

Lab 1: Learning Basic Linux Commands

OS Used: Debian 5.18.5-1kali6

1.1. Command Name: ls

Syntax: ls [OPTION]... [FILE]...

Usage: Lists files and directories within the file system and shows detailed information about them.

Commands Executed:

- \$ ls — Lists all unhidden files and directories in the current directory.
- \$ ls -l — Lists files in long listing format, including file type, permissions, owner, and more.
- \$ ls -a — Displays all files, including hidden files (starting with a dot).

Output:

```
(suresh@ITLab)-[~]
$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos

(suresh@ITLab)-[~]
$ ls -a
.          .bashrc      .config      Downloads    .java      Music
..         .bashrc.original Desktop    .face        .local      Pictures
.bash_logout .cache       Documents    .face.icon   .mozilla    .profile

(suresh@ITLab)-[~]
$ ls -l
total 32
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Desktop
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Documents
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Downloads
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Music
drwxr-xr-x 3 suresh suresh 4096 Jan 26 03:22 Pictures
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Public
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Templates
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Videos
```

1.2. Command Name: cd

Syntax: cd [directory]

Usage: Changes the current working directory to the specified directory.

Commands Executed:

- \$ cd /home — Navigates to the /home directory.
- \$ cd .. — Moves up one level in the directory hierarchy.
- \$ cd ~ — Moves to the user's home directory.

Output:

```
(suresh@ITLab)-[~]  
$ cd /home  
  
(suresh@ITLab)-[/home]  
$ cd ..  
  
(suresh@ITLab)-[/]  
$ cd ~  
  
(suresh@ITLab)-[~]  
$ █
```

1.3. Command Name: grep

Syntax: grep [OPTION]... PATTERNS [FILE]...

Usage: Searches for a specific pattern within files or input and highlights matching lines.

Commands Executed:

- \$ grep "hello" file.txt — Searches for the word "hello" in file.txt.
- \$ grep -i "hello" file.txt — Performs a case-insensitive search for "hello".
- \$ grep -r "error" /var/log — Recursively searches for "error" in /var/log directory.

Output:

```
(suresh@ITLab)-[~]
$ grep "hello" file.txt
this is just a test file that contains hello word

(suresh@ITLab)-[~]
$ grep -i "Hello" file.txt
this is just a test file that contains hello word

(suresh@ITLab)-[~]
$ grep -r "error" /var/log
/var/log/messages:Jan  4 04:02:03 ITLab /usr/libexec/gdm-x-session[633]: #011(WW) warning, (EE) error,
/var/log/messages:Jan  4 04:02:29 ITLab gnome-session[670]: gnome-session-binary[670]: GLib-GIO-CRITICAL
led
/var/log/messages:Jan  4 04:02:29 ITLab gnome-session[670]: gnome-session-binary[670]: GLib-GIO-CRITICAL
led
/var/log/messages:Jan  4 04:05:06 ITLab /usr/libexec/gdm-x-session[1090]: #011(WW) warning, (EE) error,
/var/log/messages:Jan  4 04:05:12 ITLab kernel: [ 219.034944] An X Window protocol error occurred: Bad
). Request code: 128
/var/log/messages:Jan 26 01:52:18 ITLab /usr/libexec/gdm-x-session[674]: #011(WW) warning, (EE) error,
/var/log/messages:Jan 26 01:52:34 ITLab gnome-session[713]: gnome-session-binary[713]: GLib-GIO-CRITICAL
led
/var/log/messages:Jan 26 01:52:34 ITLab gnome-session[713]: gnome-session-binary[713]: GLib-GIO-CRITICAL
led
/var/log/messages:Jan 26 01:53:15 ITLab /usr/libexec/gdm-x-session[1085]: #011(WW) warning, (EE) error,
/var/log/messages:Jan 26 01:53:21 ITLab kernel: [ 92.499273] An X Window protocol error occurred: Bad
). Request code: 128
```

1.4. Command Name: su/sudo

Syntax: su/sudo [options]

Usage: Allows a user to switch to another user or execute commands with elevated privileges.

Commands Executed:

- \$ sudo apt update — Updates package lists with administrative privileges.
- \$ sudo su — Switches to the root user.
- \$ sudo -i — Starts a root shell session.

