

# **Operating Systems**

**LAB#01**



**23K-2001**

**BCS-4J**

**pwd** : display present working directory

**ls** : display files/directories

**ls -l** : display files with details

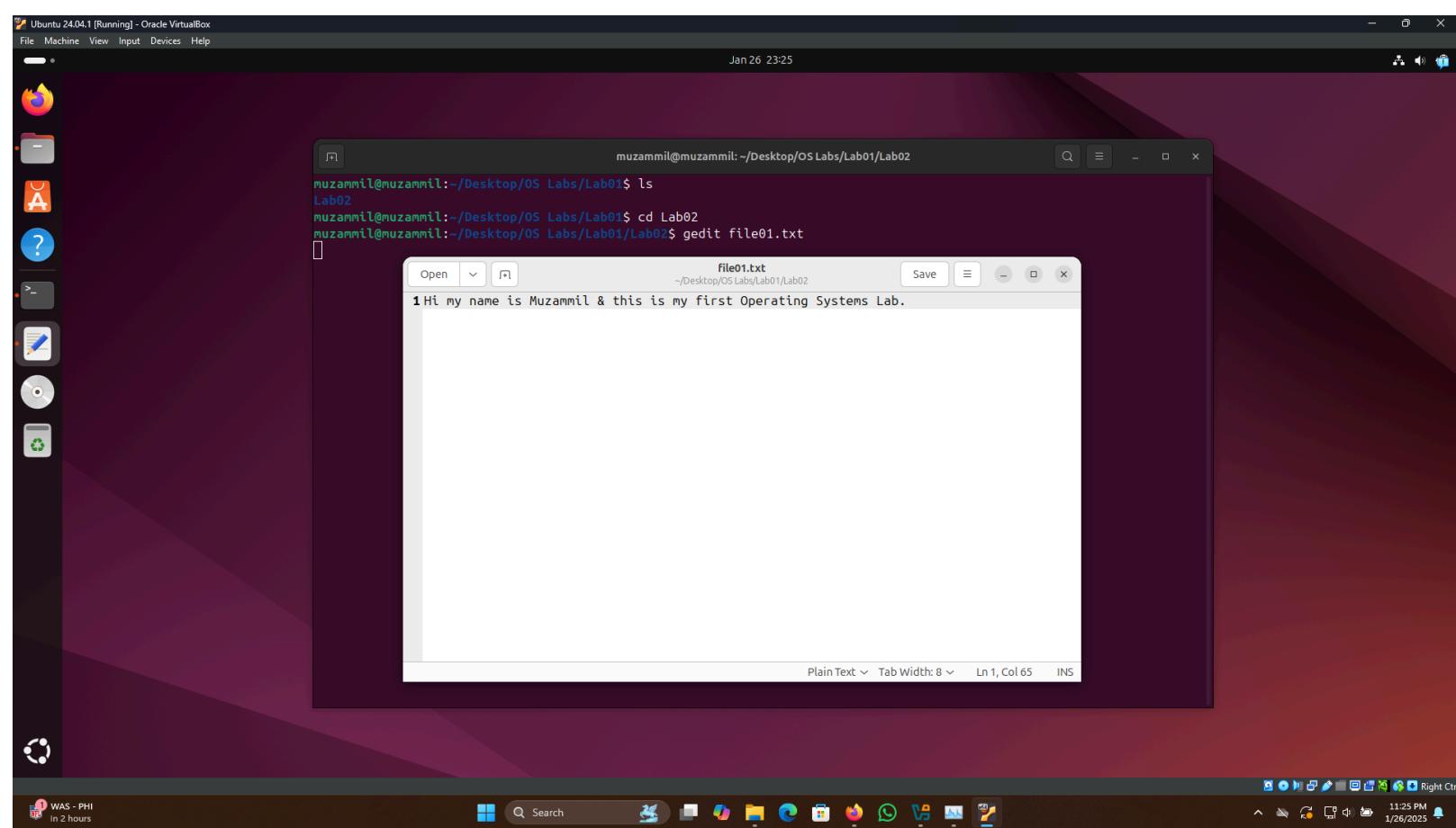
**cd /** : change directory to root

**cd ~** : change directory to home

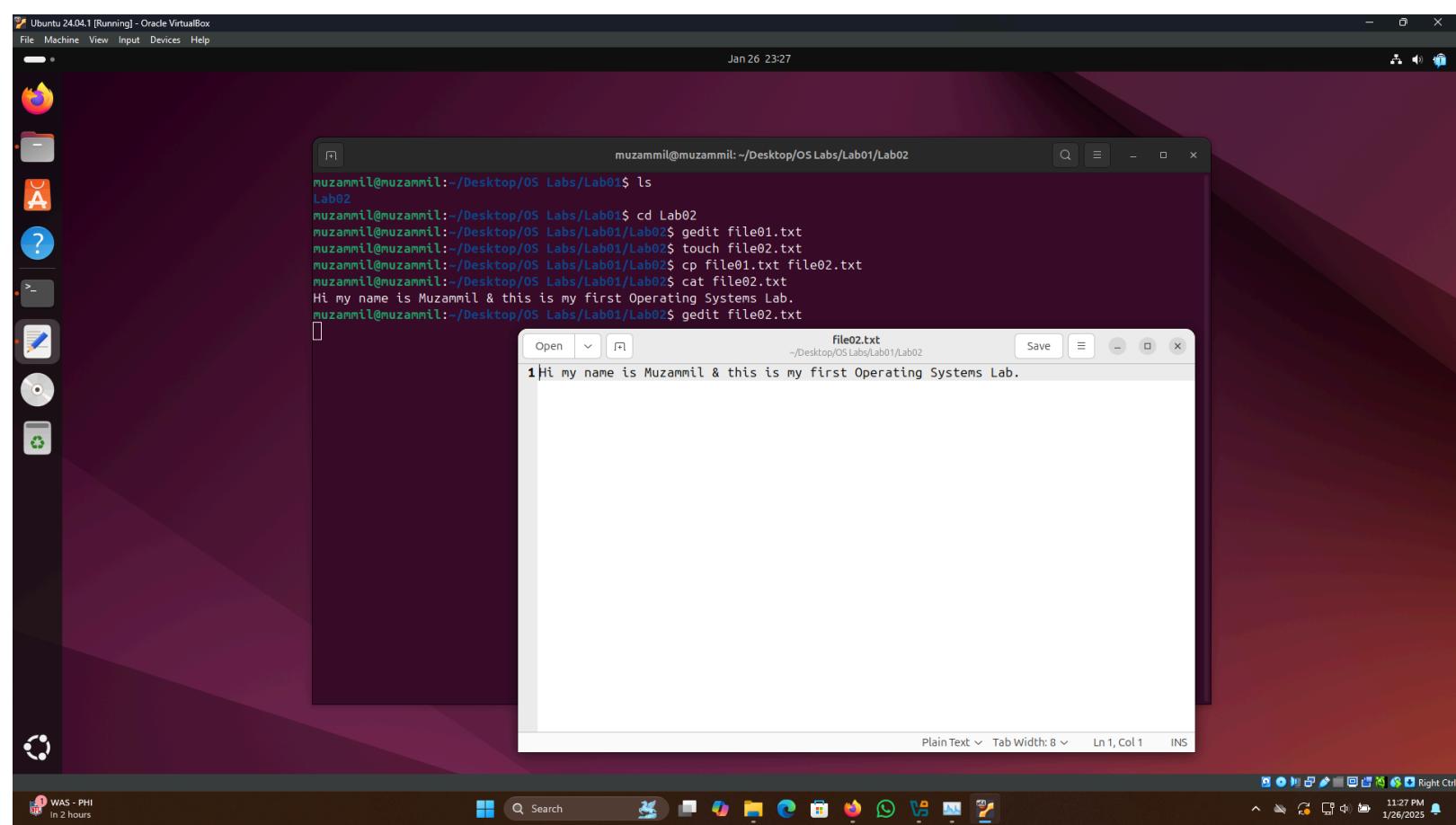
**mkdir -p parent/child/sub-folder** : create directory keeping the first as parent

```
muzammil@muzammil:~$ pwd
/home/muzammil
muzammil@muzammil:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
muzammil@muzammil:~$ ls -l
total 36
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 23:10 Desktop
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 18:37 Documents
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 18:37 Downloads
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 18:37 Music
drwxr-xr-x 3 muzammil muzammil 4096 Jan 26 21:23 Pictures
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 18:37 Public
drwx----- 4 muzammil muzammil 4096 Jan 26 21:00 snap
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 18:37 Templates
drwxr-xr-x 2 muzammil muzammil 4096 Jan 26 18:37 Videos
muzammil@muzammil:~$ cd /
muzammil@muzammil:/$
/
muzammil@muzammil:~$ ls
bin      home      mnt  sbin usr-is-merged  usr
bin usr-is-merged lib      opt  snap          var
boot    lib64      proc  srv
cdrom   lib usr-is-merged  root swap.img
dev     lost+found  run   sys
etc     media      sbin  tmp
muzammil@muzammil:~$ cd ~
muzammil@muzammil:~$ cd Desktop
muzammil@muzammil:~/Desktop$ mkdir -p "OS Labs"/Lab01/Lab02
muzammil@muzammil:~/Desktop$ cd "OS Labs"/Lab01
muzammil@muzammil:~/OS Labs/Lab01$ ls
Lab02
muzammil@muzammil:~/OS Labs/Lab01$
```

