

- 1) Create user with name Techie and provide sudo access to user.

```
ubuntu@ubuntu:~/Desktop$ ll
total 16
drwxr-xr-x  3 ubuntu ubuntu  100 Aug 29 07:43 ./
drwxr-x--- 18 ubuntu ubuntu  540 Aug 28 12:16 ../
-rw-----  1 ubuntu ubuntu 12288 Aug 28 14:27 .swp
drwxrwxr-x  2 ubuntu ubuntu   40 Aug 29 07:43 techie/
-rwxr-xr-x  1 ubuntu ubuntu  460 Aug 25 09:06 ubuntu-desktop-bootstrap_ubuntu-desktop-b
ubuntu@ubuntu:~/Desktop$ chmod 777 techie
ubuntu@ubuntu:~/Desktop$ ll
total 16
drwxr-xr-x  3 ubuntu ubuntu  100 Aug 29 07:43 ./
drwxr-x--- 18 ubuntu ubuntu  540 Aug 28 12:16 ../
-rw-----  1 ubuntu ubuntu 12288 Aug 28 14:27 .swp
drwxrwxrwx  2 ubuntu ubuntu   40 Aug 29 07:43 techie/
-rwxr-xr-x  1 ubuntu ubuntu  460 Aug 25 09:06 ubuntu-desktop-bootstrap_ubuntu-desktop-b
ubuntu@ubuntu:~/Desktop$
```

2. Navigate to the home directory

```
ubuntu@ubuntu:~/Desktop$ ~
bash: /home/ubuntu: Is a directory
ubuntu@ubuntu:~/Desktop$
```

3. Create a new directory

```
ubuntu@ubuntu:~/Desktop$ mkdir apple
ubuntu@ubuntu:~/Desktop$
```

4. List the contents of a directory

```
ubuntu@ubuntu:~/Desktop$ ls
apple  techie  ubuntu-desktop-bootstrap_ubuntu-desktop-bootstrap.desktop
ubuntu@ubuntu:~/Desktop$
```

## 5. Change the current directory

```
ubuntu@ubuntu:~$ cd
ubuntu@ubuntu:~$ ls
Desktop  DEV_OPS.txt  Downloads  Music  Public  techie_horizon  Videos
DEVOPS   Documents    file       Pictures  snap    Templates
```

## 6. Create a new empty file

```
ubuntu@ubuntu:~$ touch techie.txt
ubuntu@ubuntu:~$ ls
Desktop  DEV_OPS.txt  Downloads  Music  Public  techie_horizon  Templates
DEVOPS   Documents    file       Pictures  snap    techie.txt      Videos
```

## 7. View the contents of a file

```
vboxuser@Ubuntu:~$ vi Techie
vboxuser@Ubuntu:~$ cat Techie
hi sir
.
vboxuser@Ubuntu:~$
```

## 8. Copy a file to another location

```
ubuntu@ubuntu:~$ cp techie.txt apple
ubuntu@ubuntu:~$ ls
apple  DEVOPS  Documents  file  Pictures  snap  techie.txt  Videos
Desktop  DEV_OPS.txt  Downloads  Music  Public  techie_horizon  Templates
```

## 9. Move a file to another location

```

ubuntu@ubuntu:~$ ls
apple  DEVOPS  Documents  file  Pictures  snap  techie.txt  Videos
Desktop  DEV OPS.txt  Downloads  Music  Public  techie_horizon  Templates
ubuntu@ubuntu:~$ mv techie.txt DEV OPS
ubuntu@ubuntu:~$ ls
apple  DEV OPS  DEV OPS.txt  Downloads  Music  Public  techie_horizon  Videos
Desktop  DEV OPS  Documents  file  Pictures  snap  Templates
ubuntu@ubuntu:~$

```

## 10. Rename a file

```

ubuntu@ubuntu:~$ ls
apple  DEV OPS  DEV OPS.txt  Downloads  Music  Public  techie_horizon  Videos
Desktop  DEV OPS  Documents  file  Pictures  snap  Templates
ubuntu@ubuntu:~$ mv techie_horizon TECHIE_HORIZON
ubuntu@ubuntu:~$ ls
apple  DEV OPS  DEV OPS.txt  Downloads  Music  Public  TECHIE_HORIZON  Videos
Desktop  DEV OPS  Documents  file  Pictures  snap  Templates
ubuntu@ubuntu:~$

