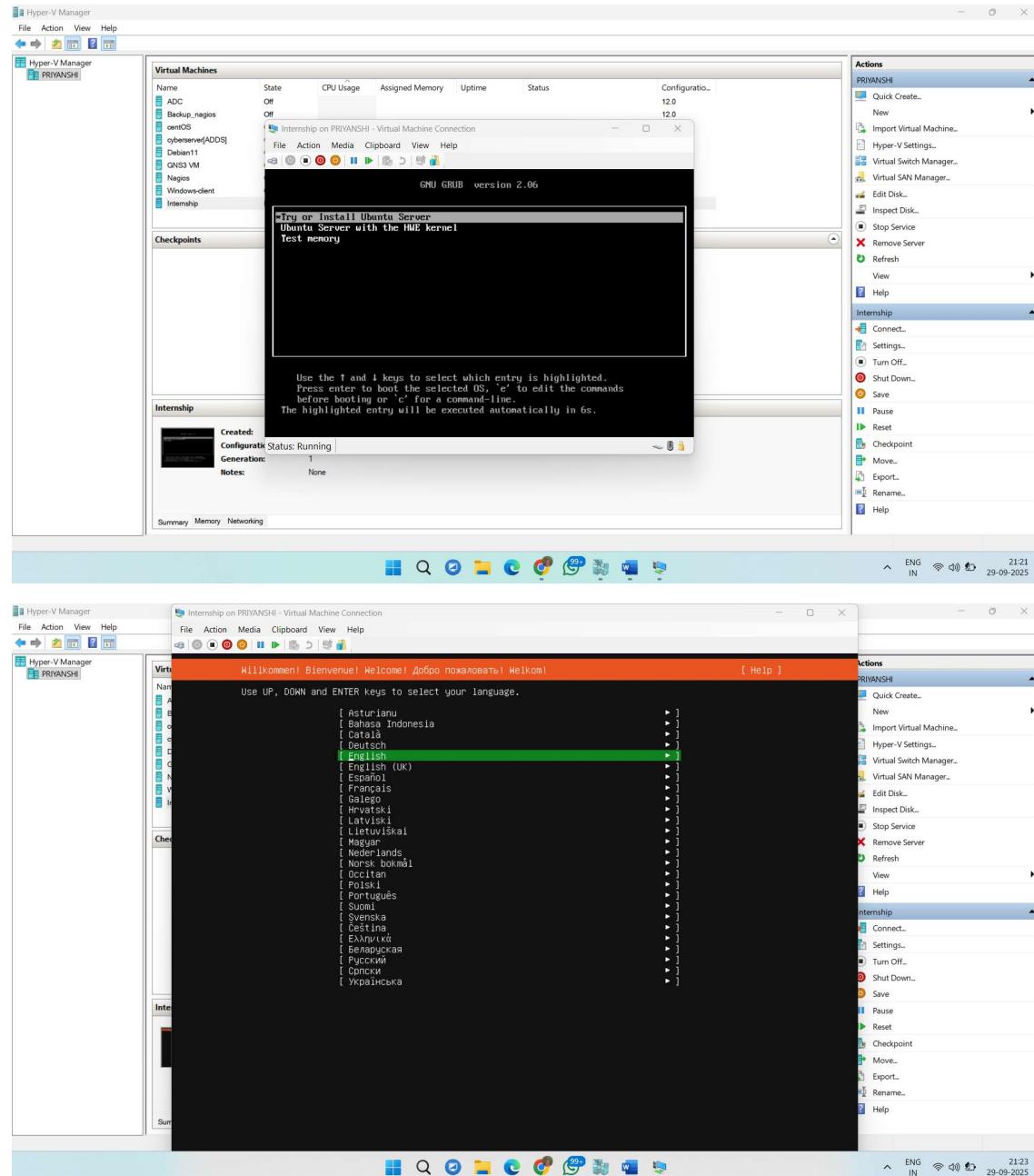
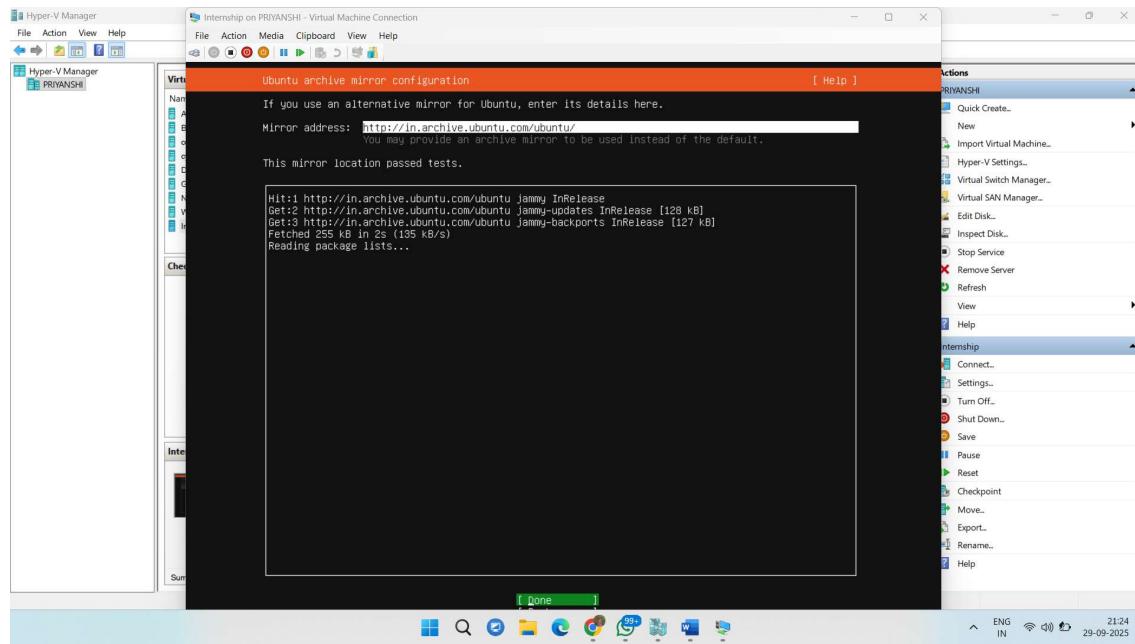
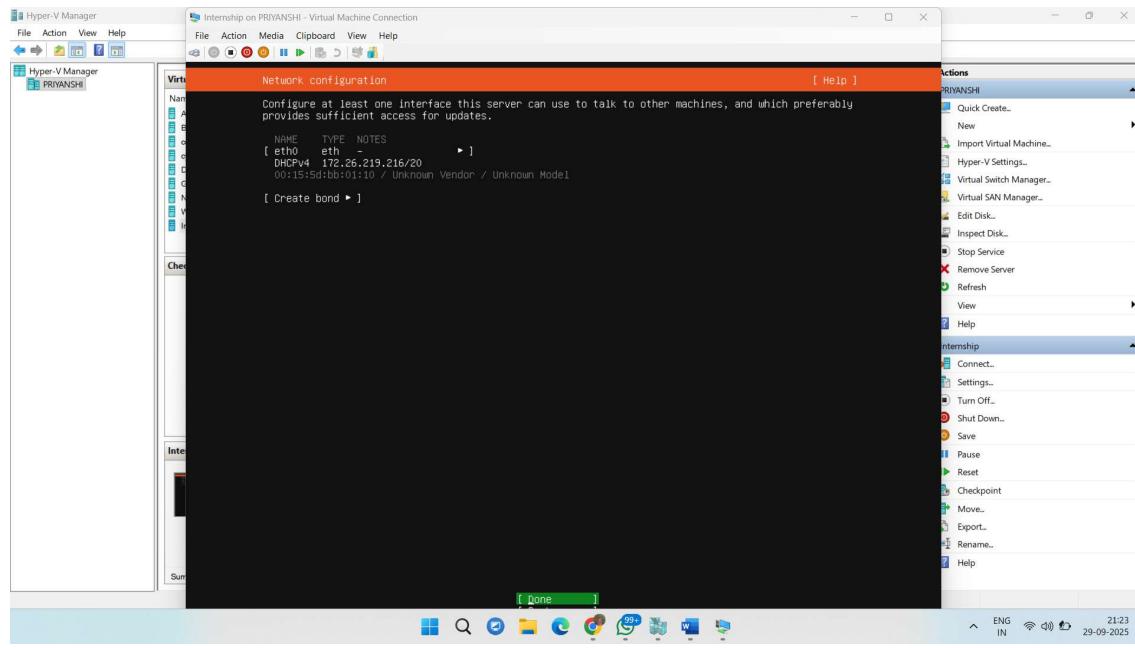
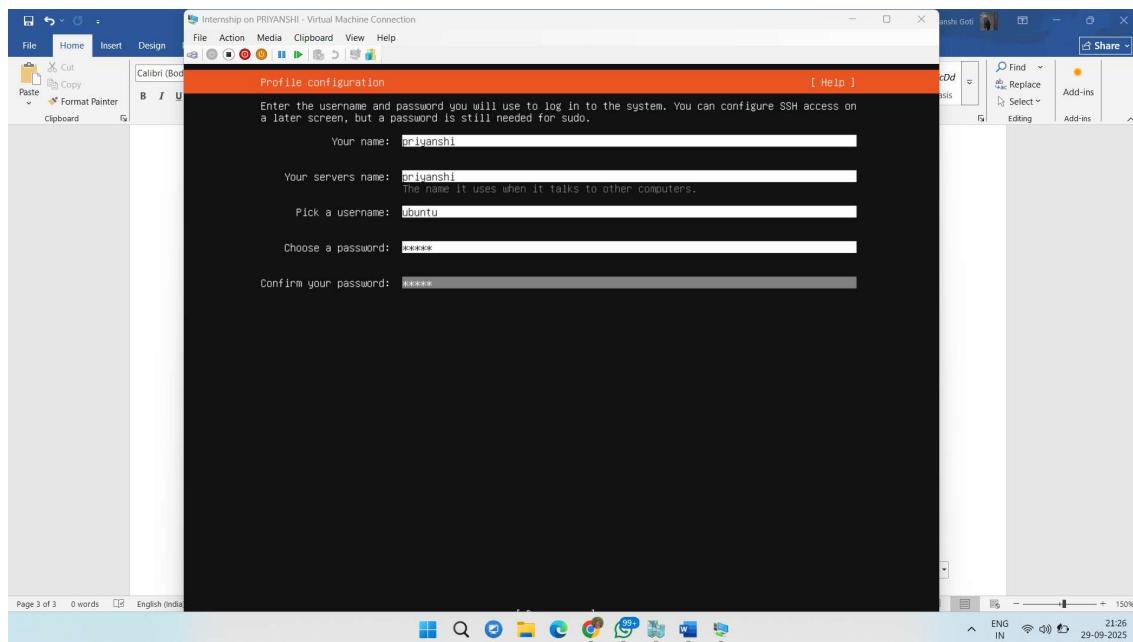
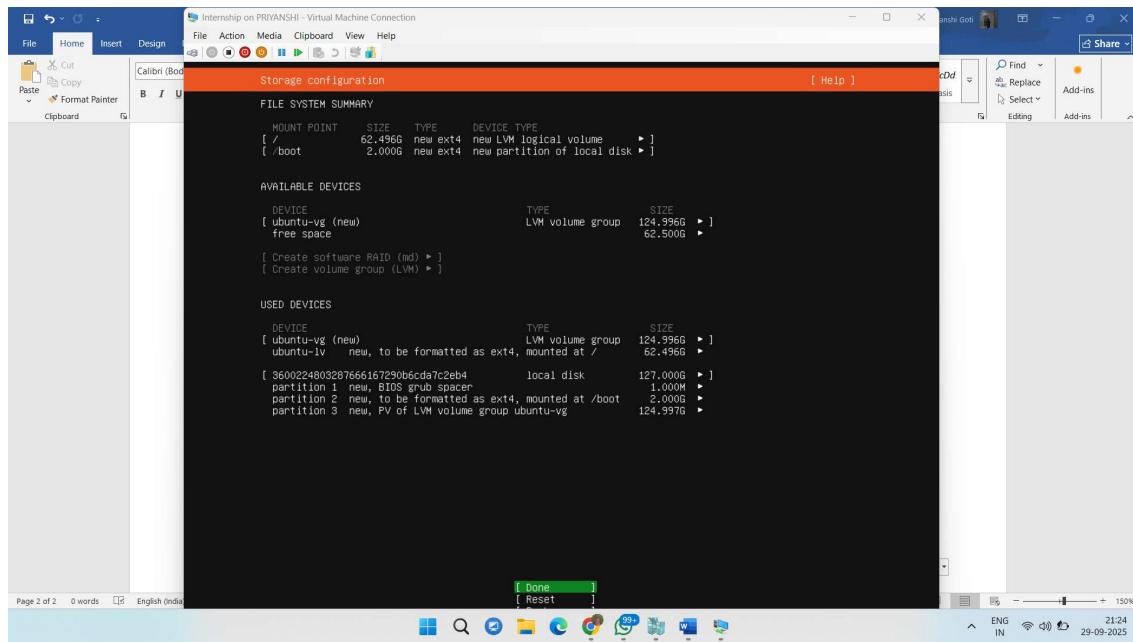


