

Kathmandu University
Department of Computer Science and Engineering
Dhulikhel, Kavre



A Lab Report
on
“Computer Graphics Lab-I”

[Code No.: COMP 307]

Submitted by

Kiran Dahal

Roll No.: 15

Submitted to
Ms. Rabina Shrestha
Department of Computer Science and Engineering

December 10, 2025

INTRODUCTION

1. What is Linux?

Linux is an open-source operating system kernel that serves as the foundation for various OS distributions. It is known for its stability, security, and powerful command-line interface.

2. The Linux Hierarchical File System

Linux uses a tree-like directory structure. It starts with the root directory, denoted by a forward slash (/), and all other files and directories branch off from there (e.g., /home, /bin).

3. Importance of Linux commands

The Command Line Interface (CLI) allows users to interact directly with the kernel. It provides greater control, automation capabilities, and efficiency compared to Graphical User Interfaces.

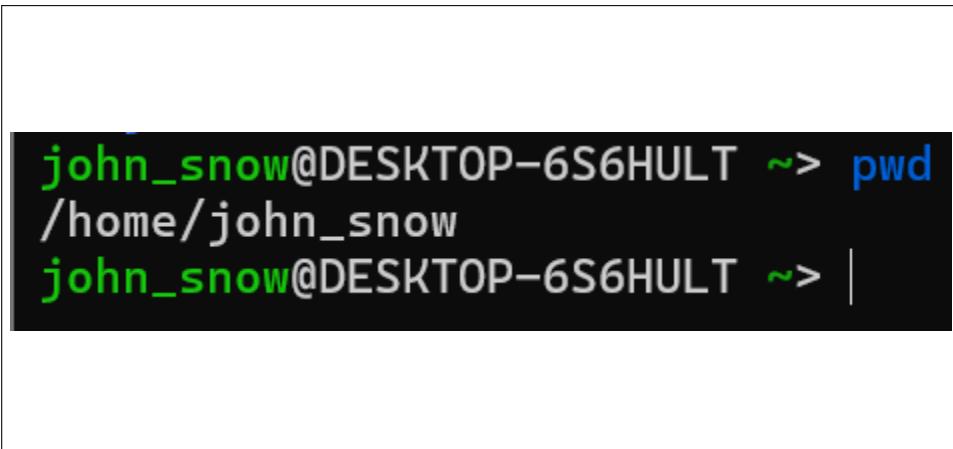
COMMAND FORMAT

1. **Command:** The keyword typed into the terminal.
2. **Explanation:** A brief description of what the command does.
3. **Output:** A screenshot demonstrating the execution and result.

COMMANDS

1. pwd

Explanation: Shows the current working directory (absolute path).



```
john_snow@DESKTOP-6S6HULT ~> pwd
/home/john_snow
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 1: Output for pwd

2. ls

Explanation: Lists visible files and folders inside the current directory.



```
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  notes    test      useless
Projects  Third_Sem  html      temp.html  test_project
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 2: Output for ls

3. ls -a

Explanation: Shows all files, including hidden files starting with a dot (.).

```
john_snow@DESKTOP-6S6HULT ~> ls -a
. .gitconfig .sqlite_history SUPR
.. .ipython .ssh Third_Sem
.bash_history .ivy2 .sudo_as_admin_successful assembly
.bash_logout .jupyter .vim html
.bashrc .lessht .viminfo notes
.bashrc_aliases .local .vimrc temp.html
.cache .m2 .vscode-server test
.cachexit .motd_shown .w3m test_project
.config .npm .wget-hsts useless
 dbus .profile DSA
.dotnet .sbt Projects
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 3: Output for ls -a

4. ls -l

Explanation: Displays detailed information about files (permissions, owner, size, date).

```
DSA
Projects
SUPR
Third_Sem
assembly
html
notes
temp.html
test
test_project
useless
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 4: Output for ls -l

5. cd

Explanation: Used to change directories (navigate folders).

```
john_snow@DESKTOP-6S6HULT ~> cd notes
john_snow@DESKTOP-6S6HULT ~/notes> ls
Third_Sem
john_snow@DESKTOP-6S6HULT ~/notes> |
```

Figure 5: Output for cd

6. mkdir

Explanation: Creates a new directory.

```
test
test_project
useless
john_snow@DESKTOP-6S6HULT ~> mkdir OS_LAB1
john_snow@DESKTOP-6S6HULT ~> ls -l
DSA
OS_LAB1
Projects
SUPR
Third_Sem
```

Figure 6: Output for mkdir

7. rmdir

Explanation: Deletes empty directories only.

```
john_snow@DESKTOP-6S6HULT ~> ls
DSA      Projects   Third_Sem   html      temp.html  test_project
OS_LAB1  SUPR      assembly   notes     test       useless
john_snow@DESKTOP-6S6HULT ~> rmdir OS_LAB1/
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly   notes     test       useless
Projects  Third_Sem   html      temp.html  test_project
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 7: Output for rmdir

8. touch

Explanation: Creates an empty file or updates file timestamps.

