

# MAWLANA BHASHANI SCIENCE AND TECHNOLOGY UNIVERSITY

SANTOSH, TANGAIL-1902



DEPARTMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY

## Lab Report

**Lab Report No : 03**

**Lab Report on : Linux Command Practice**

**Course Title : Operating System Lab**

**Course Code : ICT-2202**

Submitted By	Submitted To
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## Introduction:

The Linux Command Line Interface (CLI) is a robust tool for interacting with the operating system through text-based commands. Accessible via a terminal emulator, the Linux CLI empowers users to perform a wide range of tasks, including system administration, file management, networking, troubleshooting, and automation. Mastering Linux commands enhances efficiency, simplifies system management, and builds valuable technical expertise for users and administrators alike.

## Objectives:

- **Learn Basic Commands:** Gain a solid understanding of fundamental commands for navigating and managing files and directories.
- **Master Administrative Commands:** Explore commands for system configuration, user management, and process control.
- **Troubleshoot with System Commands:** Utilize diagnostic and monitoring tools to identify and resolve system issues effectively.
- **Automate Tasks:** Learn to create shell scripts for automating repetitive tasks and improving workflow.
- **Enhance Networking Knowledge:** Familiarize yourself with network-related commands for communication, diagnostics, and troubleshooting.
- **Develop Command-Line Proficiency:** Build confidence and competence in using the Linux CLI for both routine and advanced operations.

## **All Linux command and their execution on command prompts:**

1. **pwd:** Displays the current directory's full path.

```
(mugdha67@KalipodoSaha)-[~]  
$ pwd  
/home/mugdha67
```

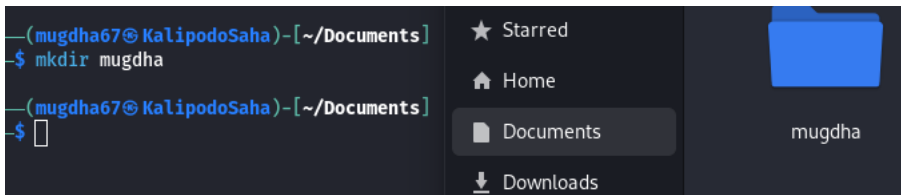
2. **ls:** Lists files and directories in the current directory.

```
(mugdha67@KalipodoSaha)-[~]  
$ ls  
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
```

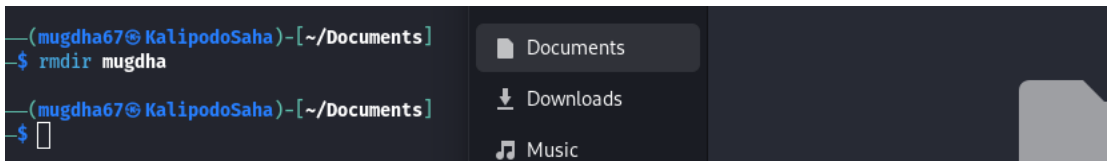
3. **cd:** Change the current working directory.

```
(mugdha67@KalipodoSaha)-[~]  
$ cd Documents  
  
(mugdha67@KalipodoSaha)-[~/Documents]  
$
```

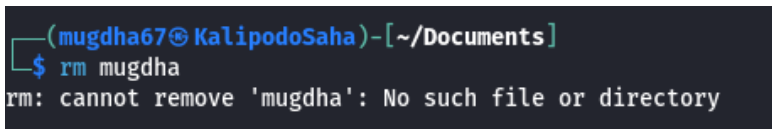
4. **mkdir**: Creates a new directory.



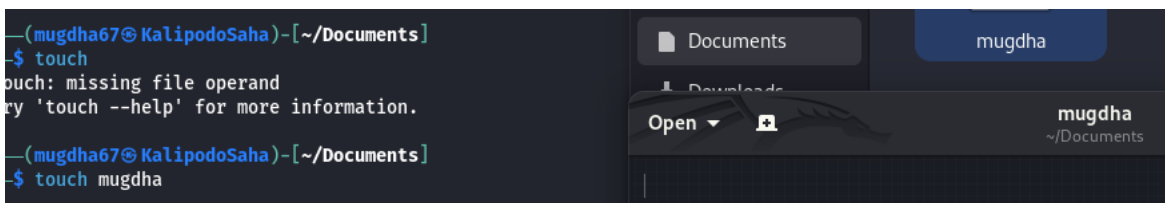
5. **rmdir**: Deletes an empty directory. Deletes files or directories.