Output:

```
(suresh@ITLab)-[~]
$ sudo apt update
[sudo] password for suresh:
Get:1 http://kali.download/kali kali-rolling InRelease [41.5 kB]
Err:1 http://kali.download/kali kali-rolling InRelease
  The following signatures were invalid: EXPKEYSIG ED444FF07D8D0BF6 Kali Linux Repository
Fetched 41.5 kB in 1s (32.8 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1981 packages can be upgraded. Run 'apt list --upgradable' to see them.
W: An error occurred during the signature verification. The repository is not updated and
i-rolling InRelease: The following signatures were invalid: EXPKEYSIG ED444FF07D8D0BF6 Kal
W: Failed to fetch http://http.kali.org/kali/dists/kali-rolling/InRelease The following s
@kali.org>
W: Some index files failed to download. They have been ignored, or old ones used instead.
```

```
(suresh@ITLab)-[~]
$ sudo -i
(root@ITLab)-[~]
#

(suresh@ITLab)-[~]
$ sudo su
(root@ITLab)-[/home/suresh]
#
```

1.5. Command Name: pwd

Syntax: pwd [options]...

Usage: Prints the current working directory.

Commands Executed:

- \$ pwd — Displays the full path of the current directory.

Output:

```
(suresh@ITLab)-[~]
$ pwd
/home/suresh
```

1.6. Command Name: mv

Syntax: mv [OPTION]... SOURCE... DIRECTORY

Usage: Moves or renames files and directories.

Commands Executed:

- \$ mv file.txt new_file.txt — Renames file.txt to new_file.txt

- \$ mv new_file.txt Desktop/file.txt — Moves new_file.txt to Desktop folder naming it file.txt.

Output:

```
(suresh@ITLab)-[~]  
$ mv file.txt new_file.txt  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop Documents Downloads Music new_file.txt Pictures  
  
(suresh@ITLab)-[~]  
$ mv new_file.txt Desktop/file.txt  
  
(suresh@ITLab)-[~]  
$ cat Desktop/file.txt  
this is just a test file that contains hello word
```

1.7. Command Name: cp

Syntax: cp [OPTION]... SOURCE... DIRECTORY

Usage: Copies files and directories.

Commands Executed:

- \$ cp file.txt new_file.txt — Copies file.txt to new_file.txt.
- \$ cp -r folder /backup/ — Recursively copies the folder to /backup.

Output:

```
(suresh@ITLab)-[~]  
$ cp file.txt new_file.txt  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop Documents Downloads file.txt Music new_file.txt
```

```
(suresh@ITLab)-[~]  
$ cp -r myFile NewFile  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop Documents Downloads Music myFile NewFile  
  
(suresh@ITLab)-[~]  
$ ls NewFile  
file.txt
```

1.8. Command Name: rm

Syntax: rm [OPTION]... [FILE]...

Usage: Deletes files or directories.

Commands Executed:

- \$ rm file.txt — Removes file.txt.
- \$ rm -r myFile/ — Recursively deletes the folder.
- \$ rm -i file.txt — Prompts for confirmation before deletion.

Output:

```
(suresh@ITLab)-[~]  
$ rm file.txt  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop Documents Downloads Music myFile NewFile P  
  
(suresh@ITLab)-[~]  
$ rm -r myFile  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop Documents Downloads Music NewFile Pictures
```

```
(suresh@ITLab)-[~]  
$ rm -i file.txt  
rm: remove regular file 'file.txt'? y  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop Documents Downloads Music NewFile Pictures Public Templates Videos
```

1.9. Command Name: mkdir

Syntax: mkdir [OPTION]... DIRECTORY...

Usage: Creates a new directory.

Commands Executed:

- \$ mkdir myFile — Creates a directory named myFile.
- \$ mkdir -p Parent/Child — Creates Parent and Child directories in one command.

Output:

```
(suresh@ITLab)-[~]
$ mkdir myFile

(suresh@ITLab)-[~]
$ ls
Desktop Documents Downloads Music myFile NewFile Pictures

(suresh@ITLab)-[~]
$ mkdir -p Parent/Child

(suresh@ITLab)-[~]
$ ls
Desktop Documents Downloads Music myFile NewFile Parent

(suresh@ITLab)-[~]
$ cd Parent

(suresh@ITLab)-[~/Parent]
$ ls
Child
```

1.10. Command Name: rmdir

Syntax: rmdir [OPTION]... DIRECTORY...

Usage: Removes empty directories.

Commands Executed:

- \$ rmdir Child — Removes the empty directory named Child.
- \$ rmdir -p Parent/Child — Removes child and parent directories if they are empty.

