02: ~/Desktop$ ls
Mahajan Vishal
student@312-02:~/Desktop$ rmdir Mahajan
student@312-02:~/Desktop$ ls
Vishal
student@312-02:~/Desktop$
```

Observation: When I used the rmdir command in Ubuntu with a argument Mahajan, I was able to remove previously created directory Mahajan in the current directory

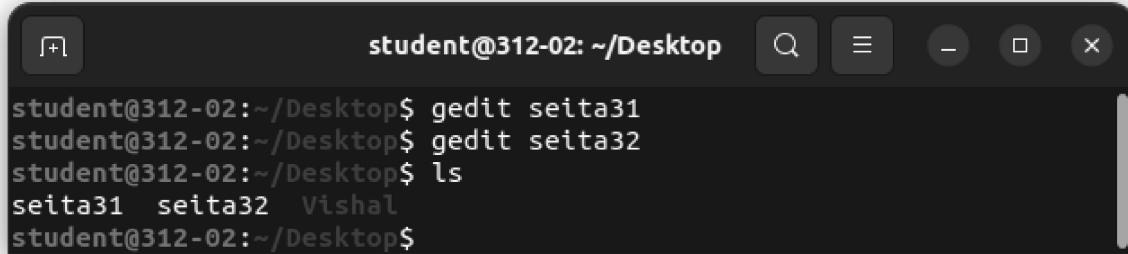
### 4.Command : pwd



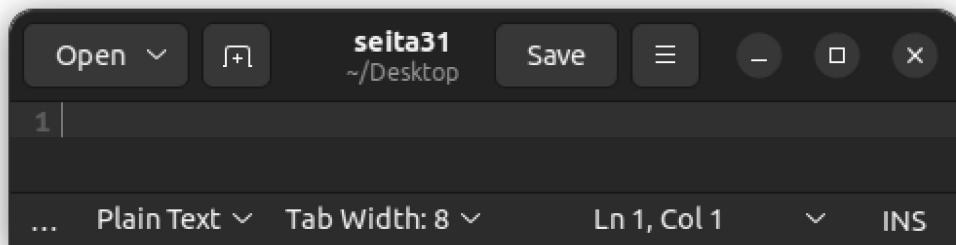
```
student@312-02: ~/Desktop$ pwd
/home/student/Desktop
student@312-02:~/Desktop$
```

Observation: When I used the pwd command in Ubuntu, it displayed the present working directory, showing the full path of my current location within the file system

## 5.Command: gedit

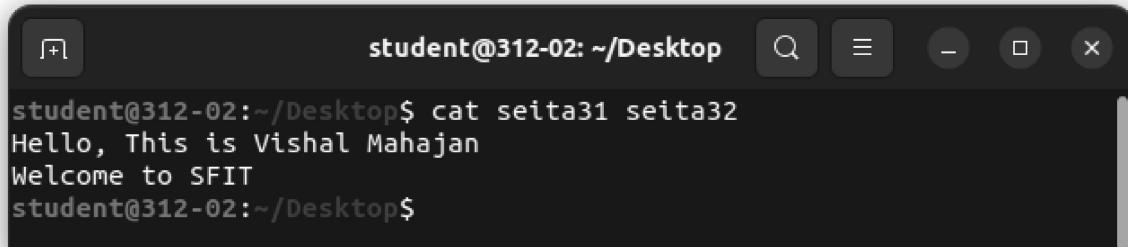