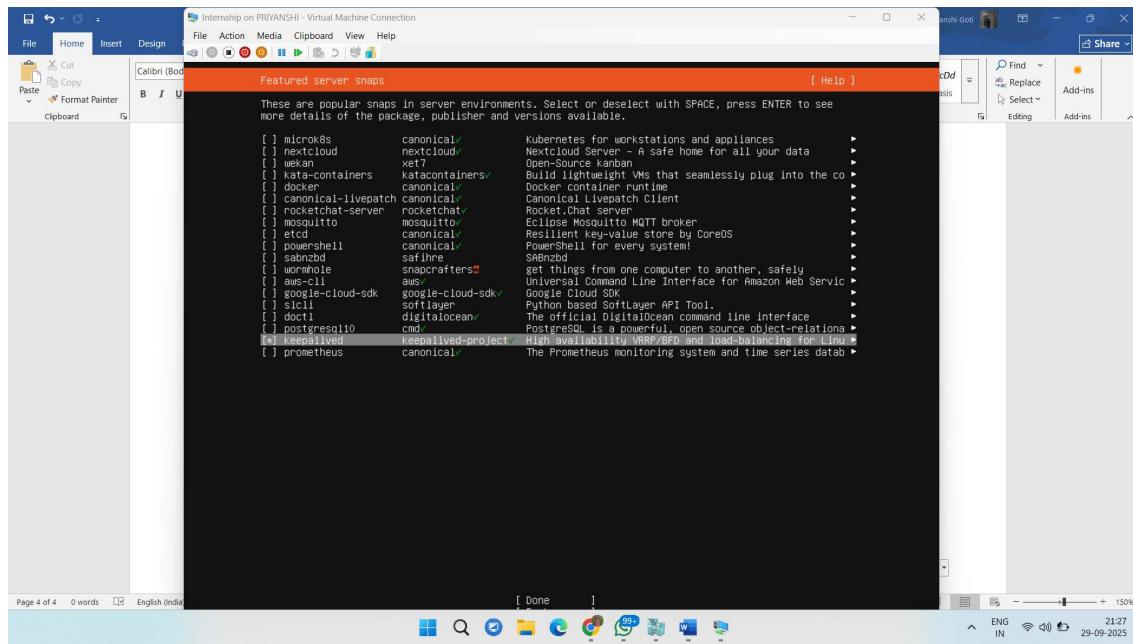
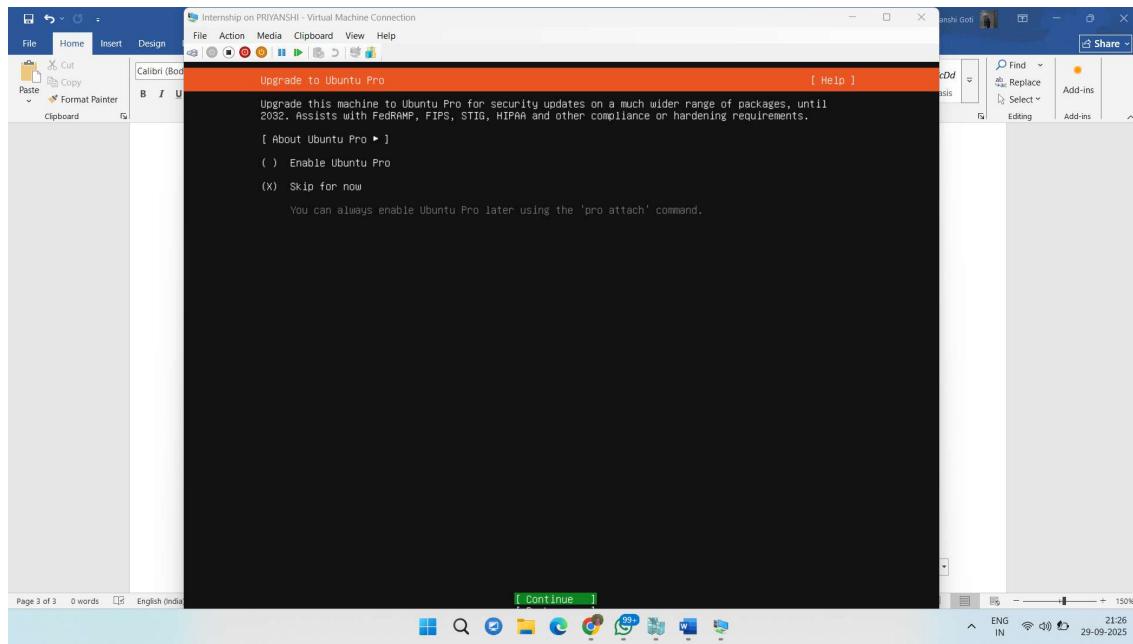
- **Task 5:** Set up a **Linux (Ubuntu/Kali)** VM and practice basic commands
- **Task 6:** Configure **static and dynamic IP**
- **Task 7:** Enable **SSH connection** between two VMs
- **Task 8:** Install and configure a **basic web server (Apache/Nginx)**