Output:

```
(suresh@ITLab)-[~]
$ rmdir -p Parent/Child

(suresh@ITLab)-[~]
$ ls
Desktop Documents Downloads Music myFile NewFile
```

1.11. Command Name: chmod

Syntax: chmod [OPTION]... [MODE]... FILE...

Usage: Changes the permissions of a file or directory. Numbers 4, 2, 1 are assigned for read, write, and execute. E.g.: 4+2+1 = 7, which allows all three: read, write, and execute.

Commands Executed:

- \$ chmod 755 script.sh — Assigns read, write, and execute permissions for the owner and read/execute for group and others.
- \$ chmod +x script.sh — Adds execute permission to script.sh.

Output:

```
(suresh@ITLab)-[~]
$ sh script.sh
sh: 0: cannot open script.sh: Permission denied

(suresh@ITLab)-[~]
$ ls -l
total 44
drwxr-xr-x 2 suresh suresh 4096 Jan 26 04:33 Desktop
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Documents
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Downloads
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Music
drwxr-xr-x 2 suresh suresh 4096 Jan 26 04:40 myFile
drwxr-xr-x 2 suresh suresh 4096 Jan 26 04:35 NewFile
drwxr-xr-x 3 suresh suresh 4096 Jan 26 03:22 Pictures
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Public
----- 1 suresh suresh  30 Jan 26 04:53 script.sh
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Templates
drwxr-xr-x 2 suresh suresh 4096 Jan  4 04:05 Videos

(suresh@ITLab)-[~]
$ chmod 755 script.sh

(suresh@ITLab)-[~]
$ sh script.sh
Hello World

(suresh@ITLab)-[~]
$ chmod +x script.sh
```

1.12. Command Name: cat

Syntax: cat [OPTION]... [FILE]...

Usage: Concatenates and displays the content of files.

Commands Executed:

- \$ cat combined.txt — Displays the content of combined.txt.
- \$ cat file1.txt file2.txt > combined.txt — Combines file1.txt and file2.txt into combined.txt.

Output:

```
(suresh@ITLab)-[~]
$ cat file1.txt file2.txt > combined.txt

(suresh@ITLab)-[~]
$ ls
combined.txt  Desktop  Documents  Downloads  file1.txt  file2.txt

(suresh@ITLab)-[~]
$ cat combined.txt
this is file 1
this is file 2
```

1.13. Command Name: chown

Syntax: chown [options] owner[:group] file...

Usage: Changes the ownership of a file or directory to a specific user or group.

Commands Executed:

- \$ chown hari file.txt — Changes the ownership of file.txt to the user hari.
- \$ chown suresh:suresh file.txt — Changes the ownership of the file.txt to user hari and group hari.

Output:

```
(suresh@ITLab)-[~]
$ sudo chown hari:hari file.txt

(suresh@ITLab)-[~]
$ ls -l file.txt
-rw-r--r-- 1 hari hari 19 Jan 26 05:02 file.txt
```

```
(suresh@ITLab)-[~]
$ sudo chown suresh file.txt

(suresh@ITLab)-[~]
$ ls -l file.txt
-rw-r--r-- 1 suresh 1001 19 Jan 26 05:02 file.txt
```

1.14. Command Name: echo

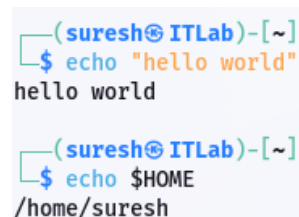
Syntax: echo [options] [string...]

Usage: The echo command is used to display a line of text or variables to the terminal. It's commonly used in scripts or to display messages in the terminal.

Commands Executed:

- `$ echo "Hello, World!"` — Displays the text "Hello, World!" in the terminal.
- `$ echo $HOME` — Displays the value of the HOME environment variable.

Output:



```
(suresh@ITLab)-[~]  
$ echo "hello world"  
hello world  
  
(suresh@ITLab)-[~]  
$ echo $HOME  
/home/suresh
```

1.15. Command Name: wc

Syntax: wc [OPTION]... [FILE]...

Usage: Counts words, lines, characters in files.

Commands Executed:

- `$ wc file.txt` — Displays the number of lines, words, and characters in file.txt.
- `$ wc -l file.txt` — Counts only the lines in file.txt.
- `$ wc -w file.txt` — Counts only the words in file.txt.
- `$ wc -c file.txt` — Counts only the characters in file.txt.