```
student@312-02: ~/Desktop$ gedit seita31
student@312-02: ~/Desktop$ gedit seita32
student@312-02: ~/Desktop$ ls
seita31  seita32  Vishal
student@312-02: ~/Desktop$
```



Observation: When I used the gedit command in Ubuntu, it opened the text editor, allowing me to Create, edit, or view text files with a graphical user interface.

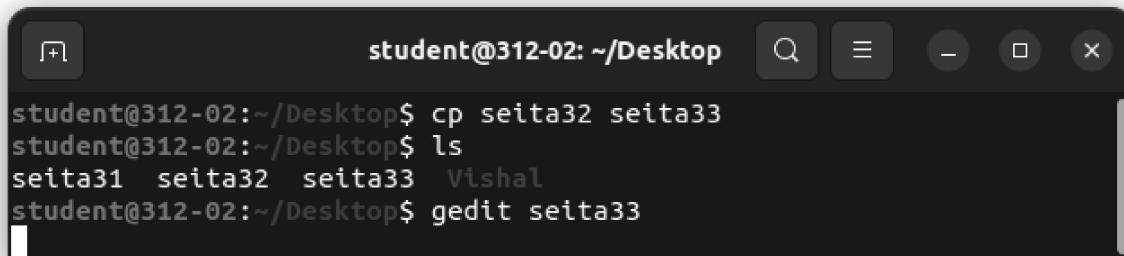
## 6.Command : Cat



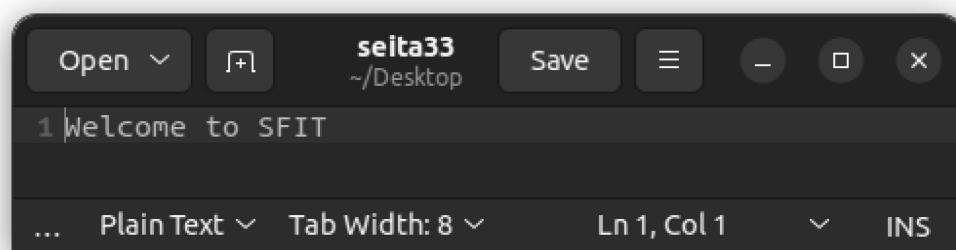
```
student@312-02: ~/Desktop$ cat seita31 seita32
Hello, This is Vishal Mahajan
Welcome to SFIT
student@312-02: ~/Desktop$
```

Observation: When I used the cat command in Ubuntu, it displayed the contents of a text file in the terminal. It's a versatile command that can concatenate and display the content of multiple files as well.

## 7.Command: cp

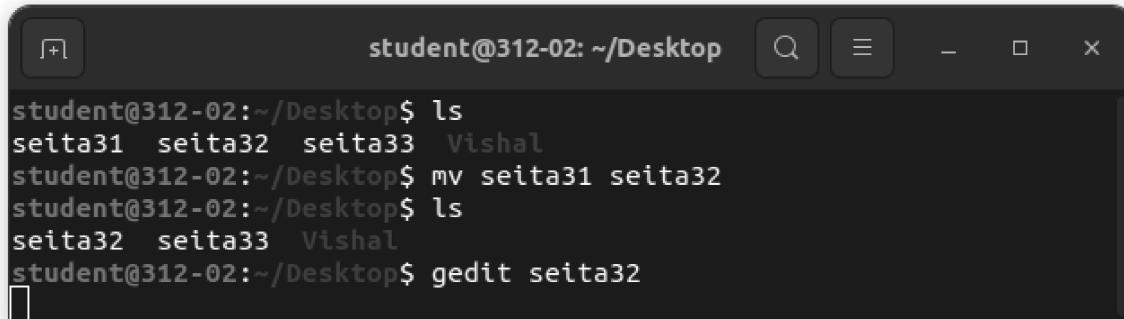


```
student@312-02: ~/Desktop$ cp seita32 seita33
student@312-02: ~/Desktop$ ls
seita31 seita32 seita33 Vishal
student@312-02: ~/Desktop$ gedit seita33
```

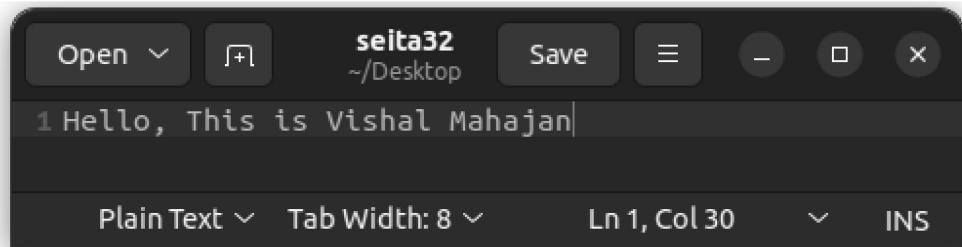


Observation: When I used the cp command in Ubuntu, it allowed me to copy files or directories. By providing source and destination arguments, I could duplicate files or create backups effortlessly.

## 8.Command : mv

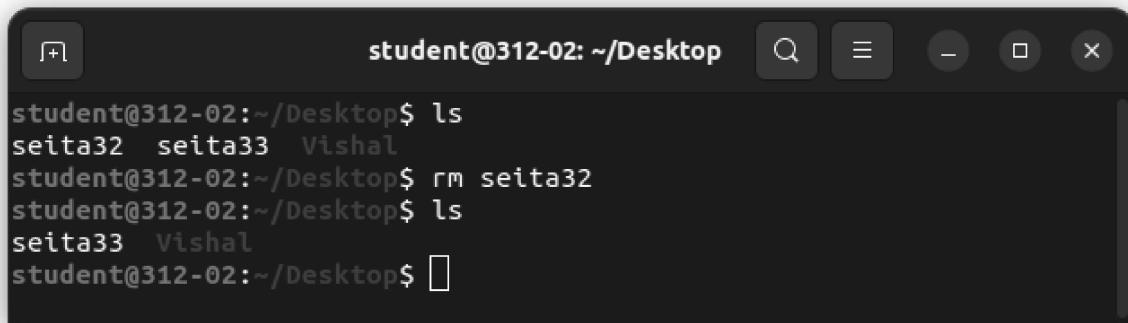