**gedit filename.txt : open file in text editor (create new if not present)**  
**ctrl+z : terminate command**

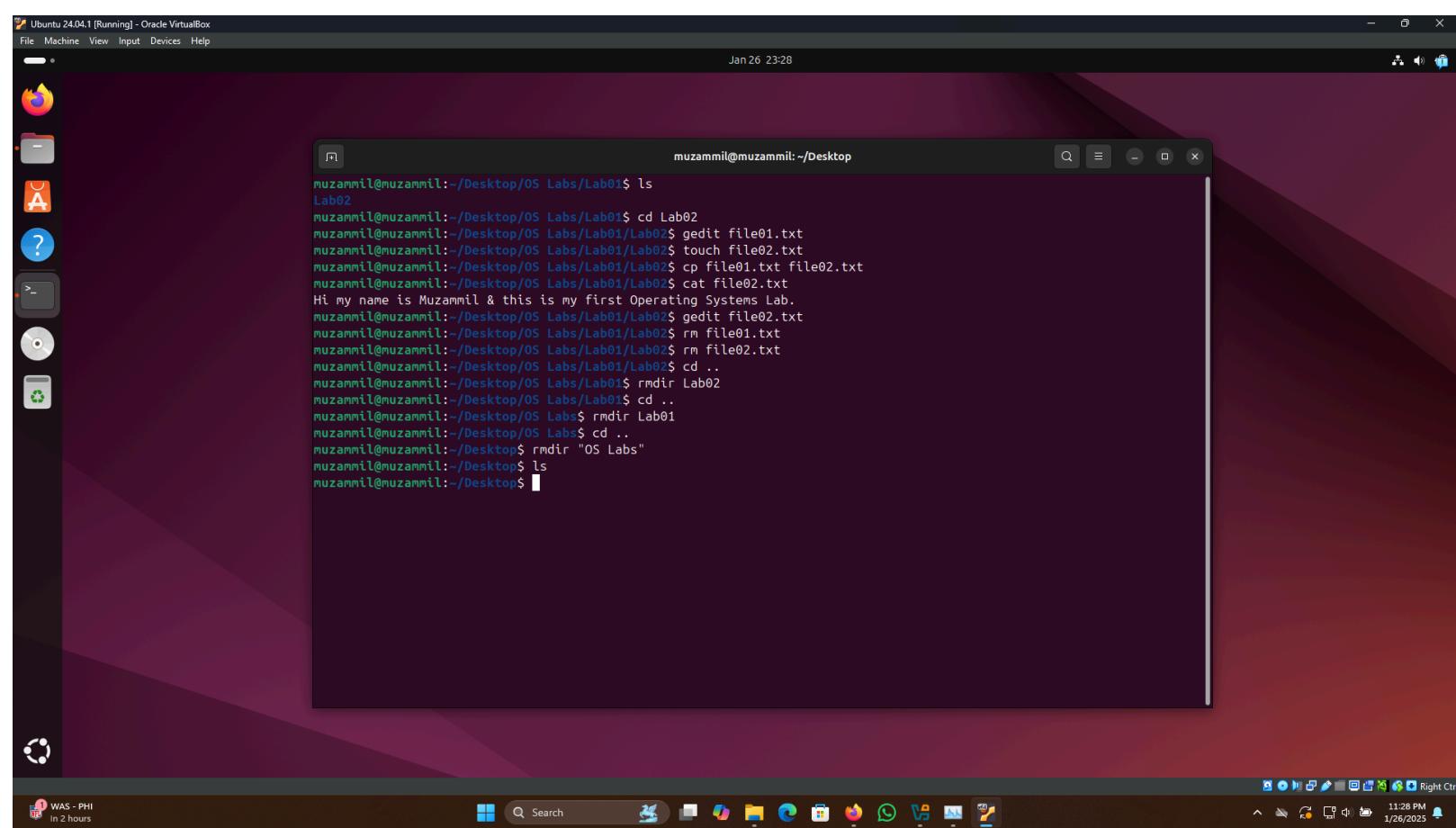


```
touch filename.txt : create new file  
cp file01.txt file02.txt : copy contents of file01.txt to file02.txt  
cat file02.txt : display contents of file on terminal
```