```
john_snow@DESKTOP-6S6HULT ~> touch file.txt
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  html  temp.html  test_project
Projects  Third_Sem  file.txt  notes  test      useless
john_snow@DESKTOP-6S6HULT ~> rm file.txt
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  notes  test      useless
Projects  Third_Sem  html      temp.html  test_project
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 8: Output for touch

9. rm

Explanation: Deletes specific files.

```
john_snow@DESKTOP-6S6HULT ~> touch file.txt
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  html  temp.html  test_project
Projects  Third_Sem  file.txt  notes  test      useless
john_snow@DESKTOP-6S6HULT ~> rm file.txt
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  notes  test      useless
Projects  Third_Sem  html      temp.html  test_project
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 9: Output for rm

10. rm -r

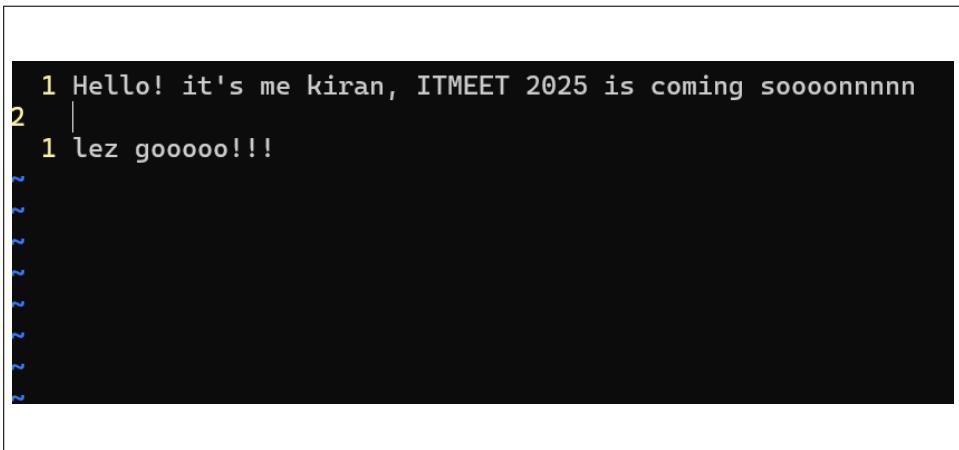
Explanation: Recursively deletes directories and all files inside them.

```
john_snow@DESKTOP-6S6HULT ~> mkdir OS_LAB1
john_snow@DESKTOP-6S6HULT ~> cd OS_LAB1/
john_snow@DESKTOP-6S6HULT ~/OS_LAB1> touch file.txt
john_snow@DESKTOP-6S6HULT ~/OS_LAB1> ls
file.txt
john_snow@DESKTOP-6S6HULT ~/OS_LAB1> cd ..
john_snow@DESKTOP-6S6HULT ~> rm -r OS_LAB1/
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  notes  test      useless
Projects  Third_Sem  html      temp.html  test_project
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 10: Output for rm -r

11. vim

Explanation: Opens the Vim text editor to create or modify files.

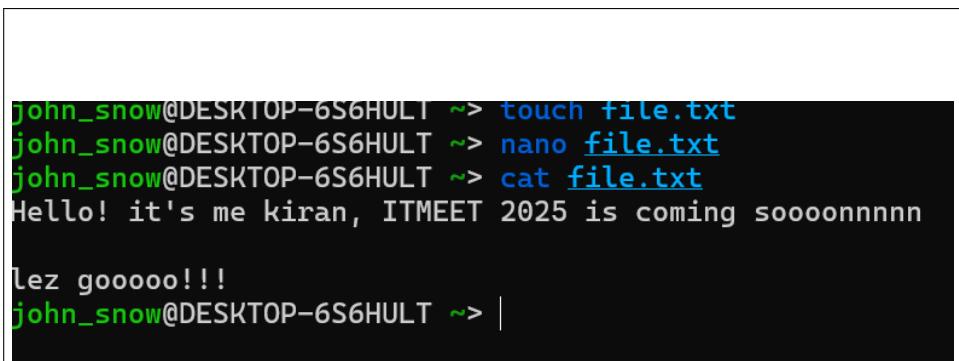


```
1 Hello! it's me kiran, ITMEET 2025 is coming soooonnnnn
2 |
3 1 lez gooooo!!!
```

Figure 11: Inside the Vim Editor Interface

12. cat

Explanation: Displays the content of a file on the terminal.



```
john_snow@DESKTOP-6S6HULT ~> touch file.txt
john_snow@DESKTOP-6S6HULT ~> nano file.txt
john_snow@DESKTOP-6S6HULT ~> cat file.txt
Hello! it's me kiran, ITMEET 2025 is coming soooonnnnn
lez gooooo!!!
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 12: Output for cat

13. cp

Explanation: Copies a file from one location/name to another.