```
student@312-02: ~/Desktop$ ls
seita31 seita32 seita33 Vishal
student@312-02: ~/Desktop$ mv seita31 seita32
student@312-02: ~/Desktop$ ls
seita32 seita33 Vishal
student@312-02: ~/Desktop$ gedit seita32
```



Observation: When I used the `mv` command in Ubuntu, I could move or rename files and directories. It allowed me to relocate items within the file system or change their names efficiently.

#### 9. Command: rm

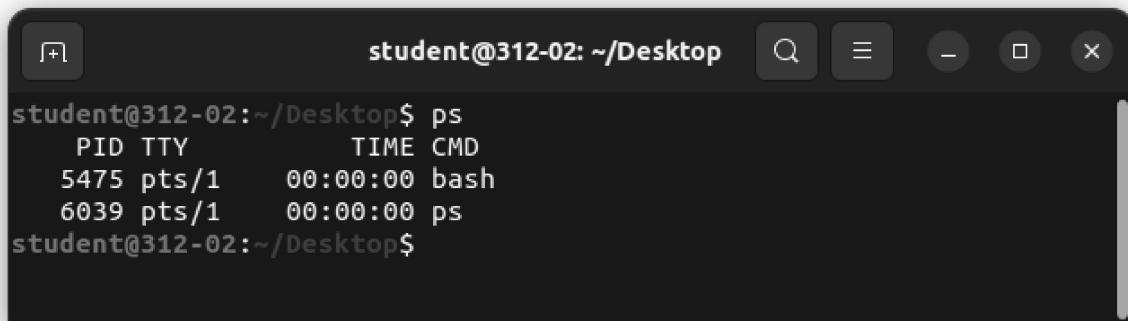


```
student@312-02: ~/Desktop$ ls
seita32 seita33 Vishal
student@312-02:~/Desktop$ rm seita32
student@312-02:~/Desktop$ ls
seita33 Vishal
student@312-02:~/Desktop$ 
```

A screenshot of a terminal window titled "student@312-02: ~/Desktop". The window has standard Linux-style window controls at the top right. The terminal displays a sequence of commands: "ls" shows files "seita32", "seita33", and "Vishal". "rm seita32" is run, which removes the file "seita32". A second "ls" command shows only "seita33" and "Vishal" remain. The prompt ends with a square icon.

Observation: When I used the `rm` command in Ubuntu, it allowed me to remove files or directories. It's important to use it with caution, as deleted files are typically not recoverable..

#### 10.Command: ps



```
student@312-02:~/Desktop$ ps
  PID TTY      TIME CMD
 5475 pts/1    00:00:00 bash
 6039 pts/1    00:00:00 ps
student@312-02:~/Desktop$ 
```

A screenshot of a terminal window titled "student@312-02: ~/Desktop". The window has standard Linux-style window controls at the top right. The terminal displays the output of the "ps" command, which lists two processes: "bash" with PID 5475 and "ps" with PID 6039, both running on terminal pts/1. The prompt ends with a square icon.

Observation: When I used the `ps` command in Ubuntu, it displayed a snapshot of currently running processes. This command provides information such as process ID (PID), terminal associated with the process, and the command used to start the process.

## 11.Command: man

```
student@312-02: ~/Desktop
LS(1)                               User Commands                         LS(1)

NAME
    ls - list directory contents

SYNOPSIS
    ls [OPTION]... [FILE]...

DESCRIPTION
    List information about the FILEs (the current directory by
    default). Sort entries alphabetically if none of -cftuvSUX
    nor --sort is specified.

Manual page ls(1) line 1/257 4% (press h for help or q to quit)
```

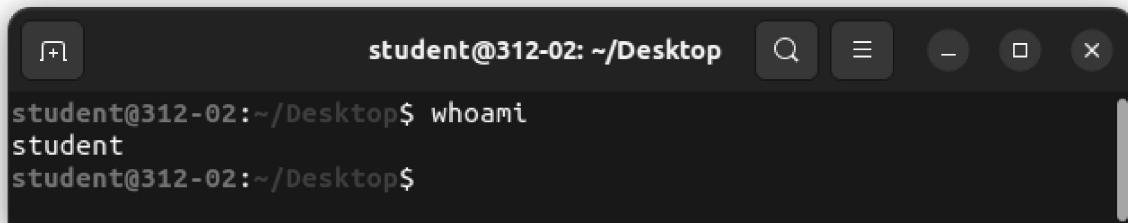
Observation: When I used the `man ls` command in Ubuntu, it displayed the manual page for the `ls` command. This manual page provides detailed information about the command, including its options, usage, and explanations of various features.

## 12.Command: who