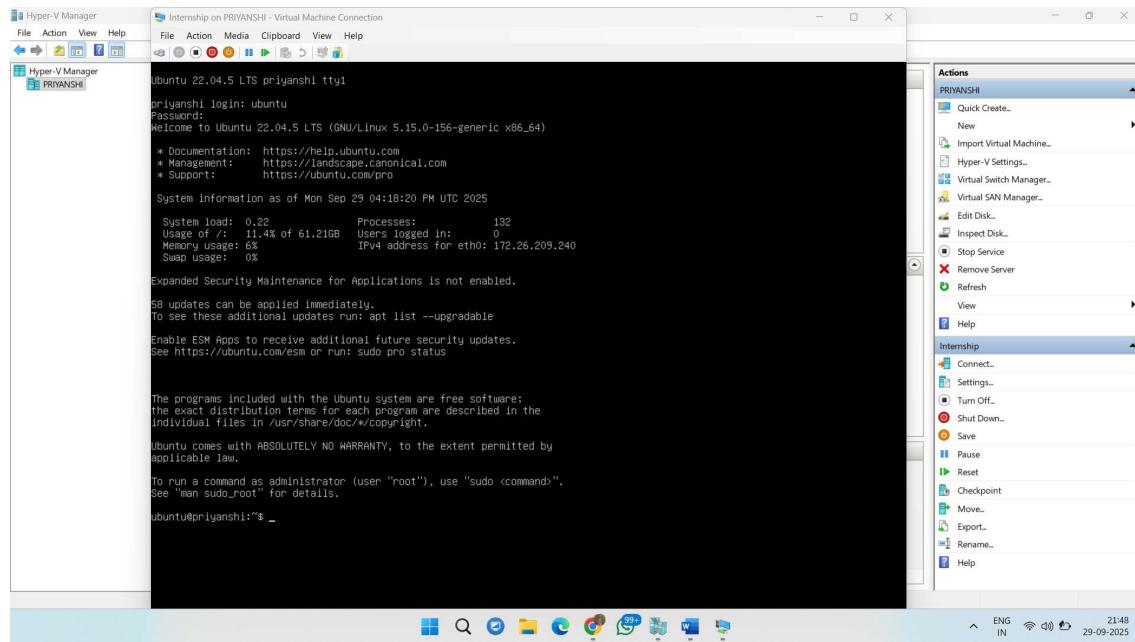
### Task:1 Set up a Linux (Ubuntu/Kali) VM and practice basic commands











**Basic commands:**

## Linux Basic Commands

---

### File & Directory Commands

#### 1. Pwd – Print Working Directory

Shows the full path of the current directory you are in

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# pwd
/
root@priyanshi:~# cd /etc/
root@priyanshi:/etc# pwd
/etc
root@priyanshi:/etc#
```

#### 2. ls – List Files and Directories

Lists all files and folders in the current directory.

- o ls -l → detailed list
- o ls -a → show hidden files

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@priyanshi:~$ cd /
ubuntu@priyanshi:~$ ls -l
total 4004940
lrwxrwxrwx 1 root root      7 Sep 11 2024 bin -> usr/bin
drwxr-xr-x  4 root root 4096 Sep 29 16:02 boot
dr-xr-xr-x  2 root root 4096 Sep 11 2024 cdrom
drwxr-xr-x 20 root root 4060 Sep 29 17:08 dev
drwxr-xr-x 97 root root 4096 Sep 29 16:16 etc
-rw-r--r--  1 root root     0 Sep 29 16:49 hello
drwxr-xr-x  3 root root 4096 Sep 29 16:15 home
lrwxrwxrwx 1 root root      7 Sep 11 2024 lib -> usr/lib
lrwxrwxrwx 1 root root     9 Sep 11 2024 lib32 -> usr/lib32
lrwxrwxrwx 1 root root     9 Sep 11 2024 lib64 -> usr/lib64
lrwxrwxrwx 1 root root    10 Sep 11 2024 libx32 -> usr/libx32
drwxr-xr-x  2 root root 16384 Sep 29 19:55 lost+found
drwxr-xr-x  2 root root 4096 Sep 11 2024 media
drwxr-xr-x  2 root root 4096 Sep 11 2024 mnt
drwxr-xr-x  2 root root 4096 Sep 11 2024 opt
dr-xr-xr-x 185 root root     0 Sep 29 17:08 proc
drwxr-xr-x  4 root root 4096 Sep 29 16:15 root
drwxr-xr-x 28 root root   800 Sep 29 17:08 run
lrwxrwxrwx 1 root root      8 Sep 11 2024 sbin -> usr/sbin
drwxr-xr-x  7 root root 4096 Sep 29 16:16 snap
drwxr-xr-x  2 root root 4096 Sep 11 2024 srv
-rw-r----- 1 root root 4100980736 Sep 29 15:58 swap.img
dr-xr-xr-x 13 root root     0 Sep 29 17:08 sys
drwxr-xr-x  2 root root 4096 Sep 29 16:48 test
drwxrwxrwx 13 root root 4096 Sep 29 17:08 tmp
drwxr-xr-x 14 root root 4096 Sep 11 2024 usr
drwxr-xr-x 13 root root 4096 Sep 11 2024 var
ubuntu@priyanshi:~$ ls -a
bin  cdrom  etc  home  lib32  libx32  media  opt  root  sbin  run  sys  tmp  var
..  boot  dev  hello  lib  lib64  lost+found  mnt  proc  snap  swap.img  test  usr
ubuntu@priyanshi:~$
```

### 3. **cd <directory>** – Change Directory

Move to another folder.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@priyanshi:~$ cd /etc/
ubuntu@priyanshi:/etc$ pwd
/etc
ubuntu@priyanshi:/etc$ _
```

### 4. **mkdir <directory>** – Make Directory

Creates a new folder.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# mkdir data001
root@priyanshi:~# ls -l
total 4004952
lrwxrwxrwx 1 root root      7 Sep 11 2024 bin -> usr/bin
drwxr-xr-x  4 root root 4096 Sep 29 16:02 boot
dr-xr-xr-x  2 root root 4096 Sep 11 2024 cdrom
drwxr-xr-x  2 root root 4096 Sep 29 17:15 data001
drwxr-xr-x 20 root root 4060 Sep 29 17:08 dev
drwxr-xr-x 97 root root 4096 Sep 29 16:16 etc
-rw-r--r--  1 root root     0 Sep 29 16:49 hello
drwxr-xr-x  3 root root 4096 Sep 29 16:15 home
drwxr-xr-x  2 root root 4096 Sep 29 17:14 intern01
lrwxrwxrwx 1 root root      7 Sep 11 2024 lib -> usr/lib
lrwxrwxrwx 1 root root     9 Sep 11 2024 lib32 -> usr/lib32
lrwxrwxrwx 1 root root     9 Sep 11 2024 lib64 -> usr/lib64
lrwxrwxrwx 1 root root    10 Sep 11 2024 libx32 -> usr/libx32
drwxr-xr-x  2 root root 16384 Sep 29 15:55 lost+found
drwxr-xr-x  2 root root 4096 Sep 11 2024 media
drwxr-xr-x  2 root root 4096 Sep 11 2024 mnt
drwxr-xr-x  2 root root 4096 Sep 11 2024 opt
dr-xr-xr-x 185 root root     0 Sep 29 17:08 proc
drwxr-xr-x  4 root root 4096 Sep 29 16:15 root
drwxr-xr-x 28 root root   800 Sep 29 17:08 run
lrwxrwxrwx 1 root root      8 Sep 11 2024 sbin -> usr/sbin
drwxr-xr-x  7 root root 4096 Sep 29 16:16 snap
drwxr-xr-x  2 root root 4096 Sep 11 2024 srv
-rw-r----- 1 root root 4100980736 Sep 29 15:58 swap.img
dr-xr-xr-x 13 root root     0 Sep 29 17:08 sys
drwxr-xr-x  2 root root 4096 Sep 29 16:48 test
drwxr-xr-x  2 root root 4096 Sep 29 17:12 testing
drwxrwxrwt 12 root root 4096 Sep 29 17:13 tmp
drwxr-xr-x 14 root root 4096 Sep 11 2024 usr
drwxr-xr-x 13 root root 4096 Sep 11 2024 var
root@priyanshi:~#
```

### 5. **rmdir <directory>** – Remove Empty Directory

Deletes an empty folder.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:/# rmkdir data001/
root@priyanshi:/# ls -l
total 4004948
lrwxrwxrwx  1 root root      7 Sep 11 2024 bin -> /usr/bin
drwxr-xr-x  4 root root  4096 Sep 29 16:02 boot
dr-xr-xr-x  2 root root  4096 Sep 11 2024 cdrom
drwxr-xr-x 20 root root  4060 Sep 29 17:08 dev
drwxr-xr-x  97 root root  4096 Sep 29 16:16 etc
-rw-r--r--  1 root root     0 Sep 29 16:49 hello
drwxr-xr-x  3 root root  4096 Sep 29 16:15 home
drwxr-xr-x  2 root root  4096 Sep 29 17:14 Intern01
lrwxrwxrwx  1 root root      7 Sep 11 2024 lib -> /usr/lib
lrwxrwxrwx  1 root root      9 Sep 11 2024 lib32 -> /usr/lib32
lrwxrwxrwx  1 root root      9 Sep 11 2024 lib64 -> /usr/lib64
lrwxrwxrwx  1 root root   10 Sep 11 2024 libx32 -> /usr/libx32
drwxr-xr-x  2 root root 16384 Sep 29 15:55 lost+found
drwxr-xr-x  2 root root  4096 Sep 11 2024 media
drwxr-xr-x  2 root root  4096 Sep 11 2024 mnt
drwxr-xr-x  2 root root  4096 Sep 11 2024 opt
dr-xr-xr-x 187 root root     0 Sep 29 17:08 proc
drwxr-xr-x  4 root root  4096 Sep 29 16:15 root
drwxr-xr-x 28 root root  800 Sep 29 17:08 run
lrwxrwxrwx  1 root root      8 Sep 11 2024 sbin -> /usr/sbin
drwxr-xr-x  7 root root  4096 Sep 29 16:15 snap
drwxr-xr-x  2 root root  4096 Sep 11 2024 sys
drwxr-xr-x  1 root root 4100980736 Sep 29 15:58 swap.img
dr-xr-xr-x 13 root root     0 Sep 29 17:08 var
drwxr-xr-x  2 root root  4096 Sep 29 16:48 test
drwxr-xr-x  2 root root  4096 Sep 29 17:12 testing
drwxrwxrwt 12 root root  4096 Sep 29 17:13 tmp
drwxr-xr-x 14 root root  4096 Sep 11 2024 usr
drwxr-xr-x 13 root root  4096 Sep 11 2024 var
root@priyanshi:/#
```

## File Commands

### 6. touch <file> – Create Empty File

Creates a new empty file.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:/# ls
bin  coredump  etc  home  lib  lib64  lost+found  mnt  proc  run  snap  swap.img  test  tmp  var
root  dev  hello  Intern01  lib32  libx32  media  opt  root  sbin  srv  sys  testing  usr
root@priyanshi:/# touch demo002
root@priyanshi:/# ls
bin  coredump  etc  hello  Intern01  lib32  libx32  media  opt  root  sbin  srv  sys  testing  usr
root  demo002  etc  home  lib  lib64  lost+found  mnt  proc  run  snap  swap.img  test  tmp  var
root@priyanshi:/#
```