```

## 11. Delete a file

```

ubuntu@ubuntu:~$ ls
apple  DEV OPS  Documents  file  Music  Public  TECHIE_HORIZON  test
Desktop  DEV OPS  Downloads  mango  Pictures  snap  Templates  Videos
ubuntu@ubuntu:~$ rm mango
ubuntu@ubuntu:~$ ls
apple  DEV OPS  Documents  file  Pictures  snap  Templates  Videos
Desktop  DEV OPS  Downloads  Music  Public  TECHIE_HORIZON  test
ubuntu@ubuntu:~$

```

## 12. Grant or revoke permissions on a file or directory

```

ubuntu@ubuntu:~$ ll
total 56
drwxr-x--- 20 ubuntu ubuntu 580 Aug 29 11:43 ./
drwxr-xr-x 1 root root 80 Aug 25 09:06 ../
drwxrwxr-x 2 ubuntu ubuntu 40 Aug 29 10:16 apple/
-rw-r----- 1 ubuntu ubuntu 567 Aug 29 07:42 .bash_history
-rw-r----- 1 ubuntu ubuntu 220 Aug 25 09:06 .bash_logout
-rw-r----- 1 ubuntu ubuntu 3771 Aug 25 09:06 .bashrc
drwx----- 11 ubuntu ubuntu 240 Aug 25 09:07 .cache/
drwxr-xr-x 14 ubuntu ubuntu 440 Aug 29 07:42 .config/
drwxr-xr-x 4 ubuntu ubuntu 120 Aug 29 07:54 Desktop/
drwxrwxr-x 2 ubuntu ubuntu 60 Aug 29 10:09 DEV OPS/
drwxrwxr-x 2 ubuntu ubuntu 40 Aug 28 12:06 DEV OPS/
-rw-r----- 1 ubuntu ubuntu 12288 Aug 28 12:16 .DEV OPS.swp
-rw-r----- 1 ubuntu ubuntu 12288 Aug 28 12:16 .DEV OPS.txt.swp
drwxr-xr-x 2 ubuntu ubuntu 40 Aug 25 09:07 Documents/
drwxr-xr-x 2 ubuntu ubuntu 40 Aug 25 09:07 Downloads/
drwxrwxr-x 2 ubuntu ubuntu 40 Aug 28 12:08 file/
drwx----- 2 ubuntu ubuntu 40 Aug 25 09:06 .gvfs/
drwx----- 4 ubuntu ubuntu 80 Aug 25 09:07 .local/
drwxr-xr-x 2 ubuntu ubuntu 40 Aug 25 09:07 Music/
drwxr-xr-x 3 ubuntu ubuntu 60 Aug 28 07:49 Pictures/
-rw-r----- 1 ubuntu ubuntu 807 Aug 25 09:06 .profile
drwxr-xr-x 2 ubuntu ubuntu 40 Aug 25 09:07 Public/
drwx----- 5 ubuntu ubuntu 100 Aug 28 06:25 snap/
-rw-r----- 1 ubuntu ubuntu 0 Aug 25 09:07 .sudo_as_admin_s
-rw-r----- 1 ubuntu ubuntu 12288 Aug 28 09:46 .swp
drwxrwxr-x 2 ubuntu ubuntu 40 Aug 28 09:27 TECHIE_HORIZON/
drwxr-xr-x 2 ubuntu ubuntu 40 Aug 25 09:07 Templates/
-rw-rw-r-- 1 ubuntu ubuntu 27 Aug 29 11:35 test
drwxr-xr-x 2 ubuntu ubuntu 40 Aug 25 09:07 Videos/
ubuntu@ubuntu:~$ chmod 777 apple
ubuntu@ubuntu:~$ ll

