

Day - 2 of CEH

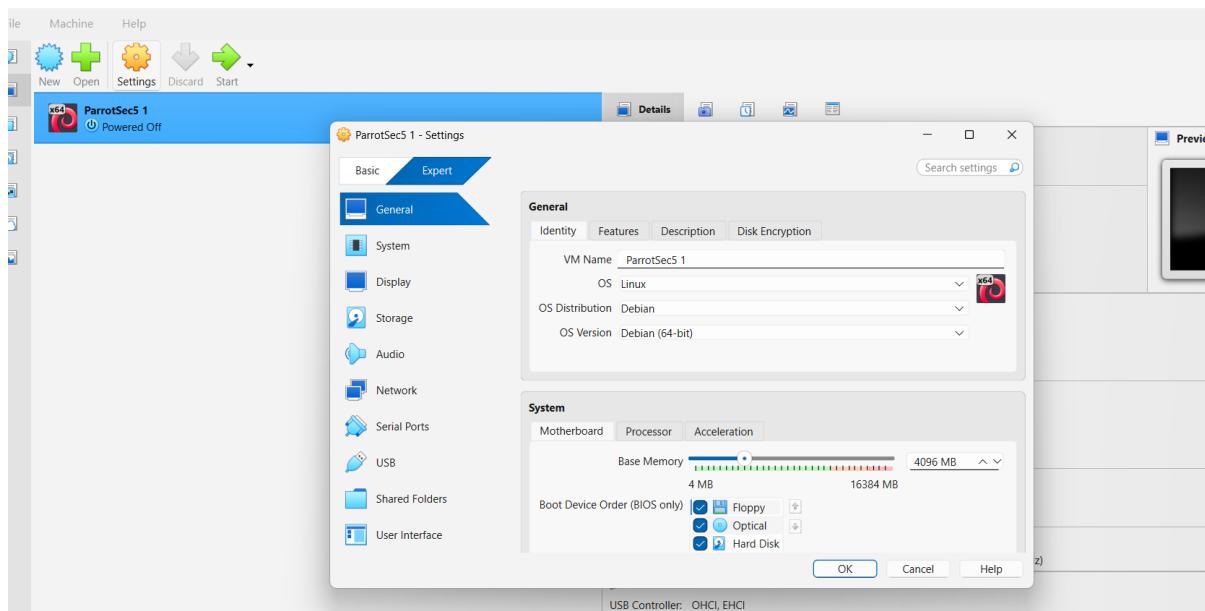
Part 1: Parrot OS Virtual Machine Settings (VirtualBox)

Step 1: Adjust System RAM

Optimizing RAM ensures that **Parrot OS runs smoothly**, especially while using **resource-intensive security and penetration-testing tools**.

Steps:

1. Open **VirtualBox** and select your **Parrot OS virtual machine**.
2. Click the **Settings** (gear icon).
3. Navigate to **System** from the left sidebar.
4. Under the **Motherboard** tab, adjust **Base Memory**:
 - **Recommended:** 4096 MB (4 GB) or higher
5. Click **OK** to save changes.