### 7. cat <file> – Display File Content

Shows the content of a file.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:/# cat > test003
Hello i am test003
^C
root@priyanshi:/# cat test003
Hello i am test003
root@priyanshi:/# ls
bin  coredump  dev  hello  img  lib  lib64  lost+found  mnt  proc  run  snap  swap.img  test  testing  usr
root  demo002  etc  home  Intern01  lib32  libx32  media  opt  root  sbin  srv  sys  test003  tmp  var
root@priyanshi:/#
```

### 8. cp <source> <destination> – Copy File

Copies a file from one place to another.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:/# cp test003 test_copy
root@priyanshi:/# cat test_copy
Hello i am test003
root@priyanshi:/#
```

### 9. mv <source> <destination> – Move or Rename File

Moves a file to a folder or renames it.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# my test003 test_rename
root@priyanshi:~# ls
bin dev hello Intern01 lib lib64 media proc sbin swap.img test_copy tmp
boot img lib lib32 init found opt root snap sys testing usr
cdrom etc lib32 lost+found opt run srv test test_rename var
root@priyanshi:~# _
```

## 10. rm <file> – Remove File

Deletes a file permanently.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# ls
bin dev hello Intern01 lib lib64 media proc sbin swap.img test_copy tmp
boot img lib lib32 init found opt root snap sys testing usr
cdrom etc lib32 lost+found opt run srv test test_rename var
root@priyanshi:~# rm test_rename
root@priyanshi:~# ls
bin dev hello Intern01 lib lib64 media proc sbin swap.img test_copy tmp
boot img lib lib32 init found opt root snap sys testing usr
cdrom etc lib32 lost+found opt run srv test test_rename var
root@priyanshi:~# _
```

For Directory :

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# ls
bin cdrom Dev hello img lib lib64 lost+found opt proc run snap swap.img test testing usr
boot demo002 etc home Intern01 lib32 libx32 media opt root sbin srv sys test_copy tmp var
root@priyanshi:~# rmdir test
root@priyanshi:~# ls
bin cdrom Dev hello img lib lib64 lost+found opt proc run snap swap.img test_copy tmp var
boot demo002 etc home Intern01 lib32 libx32 media opt root sbin srv sys testing usr
root@priyanshi:~# _
```

---

## User & System Commands

### 11. whoami – Show Current User

Displays the username of the logged-in user.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# whoami
root
root@priyanshi:~#
```

### 12. id – Show User and Group Info

Shows UID, GID, and groups for the current user.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# id
uid=0(root) gid=0(root) groups=0(root)
root@priyanshi:~#
```

### 13. uname -a – System Information

Shows system/kernel details.

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# uname -a
Linux priyanshi 5.15.0-156-generic #166-Ubuntu SMP Sat Aug 9 00:02:46 UTC 2025 x86_64 x86_64 x86_64 GNU/Linux
root@priyanshi:~#
```

## Process & History

## 14. ps aux – Show Running Processes

Lists all active processes.

File	Action	Media	Clipboard	View	Help
root	237	0.0.0.0	0 0 0	R	17:08 0:00 [kworker/u8:7-events_unbound]
root	277	0.0.0.0	0 0 0	I	17:08 0:00 [kfd flush]
root	303	0.0.0.0	0 0 0	I	17:08 0:00 [raid5dev]
root	353	0.0.0.0	0 0 0	S	17:08 0:00 [ext4-rsv-conver]
root	354	0.0.0.0	0 0 0	I	17:08 0:00 [ext4-rsv-conver]
root	426	0.0.0.0	48128 15890	S<	17:08 0:00 [/lib/systemd/systemd-journald]
root	451	0.0.0.0	0 0 0	I	17:08 0:00 [kworker/u8:3-events]
root	459	0.0.0.0	0 0 0	I	17:08 0:00 [kpath_rdacd]
root	462	0.0.0.0	0 0 0	I	17:08 0:00 [kpathd]
root	463	0.0.0.0	0 0 0	I	17:08 0:00 [kworker/u8:10-foreground]
root	464	0.0.0.0	288458 27220	SLSI	17:08 0:00 [kworker/u8:10-foreground -d -s]
root	467	0.0.0.0	1.6 26420 7392	Ss	17:08 0:00 [/lib/systemd/systemd-udevd]
root	539	0.0.0.0	0 0 0	R	17:08 0:00 [kworker/u8:3-events]
root	550	0.0.0.0	0 0 0	S	17:08 0:00 [/lib/systemd/systemd-journald]
root	563	0.0.0.0	0 0 0	S	17:08 0:00 [/lib/systemd/systemd-timesyncd]
root	634	0.0.0.0	0 0 0	I	17:08 0:00 [ext4-rsv-conver]
root	635	0.0.0.0	0 0 0	I	17:08 0:00 [ext4-rsv-conver]
root	649	0.0.0.0	88364 66479	S	17:08 0:00 [/lib/systemd/systemd-resolved]
Systemd+	650	0.0.0.0	0 0 0	S	17:08 0:00 [/lib/systemd/systemd-timesyncd]
Systemd+	656	0.0.0.0	0.3 26332 19352	Ss	17:08 0:00 [/lib/systemd/systemd-resolved]
Systemd+	657	0.0.0.0	0 0 0	S	17:08 0:00 [/lib/systemd/systemd-timesyncd]
message+root	709	0.0.0.0	0.1 72702 4829	Ss	17:08 0:00 [kworker/u8:10-foreground --addressystemd --nofork --nopidfile]
root	715	0.0.0.0	0.1 82700 4116	Ss	17:08 0:00 [/usr/sbin/inbalance --foreground]
root	716	0.0.0.0	0.1 23404 6660	Ss	17:08 0:00 [/usr/sbin/imbalance /usr/bin/networkd-dispatcher --run-startup=
root	717	0.0.0.0	0.1 23404 6660	Ss	17:08 0:00 [/usr/sbin/imbalance /usr/bin/networkd-dispatcher --run-startup=
rsyslog	718	0.0.0.0	0.1 22404 5448	Ss	17:08 0:00 [/usr/sbin/rsyslogd -n INONE]
rsyslog	721	0.0.0.0	0.3 133936 27504	Ss	17:08 0:00 [/usr/lib/systemd/snappy]
rsyslog	722	0.0.0.0	0.3 133936 27504	Ss	17:08 0:00 [/usr/lib/systemd/snappy]
root	725	0.0.0.0	0.3 352500 12848	Ss	17:08 0:00 [/usr/libexec/udisks2/udisksd]
root	726	0.0.0.0	0.3 352500 12848	Ss	17:08 0:00 [/usr/libexec/udisks2/udisksd]
root	744	0.0.0.0	0.1 784 4840 410v	Ss	17:08 0:00 [/bin/login -p --
root	761	0.0.0.0	0.1 24404 1000	Ss	17:08 0:00 [/bin/login -p --
root	819	0.0.0.0	0.5 107288 21432	Ss	17:08 0:00 [/usr/bin/python3 /usr/share/unattended-upgrades/unattended-upgrades]
ubuntu	1018	0.0.0.0	0.2 17098 9548	Ss	17:08 0:00 [/lib/systemd/systemd --user]
ubuntu	1019	0.0.0.0	0.2 17098 9548	Ss	17:08 0:00 [/lib/systemd/systemd --user]
root	1025	0.0.0.0	0.1 8676 5712 1t1y	Ss	17:08 0:00 [kworker/u8:10-foreground -d -s -pdm]
root	1047	0.0.0.0	0.1 11664 5620 1t1y	R+	17:12 0:00 sudo su
root	1048	0.0.0.0	0.1 11664 940 0tsr/o	Ss	17:12 0:00 sudo su
root	1049	0.0.0.0	0.1 11664 940 0tsr/o	Ss	17:12 0:00 sudo su
root	1050	0.0.0.0	0.1 7636 4400 0tsr/o	S	17:12 0:00 bash
root	1082	0.0.0.0	0 0 0	I	17:17 0:00 [kworker/u8:3-events]
root	1083	0.0.0.0	0 0 0	I	17:17 0:00 [kworker/u8:3-events]
root	1098	0.0.0.0	0 0 0	I	17:28 0:00 [kworker/u8:10-foreground -d -s]
root	1116	0.0.0.0	0 0 0	I	17:29 0:00 [kworker/u8:0-events_unbound]
root	1120	0.0.0.0	0 0 0	I	17:31 0:00 [kworker/u8:2-events]
root	1122	0.0.0.0	0 0 0	I	17:31 0:00 [kworker/u8:2-events]
root	1180	0.0.0.0	0 0 0	I	17:33 0:00 [kworker/u12]
root	1140	0.0.0.0	0 0 0	I	17:35 0:00 [kworker/z2]