```

```

drwxr-xr-x  2 ubuntu ubuntu    40 Aug 25 09:07 Videos/
ubuntu@ubuntu:~$ chmod 777 apple
ubuntu@ubuntu:~$ ll
total 56
drwxr-xr-x 20 ubuntu ubuntu    580 Aug 29 11:43 ./
drwxr-xr-x  1 root   root       80 Aug 25 09:06 ../
drwxrwxrwx  2 ubuntu ubuntu    40 Aug 29 10:16 apple/
-rw-r----- 1 ubuntu ubuntu   567 Aug 29 07:42 .bash_history
-rw-r----- 1 ubuntu ubuntu   220 Aug 25 09:06 .bash_logout
-rw-r----- 1 ubuntu ubuntu  3771 Aug 25 09:06 .bashrc
drwxr----- 11 ubuntu ubuntu   240 Aug 25 09:07 .cache/
drwxr-xr-x 14 ubuntu ubuntu   440 Aug 29 07:42 .config/
drwxr-xr-x  4 ubuntu ubuntu   120 Aug 29 07:54 Desktop/
drwxrwxr-x  2 ubuntu ubuntu    60 Aug 29 10:09 DEV_OPS/
drwxrwxr-x  2 ubuntu ubuntu    40 Aug 28 12:06 DEVOPS/
-rw-r----- 1 ubuntu ubuntu  12288 Aug 28 12:16 .DEV_OPS.swp
-rw-r----- 1 ubuntu ubuntu  12288 Aug 28 12:16 .DEV_OPS.txt.swp
drwxr-xr-x  2 ubuntu ubuntu    40 Aug 25 09:07 Documents/
drwxr-xr-x  2 ubuntu ubuntu    40 Aug 25 09:07 Downloads/
drwxrwxr-x  2 ubuntu ubuntu    40 Aug 28 12:08 file/
drwx----- 2 ubuntu ubuntu    40 Aug 25 09:06 .gvfs/
drwx----- 4 ubuntu ubuntu    80 Aug 25 09:07 .local/

```

### 13. View the current date and time

```

ubuntu@ubuntu:~$ date
Fri Aug 29 11:53:12 AM UTC 2025
ubuntu@ubuntu:~$

```

### 14. check the system uptime

```

ubuntu@ubuntu:~$ uptime
11:55:27 up 12:33, 1 user, load average: 0.00, 0.00, 0.00
ubuntu@ubuntu:~$

```

### 15. View the running processes

```

ubuntu    5402  0.0  0.1 396896 8696 ?        Sl   Aug28   0:00 /usr/libexec/gvfsd-recent --spawner :1.22 /org/gtk/gv
root      5705  0.0  0.5 601788 42740 ?        Ssl  Aug28   0:08 /usr/libexec/fwupd/fwupd
root      5957  0.0  0.0 92648 2892 ?        Ss   Aug28   0:00 gpg-agent --homedir /var/lib/fwupd/gnupg --use-standa
root      6825  0.0  0.1 67380 15464 ?        S<S  03:44   0:01 /usr/lib/systemd/systemd-journald
systemd+  6826  0.0  0.0 91048 7848 ?        Ssl  03:44   0:00 /usr/lib/systemd/systemd-timesyncd
root      7741  0.0  0.0 0 0 ?        I    06:07   0:15 [kworker/1:2-events]
ubuntu    9543  0.0  0.2 40564 19084 ?        S    09:06   0:00 /usr/bin/python3 /usr/bin/gnome-terminal --wait
ubuntu    9544  0.0  0.3 391492 29112 ?        Sl   09:06   0:00 /usr/bin/gnome-terminal.real --wait
ubuntu    9548  0.1  0.6 777060 54648 ?        Ssl  09:06   0:15 /usr/libexec/gnome-terminal-server
ubuntu    9560  0.0  0.0 19692 5316 pts/0    Ss   09:06   0:00 bash
root     10154  0.0  0.0 0 0 ?        I    10:27   0:00 [kworker/u8:1-events_unbound]
root     10161  0.0  0.0 0 0 ?        I    10:30   0:01 [kworker/0:0-events]
root     10234  0.0  0.0 28312 7324 pts/0    S+   10:38   0:00 sudo su -
root     10235  0.0  0.0 28312 2540 pts/1    Ss   10:38   0:00 sudo su -
root     10236  0.0  0.0 20948 4820 pts/1    S    10:38   0:00 su -
root     10237  0.0  0.0 19672 5308 pts/1    S    10:38   0:00 -bash
root     10366  0.0  0.0 0 0 ?        I    11:00   0:00 [kworker/0:2-events]
root     10389  0.0  0.0 0 0 ?        I    11:11   0:00 [kworker/u8:3-events_unbound]
root     10408  0.0  0.0 21084 4816 pts/1    S    11:21   0:00 su techie
techie    10409  0.0  0.0 2800 1624 pts/1    S    11:21   0:00 sh
root     10453  0.0  0.0 28308 7292 pts/1    S+   11:23   0:00 sudo su techie
root     10454  0.0  0.0 28308 2560 pts/2    Ss   11:23   0:00 sudo su techie
root     10455  0.0  0.0 21084 4816 pts/2    S    11:23   0:00 su techie
techie    10456  0.0  0.0 2800 1624 pts/2    S    11:23   0:00 sh
root     10460  0.0  0.0 28308 7528 pts/2    S+   11:24   0:00 sudo su ubuntu
root     10461  0.0  0.0 28308 2580 pts/3    Ss   11:24   0:00 sudo su ubuntu
root     10462  0.0  0.0 21084 5052 pts/3    S    11:24   0:00 su ubuntu
ubuntu    10463  0.0  0.0 19680 5288 pts/3    S    11:24   0:00 bash
root     10497  0.0  0.0 0 0 ?        I    11:34   0:00 [kworker/u8:2-events_unbound]
root     10649  0.0  0.0 0 0 ?        I    11:50   0:00 [kworker/1:0-events]
ubuntu    10672  0.0  0.0 22284 4760 pts/3    R+   11:58   0:00 ps aux
ubuntu@ubuntu:~$