```
student@312-02:~/Desktop$ who
student  tty2          2024-02-02 11:21 (tty2)
student@312-02:~/Desktop$ █
```

Observation: When I used the `who` command in Ubuntu, it displayed information about users currently logged into the system. This includes details such as the username, terminal, login time.

### 13.Command: whoami



```
student@312-02: ~/Desktop$ whoami
student
student@312-02:~/Desktop$
```

Observation:When I used the `whoami` command in Ubuntu, it displayed the username associated with the current user session. This command is helpful for quickly identifying the user executing the command.

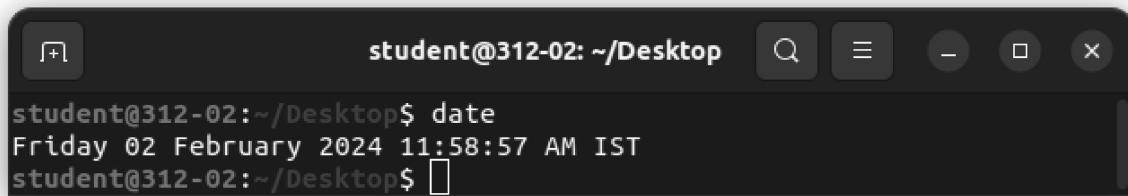
### 14.Command: Echo



```
student@312-02:~/Desktop$ echo Vishal Mahajan
Vishal Mahajan
student@312-02:~/Desktop$ echo 2+3
2+3
student@312-02:~/Desktop$ echo 2+3|bc
5
student@312-02:~/Desktop$ echo 2-3|bc
-1
student@312-02:~/Desktop$ echo 2*3|bc
6
student@312-02:~/Desktop$ echo 2/3|bc
0
student@312-02:~/Desktop$
```

Observation:When I used the `echo` command with `bc` in Ubuntu, I could perform various mathematical operations.

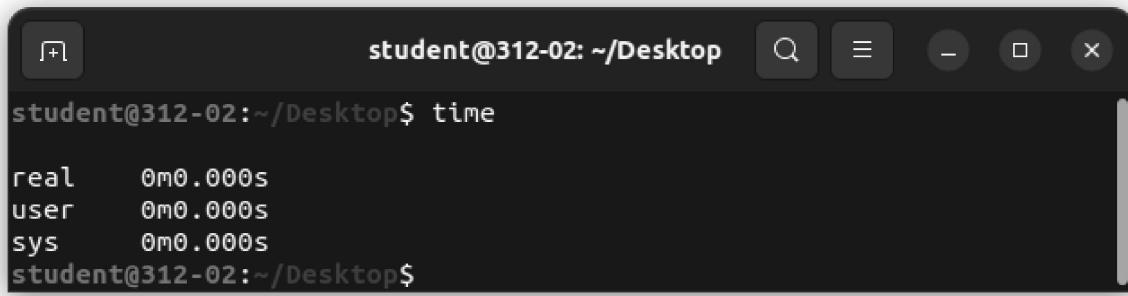
## 15.Command: date



```
student@312-02: ~/Desktop$ date
Friday 02 February 2024 11:58:57 AM IST
student@312-02:~/Desktop$
```

Observation:When I used the `date` command in Ubuntu, it displayed the current date and time. The default output includes the day of the week, month, day of the month, time in 24-hour format, timezone, and year.

## 16.Command: time

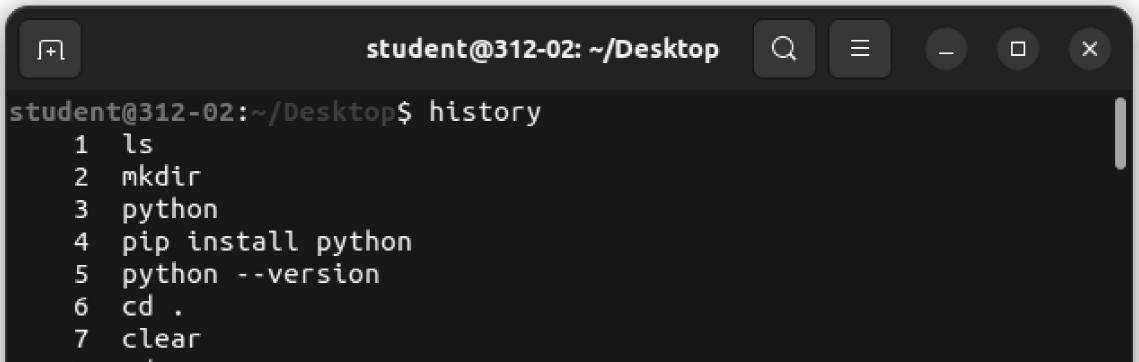