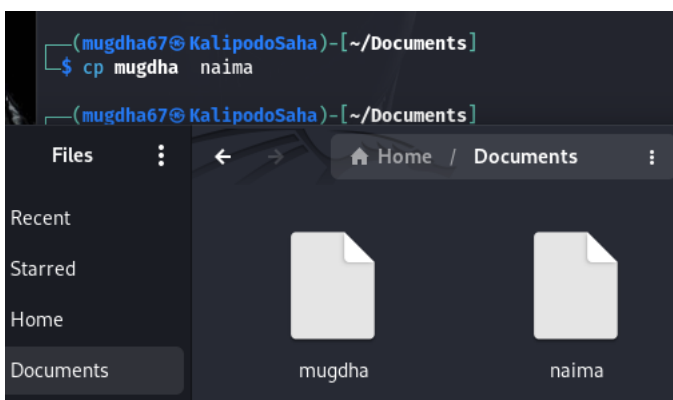
6. **rm**: Deletes files or directories.



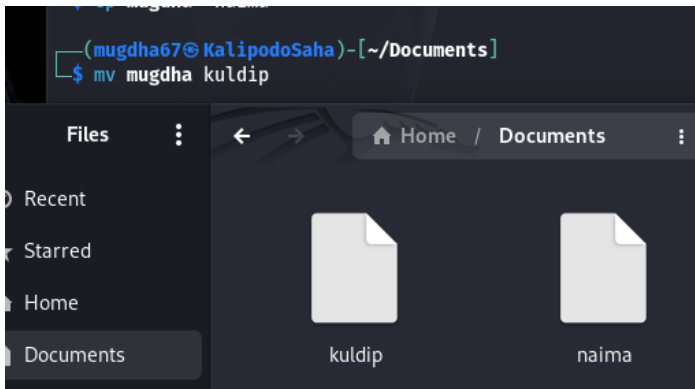
7. **touch**: Creates an empty file or updates the timestamp of an existing file.



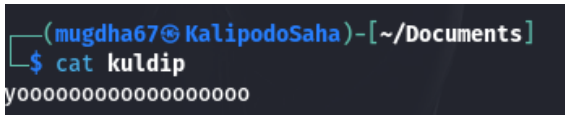
8. **cp**: Copies files or directories.



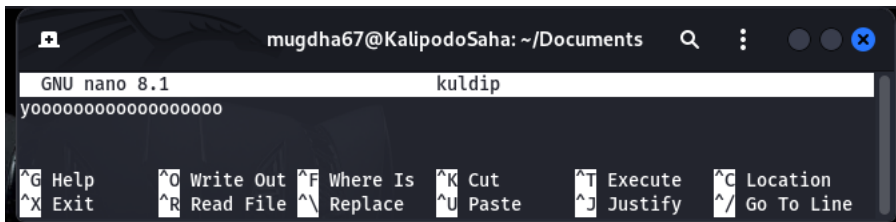
**9. mv:** Moves or rename files/directories.



**10. cat:** Displays the content of a file.



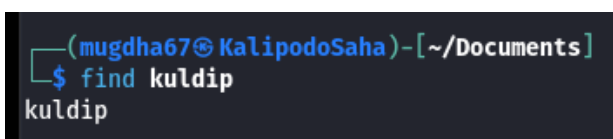
**11. nano:** Opens a file in the Nano text editor.



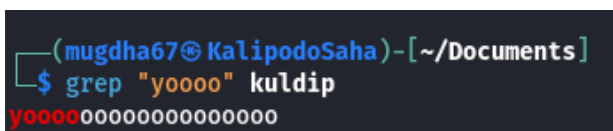
**12. echo:** Prints text or variables to the terminal.