## 15. top – Monitor Processes

## Live view of CPU and memory usage

```
[Intersight on PRANDINI - Virtual Machine Connection]
File Action Media Clipboard View Help

1:0 ~ 17:57:42 on Fri Mar 29 2019, 2 users, load average: 0.00, 0.00, 0.00
Tasks: 125 total, 1 running, 124 sleeping, 0 stopped, 0 zombie
CPU(s): 0.00 us, 0.91 sy, 0.01 ni, 99.44 id, 0.2 wa, 0.0 hi, 0.1 si, 0.0 st
Mem: 3911.4 total, 3469.0 free, 222.5 used, 219.9 buff/cache
Swap: 3911.0 free, 0.0 used, 3463.8 avail Mem

TOP USER      R  NI   VIRT   RES   SHR S %CPU %MEM    TIME+ COMMAND
123 root      0  0     0     0     0 I  0.3  0.0 0:00:35 kaerker@33-events
123 root      20  0     0     0     0 S  0.3  0.0 0:00:03 jdd@0-m8-0
353 root      20  0     0     0     0 S  0.3  0.0 0:00:03 jdd@0-m8-0
123 root      20  0     0     0     0 S  0.0  0.0 0:00:00 rtm
123 root      20  0     0     0     0 S  0.0  0.0 0:00:00 kthread
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 migration_0
5 root       0 -20    0     0     0 I  0.0  0.0 0:00:00 idle_inject
6 root       0 -20    0     0     0 I  0.0  0.0 0:00:00 flush
8 root       0 -20    0     0     0 I  0.0  0.0 0:00:00 netns
10 root      0  0     0     0     0 S  0.0  0.0 0:00:00 kaerker@0-highpri
11 root      20  0     0     0     0 S  0.0  0.0 0:00:00 rtm
11 root      20  0     0     0     0 S  0.0  0.0 0:00:00 rcutasks_trace_
12 root      20  0     0     0     0 S  0.0  0.0 0:00:00 rcutasks_trace
13 root      20  0     0     0     0 S  0.0  0.0 0:00:00 migration_0
14 root      20  0     0     0     0 I  0.0  0.0 0:00:08 rousched
15 root      rt  0     0     0     0 S  0.0  0.0 0:00:02 migration_0
16 root      -51 0     0     0     0 S  0.0  0.0 0:00:00 idle_inject0
17 root      20  0     0     0     0 I  0.0  0.0 0:00:75 kaerker@33-events
18 root      20  0     0     0     0 S  0.0  0.0 0:00:00 cpudq
19 root      20  0     0     0     0 S  0.0  0.0 0:00:00 cpudq
20 root      20  0     0     0     0 S  0.0  0.0 0:00:00 idletimer/1
21 root      rt  0     0     0     0 S  0.0  0.0 0:00:19 migration/1
22 root      20  0     0     0     0 S  0.0  0.0 0:00:02 ksftisr/0
24 root      20  0     0     0     0 S  0.0  0.0 0:00:00 kaerker@20m-events_highpri
25 root      20  0     0     0     0 S  0.0  0.0 0:00:00 cpudq
26 root      -51 0     0     0     0 S  0.0  0.0 0:00:00 idle_inject/2
27 root      20  0     0     0     0 S  0.0  0.0 0:00:00 migration_0
28 root      20  0     0     0     0 S  0.0  0.0 0:00:02 ksftisr/0
30 root      0 -20    0     0     0 I  0.0  0.0 0:00:00 kaerker@20m-events_highpri
31 root      20  0     0     0     0 S  0.0  0.0 0:00:00 cpudq
32 root      20  0     0     0     0 S  0.0  0.0 0:00:00 idle_inject/3
33 root      rt  0     0     0     0 S  0.0  0.0 0:00:16 migration/3
34 root      20  0     0     0     0 S  0.0  0.0 0:00:03 ksftisr/3
35 root      20  0     0     0     0 S  0.0  0.0 0:00:00 kaerker@20m-events_highpri
37 root      20  0     0     0     0 S  0.0  0.0 0:00:00 kdevtmpfs
38 root      20  0     0     0     0 I  0.0  0.0 0:00:00 inet_frag_wq
39 root      20  0     0     0     0 S  0.0  0.0 0:00:00 migration_0
40 root      20  0     0     0     0 S  0.0  0.0 0:00:00 khungtaskd
41 root      20  0     0     0     0 S  0.0  0.0 0:00:00 com_resaper
```

## 16. history – Show Command History

Displays previously executed commands.

```
15: ~$ rm -r demo001
16: ~$ 
17: ~$ clear
18: ~$ ls
19: ~$ touch demo002
20: ~$ ls
21: ~$ touch test003
22: ~$ cat test003
23: ~$ ls
24: ~$ clear
25: ~$ cat < i
26: ~$ cat > img
27: ~$ rm img
28: ~$ clear
29: ~$ clear
30: ~$ cat test003
31: ~$ cat test003
32: ~$ ls
33: ~$ clear
34: ~$ cp test003 test_copy
35: ~$ cat test_copy
36: ~$ clear
37: ~$ mv test003 test_rename
38: ~$ ls
39: ~$ clear
40: ~$ rm test_rename
41: ~$ ls
42: ~$ clear
43: ~$ ls
44: ~$ whoami
45: ~$ rm test
46: ~$ ls
47: ~$ clear
48: ~$ whoami
49: ~$ id
50: ~$ clear
51: ~$ id
52: ~$ clear
53: ~$ uname -a
54: ~$ free -m
55: ~$ ps aux
56: ~$ clear
57: ~$ ls
58: ~$ clear
59: ~$ top
60: ~$ clear
```

## Networking

### 17. ip a – Show IP Addresses

Displays all network interfaces and their IPs.

```
root@priyanshi:~# ip a
1: lo: <LOOPBACK,NOQUEUE,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 127.255 scope host lo
        valid_lft forever preferred_lft forever
        link-layer brd 00:00:00:00:00:00
        valid_lft forever preferred_lft forever
2: eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc mq state DOWN group default qlen 1000
    link/ether 00:15:5d:fe:bb:10 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.10 brd 192.168.1.255 scope global dynamic eth0
        valid_lft 644998sec preferred_lft 644998sec
        link-layer brd fe:80:15:5d:fe:bb:10:64
        valid_lft forever preferred_lft forever
root@priyanshi:~#
```

### 18. ping <host> – Test Connectivity

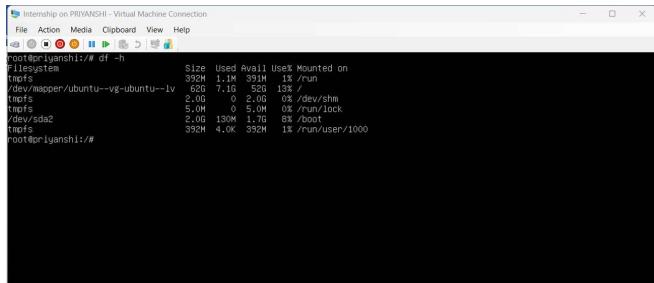
Sends packets to a host to check if reachable.

```
root@priyanshi:~# ping 172.22.126.183
PING 172.22.126.183 (172.22.126.183) 56(84) bytes of data.
64 bytes from 172.22.126.183: icmp_seq=1 ttl=64 time=0.046 ms
64 bytes from 172.22.126.183: icmp_seq=2 ttl=64 time=0.046 ms
64 bytes from 172.22.126.183: icmp_seq=3 ttl=64 time=0.045 ms
64 bytes from 172.22.126.183: icmp_seq=4 ttl=64 time=0.042 ms
64 bytes from 172.22.126.183: icmp_seq=5 ttl=64 time=0.045 ms
```

## Disk & Memory

### 20. df -h – Disk Usage

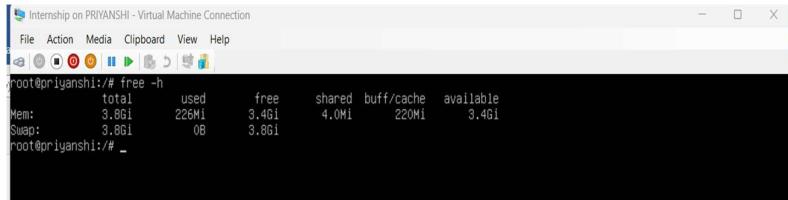
Shows available and used disk space in human-readable format.



```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# df -h
Filesystem      Size  Used Avail Mounted on
tmpfs           393M   16K  392M  /run
/dev/mapper/ubuntu--vg-ubuntu--1v  626G  7.1G  520G  /var
tmpfs           2.0G   0  2.0G  /dev/shm
tmpfs           5.0M   0  5.0M  /var/run/lock
tmpfs           2.0G  130K  199M  /dev/shm
tmpfs           392M  4.0K  392M  /run/user/1000
root@priyanshi:~#
```

## 21. free -h – Memory Usage

Displays RAM and swap usage.



```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
root@priyanshi:~# free -h
              total        used         free       shared  buff/cache   available
Mem:      3.8Gi       226Mi      3.4Gi      4.0Mi     220Mi      3.4Gi
Swap:            0B          0B      3.8Gi
root@priyanshi:~#
```