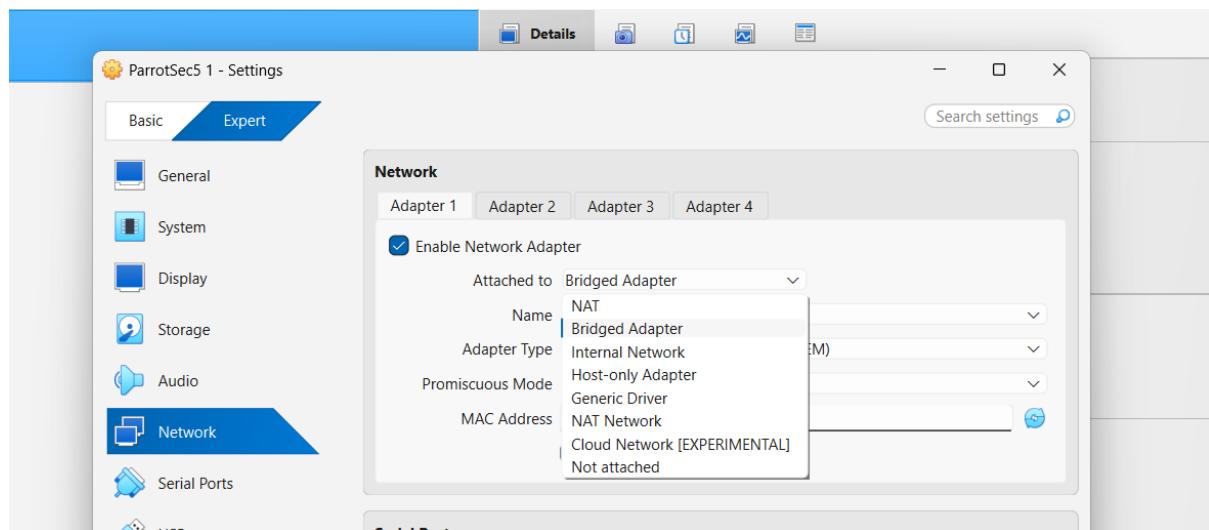


Step 2: Network Configuration

Configuring the network in **Bridged Mode** allows the virtual machine to behave like a **separate device on your physical network**.

Steps:

1. Open **Settings** for Parrot OS.
2. Go to the **Network** tab.
3. Under **Adapter 1**, ensure **Enable Network Adapter** is checked.
4. In the **Attached to:** dropdown, select **Bridged Adapter**.
5. In the **Name:** dropdown, choose your active interface:
 - Physical **Wi-Fi** or **Ethernet** adapter
6. Click **OK**.



Purpose:

Enables Parrot OS to receive a **dedicated IP address from the local router**, just like the host machine.

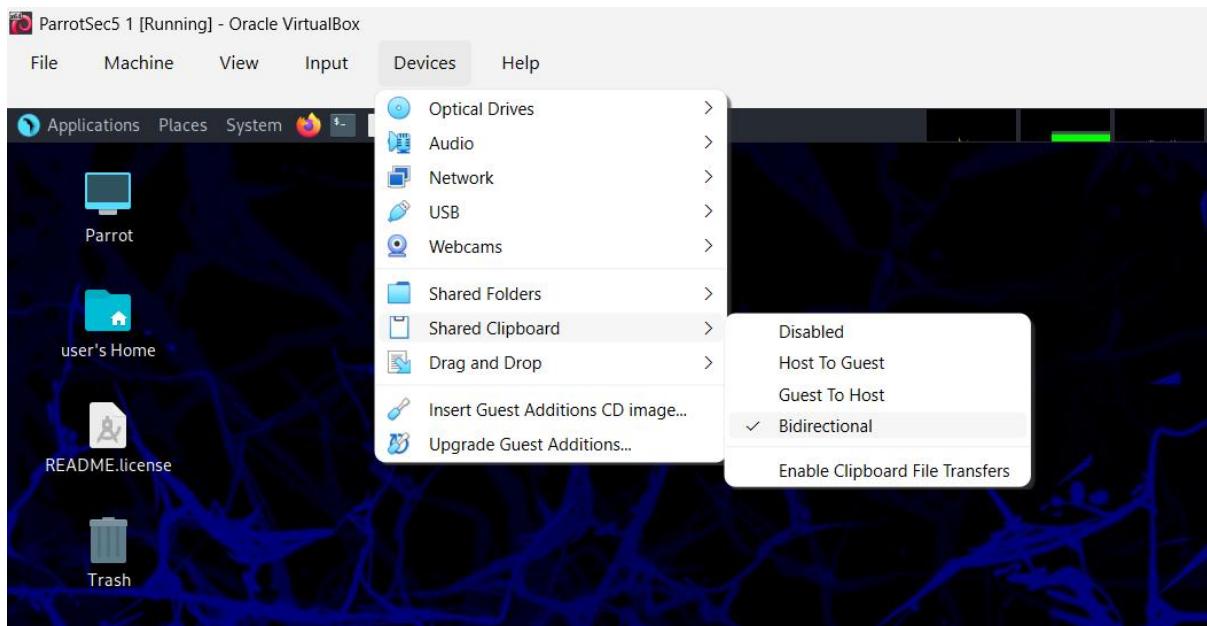
Step 3: Enable Shared Clipboard

The shared clipboard improves productivity by allowing **text transfer between the Host OS and the Virtual Machine**.