**rm filename.txt : remove single file**

**rmdir folder : remove single directory (must be empty)**



The screenshot shows a desktop environment for Ubuntu 24.04.1 running in Oracle VirtualBox. A terminal window is open, displaying a command-line session. The session starts with the user navigating to a directory named 'Lab02' and listing its contents. The user then creates two files, 'file01.txt' and 'file02.txt', copies 'file01.txt' to 'file02.txt', and concatenates 'file02.txt' to it. A message is printed to the screen. Finally, the user removes 'file01.txt' and 'file02.txt', then removes the 'Lab02' directory. The terminal window has a dark theme and is titled 'muzammil@muzammil: ~/Desktop'. The desktop background is also dark.

```
muzammil@muzammil:~/Desktop/OS Labs/Lab01$ ls
Lab02
muzammil@muzammil:~/Desktop/OS Labs/Lab01$ cd Lab02
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ gedit file01.txt
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ touch file02.txt
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ cp file01.txt file02.txt
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ cat file02.txt
Hi my name is Muzammil & this is my first Operating Systems Lab.
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ gedit file02.txt
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ rm file01.txt
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ rm file02.txt
muzammil@muzammil:~/Desktop/OS Labs/Lab01/Lab02$ cd ..
muzammil@muzammil:~/Desktop/OS Labs/Lab01$ rmdir Lab02
muzammil@muzammil:~/Desktop/OS Labs/Lab01$ cd ..
muzammil@muzammil:~/Desktop/OS Labs$ rmdir Lab01
muzammil@muzammil:~/Desktop/OS Labs$ cd ..
muzammil@muzammil:~/Desktop$ rmdir "OS Labs"
muzammil@muzammil:~/Desktop$ ls
muzammil@muzammil:~/Desktop$
```

**whoami : display username**

**uname : display operating system name**

**top : display active process and resources being used**

The screenshot shows a desktop environment with a terminal window open. The terminal window title is "muzammil@muzammil: ~/Desktop". The window contains the following command history:

```
muzammil@muzammil:~/Desktop$ whoami
muzammil
muzammil@muzammil:~/Desktop$ uname
Linux
muzammil@muzammil:~/Desktop$ top
```