```

## 16. Kill a running process

```
vboxuser@Ubuntu:~$ sleep 300 &
[2] 15896
vboxuser@Ubuntu:~$ kill -9 15896
vboxuser@Ubuntu:~$
[2]+  Killed                  sleep 300
vboxuser@Ubuntu:~$
```

## 17. Install a package using the package manager (e.g., apt or yum).

```
vboxuser@Ubuntu:~$ sudo apt install curl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  curl
0 upgraded, 1 newly installed, 0 to remove and 40 not upgraded.
Need to get 226 kB of archives.
After this operation, 534 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 curl amd64 8.5.0-2ubuntu10.6 [226 kB]
Fetched 226 kB in 1s (293 kB/s)
Selecting previously unselected package curl.
(Reading database ... 151225 files and directories currently installed.)
Preparing to unpack .../curl_8.5.0-2ubuntu10.6_amd64.deb ...
Unpacking curl (8.5.0-2ubuntu10.6) ...
Setting up curl (8.5.0-2ubuntu10.6) ...
Processing triggers for man-db (2.12.0-4build2) ...
vboxuser@Ubuntu:~$
```

## 18. Update the system packages

```
vboxuser@Ubuntu:~$ sudo apt install
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
0 upgraded, 0 newly installed, 0 to remove and 40 not upgraded.
vboxuser@Ubuntu:~$
```

## 19. Create a symbolic link

```

root@Ubuntu:~# echo "hello linux" > original.txt
root@Ubuntu:~# ln -s original.txt shortcut.txt
root@Ubuntu:~# ll
total 100
drwx----- 7 root root 4096 Sep  2 12:24 ./
drwxr-xr-x 23 root root 4096 Aug 30 06:13 ../
-rw-r--r-- 1 root root 14 Sep  1 09:06 alphabets
-rw-r--r-- 1 root root  0 Sep  1 07:27 amazon.tar
-rw----- 1 root root 2632 Sep  2 03:38 .bash_history
-rw-r--r-- 1 root root 3106 Apr 22  2024 .bashrc
drwx----- 2 root root 4096 Aug  5 16:51 .cache/
drwx----- 3 root root 4096 Sep  1 07:40 .config/
-rw-r--r-- 1 root root 199 Sep  1 17:05 employee
-rw-r--r-- 1 root root 165 Sep  1 10:28 employee.txt
-rw-r--r-- 1 root root 43 Sep  1 17:36 file1.sorted
-rw-r--r-- 1 root root  0 Sep  1 17:38 file1.txt
-rw-r--r-- 1 root root 40 Sep  1 17:22 file2.txt
drwxr-xr-x 2 root root 4096 Sep  1 06:37 id/
-rw----- 1 root root 20 Sep  2 05:39 .lessht
-rw-r--r-- 1 root root 18 Sep  1 16:00 marks
-rw-r--r-- 1 root root 119 Sep  1 07:38 my_file.tar
-rw----- 1 root root 348 Sep  2 09:13 .mysql_history
-rw-r--r-- 1 root root 12 Sep  2 12:23 original.txt
-rw-r--r-- 1 root root 161 Apr 22  2024 .profile
lrwxrwxrwx 1 root root 12 Sep  2 12:24 shortcut.txt -> original.txt
drwx----- 6 root root 4096 Aug 30 06:25 snap/
drwx----- 2 root root 4096 Aug 30 06:25 .ssh/
-rw-r--r-- 1 root root 20 Sep  1 16:23 string.txt
-rwxr-xr-x 1 root root 7048 Aug 30 06:23 vboxpostinstall.sh*