Output:

```
(suresh@ITLab)-[~]  
$ wc file.txt  
1  5 19 file.txt  
  
(suresh@ITLab)-[~]  
$ wc -l file.txt  
1 file.txt  
  
(suresh@ITLab)-[~]  
$ wc -w file.txt  
5 file.txt  
  
(suresh@ITLab)-[~]  
$ wc -c file.txt  
19 file.txt
```

1.16. Command Name: man

Syntax: man [options]... [Command]

Usage: Displays the manual page of a command.

Commands Executed:

- \$ man ls — Opens the manual page for the ls command.

Output:

```
LS(1) User C  
  
NAME  
    ls - list directory contents  
  
SYNOPSIS  
    ls [OPTION]... [FILE]...  
  
DESCRIPTION  
    List information about the FILES (the current directory by default).  Sort  
    Mandatory arguments to long options are mandatory for short options too.  
  
    -a, --all  
        do not ignore entries starting with .  
  
    -A, --almost-all  
        do not list implied . and ..  
  
    --author  
        with -l, print the author of each file  
  
    -b, --escape  
        print C-style escapes for nongraphic characters
```

1.17. Command Name: history

Syntax: history [options]

Usage: The history command shows the list of previously executed commands in the terminal session. It allows users to recall and reuse commands from the history list.

Commands Executed:

\$ history — Displays the list of previously executed commands.

\$ history | grep "uname" — Searches the command history for occurrences of "uname".

Output:

```
(suresh@ITLab)-[~]  
$ history  
1  uname  
2  uname -a  
3  ls  
4  ls -l  
5  ls -a  
6  ls  
7  ls -a  
8  ls -l  
9  ls  
10 ls -a  
11 ls -l  
12 cd /home  
13 cd ..  
14 cd ~  
15 nano file.txt  
16 grep "hello" file.txt  
17 grep -i "Hello" file.txt  
18 grep -r "error" /var/log
```

```
(suresh@ITLab)-[~]  
$ history | grep "uname"  
1  uname  
2  uname -a
```

1.18. Command Name: clear

Syntax: clear [options]

Usage: Clears the terminal screen.

Commands Executed:

- \$ clear — Clears all previous terminal output.

Output:

```
126 sudo useradd hari
127 clear
128 chown file.txt hari:hari
129 chown hari:hari file.txt
130 sydo chown hari:hari file.txt
131 sudo chown hari:hari file.txt
132 ls -l file.txt
133 deluser file.txt
134 sudo deluser hari
135 ped
136 passwd
137 clear
138 chown hari file.txt
139 chown suresh file.txt
140 sudo chown suresh file.txt
141 ls -l file.txt
142 echo "hello world"
143 echo $HOME
144 wc file.txt
145 wc -l file.txt
146 wc -w file.txt
147 wc -c file.txt
148 msn ls
149 man ls

(suresh@ITLab)-[~]
$ history | grep "uname"
 1  uname
 2  uname -a

(suresh@ITLab)-[~]
$ clear
```

FIGURE 1 BEFORE EXECUTING THE COMMAND

```
(suresh@ITLab)-[~]
$ █
```

FIGURE 2 AFTER EXECUTING THE COMMAND

1.19. Command Name: touch

Syntax: touch [OPTION]... FILE...

Usage: Creates an empty file or updates the timestamp of an existing file.

Commands Executed:

- \$ touch newfile.txt — Creates a new empty file named newfile.txt.

Output:

```
(suresh@ITLab)-[~]  
$ touch newFile.txt  
  
(suresh@ITLab)-[~]  
$ ls  
Desktop  Documents  Downloads  file.txt  Music  newFile.txt
```

1.20. Command Name: locate

Syntax: locate [OPTION]... PATTERN...

Usage: Finds files by name.

Commands Executed:

- \$ locate file.txt — Searches for the specified filename in indexed file paths.

Output:

```
(suresh@ITLab)-[~]  
$ locate file.txt  
/home/suresh/file.txt  
/usr/share/metasploit-framework/data/wmap/wmap_sample_profile.txt  
/usr/share/metasploit-framework/vendor/bundle/ruby/3.0.0/gems/em-http
```

1.21. Command Name: netstat

Syntax: netstat [options]

Usage: Displays network connections and statistics.