Steps:

1. Start the **Parrot OS virtual machine**.
2. In the VM's top menu bar, click **Devices**.
3. Select **Shared Clipboard**.

4. Choose **Bidirectional**.



Purpose:

Allows seamless **copy–paste functionality** between Host OS and Parrot OS.

Part 2: Basic Network Commands

ifconfig

The ifconfig (**interface configuration**) command is a **classic Linux networking tool** used to view and configure network interfaces.

Purpose:

- Displays all network interfaces available on the system
- Shows IP address and network configuration details

Information Displayed:

- Interface names (e.g., eth0, wlan0, lo)
- IP address (inet)
- MAC address
- Packet statistics

Important Notes:

- lo → Loopback interface (127.0.0.1)
- inet → IPv4 address assigned to the interface.

```
File Edit View Search Terminal Help
-[user@parrot]~
$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.23.35.255 brd 10.23.35.255 netmask 255.255.255.0 broadcast 10.23.35.255
        ether 08:00:27:54:c1:71 txqueuelen 1000 (Ethernet)
        RX packets 13 bytes 1640 (1.6 KiB)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 15 bytes 1938 (1.8 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 brd 127.255 netmask 255.255.255.0 broadcast 127.0.0.1
        loop txqueuelen 1000 (Local Loopback)
        RX packets 4 bytes 240 (240.0 B)
        RX errors 0 dropped 0 overruns 0 frame 0
        TX packets 4 bytes 240 (240.0 B)
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

ping

Purpose:

Checks whether the system is connected to the network or internet.

How it works:

Sends ICMP echo requests and receives replies.

To stop ping:

Ctrl + C

```
-[user@parrot]~
$ ping google.com
PING google.com (142.250.183.142) 56(84) bytes of data.
64 bytes from lcmaaa-ba-in-f14.1e100.net (142.250.183.142): icmp_seq=1 ttl=115 time=40.3 ms
64 bytes from lcmaaa-ba-in-f14.1e100.net (142.250.183.142): icmp_seq=2 ttl=115 time=65.0 ms
64 bytes from lcmaaa-ba-in-f14.1e100.net (142.250.183.142): icmp_seq=3 ttl=115 time=50.9 ms
64 bytes from lcmaaa-ba-in-f14.1e100.net (142.250.183.142): icmp_seq=4 ttl=115 time=40.5 ms
64 bytes from lcmaaa-ba-in-f14.1e100.net (142.250.183.142): icmp_seq=5 ttl=115 time=45.8 ms

--- google.com ping statistics ---
24 packets transmitted, 23 received, 4.16667% packet loss, time 23279ms
rtt min/avg/max/mdev = 40.282/55.258/106.220/12.102 ms
```

ip a

Purpose:

Modern replacement for ifconfig.

What it does:

- Shows IP address, interfaces, and network state
- Recommended in modern Linux distributions

```
—[x]—[user@parrot]—[~]
→ $ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    qlen 1000
        link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 brd 0.0.0.0 scope host lo
            valid_lft forever preferred_lft forever
            inet6 ::1/128 brd 0.0.0.0 scope host
                valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default
    qlen 1000
        link/ether 00:0c:29:4c:71:ff brd ff:ff:ff:ff:ff:ff
        inet 10.23.35.2/24 brd 10.23.35.255 scope global dynamic noprefixroute enp0s3
            valid_lft 3452sec preferred_lft 3452sec
            inet6 fe80::c00c:29ff:fe4c:71ff/64 brd fe80::ff:ff:ff:ff:ff:ff scope link noprefixroute
                valid_lft forever preferred_lft forever
—[user@parrot]—[~]
→ $
```

clear

Purpose:

- Clears all previous output from the terminal screen
- Does not delete command history

ipconfig

Purpose:

- ✗ Not a Linux command
- ✓ Used in **Windows** to view IP details

Part 3: System Information Commands

whoami

Purpose:

- Shows the currently logged-in user
- Useful to confirm privilege level