```

20. Search for files using the find command

```

root@Ubuntu:~# find /root -type f
/root/.bashrc
/root/.profile
/root/.ssh/authorized_keys
/root/vboxpostinstall.sh
/root/.bash_history
root@Ubuntu:~#

```

21. Compress and decompress files using tar



```

root@Ubuntu:~# tar -zcvf my_file.tar my_file.tar
my_file.tar
root@Ubuntu:~# ll
total 48
drwx----- 6 root root 4096 Sep  1 07:34 ./
drwxr-xr-x 23 root root 4096 Aug 30 06:13 ../
-rw-r--r-- 1 root root  0 Sep  1 07:27 amazon.tar
-rw-r--r-- 1 root root 375 Sep  1 07:17 .bash_history
-rw-r--r-- 1 root root 3106 Apr 22 2024 .bashrc
drwx----- 2 root root 4096 Aug  5 16:51 .cache/
drwxr-xr-x 2 root root 4096 Sep  1 06:37 id/
-rw-r--r-- 1 root root 119 Sep  1 07:34 my_file.tar
-rw-r--r-- 1 root root 161 Apr 22 2024 .profile
drwx----- 6 root root 4096 Aug 30 06:25 snap/
drwx----- 2 root root 4096 Aug 30 06:25 .ssh/
-r-xr-xr-x 1 root root 7049 Aug 30 06:23 vboxpostinstall.sh*
root@Ubuntu:~# █

```

```

root@Ubuntu:~# tar -xvf my_file.tar
my_file.tar
root@Ubuntu:~# ll
total 44
drwx----- 6 root root 4096 Sep  1 07:35 ./
drwxr-xr-x 23 root root 4096 Aug 30 06:13 ../
-rw-r--r-- 1 root root  0 Sep  1 07:27 amazon.tar
-rw-r--r-- 1 root root 375 Sep  1 07:17 .bash_history
-rw-r--r-- 1 root root 3106 Apr 22 2024 .bashrc
drwx----- 2 root root 4096 Aug  5 16:51 .cache/
drwxr-xr-x 2 root root 4096 Sep  1 06:37 id/
-rw-r--r-- 1 root root  0 Sep  1 07:34 my_file.tar
-rw-r--r-- 1 root root 161 Apr 22 2024 .profile
drwx----- 6 root root 4096 Aug 30 06:25 snap/
drwx----- 2 root root 4096 Aug 30 06:25 .ssh/
-r-xr-xr-x 1 root root 7049 Aug 30 06:23 vboxpostinstall.sh*
root@Ubuntu:~# █

```

## 22. Monitor system resources with top or htop

```

top - 07:41:15 up 9:37, 1 user, load average: 0.00, 0.03, 0.06
Tasks: 200 total, 1 running, 199 sleeping, 0 stopped, 0 zombie
%Cpu(s):  0.2 us,  0.4 sy,  0.0 ni, 99.1 id,  0.0 wa,  0.0 hi,  0.4 si,  0.0 st
MiB Mem : 7942.6 total, 4186.8 free, 1494.8 used, 2566.1 buff/cache
MiB Swap:  0.0 total,  0.0 free,  0.0 used. 6447.8 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM    TIME+  COMMAND
 2633 vboxuser  20   0 4063680 429640 146824 S   1.3   5.3   15:06.23 gnome-shell
   37 root      20   0      0      0      0 S   0.3   0.0    0:03.22 kcompactd0
 6851 vboxuser  20   0 636920 59472 45460 S   0.3   0.7    0:25.78 gnome-terminal-
10713 vboxuser  20   0 4689276 162952 27868 S   0.3   2.0   1:38.04 java
17146 root      20   0      0      0      0 I   0.3   0.0    0:00.28 kworker/u8:3-events_freezable_pwr_
17179 root      20   0 23184 5904 3728 R   0.3   0.1   0:00.13 top
    1 root      20   0 23124 14048 9312 S   0.0   0.2    0:06.83 systemd
    2 root      20   0      0      0      0 S   0.0   0.0    0:00.09 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_gp
    5 root      0 -20      0      0      0 I   0.0   0.0    0:00.00 kworker/R-sync_wq
    6 root      0 -20      0      0      0 I   0.0   0.0    0:00.00 kworker/R-kvfree_rcu_reclaim
    7 root      0 -20      0      0      0 I   0.0   0.0    0:00.00 kworker/R-slub_flushwq
    8 root      0 -20      0      0      0 I   0.0   0.0    0:00.00 kworker/R-netns
   13 root      0 -20      0      0      0 I   0.0   0.0    0:00.00 kworker/R-mm_percpu_wq
   14 root      20   0      0      0      0 I   0.0   0.0    0:00.00 rcu_tasks_kthread
   15 root      20   0      0      0      0 I   0.0   0.0    0:00.00 rcu_tasks_rude_kthread
   16 root      20   0      0      0      0 I   0.0   0.0    0:00.00 rcu_tasks_trace_kthread