```
john_snow@DESKTOP-6S6HULT ~> cat a.text
this is file 1
john_snow@DESKTOP-6S6HULT ~> cat b.text
this is file 2
john_snow@DESKTOP-6S6HULT ~> cp a.text b.text
john_snow@DESKTOP-6S6HULT ~> cat a.text
this is file 1
john_snow@DESKTOP-6S6HULT ~> cat b.text
this is file 1
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 13: Output for cp

14. mv

Explanation: Moves or renames files and directories.

```
john_snow@DESKTOP-6S6HULT ~> mv a.text b.text
john_snow@DESKTOP-6S6HULT ~> ls
DSA      Third_Sem   file.txt  temp.html    useless
Projects  assembly   html      test
SUPR      b.text     notes     test_project
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 14: Output for mv

15. echo

Explanation: Prints text or variable values to the terminal screen.

```
john_snow@DESKTOP-6S6HULT ~> echo "kiran Dahal"
kiran Dahal
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 15: Output for echo

16. uname -a

Explanation: Shows detailed system information (kernel, architecture, OS).

```
john_snow@DESKTOP-6S6HULT ~> uname -a
Linux DESKTOP-6S6HULT 6.6.87.2-microsoft-standard-WSL2 #1 SMP
PREEMPT_DYNAMIC Thu Jun  5 18:30:46 UTC 2025 x86_64 x86_64 x86
_64 GNU/Linux
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 16: Output for uname -a

17. df -h

Explanation: Displays disk space usage in a human-readable format.

FSTYPE	SIZE	USED	AVAIL	PCT	MOUNTPOINT
none	3.9G	0	3.9G	0%	/usr/lib/modules/6.6.87.2-micro
soft-standard-WSL2					
none	3.9G	4.0K	3.9G	1%	/mnt/wsl
drivers	432G	213G	219G	50%	/usr/lib/wsl/drivers
/dev/sdd	1007G	13G	944G	2%	/
none	3.9G	80K	3.9G	1%	/mnt/wslg
none	3.9G	0	3.9G	0%	/usr/lib/wsl/lib
rootfs	3.9G	2.7M	3.8G	1%	/init
none	3.9G	0	3.9G	0%	/run
none	3.9G	0	3.9G	0%	/run/lock
none	3.9G	0	3.9G	0%	/run/shm
none	3.9G	0	3.9G	0%	/run/user
none	3.9G	76K	3.9G	1%	/mnt/wslg/versions.txt
none	3.9G	76K	3.9G	1%	/mnt/wslg/doc
C:\	432G	213G	219G	50%	/mnt/c
E:\	250G	88G	163G	36%	/mnt/e

Figure 17: Output for df -h

18. ps -u \$USER

Explanation: Shows currently running processes for the specific user.

```
john_snow@DESKTOP-6S6HULT ~> ps -u $USER
 PID TTY          TIME CMD
 11 pts/0        00:00:00 fish
 30 ?            00:00:00 ssh-agent
 83 pts/0        00:00:03 fish
 1115 pts/0       00:00:00 ps
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 18: Output for ps

19. top

Explanation: Displays a real-time view of running processes and system resources.

```
john_snow@DESKTOP-6S6HULT ~> top
top - 23:51:20 up 3:02, 0 users, load average: 0.09, 0.05, 0.01
Tasks: 8 total, 1 running, 7 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 0.0 ni,100.0 id, 0.0 wa, 0.0 hi, 0.0
MiB Mem : 7796.2 total, 7372.0 free, 344.2 used, 79.9 buf
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 7329.3 ava

 PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+
  1 root      20   0   3124  2304  2176 S  0.0  0.0  0:00.03
  6 root      20   0   3120  1792  1792 S  0.0  0.0  0:00.00
  9 root      20   0   3132   768   768 S  0.0  0.0  0:00.00
 10 root      20   0   3148  1156  1024 S  0.0  0.0  0:00.23
 11 john_sn+  20   0 166632  7808  5632 S  0.0  0.1  0:00.14
 30 john_sn+  20   0   7980  4212  3072 S  0.0  0.1  0:00.00
 83 john_sn+  20   0 231896  8832  6016 S  0.0  0.1  0:03.76
1130 john_sn+ 20   0   7808  3584  3072 R  0.0  0.0  0:00.00
```

Figure 19: Output for top

20. chmod

Explanation: Changes file access permissions (read, write, execute).

```
john_snow@DESKTOP-6S6HULT ~> ls
DSA      SUPR      assembly  file.txt  notes      test      useless
Projects  Third_Sem b.text    html      temp.html  test_project
john_snow@DESKTOP-6S6HULT ~> chmod 744 file.txt
john_snow@DESKTOP-6S6HULT ~> |
```

Figure 20: Output for chmod