Below the command history, the "top" command is running, displaying system resource usage. The output includes:

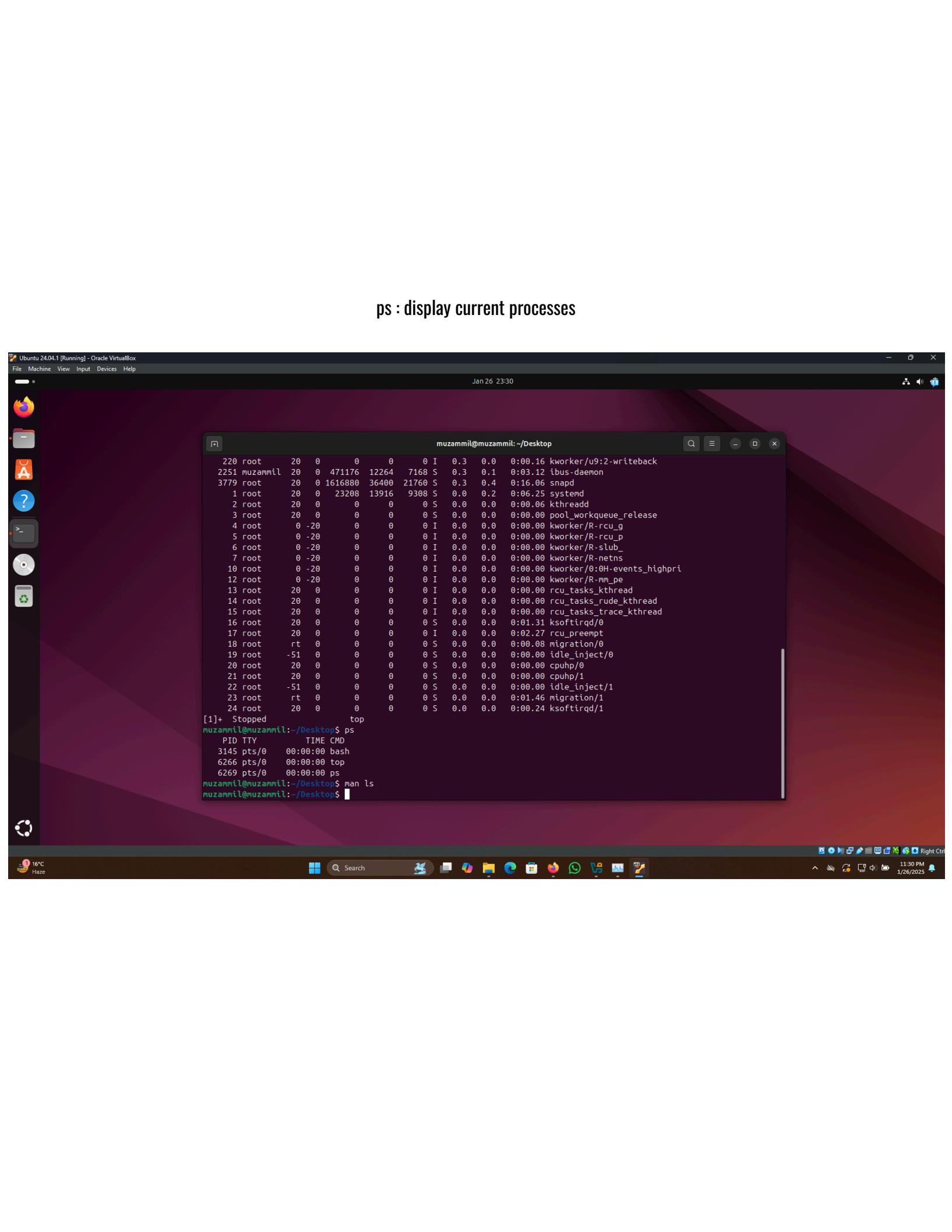
```
top - 23:29:28 up 24 min, 1 user, load average: 0.05, 0.25, 0.37
Tasks: 231 total, 1 running, 230 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.1 us, 0.2 sy, 0.0 ni, 99.7 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 8921.4 total, 6202.6 free, 1596.9 used, 1413.9 buff/cache
MiB Swap: 4096.0 total, 4096.0 free, 0.0 used. 7324.5 avail Mem
```