```
student@312-02: ~/Desktop$ time

real    0m0.000s
user    0m0.000s
sys     0m0.000s
student@312-02:~/Desktop$
```

Observation:when I used time command, I showed me the user and sys time

## 17.Command: history



```
student@312-02:~/Desktop$ history
 1  ls
 2  mkdir
 3  python
 4  pip install python
 5  python --version
 6  cd .
 7  clear
 8
```

Observation:When I used the history command in Ubuntu, it displayed a list of previously executed commands, including their line numbers.

## 18.Command: cal

```
student@312-02: ~/Desktop$ cal 2024
2024
January          February          March
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
  1  2  3  4  5  6       1  2  3  4  5  6  7   1  2  3  4  5  6  7  8  9
  7  8  9 10 11 12 13   4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
14 15 16 17 18 19 20   11 12 13 14 15 16 17 18 19 20 21 22 23 24 10 11 12 13 14 15 16
21 22 23 24 25 26 27   18 19 20 21 22 23 24 25 26 27 28 29 24 25 26 27 28 29 30
28 29 30 31               25 26 27 28 29
                                31

April            May             June
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
  1  2  3  4  5  6       1  2  3  4  5  6  7   1  2  3  4  5  6  7  8  9
  7  8  9 10 11 12 13   5  6  7  8  9 10 11 12 13 14 15 16 17 18 9 10 11 12 13 14 15
14 15 16 17 18 19 20   12 13 14 15 16 17 18 19 20 21 22 23 24 25 16 17 18 19 20 21 22
21 22 23 24 25 26 27   19 20 21 22 23 24 25 26 27 28 29 30 31 23 24 25 26 27 28 29
28 29 30               30

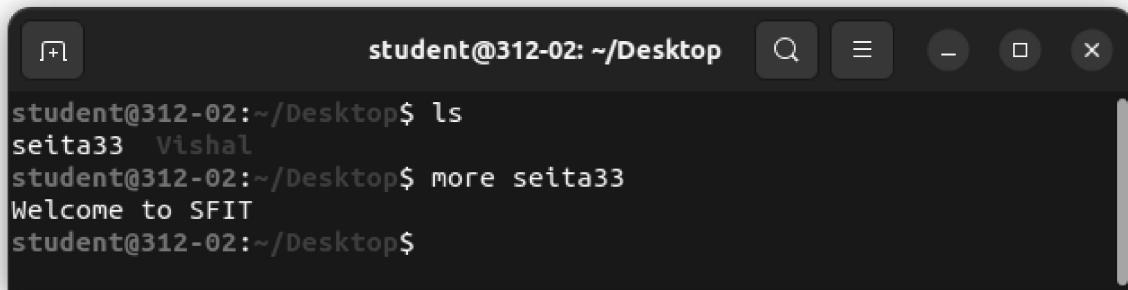
July            August          September
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
  1  2  3  4  5  6       1  2  3  4  5  6  7   1  2  3  4  5  6  7  8  9
  7  8  9 10 11 12 13   4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
14 15 16 17 18 19 20   11 12 13 14 15 16 17 18 19 20 21 22 23 24 22 23 24 25 26 27 28
21 22 23 24 25 26 27   18 19 20 21 22 23 24 25 26 27 28 29 30 29 30
28 29 30 31               25 26 27 28 29 30 31

October          November         December
Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa   Su Mo Tu We Th Fr Sa
  1  2  3  4  5  6       1  2  3  4  5  6  7   1  2  3  4  5  6  7  8  9
  6  7  8  9 10 11 12   3  4  5  6  7  8  9 10 11 12 13 14 15 16 15 16 17 18 19 20 21
13 14 15 16 17 18 19   10 11 12 13 14 15 16 17 18 19 20 21 22 23 22 23 24 25 26 27 28
20 21 22 23 24 25 26   17 18 19 20 21 22 23 24 25 26 27 28 29 30 29 30 31
27 28 29 30 31               24 25 26 27 28 29 30
                                31