```

## 23. Create and manage user groups

```
root@Ubuntu:~# groupadd cat
```

## 24. Setup SSH password less authentication

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~  
$ cd Downloads  
  
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Downloads  
$ ssh -i linux-testing.pem ec2-user@13.60.92.65  
  
#_  
~\#####_ Amazon Linux 2023  
~\#####\  
~\###|  
~\#/  
~V~'-'->  
~  
~.-.-/ /  
~/_/ /  
~/_/m/' /  
  
Last login: Tue Sep  2 12:36:14 2025 from 103.143.169.218  
[ec2-user@ip-172-31-45-97 ~]$ |
```

## 25. Monitor log files using tail or grep

```
root@Ubuntu:~# vi alphabets
root@Ubuntu:~# cat alphabets
a
b
c
d
e
f
g
root@Ubuntu:~# grep z alphabets
root@Ubuntu:~# grep g alphabets
g
root@Ubuntu:~#
```

## 26. Setup a web server (ex: Apache or nginx)

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  nginx-common
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
```

## 27. Configure and secure a My SQL Database.



```
vboxuser@Ubuntu:~$ sudo apt install mysql-server
[sudo] password for vboxuser:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libaio1t64 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64 libfcgi-bin
  libfcgi-perl libfcgi0t64 libhtml-template-perl libmecab2 libprotobuf-lite32t64 mecab-ipadic mecab-ipadic-utf8
  mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0 mysql-server-core-8.0
Suggested packages:
  libipc-sharedcache-perl mailx tinycd
The following NEW packages will be installed:
  libaio1t64 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64 libfcgi-bin
  libfcgi-perl libfcgi0t64 libhtml-template-perl libmecab2 libprotobuf-lite32t64 mecab-ipadic mecab-ipadic-utf8
  mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0 mysql-server-core-8.0
0 upgraded, 20 newly installed, 0 to remove and 0 not upgraded.
Need to get 29.3 MB of archives.
After this operation, 242 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
```

```
mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| shaik_db |
| sys |
+-----+
5 rows in set (0.00 sec)

mysql> 
```

## 28. Setup a Application Server(ex:Apache Tomcat).

```
vboxuser@Ubuntu:~$ sudo apt update && sudo apt upgrade -y
Hit:1 http://in.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.6 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212
```

## 29.Create a Service File for Apache Tomcat. (Should Execute by Systemctl command).

```
vboxuser@UBUNTU:/etc/systemd/system$ sudo nano /etc/systemd/system/tomcat.service
/etc/sudoers:54:22: expected a fully-qualified path name
techie ALL=(ALL:ALL) All
```

Sudo systemctl daemon-reload to reload

```
vboxuser@UBUNTU:/etc/systemd/system$ sudo systemctl daemon-reload
/etc/sudoers:54:22: expected a fully-qualified path name
techie ALL=(ALL:ALL) All
```

Sudo systemctl enable tomcat.services to enable it

```
vboxuser@UBUNTU:/etc/systemd/system$ sudo systemctl enable tomcat.service
/etc/sudoers:54:22: expected a fully-qualified path name
techie ALL=(ALL:ALL) All
```