Commands Executed:

- \$ netstat -a — Shows all active connections.

Output:

```
(suresh@ITLab)-[~]
$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 ITLab:bootpc           gateway:bootps          ESTABLISHED
raw6       0      0 [::]:ipv6-icmp         [::]:*                  7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags     Type       State      I-Node  Path
unix  2      [ ACC ] STREAM    LISTENING   31669    @/tmp/dbus-HNT5pMA9
unix  2      [ ACC ] STREAM    LISTENING   17247    @/tmp/.ICE-unix/1282
unix  2      [ ]       DGRAM          18946    /run/user/1000/systemd/notify
unix  2      [ ACC ] STREAM    LISTENING   18949    /run/user/1000/systemd/private
unix  2      [ ACC ] STREAM    LISTENING   18373    @/home/suresh/.cache/ibus/dbus-Mj8Q5a4D
unix  2      [ ACC ] STREAM    LISTENING   20034    @/tmp/.X11-unix/X1
unix  2      [ ACC ] STREAM    LISTENING   18959    /run/user/1000/bus
unix  3      [ ]       DGRAM    CONNECTED   13669    /run/systemd/notify
```

1.22. Command Name: df

Syntax: df [OPTION]... [FILE]...

Usage: Displays available disk space.

Commands Executed:

- \$ df -h — Shows disk usage in a human-readable format.

Output:

```
(suresh@ITLab)-[~]
$ df -h
df: /run/user/1000/doc: Operation not permitted
Filesystem      Size  Used Avail Use% Mounted on
udev            1.9G   0    1.9G   0% /dev
tmpfs           393M  1.2M  392M   1% /run
/dev/sda1        39G   12G   26G  31% /
tmpfs           2.0G   0    2.0G   0% /dev/shm
tmpfs           5.0M   0    5.0M   0% /run/lock
tmpfs           393M   80K  393M   1% /run/user/1000
```

1.23. Command Name: du

Syntax: du [OPTION]... [FILE]...

Usage: Displays the disk usage of files or directories.

Commands Executed:

- \$ du -sh Downloads — Displays the size of a Downloads folder in a human-readable format.

Output:

```
(suresh@ITLab)-[~]  
$ du -sh Downloads  
4.0K Downloads
```

1.24. Command Name: uname

Syntax: uname [option]...

Usage: Displays system information.

Commands Executed:

- \$ uname -a — Shows all system information including kernel, OS version, etc.

Output:

```
(suresh@ITLab)-[~]  
$ uname -a  
Linux ITLab 5.18.0-kali5-amd64 #1 SMP PREEMPT_DYNAMIC Debian 5.18.5-1kali6 (2022-07-07) x86_64 GNU/Linux
```

1.25. Command Name: passwd

Syntax: passwd [options]

Usage: Changes the password of a user.

Commands Executed:

- \$ passwd — Prompts to change the current user's password.

Output:

```
(suresh@ITLab)-[~]  
$ passwd  
Changing password for suresh.  
Current password:  
New password:  
Retype new password:  
passwd: password updated successfully
```

1.26. Command Name: useradd

Syntax: useradd [options] [NAME]

Usage: Adds a new user to the system.

Commands Executed:

- \$ useradd hari — Creates a new user named hari.

Output:

```
(suresh@ITLab)-[~]  
$ sudo useradd hari
```

```
(suresh@ITLab)-[~]  
$ cat /etc/passwd
```

```
suresh:x:1000:1000:Suresh Dahal,,,:/home/suresh:/usr/bin/zsh  
hari:x:1001:1001::/home/hari:/bin/sh
```

1.27. Command Name: userdel

Syntax: userdel [options] [Name]

Usage: Deletes a user from the system.

Commands Executed:

- \$ userdel hari — Removes the user named hari.

Output:

```
(suresh@ITLab)-[~]  
$ sudo userdel hari
```

1.28. Command Name: apt-get

Syntax: apt-get [options]

Usage: Manages software packages on Debian-based systems.

Commands Executed:

- \$ apt-get update — Updates package lists.
- \$ apt-get upgrade — Upgrades installed packages.
- \$ apt-get install cmatrix — Installs a specified package - cmatrix.