## Task :2Configure static and dynamic IP Dynamic IP:

- **Dynamic IP:**

The image shows two terminal windows side-by-side. The left window displays the contents of the file `/etc/netplan/50-cloud-init.yaml`, which contains configuration for a dynamic IP address on interface `eth0`. The right window shows the command `sudo nano /etc/netplan/50-cloud-init.yaml` being run in a terminal.

```
Intership on PRYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
GNU nano 6.2                               /etc/netplan/50-cloud-init.yaml
# This file is generated from information provided by the datasource. Changes
# to it will not persist across an instance reboot. To disable cloud-init's
# network configuration capabilities, write a file
# /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:
# network: {config: disabled}

network:
  ethernets:
    eth0:
      dhcp4: true
  version: 2

Intership on PRYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@pryanshi:~$ sudo nano /etc/netplan/50-cloud-init.yaml
```

The image shows a single terminal window displaying the output of the `ip addr show` command. It lists the interfaces `lo` and `eth0`. The `lo` interface is a loopback interface with a static IP of `127.0.0.1/8`. The `eth0` interface is an Ethernet interface with a dynamic IP of `172.22.126.183/24`.

```
Intership on PRYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@pryanshi:~$ ip addr show
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 127.255.255.255 scope host lo
        valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:bb:01:18 brd ff:ff:ff:ff:ff:ff
    inet 172.22.126.183/24 brd 172.22.127.255 scope global dynamic eth0
        valid_lft 82963sec preferred_lft 82963sec
        inet6 fe80::155d:bbff:fe01:18%eth0 brd fe80::ff:ff:fe01:18 scope link
            valid_lft forever preferred_lft forever
ubuntu@pryanshi:~$
```

- **Static IP:**

The image shows a single terminal window displaying the command `sudo nano /etc/netplan/50-cloud-init.yaml` being run in a terminal. This command edits the netplan configuration file to set a static IP address on the `eth0` interface.

```
Intership on PRYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@pryanshi:~$ sudo nano /etc/netplan/50-cloud-init.yaml
```

```
# This file is generated from information provided by the datasource. Changes
# to it will not persist across an instance reboot. To disable cloud-init's
# network configuration capabilities, write a file
# /etc/cloud/cloud.cfg.d/99-disable-network-config.cfg with the following:
# network: (config: disabled)

network:
  version: 2
  ethernets:
    eth0:
      dhcp4: no
      addresses:
        - 192.168.10.10/24
      gateway4: 192.168.10.1
      nameservers:
        addresses:
          - 8.8.8.8
          - 1.1.1.1
```

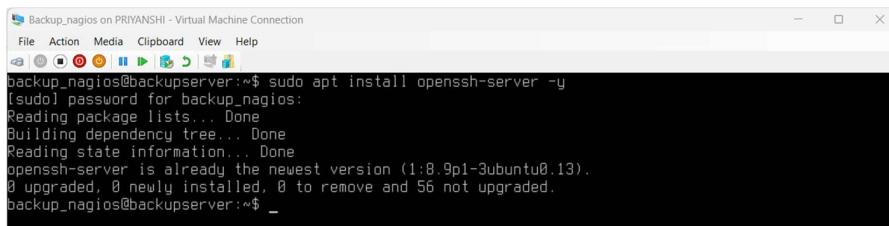
```
ubuntu@priyanshi:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
2: eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:bb:01:10 brd ff:ff:ff:ff:ff:ff
        inet 192.168.10.10/24 brd 192.168.10.255 scope global eth0
            valid_lft forever preferred_lft forever
        inet6 fe80::155d:bbff:fe01:10/64 scope link
            valid_lft forever preferred_lft forever
ubuntu@priyanshi:~$ _
```

## Task 7: Enable SSH connection between two VMs

- VM1: Backup\_nagios
- VM2: Internship

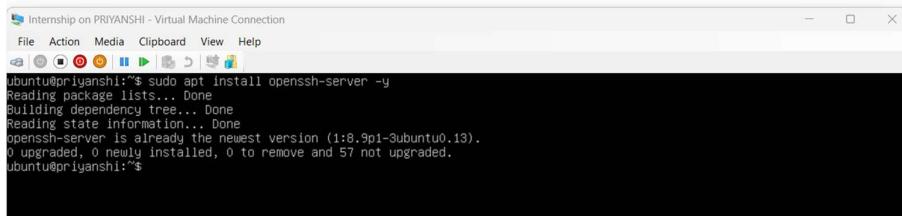
Install SSH server on both VMs:

- VM1:



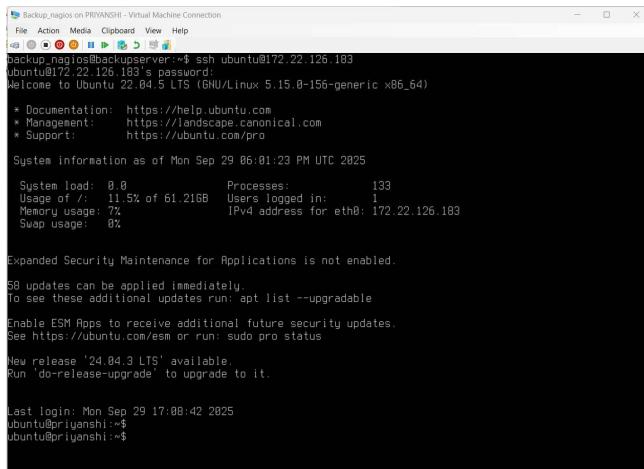
```
File Action Media Clipboard View Help
backup_nagios@backupserver:~$ sudo apt install openssh-server -y
(sudo) password for backup_nagios:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
openssh-server is already the newest version (1:8.9p1-3ubuntu0.13).
0 upgraded, 0 newly installed, 0 to remove and 56 not upgraded.
backup_nagios@backupserver:~$ _
```

- VM2:



```
File Action Media Clipboard View Help
ubuntu@priyanshi:~$ sudo apt install openssh-server -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
openssh-server is already the newest version (1:8.9p1-3ubuntu0.13).
0 upgraded, 0 newly installed, 0 to remove and 57 not upgraded.
ubuntu@priyanshi:~$ _
```

- From VM1 to access VM2:



```
File Action Media Clipboard View Help
backup_nagios@backupserver:~$ ssh ubuntu@172.22.126.189
ubuntu@172.22.126.189's password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-196-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Mon Sep 29 06:01:23 PM UTC 2025

System load: 0.0          Processes:           133
Usage of /: 11.5% of 61.21GB Users logged in: 1
Memory usage: 7%
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

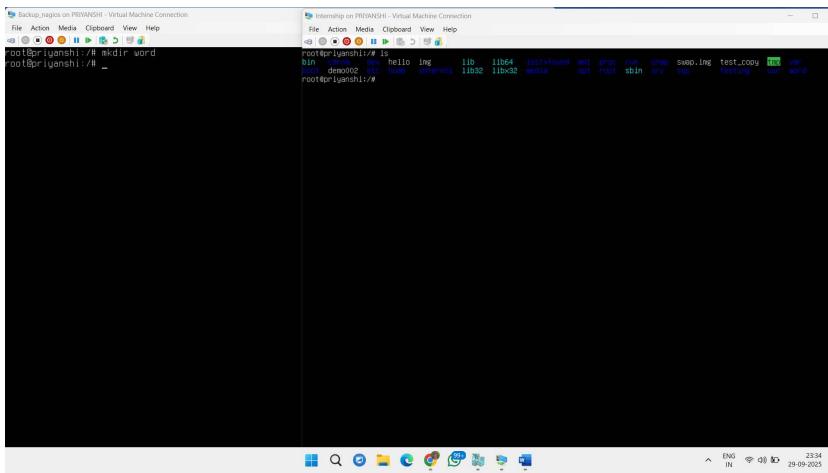
58 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

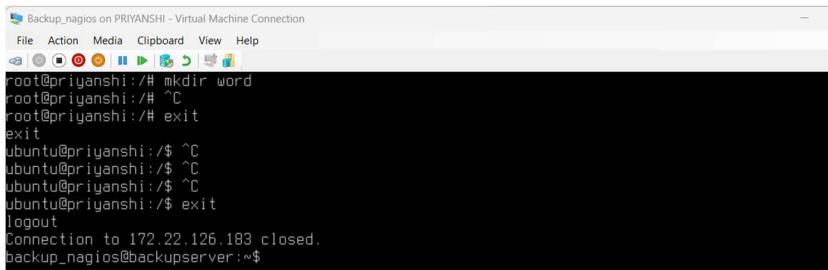
New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Mon Sep 29 17:00:42 2025
ubuntu@priyanshi:~$
```

- Example: Creating directory on VM1 and see reflection on VM2:



- **Connection Closed:**



## Task 8: Install and configure a basic web server (Apache/Nginx)

- A web server is software that delivers web pages (HTML, PHP, etc.) to clients (like your browser) over HTTP/HTTPS.

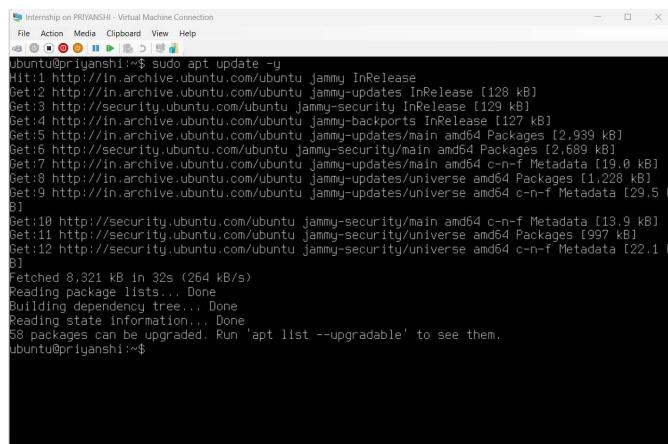
Two common web servers in Linux:

- **Apache (httpd)** → Most widely used, easy to configure.
- **Nginx** → Lightweight, high-performance, commonly used for modern setups.