Sudo systemctl start tomcat.services to enable it

```
vboxuser@UBUNTU:/etc/systemd/system$ sudo systemctl start tomcat.service
/etc/sudoers:54:22: expected a fully-qualified path name
techie ALL=(ALL:ALL) All
```

30. Print Specific Columns from a delimited File.

```
root@Ubuntu:~# cat employee.txt

no    name      age    salary
1     ram        23     25000
2     ravi       26     22000
3     ramesh     27     24000
4     raghu      22     26000
5     raju       24     28000

root@Ubuntu:~# awk '{print $2}' employee.txt

name
ram
ravi
ramesh
raghu
raju
```

31. Filter and print lines based on a specific pattern or condition.

```
vboxuser@Ubuntu:~/Desktop$ cat text | grep sun
Sun is the brightest planet in the world. sun is very biggest planet.Sun is the hottest planet
vboxuser@Ubuntu:~/Desktop$ s
```

32. Calculate the Print and Average ,Sum or Other Statistics of a column. Sum:

```
root@Ubuntu:~# vi marks
root@Ubuntu:~# cat marks
80
90
60
40
80
50
root@Ubuntu:~# awk '{sum += $1} END {print "sum:", sum}' marks.txt
awk: cannot open "marks.txt" (No such file or directory)
root@Ubuntu:~# awk '{sum += $1} END {print "sum:", sum}' marks
sum: 400
root@Ubuntu:~#
```

Average :

```
root@Ubuntu:~# awk '{sum += $1; count++} END {print "Average:", sum/count}' marks
Average: 66.6667
root@Ubuntu:~#
```

Count of Rows:

```
root@Ubuntu:~# awk 'END {print "count:", NR}' marks
count: 6
root@Ubuntu:~#
```

33. Perform String Manipulation Such as Extracting Substrings or Changing case.

Extract Sub String:

```
root@Ubuntu:~# str="HELLOWORLD"
root@Ubuntu:~# echo "${str:0:5}"
HELLO
root@Ubuntu:~#
```

Change case:

```
vboxuser@Ubuntu:~/Desktop$ str="HELLO WORLD"
vboxuser@Ubuntu:~/Desktop$ echo "${str,,}"
hello world
vboxuser@Ubuntu:~/Desktop$ Str="hello world"
vboxuser@Ubuntu:~/Desktop$ echo "${str^^}"
HELLO WORLD
```

34. Count the Occurances of a Specific Pattern in a File.

```
vboxuser@Ubuntu:~/Desktop$ cat text
Sun is the brightest planet in the world. sun is very biggest planet.Sun is the hottest planet
vboxuser@Ubuntu:~/Desktop$ cat text | grep -wc sun
1
```

35. Sort lines based on a specific field or column.

```

root@Ubuntu:~# cat employee.txt

no    name      age    salary
1     ram       23     25000
2     ravi      26     22000
3     ramesh    27     24000
4     raghu     22     26000
5     raju      24     28000

root@Ubuntu:~# sort -k1 employee.txt

1     ram       23     25000
2     ravi      26     22000
3     ramesh    27     24000
4     raghu     22     26000
5     raju      24     28000
no    name      age    salary
root@Ubuntu:~# sort -k3 employee.txt

4     raghu     22     26000
1     ram       23     25000
5     raju      24     28000
2     ravi      26     22000
3     ramesh    27     24000
no    name      age    salary
root@Ubuntu:~#

```

36. Merge multiple files based on a common field or column.

```

vboxuser@Ubuntu:~$ cat t1.txt t2.txt
1. mujaheed
1. 1. is a devops engineer
vboxuser@Ubuntu:~$ vi t2.txt
vboxuser@Ubuntu:~$
vboxuser@Ubuntu:~$ join t1.txt t2.txt > merged.txt
vboxuser@Ubuntu:~$ cat merged.txt
1. mujaheed is a devops engineer
vboxuser@Ubuntu:~$

```

37. Substitute text in a file using search and replace.

```
vboxuser@Ubuntu:~$ cat mv_file
1 A 2 A 3 A 4 A 5
vboxuser@Ubuntu:~$ sed 's/A/B/g' mv_file
1 B 2 B 3 B 4 B 5
vboxuser@Ubuntu:~$
```

38. Delete specific lines based on a pattern or line number.

```
vboxuser@Ubuntu:~$ cat mv_file
1
2
3
4
5
vboxuser@Ubuntu:~$ sed '2, 3d' mv_file
1
4
5
vboxuser@Ubuntu:~$
```