A detailed table of active processes follows:

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2156	muzammil	20	0	5100692	463932	149412	S	1.7	5.1	2:40.53	gnome-shell
1	root	20	0	23208	13916	9308	S	0.3	0.2	0:06.25	systemd
53	root	20	0	0	0	0	I	0.3	0.0	0:01.56	kworker/1:1-events
1186	root	20	0	364316	2560	2432	S	0.3	0.0	0:01.74	VBoxDRMClient
3138	muzammil	20	0	635500	57800	45516	S	0.3	0.6	0:08.83	gnome-terminal
4090	root	20	0	0	0	0	I	0.3	0.0	0:00.97	kworker/u1:4-events_freezable_power_
2	root	20	0	0	0	0	S	0.0	0.0	0:00.06	kthread
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_

The desktop environment includes a dock with various icons and a system tray at the bottom.

## ps : display current processes



A screenshot of an Ubuntu 24.04.1 desktop environment running in Oracle VirtualBox. The desktop has a dark purple theme. A terminal window titled "muzammil@muzammil: ~/Desktop" is open, showing the output of the "ps" command. The terminal shows numerous processes running, primarily kernel threads and system daemons. The output includes columns for PID, TTY, TIME, and CMD. The terminal window is positioned over a dark background, and the desktop icons are visible on the left.

```
muzammil@muzammil:~/Desktop
Jan 26 23:30
220 root    20  0      0      0      0 I   0.3  0.0  0:00.16 kworker/u9:2-writeback
2251 muzammil 20  0 471176 12264  7168 S  0.3  0.1  0:03.12 ibus-daemon
3779 root    20  0 1616880 36400 21760 S  0.3  0.4  0:16.06 snapd
  1 root    20  0 23208 13916  9308 S  0.0  0.2  0:06.25 systemd
  2 root    20  0      0      0      0 S   0.0  0.0  0:00.00 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-slab_
  7 root    0 -20     0      0      0 I   0.0  0.0  0:00.00 kworker/R-netns
 10 root   0 -20     0      0      0 I   0.0  0.0  0:00.00 kworker/0:0H-events_highpri
 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  0:01.31 ksoftirqd/0
 17 root   20  0      0      0      0 I   0.0  0.0  0:02.27 rcu_preempt
 18 root   rt  0      0      0      0 S   0.0  0.0  0:00.00 migration/0
 19 root   -51  0      0      0      0 S   0.0  0.0  0:00.00 idle_inject/0
 20 root   20  0      0      0      0 S   0.0  0.0  0:00.00 cpuhp/0
 21 root   20  0      0      0      0 S   0.0  0.0  0:00.00 cpuhp/1
 22 root   -51  0      0      0      0 S   0.0  0.0  0:00.00 idle_inject/1
 23 root   rt  0      0      0      0 S   0.0  0.0  0:01.46 migration/1
 24 root   20  0      0      0      0 S   0.0  0.0  0:00.24 ksoftirqd/1
[1]+  Stopped                  top
muzammil@muzammil:~/Desktop$ ps
  PID TTY      TIME CMD
 3145 pts/0    00:00:00 bash
 6266 pts/0    00:00:00 top
 6269 pts/0    00:00:00 ps
muzammil@muzammil:~/Desktop$ man ls
muzammil@muzammil:~/Desktop$
```

## man ls : list the manual

```
muzammil@muzammil:~/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.

    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

-B, --ignore-backups
        do not list implied entries ending with ~

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