```
[user@parrot]~$ whoami
user
```

hostname

Purpose:

- Displays the system's hostname
- Important in network identification

```
[user@parrot]~$ hostname
parrot
[User's Home]
[user@parrot]~$
```

uname -a

Purpose:

Displays complete system information.

Shows:

- Kernel version
- Architecture
- OS name

```
[user@parrot]~$ uname -a
Linux parrot 5.16.0-12parrot1-amd64 #1 SMP PREEMPT Debian 5.16.12-2parrot1 (2022-03-11) x86_64 GNU/Linux
[user@parrot]~$
```

Helps attackers identify kernel vulnerabilities.

date

Purpose:

- Shows current system date and time
- Used for log analysis and timestamps

```
[user@parrot]~$ date
Wednesday 31 December 2025 12:01:42 PM IST
[...]
```

service <service_name> start | stop | restart | status

Purpose:

- Manages background services
- Used to start web servers, databases, etc.

```
[user@parrot]~$ service apache2 start
[User@parrot]~$ service apache2 status
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor preset: disabled)
     Active: active (running) since Wed 2025-12-31 12:02:58 IST; 13s ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 1496 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 1507 (apache2)
      Tasks: 6 (limit: 4592)
     Memory: 17.4M
        CPU: 70ms
      CGroup: /system.slice/apache2.service
              └─1507 /usr/sbin/apache2 -k start
                ├─1509 /usr/sbin/apache2 -k start
                ├─1510 /usr/sbin/apache2 -k start
                ├─1511 /usr/sbin/apache2 -k start
                ├─1512 /usr/sbin/apache2 -k start
                └─1513 /usr/sbin/apache2 -k start
[User@parrot]~$ service apache2 stop
[User@parrot]~$ service apache2 status
○ apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; disabled; vendor preset: disabled)
     Active: inactive (dead)
       Docs: https://httpd.apache.org/docs/2.4/
[x]~[User@parrot]~$
```

history

Purpose:

- Displays previously executed commands
- Attackers can view past commands if access is gained

```
-[user@parrot]-[~]
→ $history
1 exit
2 firefox
3 sudo nano /usr/share/applications/firefox.desktop
4 mate-panel --replace &
5 ifconfig
6 ip -a
7 ip a
8 ping google.com
9 clear
10 whoami
11 hostname
12 uname -a
13 date
14 history
-[user@parrot]-[~]
→ $
```

top

Purpose:

Shows running processes in real time.

Displays:

- CPU usage
- Memory usage
- Process IDs

Used to detect suspicious processes.

```

top - 12:04:08 up 7 min,  1 user,  load average: 0.12, 0.14, 0.09
Tasks: 170 total,   1 running, 169 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.1 us,  0.1 sy,  0.0 ni, 99.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem : 3929.1 total,  1979.7 free,   631.6 used, 1317.9 buff/cache
MiB Swap: 5118.3 total,  5118.3 free,     0.0 used. 2992.9 avail Mem

