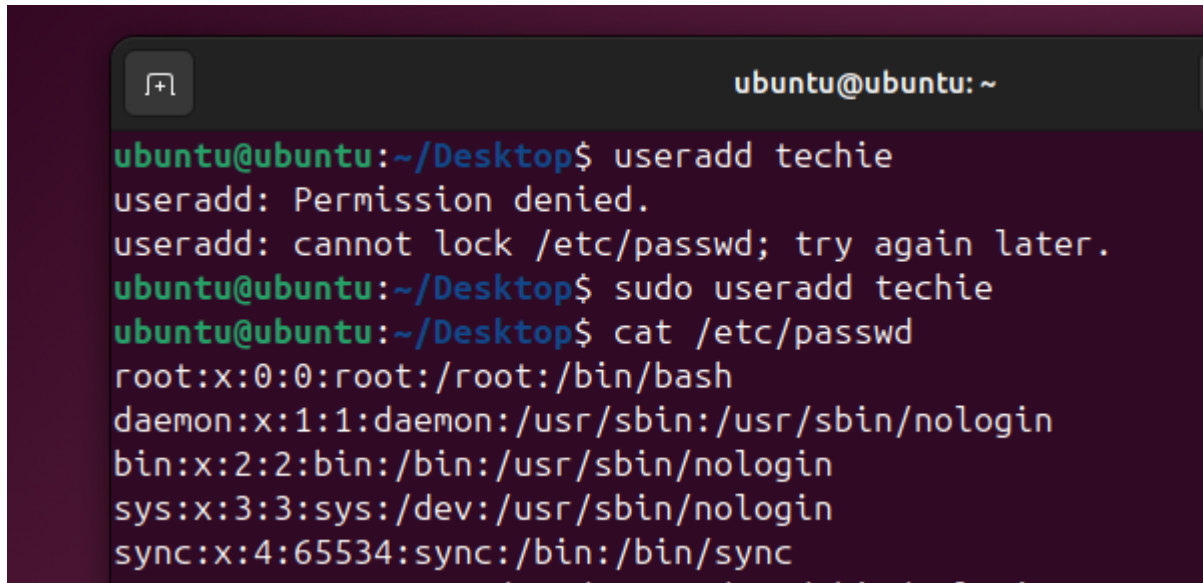


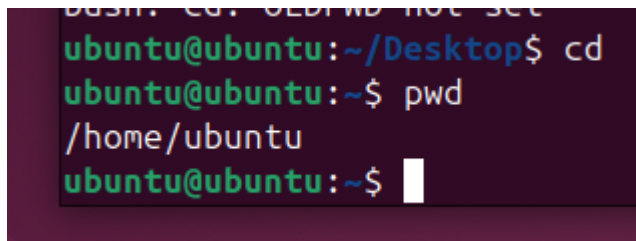
TASKS

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

A terminal window titled 'ubuntu@ubuntu: ~' with a window icon in the top-left corner. The terminal shows the following commands and output:

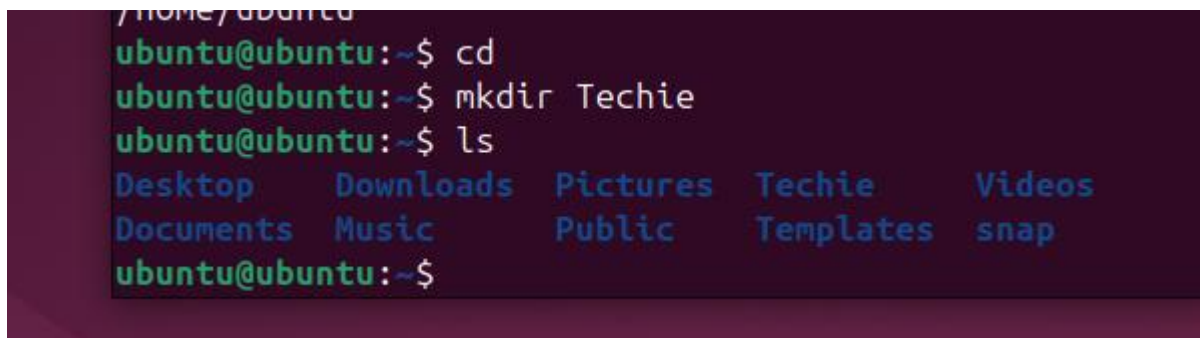
```
ubuntu@ubuntu:~/Desktop$ useradd techie
useradd: Permission denied.
useradd: cannot lock /etc/passwd; try again later.
ubuntu@ubuntu:~/Desktop$ sudo useradd techie
ubuntu@ubuntu:~/Desktop$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
```

2) Navigate to the home directory.