### Option 1: Install & Configure Apache Web Server

#### Step 1: Update your package manager

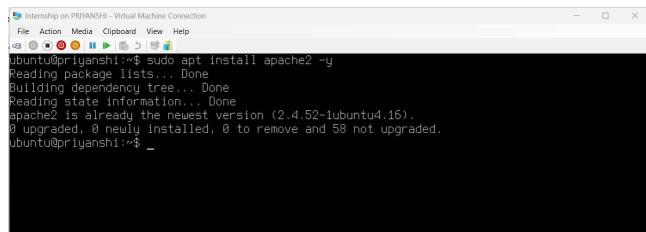
```
sudo apt update -y
```



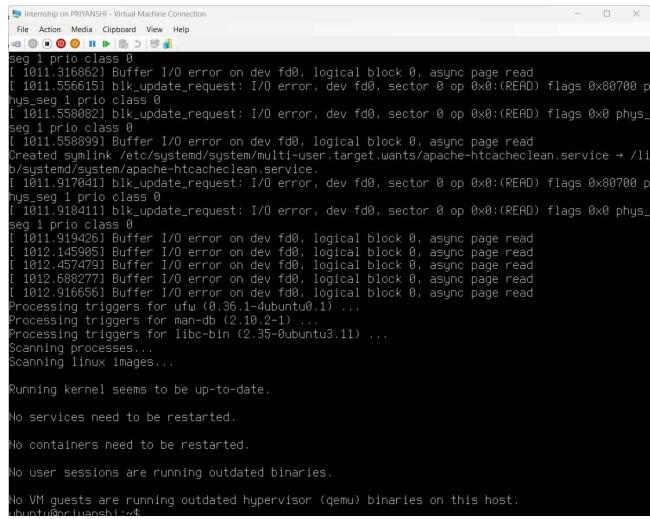
```
Intership on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@priyanshi:~$ sudo apt update -y
Hit:1 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2,939 kB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [2,589 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [19.0 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,226 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 c-n-f Metadata [29.5 kB]
Get:10 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [13.9 kB]
Get:11 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [997 kB]
Get:12 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [22.1 kB]
Fetched 8,321 kB in 32s (264 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
58 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@priyanshi:~$
```

#### Step 2: Install Apache

```
sudo apt install apache2 -y
```



```
Intership on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@priyanshi:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.52-1ubuntu4.16).
0 upgraded, 0 newly installed, 0 to remove and 58 not upgraded.
ubuntu@priyanshi:~$ _
```

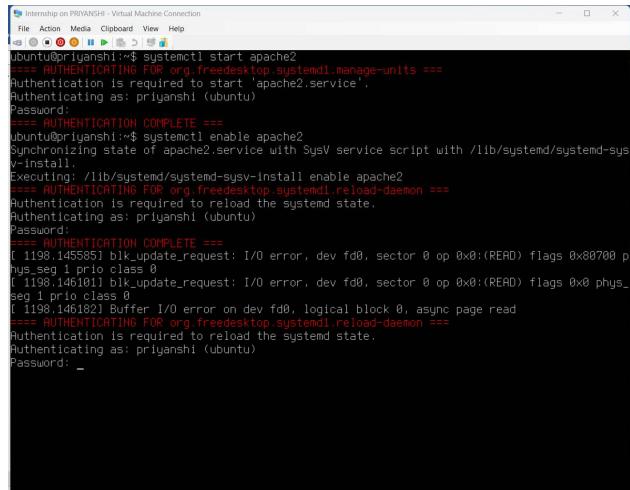


```
File Action Media Clipboard View Help
Seq 1 prio class 0
[ 1011 316862] Buffer I/O error on dev fd0, logical block 0, async page read
[ 1011 556615] blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x80700 p
nys_seq 1 prio class 0
[ 1011 558082] blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x0 phys_
seq 1 prio class 0
[ 1011 558899] Buffer I/O error on dev fd0, logical block 0, async page read
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /li
b/systemd/system/apache-htcacheclean.service.
[ 1011 917041] blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x80700 p
nys_seq 1 prio class 0
[ 1011 918411] blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x0 phys_
seq 1 prio class 0
[ 1011 919426] Buffer I/O error on dev fd0, logical block 0, async page read
[ 1012 145985] Buffer I/O error on dev fd0, logical block 0, async page read
[ 1012 457479] Buffer I/O error on dev fd0, logical block 0, async page read
[ 1012 568277] Buffer I/O error on dev fd0, logical block 0, async page read
[ 1012 916656] Buffer I/O error on dev fd0, logical block 0, async page read
Processing triggers for ufw (0.36.1-4ubuntu0.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.11) ...
Scanning processes...
Scanning Linux Images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
Ubuntu@privanshi:~$
```

### Step 3: Start and enable Apache

```
sudo systemctl start apache2
```

```
sudo systemctl enable apache2
```



```
File Action Media Clipboard View Help
Ubuntu@privanshi:~$ sudo systemctl start apache2
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ====
Authentication is required to start 'apache2.service'.
Authenticating as: priyanshi (ubuntu)
Password: **** AUTHENTICATION COMPLETE ****
Ubuntu@privanshi:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/system-sys
* Install
Executing: /lib/systemd/systemd-sysv-install enable apache2
==== AUTHENTICATING FOR org.freedesktop.systemd1.reload-daemon ====
Authentication is required to reload the systemd state.
Authenticating as: priyanshi (ubuntu)
Password: **** AUTHENTICATION COMPLETE ****
[ 1198.146101] blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x80700 p
nys_seq 1 prio class 0
[ 1198.146101] blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x0 phys_
seq 1 prio class 0
[ 1198.146182] Buffer I/O error on dev fd0, logical block 0, async page read
==== AUTHENTICATING FOR org.freedesktop.systemd1.reload-daemon ====
Authentication is required to reload the systemd state.
Authenticating as: priyanshi (ubuntu)
Password: _
```

### Step 4: Check Apache status

```
systemctl status apache2
```

```
Internship on PRINSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@privanshi:~$ systemctl status apache2
apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2025-09-30 10:43:30 UTC; 4min 13s ago
       Docs: https://httpd.apache.org/docs/2.4/
Main PID: 17130 (apache2)
    Tasks: 55 (limit: 4557)
      Memory: 5.3MiB
        CPU: 39ms
      CGroup: /system.slice/apache2.service
              └─17130 /usr/sbin/apache2 -k start
                  ├─17131 /usr/sbin/apache2 -k start
                  ├─17132 /usr/sbin/apache2 -k start
                  └─17132 /usr/sbin/apache2 -k start

Sep 30 10:43:30 privanshi systemd[1]: Starting The Apache HTTP Server...
Sep 30 10:43:30 privanshi apachectl[17129]: AH00558: apache2: could not reliably determine ...
Sep 30 10:43:30 privanshi systemd[1]: Started The Apache HTTP Server.
lines 1-16/16 (END)
```

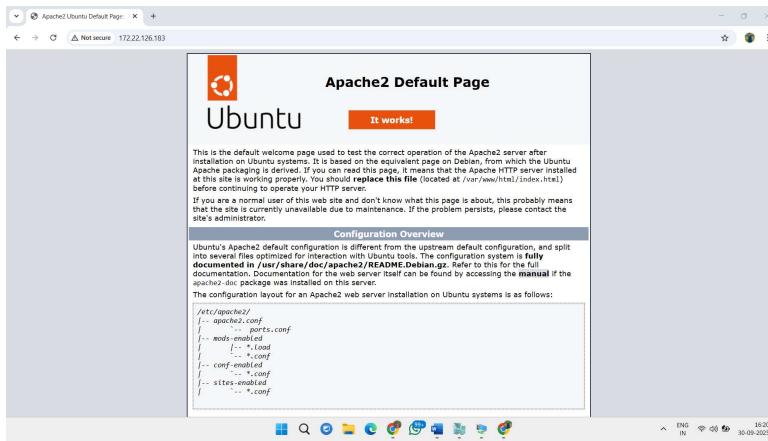
#### **Step 5: Allow firewall (if enabled)**

```
sudo ufw allow 80/tcp
```

```
Internship on PRIYANSHI - Virtual Machine Connection
File Action Media Clipboard View Help
ubuntu@priyanshi:~$ sudo ufw allow 80/tcp
Rules updated (v6)
ubuntu@priyanshi:~$ _
```