   user@Home: ~

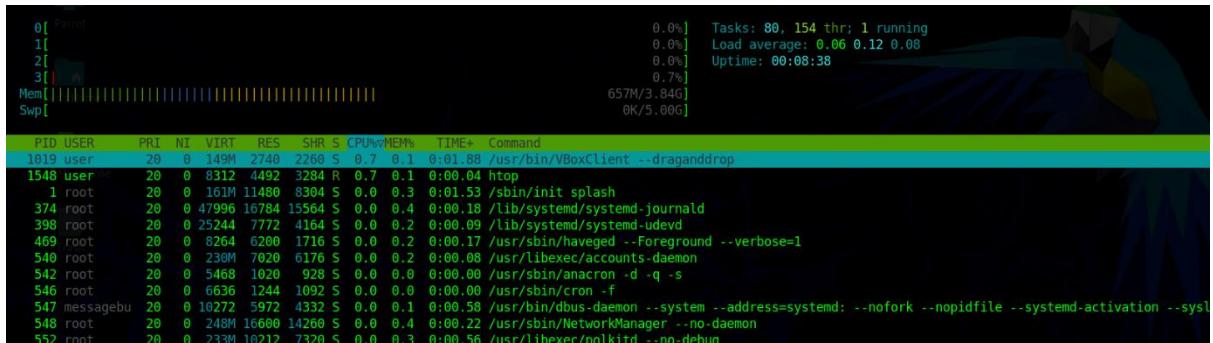
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
712	root	20	0	1323888	129740	60912	S	0.5	3.2	0:07.20	Xorg
1224	user	20	0	345976	28956	18536	S	0.5	0.7	0:01.00	mate-multiload
1019	user	20	0	152924	2740	2260	S	0.2	0.1	0:01.80	VBoxClient
1110	user	20	0	317684	39964	28004	S	0.2	1.0	0:00.13	mate-inhibit-ap
1	root	20	0	165756	11480	8304	S	0.0	0.3	0:06.25	systemd

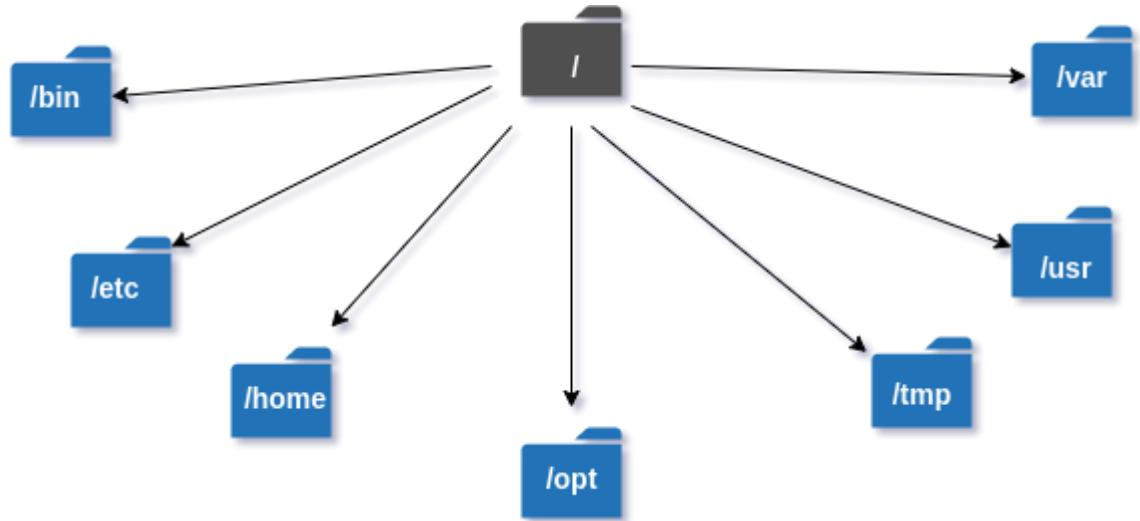
htop

Purpose:

- Advanced version of top with GUI-style interface
- Allows process killing using keyboard



Part 4: Linux Directory Structure



/

Root directory — base of the entire Linux filesystem.

/root

Home directory of the **root user**.

/home

Contains home directories of normal users.

/bin

Essential executable binaries (ls, cat, cp).

/sbin

System binaries used by root user only.

/usr

User system resources and applications.

/etc

System configuration files.

/lib

Library files required by binaries.

/var

Log files and variable data.

/opt

Optional third-party software.

/tmp

Temporary files (cleared on reboot).

/media

Mounted external devices (USB, CD).

Part 5: File & Directory Commands

pwd

Purpose:

Shows current working directory.

```
[user@parrot]~$ pwd  
/home/user  
[user@parrot]~$
```

ls

Lists files and directories.