Output:

```
(suresh@ITLab)-[~]
$ sudo apt-get update && sudo apt-get upgrade -y
Get:1 http://kali.download/kali kali-rolling InRelease [41.5 kB]
Err:1 http://kali.download/kali kali-rolling InRelease
  The following signatures were invalid: EXPKEYSIG ED444FF07D8D0BF6 Kali Linux
Fetched 41.5 kB in 1s (48.1 kB/s)
Reading package lists... Done
W: An error occurred during the signature verification. The repository is not u
i-rolling InRelease: The following signatures were invalid: EXPKEYSIG ED444FF07
W: Failed to fetch http://http.kali.org/kali/dists/kali-rolling/InRelease The
@kali.org>
W: Some index files failed to download. They have been ignored, or old ones use
```

```
(suresh@ITLab)-[~]
$ sudo apt-get install cmatrix
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libnsl-dev libtirpc-dev
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
```

1.29. Command Name: ping

Syntax: ping [options] <destination>

Usage: Checks network connectivity to a host.

Commands Executed:

- \$ ping google.com — Sends ICMP packets to test connectivity with google.com.

Output:

```
(suresh@ITLab)-[~]
$ ping google.com
PING google.com (142.250.194.174) 56(84) bytes of data.
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=1 ttl=255 time=23.8 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=2 ttl=255 time=26.0 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=3 ttl=255 time=29.1 ms
64 bytes from del12s06-in-f14.1e100.net (142.250.194.174): icmp_seq=4 ttl=255 time=27.3 ms
```

1.30. Command Name: find

Syntax: find [directory] [options] [filename]

Usage: Searches for files or directories.

Commands Executed:

- \$ find /home -name 'file.txt' — Searches for file.txt in the /home directory.

Output:

```
(suresh@ITLab)-[~]  
$ find /home -name file.txt  
/home/suresh/file.txt
```

1.31. Command Name: head

Syntax: head [options] [filename]

Usage: Displays the first few lines of a file.

Commands Executed:

- \$ head file.txt — Displays the first 10 lines of file.txt.

Output:

```
(suresh@ITLab)-[~]  
$ head file.txt  
But I must explain to you how all this mistaken idea of denou  
the actual teachings of the great explorer of the truth, the  
No one rejects,  
dislikes,  
or avoids pleasure itself,  
because it is pleasure,  
but because those who do not know how to pursue pleasure rati  
Nor again is there anyone who loves or pursues or desires to  
but because occasionally circumstances occur in which toil ar  
To take a trivial example,  
which of us ever undertakes laborious physical exercise,
```

1.32. Command Name: rename

Syntax: rename [pattern] [files]

Usage: Renames files in bulk.

Commands Executed:

- \$ rename 's/\.txt\$/\.html/' *.txt – Renames all .txt files into .html file.

Output:

```
(suresh@ITLab)-[~]
$ rename 's/\.txt$/\.html/' *.txt

(suresh@ITLab)-[~]
$ ls
Desktop  Documents  Downloads  file.html  Music  newFile.html
```

1.33. Command Name: tail

Syntax: tail [options] [filename]

Usage: Displays the last few lines of a file.

Commands Executed:

- \$ tail file.txt — Shows the last 10 lines of file.txt.

Output:

```
(suresh@ITLab)-[~]
$ tail file.txt
or avoids pleasure itself,
because it is pleasure,
but because those who do not know how to pursue pleasure rationally en
Nor again is there anyone who loves or pursues or desires to obtain pa
but because occasionally circumstances occur in which toil and pain ca
To take a trivial example,
which of us ever undertakes laborious physical exercise,
except to obtain some advantage from it?
But who has any right to find fault with a man who chooses to enjoy a
or one who avoids a pain that produces no resultant pleasure?
```

1.34. Command Name: tac

Syntax: tac [options] [filename]

Usage: Displays file contents in reverse order. As ‘cat’ command shows file contents in correct order, this command is reverse of CAT : TAC.

Commands Executed:

- \$ tac file.txt — Displays the content of file.txt in reverse line order.

Output:

```
(suresh@ITLab)-[~]
$ tac file.html
or one who avoids a pain that produces no resultant pleasure?
But who has any right to find fault with a man who chooses to enjoy
except to obtain some advantage from it?
which of us ever undertakes laborious physical exercise,
To take a trivial example,
but because occasionally circumstances occur in which toil and pain
Nor again is there anyone who loves or pursues or desires to obtain
```

1.35. Command Name: comm

Syntax: comm [options] [files]

Usage: Compares two sorted files line by line.

Commands Executed:

- \$ comm file1.txt file2.txt — Compares file1.txt and file2.txt.