**13. find:** Searches for files or directories.



**14. grep:** Searches for text patterns in files.



**15. chmod:** Changes file or directory permissions.

```
(mugdha67@KalipodoSaha) - [~/Documents]
$ chmod 755 kuldip
```

**16. df:** Displays disk space usage.

```
(mugdha67@KalipodoSaha) - [~/Documents]
$ df
Filesystem      1K-blocks      Used Available Use% Mounted on
udev            949192         0    949192   0% /dev
tmpfs           198400       1392    197008   1% /run
/dev/sda1       39987708 17155076 20769172  46% /
tmpfs           992000         0    992000   0% /dev/shm
tmpfs           5120          0     5120   0% /run/lock
tmpfs           1024          0     1024   0% /run/credentials/systemd-journald.service
tmpfs           1024          0     1024   0% /run/credentials/systemd-udev-load-credentials.service
tmpfs           1024          0     1024   0% /run/credentials/systemd-tmpfiles-setup-dev-early.service
tmpfs           1024          0     1024   0% /run/credentials/systemd-sysctl.service
tmpfs           1024          0     1024   0% /run/credentials/systemd-tmpfiles-setup-dev.service
tmpfs           992000         0    992000   0% /tmp
tmpfs           1024          0     1024   0% /run/credentials/systemd-tmpfiles-setup.service
tmpfs           198400        192    198208   1% /run/user/1000
```

**17. du:** Displays the size of directories or files.

```
(mugdha67@KalipodoSaha) - [~/Documents]
$ du
8 .
```

**18. ps:** Lists running processes.

```
(mugdha67@KalipodoSaha) - [~/Documents]
$ ps
  PID TTY          TIME CMD
 4102 pts/0      00:00:00 zsh
 4428 pts/0      00:00:00 ps
```

**19. top:** Monitors real-time system resource usage.

```
(mugdha67@KalipodoSaha) - [~/Documents]
$ top

top - 23:07:51 up 1:30, 2 users, load average: 0.01, 0.05, 0.02
Tasks: 281 total, 1 running, 280 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.5 us, 0.2 sy, 0.0 ni, 97.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 1937.5 total, 142.6 free, 1391.7 used, 586.3 buff/cache
MiB Swap: 975.0 total, 962.4 free, 12.6 used, 545.8 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+  COMMAND
 1933 mugdha67  20   0 400472 418128 122724 S   4.3  21.1  1:53.28 gnome-shell
 1731 mugdha67  20   0 394128 84420 36800 S   1.3   4.3   0:30.08 Xorg
 2144 mugdha67  20   0 215756 39540 28404 S   0.3   2.0   0:10.93 vmtotlsd
 4090 mugdha67  20   0 706216 58120 45916 S   0.3   2.9   0:01.45 gnome-terminal-
 4437 mugdha67  20   0  9640   5120  2944 R   0.3   0.3   0:00.02 top
    1 root      20   0 22576 14316 10200 S   0.0   0.7   0:01.35 systemd
    2 root      20   0      0      0      0 S   0.0   0.0   0:00.02 kthreadd
    3 root      20   0      0      0      0 S   0.0   0.0   0:00.00 pool_workqueue_release
    4 root      0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_g
    5 root      0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-rcu_p
    6 root      0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-slub_
    7 root      0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-netns
    9 root      0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
   11 root      20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/u256:0-ext4-rsv-conversion
   12 root      0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/R-mm_pe
   13 root      20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
   14 root      20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
   15 root      20   0      0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
   16 root      20   0      0      0      0 S   0.0   0.0   0:00.09 ksoftirqd/0
   17 root      20   0      0      0      0 I   0.0   0.0   0:00.28 rcu_preempt
   18 root      rt    0      0      0      0 S   0.0   0.0   0:00.02 migration/0
```

**20. kill:** Terminates processes by ID.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ kill kuldip
kill: illegal pid: kuldip
```

**21. tar:** Archives files or extracts archives.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ tar -czvf archive.tar.gz kuldip naima
kuldip
naima
```

**22. zip:** Compresses files into a zip archive.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ zip archive.zip kuldip
adding: kuldip (deflated 70%)
```

**23. unzip:** Extracts files from a zip archive.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ unzip archive.zip
Archive:  archive.zip
replace kuldip? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
inflating: kuldip
```