A terminal window showing the following commands and output:

```
ubuntu@ubuntu:~/Desktop$ cd
ubuntu@ubuntu:~$ pwd
/home/ubuntu
ubuntu@ubuntu:~$
```

3) create a new directory.

A terminal window showing the following commands and output:

```
ubuntu@ubuntu:~$ cd
ubuntu@ubuntu:~$ mkdir Techie
ubuntu@ubuntu:~$ ls
Desktop    Downloads  Pictures   Techie     Videos
Documents  Music      Public     Templates  snap
ubuntu@ubuntu:~$
```

4) list the contents of directory

```
ubuntu@ubuntu:~$ ls -l
total 0
drwxr-xr-x 2 ubuntu ubuntu 60 Apr 25 11:02 Desktop
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Documents
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Downloads
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Music
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Pictures
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Public
drwxrwxr-x 2 ubuntu ubuntu 40 Apr 25 11:22 Techie
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Templates
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Videos
drwx----- 4 ubuntu ubuntu 80 Apr 25 11:03 snap
ubuntu@ubuntu:~$
```

5) change the current directory

```
drwxr-xr-x 2 ubuntu ubuntu 40 Apr 25 11:02 Videos
drwx----- 4 ubuntu ubuntu 80 Apr 25 11:03 snap
ubuntu@ubuntu:~$ cd
ubuntu@ubuntu:~$
```

6) create a new empty file

```
ubuntu@ubuntu: ~
ubuntu@ubuntu:~$ touch hello
ubuntu@ubuntu:~$ ls
Desktop  Downloads  Pictures  Techie    Videos  snap
Documents Music      Public    Templates Videos  hello
ubuntu@ubuntu:~$
```

7) view the contents of a file

```
Desktop Downloads Pictures Techie Videos snap
Documents Music Public Templates hello
ubuntu@ubuntu:~$ cat hello
ubuntu@ubuntu:~$
```

8) copy a file to another location

```
ubuntu@Ubuntu:~$ cp hello /home/ubuntu/Downloads/
ubuntu@Ubuntu:~$
```

10) Rename a file

```
ubuntu@ubuntu:~$ ls
'?' Downloads Public Videos kiran.txt
Desktop Music Techie hello sai.txt
Documents Pictures Templates hello2 snap
ubuntu@ubuntu:~$ mv hello saikiran34
ubuntu@ubuntu:~$
```

11) Delete a file

```
ubuntu@ubuntu:~$ ls
'?' Downloads Public Videos sai.txt
Desktop Music Techie hello2 saikiran34
Documents Pictures Templates kiran.txt snap
ubuntu@ubuntu:~$ rm sai.txt
ubuntu@ubuntu:~$ ls
'?' Downloads Public Videos saikiran34
Desktop Music Techie hello2 snap
Documents Pictures Templates kiran.txt
ubuntu@ubuntu:~$
```

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

```
ubuntu@ubuntu:~/Desktop$ is -ltr
Command 'is' not found, but can be installed with:
sudo apt install ironseed
ubuntu@ubuntu:~/Desktop$ ls -ltr
total 4
-rwxr-xr-x 1 ubuntu ubuntu 460 Apr 25 11:02 ubuntu-desktop-bootstrap_ubuntu-desk
top-bootstrap.desktop
-rw-rw-r-- 1 ubuntu ubuntu 0 Apr 25 11:48 sai.txt
ubuntu@ubuntu:~/Desktop$ chmod 777 sai.txt
ubuntu@ubuntu:~/Desktop$ ls -ltr
total 4
-rwxr-xr-x 1 ubuntu ubuntu 460 Apr 25 11:02 ubuntu-desktop-bootstrap_ubuntu-desk
top-bootstrap.desktop
-rwxrwxrwx 1 ubuntu ubuntu 0 Apr 25 11:48 sai.txt
ubuntu@ubuntu:~/Desktop$
```