student@312-02: ~/Desktop$ █
```

Observation: When I used the `cal 2024` command in Ubuntu, it displayed the calendar for the year 2024, showing each month with the days of the week and their corresponding dates.

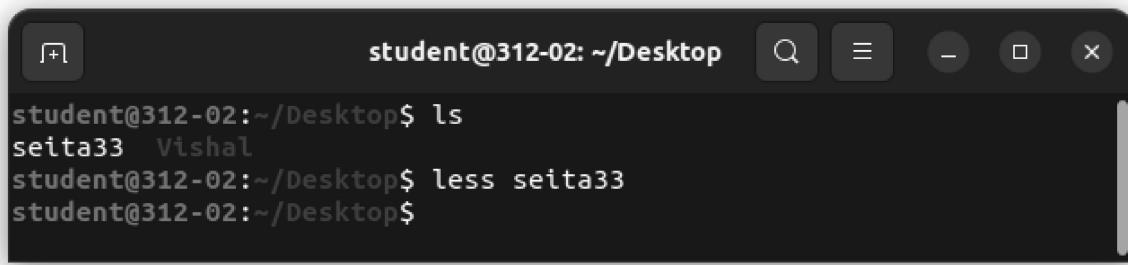
## 19.Command: More



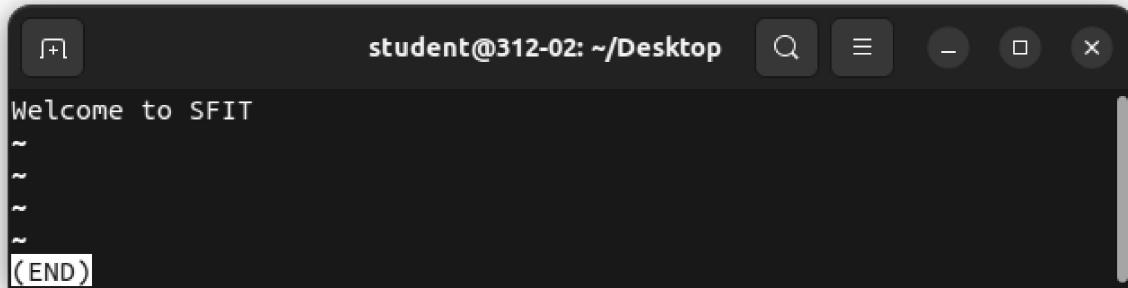
```
student@312-02: ~/Desktop$ ls
seita33 Vishal
student@312-02:~/Desktop$ more seita33
Welcome to SFIT
student@312-02:~/Desktop$
```

Observation: When you used the `more seita33` command, it attempted to display the contents of the file named "seita33" using the `more` command.

## 20.Command: Less



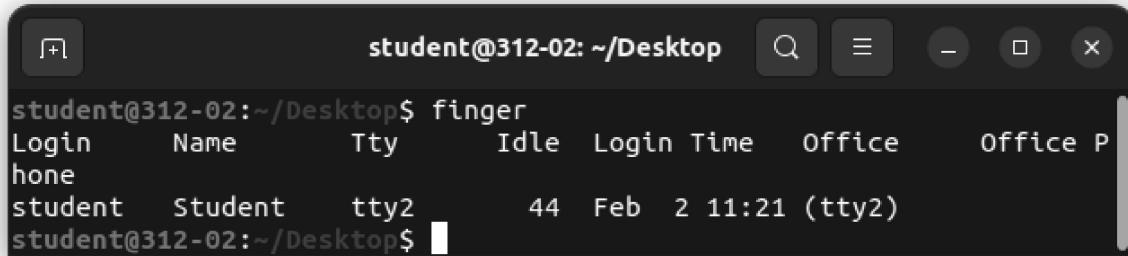
```
student@312-02: ~/Desktop$ ls
seita33 Vishal
student@312-02:~/Desktop$ less seita33
student@312-02:~/Desktop$
```