**24. wget:** Downloads files from the internet.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ wget https://mbstu.com/kuldip
--2025-01-06 23:19:46-- https://mbstu.com/kuldip
Resolving mbstu.com (mbstu.com)... 3.18.7.81, 3.19.116.195
Connecting to mbstu.com (mbstu.com)|3.18.7.81|:443... failed: Connection refused.
Connecting to mbstu.com (mbstu.com)|3.19.116.195|:443... failed: Connection refused.
```

**25. curl:** Transfers data from or to a server.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ curl https://mugdha.com
<!doctype html>
<html data-adblockkey="MFwwDQYJKoZIhvcNAQEBBQADSwAwSAJBAN
4kNNBMw7SpdX4hxJMrZPXGA8Ng==" lang="en" style="background
<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, in
  <link rel="icon" href="data:image/png;base64,iVBORw0K
  <link rel="preconnect" href="https://www.google.com"
</head>
<body>
<div id="target" style="opacity: 0"></div>
<script>window.park = "eyJ1dWlkIjoInjUwYjkyMTgtMzE3Mi00OT
nBhZ2VfaGVhZGVycyI6e30sImhvc3QiOiJtdWdkaGEuY29tIiwiaXAiOi
<script src="/bZzuMGIGs.js"></script>
</body>
</html>
```

## 26. ifconfig: Displays or configures network interfaces.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.159.128 netmask 255.255.255.0 broadcast 192.168.159.255
    inet6 fe80::20c:29ff:fe43:dfd6 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:43:df:d6 txqueuelen 1000 (Ethernet)
    RX packets 2032 bytes 1646659 (1.5 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 874 bytes 69096 (67.4 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 32 bytes 1920 (1.8 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 32 bytes 1920 (1.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

## 27. ping: Tests network connectivity to a host.

```
(mugdha67@KalipodoSaha)~[~/Documents]
$ ping codeforces.com
PING codeforces.com (172.67.68.254) 56(84) bytes of data.
64 bytes from 172.67.68.254: icmp_seq=1 ttl=128 time=5.77 ms
64 bytes from 172.67.68.254: icmp_seq=2 ttl=128 time=8.54 ms
64 bytes from 172.67.68.254: icmp_seq=3 ttl=128 time=8.78 ms
64 bytes from 172.67.68.254: icmp_seq=4 ttl=128 time=8.32 ms
64 bytes from 172.67.68.254: icmp_seq=5 ttl=128 time=8.61 ms
64 bytes from 172.67.68.254: icmp_seq=6 ttl=128 time=8.85 ms
64 bytes from 172.67.68.254: icmp_seq=7 ttl=128 time=9.13 ms
64 bytes from 172.67.68.254: icmp_seq=8 ttl=128 time=8.68 ms
64 bytes from 172.67.68.254: icmp_seq=9 ttl=128 time=10.5 ms
64 bytes from 172.67.68.254: icmp_seq=10 ttl=128 time=8.65 ms
64 bytes from 172.67.68.254: icmp_seq=11 ttl=128 time=8.88 ms
64 bytes from 172.67.68.254: icmp_seq=12 ttl=128 time=8.88 ms
64 bytes from 172.67.68.254: icmp_seq=13 ttl=128 time=5.87 ms
64 bytes from 172.67.68.254: icmp_seq=14 ttl=128 time=8.99 ms
64 bytes from 172.67.68.254: icmp_seq=15 ttl=128 time=5.99 ms
64 bytes from 172.67.68.254: icmp_seq=16 ttl=128 time=8.31 ms
64 bytes from 172.67.68.254: icmp_seq=17 ttl=128 time=8.93 ms
64 bytes from 172.67.68.254: icmp_seq=18 ttl=128 time=8.78 ms
64 bytes from 172.67.68.254: icmp_seq=19 ttl=128 time=8.32 ms
64 bytes from 172.67.68.254: icmp_seq=20 ttl=128 time=7.62 ms
64 bytes from 172.67.68.254: icmp_seq=21 ttl=128 time=8.87 ms
```