Examples:

ls

```
[user@parrot]~$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos  
[user@parrot]~$
```

```
ls -l
```

```
[user@parrot]~$ ls -l
total 32
drwxr-xr-x 2 user user 4096 May  3 2022 Desktop
drwxr-xr-x 2 user user 4096 Jul 29 2022 Documents
drwxr-xr-x 2 user user 4096 Jan 31 2025 Downloads
drwxr-xr-x 2 user user 4096 Jul 29 2022 Music
drwxr-xr-x 2 user user 4096 Jul 29 2022 Pictures
drwxr-xr-x 2 user user 4096 Jul 29 2022 Public
drwxr-xr-x 5 user user 4096 May  3 2022 Templates
drwxr-xr-x 2 user user 4096 Jul 29 2022 Videos
[user@parrot]~$
```

```
ls -a
```

```
[user@parrot]~$ ls -a
.. .BurpSuite .dbeaver4 Documents .gtkrc-2.0 .local Music Public .vboxclient-display-svga-x11.pid Videos .xsession-errors
. .cache Desktop Downloads .kde .mozilla Pictures Templates .vboxclient-draganddrop.pid .vimrc .xsession-errors.old
.bash_history .config .dmrc .emacs .lessht .msf4 .profile .vboxclient-clipboard.pid .vboxclient-seamless.pid .Xauthority .zshrc
[user@parrot]~$
```

```
ls -la
```

```
[user@parrot]~$ ls -la
total 140
drwxr-xr-x 18 user user 4096 Dec 31 12:03 .
drwxr-xr-x  3 root root 4096 Jul 29 2022 ..
-rw-----  1 user user   86 Dec 29 12:21 .bash_history
drwxr-xr-x  2 user user 4096 May  3 2022 .BurpSuite
drwxr-xr-x  8 user user 4096 Dec 31 11:56 .cache
drwxr-xr-x 29 user user 4096 Dec 31 12:04 .config
drwxr-xr-x  3 user user 4096 May  3 2022 .dbeaver4
drwxr-xr-x  2 user user 4096 May  3 2022 Desktop
-rw-r--r--  1 user user   35 Jul 29 2022 .dmrc
drwxr-xr-x  2 user user 4096 Jul 29 2022 Documents
```

```
ls --help
```

Purpose:

Shows help information for the ls command.

```
[user@parrot]~$ ls --help
Usage: ls [OPTION]... [FILE]...
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
-A, --almost-all
--author
-b, --escape
--block-size=SIZE
-Trash
-B, --ignore-backups
-c
--color[=WHEN]
-d, --directory
-D, --dired
```

man <command>

Purpose:

Displays the manual (documentation) page of a command.

```
LS(1) Parrot                                         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 of -cftuvSUX nor --sort i
README[when]
Mandatory arguments to long options are mandatory for short options too.

-a, --all
-Trash    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
```

whatis <command>

Purpose:

Displays a one-line description of a command.

```
[user@parrot]~]$ whatis ls  
ls (1)           - list directory contents  
[user@parrot]~]$
```

\$ and

User symbols in the Linux terminal:

- \$ → Normal user
- # → Root (superuser)

cd

Purpose:

Changes the current working directory.

Examples:

- cd

```
[user@parrot]~/etc]$ cd  
[user@parrot]~]$
```

- cd ..

```
[x]~$ cd ..  
[user@parrot]~/home]$
```

- cd /home/user

```
[user@parrot]~$ cd /etc  
[user@parrot]~/etc]$
```

Absolute vs Relative Path

- **Absolute Path:**

Starts from the root directory
/home/user/file

- **Relative Path:**

Based on the current directory
../file

&&

Purpose:

Runs multiple commands sequentially.

The next command executes only if the previous command is successful.

```
[x]--[user@parrot]--[/home]
└─ $cd user && pwd
/home/user
[User@parrot]--[~]
└─ $
```

mkdir

Purpose:

Creates a new directory.

```
[User@parrot]--[~]
└─ $mkdir abc
[User@parrot]--[~]
└─ $ls
abc Desktop s Music Pictures Public Templates Videos
  Documents
```

touch

Purpose:

Creates an empty file.

```
[User@parrot]--[~]
└─ $cd abc
[User@parrot]--[~/abc]
└─ $touch file.txt
[User@parrot]--[~/abc]
└─ $ls
file.txt
```

cat

Purpose:

Displays the contents of a file.