39. Append or insert text before or after a specific pattern or line.

```
vboxuser@Ubuntu:~$ sed '3i,/inserted before line 3' mv_file
1
2
,/inserted before line 3
3
4
5
vboxuser@Ubuntu:~$
```

40. Print only specific lines from a file.

```
vboxuser@Ubuntu:~/Desktop$ vi sir
vboxuser@Ubuntu:~/Desktop$ cat sir
hello sir
how are you sir
welcome sir
thank you sir
vboxuser@Ubuntu:~/Desktop$ tail -1 sir
thank you sir
vboxuser@Ubuntu:~/Desktop$ tail -3 sir
how are you sir
welcome sir
thank you sir
vboxuser@Ubuntu:~/Desktop$
```



41. Copy file from linux to windows machine

Step 1: Use scp -i

/path/to/your/keypair.pem /path/to/local/file.txt

Administrator@<Public\_IP>:/path/on/windows

/server/ to copy from linux to windows machine.

42. 5 use cases for AWK and 5 use cases for sed.

a) To Print Specific Column.

```
vboxuser@Ubuntu:~/Desktop$ vi table
vboxuser@Ubuntu:~/Desktop$ cat table
no    age    name
1     23     ram
2     22     raju
3     26     ravi
4     24     ramesh

~
vboxuser@Ubuntu:~/Desktop$ awk '{print $2}' table
age
23
22
26
24

vboxuser@Ubuntu:~/Desktop$
```

a) Filter rows by condition.

```
vboxuser@Ubuntu:~/Desktop$ cat table
no    age    name
1     23     ram
2     22     raju
3     26     ravi
4     24     ramesh

~
vboxuser@Ubuntu:~/Desktop$ awk '$2 > 22 {print $2,$3} table
> ^C
vboxuser@Ubuntu:~/Desktop$ awk '$2 > 22 {print $2,$3}' table
age name
23 ram
26 ravi
24 ramesh
vboxuser@Ubuntu:~/Desktop$
```

b) Count number of lines (records).

```
vboxuser@Ubuntu:~/Desktop$ cat table
no    age    name
1     23     ram
2     22     raju
3     26     ravi
4     24     ramesh

~
vboxuser@Ubuntu:~/Desktop$ awk 'END {print "Total lines", NR}' table
Total lines 7
vboxuser@Ubuntu:~/Desktop$
```

c) Print lines with more than N fields

```
vboxuser@Ubuntu:~/Desktop$ vi table1
vboxuser@Ubuntu:~/Desktop$ cat table1
no    age    name
1     23     ram
2     22     raju
3     26     ravi      rakesh
4     24     ramesh

vboxuser@Ubuntu:~/Desktop$ awk 'NF > 3' table1
3     26     ravi      rakesh
vboxuser@Ubuntu:~/Desktop$
```

Sed Use cases:

1. Find and replace text.

```
vboxuser@Ubuntu:~/Desktop$ vi letterds
vboxuser@Ubuntu:~/Desktop$ cat letterds
hello sir
welcome sir
how are you sir
vboxuser@Ubuntu:~/Desktop$ sed 's/sir/madam/' letterds
hello madam
welcome madam
how are you madam
vboxuser@Ubuntu:~/Desktop$
```

2. Replace all occurrences in a line.

```
vboxuser@Ubuntu:~/Desktop$ cat letterds
hello sir
welcome sir
how are you sir
vboxuser@Ubuntu:~/Desktop$ sed 's/sir/madam/g' letterds
hello madam
welcome madam
how are you madam
vboxuser@Ubuntu:~/Desktop$
```

### 3. Delete Specific Lines.

```
root@Ubuntu:~# cat flowers
1.rose
2.lilly
3.jasmine
4.lotus
root@Ubuntu:~# sed '2d' flowers.txt
sed: can't read flowers.txt: No such file or directory
root@Ubuntu:~# sed '2d' flowers
1.rose
3.jasmine
4.lotus
root@Ubuntu:~#
```

### 4. To Print Specific Line.

```
root@Ubuntu:~# cat flowers
1.rose
2.lilly
3.jasmine
4.lotus
root@Ubuntu:~# sed -n '3p' flowers
3.jasmine
root@Ubuntu:~#
```