```
Welcome to SFIT
~
~
~
~
~
(END)
```

Observation: When I used the `less seita33` command in Ubuntu, it displayed the contents of the file named "seita33" using the `less` pager. This allows for navigating through the file content using keyboard commands, such as arrow keys for scrolling and 'q' to exit.

## 21.Command: Finger

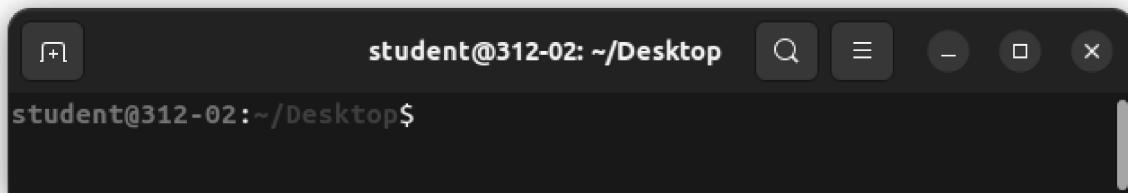


A screenshot of a terminal window titled "student@312-02: ~/Desktop". The window contains the command "finger" followed by its output. The output shows one user entry:

Login	Name	Tty	Idle	Login Time	Office	Office P hone
student	Student	tty2	44	Feb 2 11:21	(tty2)	

Observation: When I used the 'finger' command in Ubuntu, it displayed information about users, including their login name, terminal, login time, and other details. This command provides a quick overview of user activity on the system.

## 22.Command: Clear



A screenshot of a terminal window titled "student@312-02: ~/Desktop". The window contains the command "clear" followed by a blank screen, indicating that the terminal has been cleared.

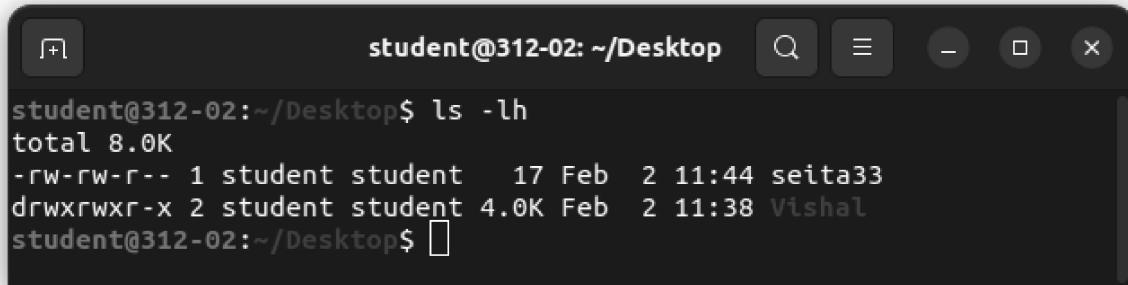
Observation: When I used the 'clear' command in Ubuntu, it cleared the terminal screen.

## 4.POST EXPERIMENT-EXERCISE:

### B. Questions:

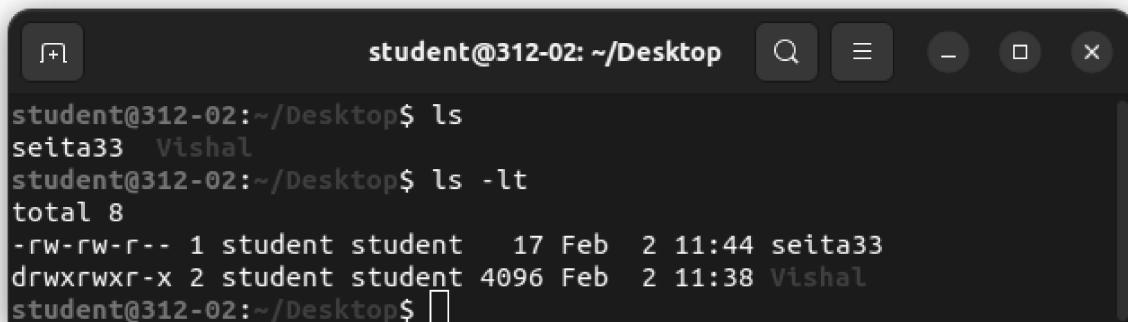
Write the commands and output of those for the following:

1.To display file size in human readable Form: ls -lh



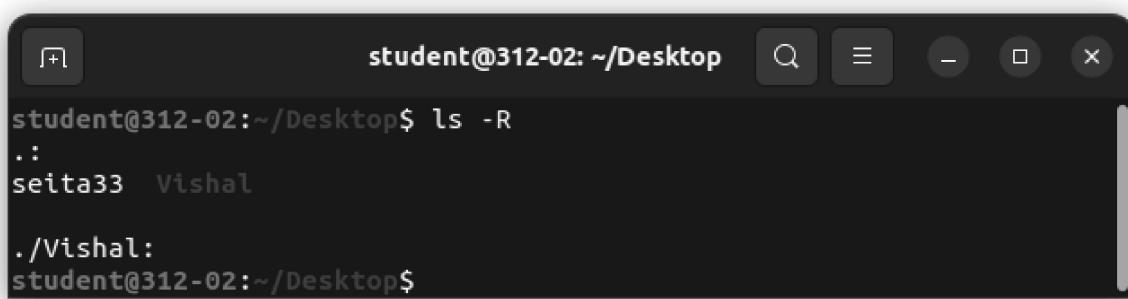
```
student@312-02: ~/Desktop$ ls -lh
total 8.0K
-rw-rw-r-- 1 student student 17 Feb 2 11:44 seita33
drwxrwxr-x 2 student student 4.0K Feb 2 11:38 Vishal
student@312-02:~/Desktop$
```

2.To order files based on Last Modified Time in Descending Order: ls -lt



```
student@312-02:~/Desktop$ ls
seita33 Vishal
student@312-02:~/Desktop$ ls -lt
total 8
-rw-rw-r-- 1 student student 17 Feb 2 11:44 seita33
drwxrwxr-x 2 student student 4096 Feb 2 11:38 Vishal
student@312-02:~/Desktop$
```

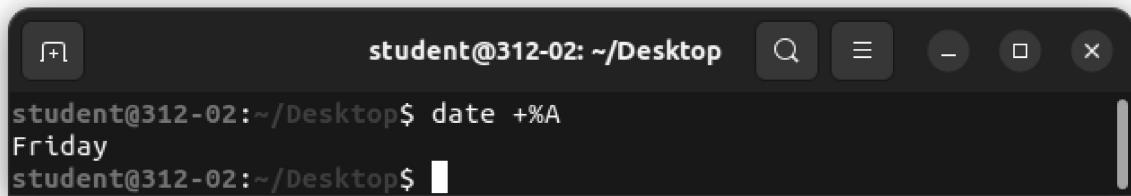
3.To display file recursively: ls -R