Output:

```
(suresh@ITLab)-[~]
$ comm file1.txt file2.txt
      this is a file
      this is second file
this is the first file
```

1.36. Command Name: cut

Syntax: cut [options] [file]

Usage: Removes sections of lines from files.

Commands Executed:

- \$ cut -d',' -f2 file.csv — Extracts the second field of a CSV file.

Output:

```
(suresh@ITLab)-[~]
$ cut -d',' -f2 file.csv
"Suresh Dahal"
"Alisha Bista"
"Ruby Angdembe"
```

1.37. Command Name: sort

Syntax: sort [OPTION]... [FILE]...

Usage: Sorts the contents of a file.

Commands Executed:

- \$ sort file.txt — Sorts the lines in file.txt alphabetically.

Output:

```
(suresh@ITLab)-[~]  
$ cat alphs.txt  
a  
b  
d  
e  
z  
f  
r  
p  
m  
o  
  
(suresh@ITLab)-[~]  
$ sort alphs.txt  
a  
b  
d  
e  
f  
m  
o  
p  
r  
z
```

1.38. Command Name: date

Syntax: date [OPTION]... [+FORMAT]

Usage: Displays the current date and time.

Commands Executed:

- \$ date — Shows the current system date and time.

Output:

```
(suresh@ITLab)-[~]  
$ date  
Sun Jan 26 10:04:42 AM EST 2025
```

1.39. Command Name: cal

Syntax: cal [options]

Usage: Displays a calendar.

Commands Executed:

- \$ cal — Displays the current month's calendar.

Output:

```
(suresh@ITLab)-[~]  
$ cal  
January 2025  
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 31
```

1.40. Command Name: time

Syntax: man [OPTION...] [SECTION] PAGE...

Usage: Measures the execution time of a command.

Commands Executed:

- \$ time ls — Measures how long it takes to execute the ls command.

Output:

```
(suresh@ITLab)-[~]  
$ time ls  
alphs.txt  Desktop  Documents  
  
real    0.00s  
user    0.00s  
sys     0.00s  
cpu     92%
```

1.41. Command Name: host

Syntax: host [OPTION] [URL]

Usage: Performs DNS lookups.

Commands Executed:

- \$ host google.com — Retrieves the IP address of google.com.

Output:

```
(suresh@ITLab)-[~]  
$ host google.com  
google.com has address 142.250.193.14  
google.com has IPv6 address 2404:6800:4002:819::200e  
google.com mail is handled by 10 smtp.google.com.
```

1.42. Command Name: wget

Syntax: wget [OPTION]... [URL]...

Usage: Downloads files from the web.

Commands Executed:

- \$ wget

https://sureshdahal.com.np/suresh_dahal_frontend_developer_codersuresh_resume.pdf —
Downloads the specified file.

Output:

```
(suresh@ITLab)-[~]  
$ wget https://sureshdahal.com.np/suresh_dahal_frontend_developer_codersuresh_resume.pdf  
--2025-01-26 10:28:02-- https://sureshdahal.com.np/suresh_dahal_frontend_developer_codersuresh_resume.pdf  
Resolving sureshdahal.com.np (sureshdahal.com.np)... 172.67.209.177, 104.21.45.45, 2606:4700:3036::6815:2d2d, ...  
Connecting to sureshdahal.com.np (sureshdahal.com.np)|172.67.209.177|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 68200 (67K) [application/pdf]  
Saving to: 'suresh_dahal_frontend_developer_codersuresh_resume.pdf'  
  
suresh_dahal_frontend_developer_codersures 100%[=====]  
2025-01-26 10:28:03 (733 KB/s) - 'suresh_dahal_frontend_developer_codersuresh_resume.pdf' saved [68200/68200]
```

1.43. Command Name: id

Syntax: id [OPTION]... [USER]...

Usage: Displays user ID and group ID information.

Commands Executed:

- \$ id — Displays ID information of the current user.

Output:

```
(suresh@ITLab)-[~]  
$ id  
uid=1000(suresh) gid=1000(suresh) groups=1000(suresh),4(adm),20(dialout),24(cdrom),25(floppy),27(sudo),29(audio),30(dip),44(video),46(plugdev),109(netdev),118(wireshark),120(bluetooth),133(scanner),138(vboxsf),139(kaboxer)
```

1.44. Command Name: ps

Syntax: ps [options]

Usage: Displays running processes.