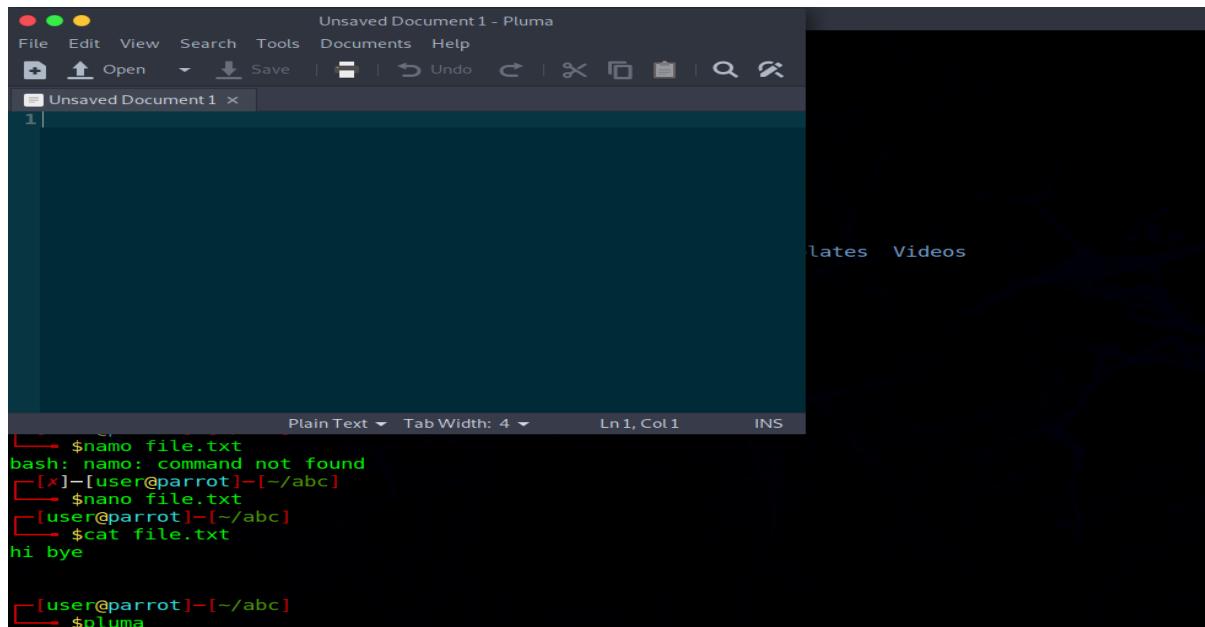
Read-only display.

```
[user@parrot]~$ cat file.txt
hi bye
```

pluma

Purpose:

Graphical (GUI) text editor available in Parrot OS.



nano

Purpose:

Terminal-based text editor available in all Linux distributions.

```
[x]~[user@parrot]~$ nano file.txt
[user@parrot]~$ cat file.txt
hi bye
```

sudo su

Purpose:

Switches the current user to the root (superuser).

```
[user@parrot]~[~/abc]
└─$ sudo su
[sudo] password for user:
[root@parrot]~[/home/user/abc]
└─#
```

cp

Purpose:

Copies files or directories.

```
[user@parrot]~[~/abc]
└─$ cp file.txt /home/user/Desktop
[user@parrot]~[~/abc]
└─#
```

rm

Purpose:

Deletes a file.

```
[user@parrot]~[~/abc]
└─$ rm file.txt
[user@parrot]~[~/abc]
```

rmdir

Purpose:

Deletes an empty directory.

```
[user@parrot]~[~]
└─$ rmdir abc
[user@parrot]~[~]
```

mv

Purpose:

Moves or renames files and directories.

```
[user@parrot]~/.abc
└─ $mv /home/user/Desktop/file.txt /home/user/abc
[user@parrot]~/.abc
└─ $
```

rm -rf

Purpose:

Forcefully deletes directories along with their contents.

Very dangerous command – use with extreme caution.

NOTE

All these commands are **foundation commands** required for:

- Kali / Parrot OS usage
- Linux privilege escalation
- Penetration testing workflows