```
student@312-02:~/Desktop$ ls -R
.:
seita33 Vishal

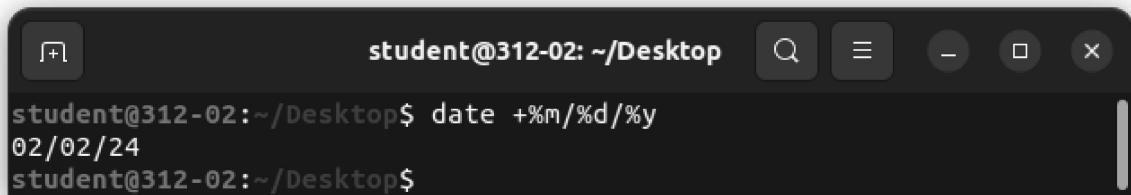
./Vishal:
student@312-02:~/Desktop$
```

4. To display Weekday name in full short (like Monday, Tuesday).



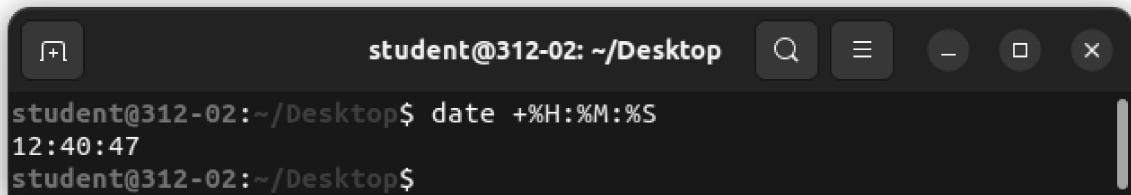
```
student@312-02: ~/Desktop$ date +%A
Friday
student@312-02: ~/Desktop$
```

5. To display Current Date; shown in MM/DD/YY.



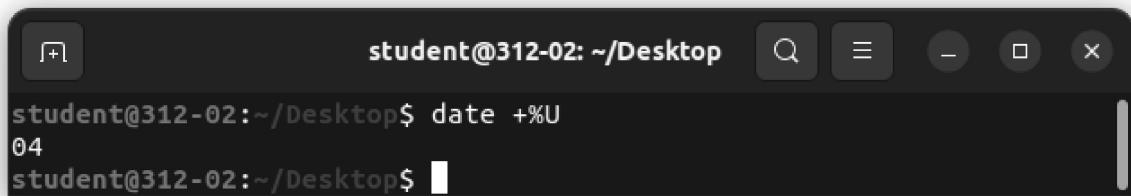
```
student@312-02: ~/Desktop$ date +%m/%d/%y
02/02/24
student@312-02: ~/Desktop$
```

6. To display time; shown as HH:MM:SS. Note: Hours in 24 Format



```
student@312-02: ~/Desktop$ date +%H:%M:%S
12:40:47
student@312-02: ~/Desktop$
```

7. To displays week number of year, with Sunday as first day of week (00..53).



```
student@312-02: ~/Desktop$ date +%U
04
student@312-02: ~/Desktop$
```

8. To display Julian calendar and Julian days.

```
student@312-02:~/Desktop$ cal $month $year -j
        February 2024
Su Mo Tu We Th Fr Sa
                    32 33 34
35 36 37 38 39 40 41
42 43 44 45 46 47 48
49 50 51 52 53 54 55
56 57 58 59 60

student@312-02:~/Desktop$
```

9. To add a specified number of months before or after the current one in output.

```
student@312-02:~/Desktop$ date -d "+6 months"
Friday 02 August 2024 12:46:07 PM IST
student@312-02:~/Desktop$
```

10. To list Processes in a Hierarchy.

```
student@312-02:~/Desktop$ pstree
systemd--ModemManager--2*[{ModemManager}]
|   NetworkManager--2*[{NetworkManager}]
|   accounts-daemon--2*[{accounts-daemon}]
|   acpid
|   avahi-daemon--avahi-daemon
|   bluetoothd
|   colord--2*[{colord}]
|   cron
|   cups-browsed--2*[{cups-browsed}]
|   cupsd--dbus
|   dbus-daemon
|   fwupd--4*[{fwupd}]
|   gdm3--gdm-session-wor--gdm-wayland-ses--gnome-session-+
```