Commands Executed:

- \$ ps — Lists processes running in the current shell.

Output:

```
(suresh@ITLab)-[~]  
$ ps  
  PID TTY          TIME CMD  
  3515 pts/0        00:00:23 zsh  
 20181 pts/0        00:00:00 ps
```

1.45. Command Name: top

Syntax: top [options]

Usage: Displays real-time system processes and resource usage.

Commands Executed:

- \$ top — Opens an interactive view of running processes.

Output:

```
top - 10:32:15 up 5:26, 1 user, load average: 0.03, 0.11, 0.18
Tasks: 192 total, 1 running, 191 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.8 us, 2.1 sy, 0.0 ni, 94.3 id, 0.8 wa, 0.0 hi, 0.1 si, 0.0 st
MiB Mem : 3929.0 total, 791.0 free, 1012.7 used, 2125.3 buff/cache
MiB Swap: 975.0 total, 973.5 free, 1.5 used. 2633.6 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
1307	suresh	20	0	5042128	423888	137836	S	16.9	10.5	8:47.71	gnome-s+
1085	suresh	20	0	344128	103148	61492	S	7.6	2.6	3:33.70	Xorg
3490	suresh	20	0	568484	61712	41028	S	1.0	1.5	0:35.21	gnome-t+
1216	suresh	20	0	153000	2172	1692	S	0.3	0.1	1:02.46	VBoxCli+
7696	suresh	20	0	2715176	54800	34488	S	0.3	1.4	0:00.83	gjs
10613	root	20	0	0	0	0	I	0.3	0.0	0:01.15	kworker+
20207	suresh	20	0	9108	3732	3180	R	0.3	0.1	0:00.06	top
1	root	20	0	23044	13704	9792	S	0.0	0.3	0:04.76	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.05	kthreadd
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_par+
5	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker+
9	root	0	-20	0	0	0	I	0.0	0.0	0:02.98	kworker+
10	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_perc+

1.46. Command Name: kill

Syntax: kill [options] [PID]...

Usage: Terminates a process by PID.

Commands Executed:

- \$ kill 11 — Terminates the process with PID 11.

Output:

```
(suresh@ITLab)-[~]
$ sudo kill 11
```

1.47. Command Name: pkill

Syntax: pkill [options] <pattern>

Usage: Terminates processes by name.

Commands Executed:

- \$ pkill firefox — Kills all processes with the name 'firefox'.

Output:

```
—(suresh@ITLab)-[~]  
-$ pkill firefox
```

1.48. Command Name: killall

Syntax: killall [OPTION]... NAME...

Usage: Kills all instances of a process.

Commands Executed:

- \$ killall chrome — Kills all instances of the chrome process.

Output:

```
—(suresh@ITLab)-[~]  
$ killall chrome  
chrome: no process found
```

1.49. Command Name: bg

Syntax: bg [options]

Usage: Resumes a background process.

Commands Executed:

- \$ bg %1 — Resumes the first background job.

Output:

```
—(suresh@ITLab)-[~]  
$ bg %1  
bg: %1: no such job
```

1.50. Command Name: fg

Syntax: fg [options]

Usage: Brings a background process to the foreground.

Commands Executed:

- \$ fg %1 — Brings the first background job to the foreground.

Output:

```
(suresh@ITLab)-[~]  
$ fg %1  
fg: %1: no such job
```

1.51. Command Name: tar

Syntax: tar [OPTION...] [FILE]...

Usage: Archives files.

Commands Executed:

- \$ tar -cvf archive.tar file.txt — Archives file.txt into archive.tar.

Output:

```
(suresh@ITLab)-[~]  
$ nano file.txt  
  
(suresh@ITLab)-[~]  
$ tar -cvf archive.tar file.txt  
file.txt  
  
(suresh@ITLab)-[~]  
$ ls  
archive.tar  Documents  file.txt  Pictures  Templates
```

1.52. Command Name: gzip

Syntax: gzip [OPTION]... [FILE]...

Usage: Compresses files using the gzip algorithm.

Commands Executed:

- \$ gzip file.txt — Compresses file.txt into file.txt.gz.

Output:

```
(suresh@ITLab)-[~]  
$ gzip file.txt  
  
(suresh@ITLab)-[~]  
$ ls  
archive.tar  Documents  file.txt.gz  Pictures  Templates  
Desktop      Downloads  Music        Public    Videos
```