## 28. netstat: Displays network connections and statistics.

```
(mugdha67@KalipodoSaha)~[~]
$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 192.168.159.254:bootpc  192.168.159.254:bootps  ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags   Type       State           I-Node    Path
unix   3      [ ]     STREAM    CONNECTED      15504
unix   3      [ ]     STREAM    CONNECTED      15684
unix   3      [ ]     STREAM    CONNECTED      16426      @/tmp/.X11-unix/X1
unix   3      [ ]     STREAM    CONNECTED      16162
unix   3      [ ]     STREAM    CONNECTED      13187      /run/dbus/system_bus_socket
unix   3      [ ]     STREAM    CONNECTED      20966      /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED      16575      /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED      15657
unix   3      [ ]     STREAM    CONNECTED      15553
unix   3      [ ]     STREAM    CONNECTED      30192
unix   3      [ ]     STREAM    CONNECTED      14365
unix   3      [ ]     STREAM    CONNECTED      15676
unix   3      [ ]     STREAM    CONNECTED      16485      /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED      15068      /run/user/1000/bus
unix   3      [ ]     STREAM    CONNECTED      16171
unix   3      [ ]     STREAM    CONNECTED      30196      /home/mugdha67/.cache/ibus/dbus-RJccW5gs
unix   3      [ ]     STREAM    CONNECTED      15690      /home/mugdha67/.cache/ibus/dbus-RJccW5gs
unix   3      [ ]     STREAM    CONNECTED      15642
unix   3      [ ]     STREAM    CONNECTED      15556
unix   3      [ ]     STREAM    CONNECTED      26184      /run/user/1000/pulse/native
unix   3      [ ]     STREAM    CONNECTED      14342
unix   3      [ ]     STREAM    CONNECTED      16576      @/tmp/.X11-unix/X1
unix   3      [ ]     STREAM    CONNECTED      16484      /run/user/1000/at-spi-bus_1
unix   3      [ ]     STREAM    CONNECTED      15086      /run/systemd/journal/stdout
unix   3      [ ]     STREAM    CONNECTED      14366
unix   3      [ ]     STREAM    CONNECTED      15694      /home/mugdha67/.cache/ibus/dbus-RJccW5gs
```

**29. ssh:** Connects to a remote machine securely.

```
(mugdha67@KalipodoSaha)-[~]  
$ ssh mugdha67  
ssh: connect to host mugdha67 port 22: Connection timed out
```

**30. man:** Displays the manual for a command.

```
(mugdha67@KalipodoSaha)-[~]  
$ man ls
```

```
LS(1) User Commands  
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  
    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  
    --block-size=SIZE  
        with -l, scale sizes by SIZE when printing them; e.g., '--block-size=M'; see SIZE format below
```

**31. alias:** Creates shortcuts for commands.

```
(mugdha67@KalipodoSaha)-[~]  
$ alias  
diff='diff --color=auto'  
egrep='egrep --color=auto'  
fgrep='fgrep --color=auto'  
grep='grep --color=auto'  
history='history 0'  
ip='ip --color=auto'  
l='ls -CF'  
la='ls -A'  
ll='ls -l'  
ls='ls --color=auto'  
which-command=whence
```



**32. history:** Displays previously executed commands.

```
(mugdha67@KalipodoSaha)-[~]  
$ history  
 1 pwd  
 2 ls  
 3 cd  
 4 cd Documents  
 5 mkdir mugdha  
 6 rmdir mugdha  
 7 rm  
 8 rm mugdha  
 9 touch  
10 touch mugdha  
11 cp mugdha.txt naima.txt  
12 cp mugdha naima  
13 mv mugdha kuldip  
14 cat kuldip  
15 nano kuldip  
16 echo ami ekta valo chele  
17 find naima  
18 find yooooooooooooo  
19 find kuldip  
20 cd Documents  
21 find kuldip  
22 grep "yoooo" kuldip  
23 chmod kuldip  
24 chmod 755 script.sh  
25 chmod kuldip  
26 chmod 755 kuldip  
27 df  
28 du  
29 ps  
30 top  
31 kill  
32 kill 1234  
33 cd Documents  
34 kill kuldip  
35 ps aux | grep kuldip  
36 tar  
37 tar kuldip  
38 tar kuldip naima
```

### **Discussion:**

The Linux Command-Line Interface is an invaluable resource for efficiently performing system-related tasks. By mastering a wide range of commands, users can streamline workflows, enhance troubleshooting skills, and execute essential administrative operations with precision. Developing command-line expertise empowers users to work faster, solve problems effectively, and fully utilize the powerful capabilities of the Linux operating system.