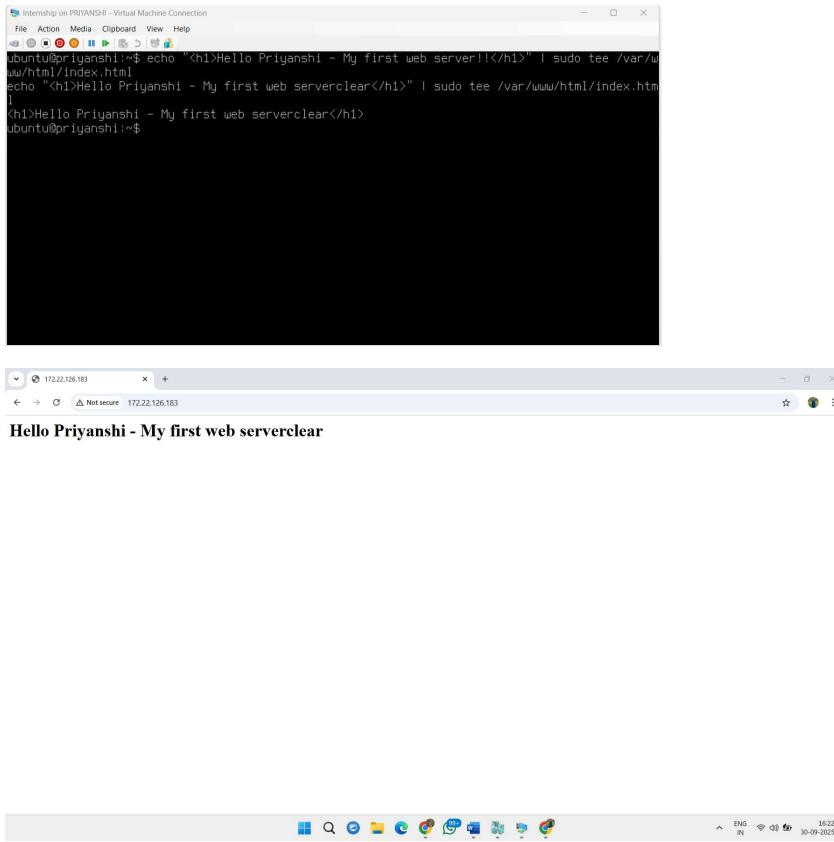
## Step 6: Test Apache

- Open your browser and type:
  - [http://<your\\_VM\\_IP>](http://<your_VM_IP>)



## **Step 7: Host a Custom Website**

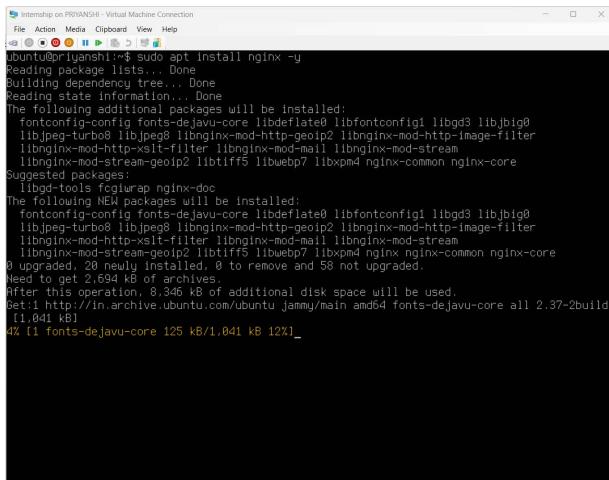
1. Create an HTML file:
  2. echo "<h1>Hello Priyanshi - My First Web Server!</h1>" | sudo tee /var/www/html/index.html



## Option 2: Install & Configure Nginx Web Server

### Step 1: Install Nginx

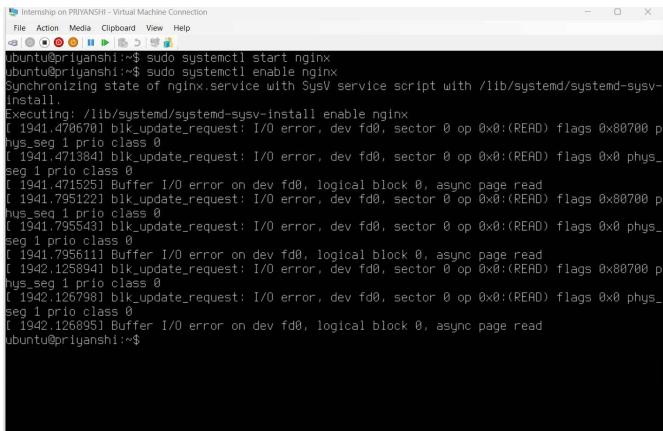
```
sudo apt install nginx -y
```



### Step 2: Start and enable Nginx

```
sudo systemctl start nginx
```

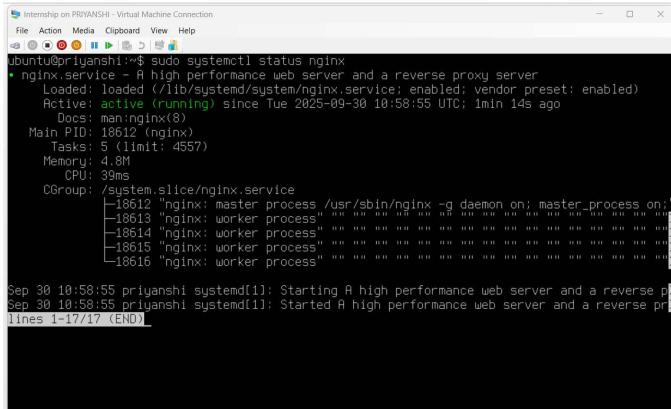
```
sudo systemctl enable nginx
```



```
ubuntu@priyanshi:~$ sudo systemctl start nginx
ubuntu@priyanshi:~$ sudo systemctl enable nginx
Synchronizing state of nginx.service with SysV service script with /lib/systemd/systemd-sysv-install...
Executing: /lib/systemd/systemd-sysv-install enable nginx
( 1941.479670) blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x80700 phys_sect 1 prio class 0
( 1941.471384) blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x0 phys_sect 1 prio class 0
( 1941.471525) Buffer I/O error on dev fd0, logical block 0, async page read
( 1941.795122) blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x80700 phys_sect 1 prio class 0
( 1941.795543) blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x0 phys_sect 1 prio class 0
( 1941.795611) Buffer I/O error on dev fd0, logical block 0, async page read
( 1942.125894) blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x80700 phys_sect 1 prio class 0
( 1942.126798) blk_update_request: I/O error, dev fd0, sector 0 op 0x0:(READ) flags 0x0 phys_sect 1 prio class 0
( 1942.126895) Buffer I/O error on dev fd0, logical block 0, async page read
ubuntu@priyanshi:~$
```

### Step 3: Check Nginx status

systemctl status nginx

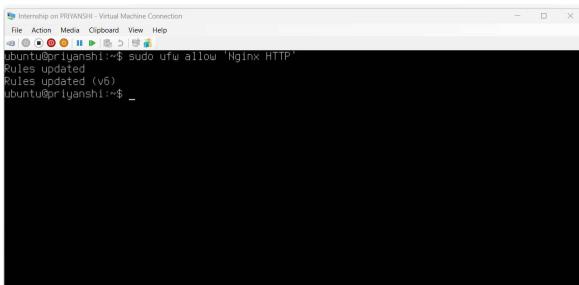


```
ubuntu@priyanshi:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-09-30 10:58:55 UTC; 1min 14s ago
     Docs: man:nginx(8)
 Main PID: 18612 (nginx)
    Tasks: 5 (limit: 4557)
   Memory: 4.8M
      CPU: 39ms
     CGroup: /system.slice/nginx.service
             └─18612 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
               ├─18613 "nginx: worker process"
               ├─18614 "nginx: worker process"
               ├─18615 "nginx: worker process"
               └─18616 "nginx: worker process"

Sep 30 10:58:55 priyanshi systemd[1]: Starting A high performance web server and a reverse proxy...
Sep 30 10:58:55 priyanshi systemd[1]: Started A high performance web server and a reverse proxy...
1 lines 1-17 (END)
```

### Step 4: Allow firewall

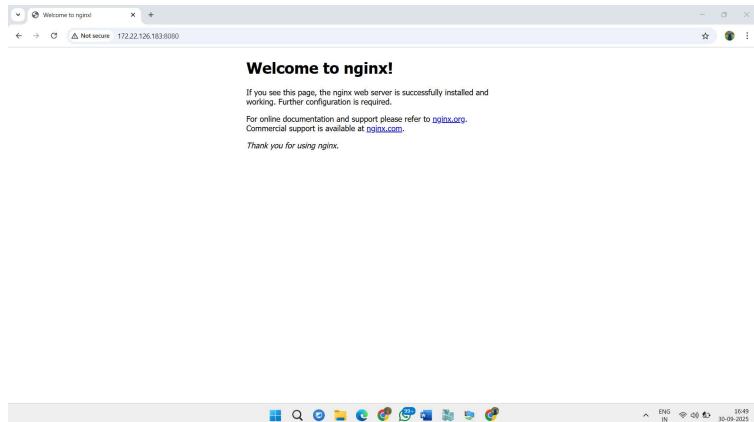
sudo ufw allow 'Nginx HTTP'



```
ubuntu@priyanshi:~$ sudo ufw allow 'Nginx HTTP'
Rules updated
Rules updated (v6)
ubuntu@priyanshi:~$
```

### Step 5: Test Nginx

- Open:
- [http://<your\\_VM\\_IP>](http://<your_VM_IP>)



## Step 6: Host a Custom Website

1. Create an HTML file:
2. echo "<h1>Hello Priyanshi - My First Nginx Server!</h1>" | sudo tee /var/www/html/index.nginx-debian.html

A screenshot of a terminal window titled "Ubuntu on PRIYANSHI - Virtual Machine Connection". It shows the command "echo "<h1>Hello Priyanshi - This is Nginx Server</h1>" | sudo tee /var/www/html/index.nginx-debian.html" being run and its output, which is the same command with the addition of "<h1>Hello Priyanshi - This is Nginx Server</h1>".