13) View the current date and time.

```
ubuntu@ubuntu:~$ date
Fri Apr 25 12:21:45 UTC 2025
ubuntu@ubuntu:~$
```

14) check the system uptime

```
Fri Apr 25 12:21:45 UTC 2025
ubuntu@ubuntu:~$ top

top - 12:23:03 up 1:20, 1 user, load average: 0.01, 0.06, 0.02
Tasks: 228 total, 1 running, 227 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.4 us, 0.2 sy, 0.0 ni, 99.2 id, 0.0 wa, 0.0 hi, 0.1 si, 0
MiB Mem : 1967.1 total, 206.8 free, 1214.7 used, 788.6 buff/cach
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 752.4 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM   TIME+
3111 ubuntu    20   0 4484768 320872 108404 S   1.0  15.9  0:47.93
5802 ubuntu    20   0  23632    584   3668 R   0.7   0.3  0:00.05
2866 ubuntu    20   0 356324  80944  44252 S   0.3   4.0  0:43.53
   1 root       20   0  23348  14076   9340 S   0.0   0.7  0:03.56
   2 root       20   0     0     0     0 S   0.0   0.0  0:00.01
   3 root       20   0     0     0     0 S   0.0   0.0  0:00.00
   4 root        0 -20     0     0     0 I   0.0   0.0  0:00.00
   5 root        0 -20     0     0     0 I   0.0   0.0  0:00.00
```

15) view the running process

```
ubuntu@ubuntu:~/Desktop$ ps -ef
```

UID	PID	PPID	C	STIME	TTY	TIME	CMD
root	1	0	0	11:02	?	00:00:03	/sbin/init --- splash
root	2	0	0	11:02	?	00:00:00	[kthreadd]
root	3	2	0	11:02	?	00:00:00	[pool_workqueue_release]
root	4	2	0	11:02	?	00:00:00	[kworker/R-rcu_gp]
root	5	2	0	11:02	?	00:00:00	[kworker/R-sync_wq]
root	6	2	0	11:02	?	00:00:00	[kworker/R-slab_flushwq]
root	7	2	0	11:02	?	00:00:00	[kworker/R-netns]
root	11	2	0	11:02	?	00:00:00	[kworker/u12:0-ipv6_addrconf]
root	12	2	0	11:02	?	00:00:00	[kworker/R-mm_percpu_wq]
root	13	2	0	11:02	?	00:00:00	[rcu_tasks_kthread]
root	14	2	0	11:02	?	00:00:00	[rcu_tasks_rude_kthread]
root	15	2	0	11:02	?	00:00:00	[rcu_tasks_trace_kthread]
root	16	2	0	11:02	?	00:00:00	[ksoftirqd/0]
root	17	2	0	11:02	?	00:00:01	[rcu_preempt]
root	18	2	0	11:02	?	00:00:00	[rcu_exp_par_gp_kthread_work]
root	19	2	0	11:02	?	00:00:00	[rcu_exp_gp_kthread_worker]
root	20	2	0	11:02	?	00:00:00	[migration/0]
root	21	2	0	11:02	?	00:00:00	[idle_inject/0]
root	22	2	0	11:02	?	00:00:00	[cpuhp/0]
root	23	2	0	11:02	?	00:00:00	[cpuhp/1]
root	24	2	0	11:02	?	00:00:00	[idle_inject/1]

16) kill a running process

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

```
ubuntu@ubuntu: ~/Desktop
ubuntu@ubuntu:~/Desktop$ sudo apt install 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:
  nginx nginx-common
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 552 kB of archives.
After this operation, 1596 kB of additional disk space will be used.
```

18) update the system packages

```
ubuntu@ubuntu:~/Desktop$ sudo apt update
Ign:1 cdrom://Ubuntu 24.04.2 LTS _Noble Numbat_ - Release amd64 (20250215) noble
InRelease
Hit:2 cdrom://Ubuntu 24.04.2 LTS _Noble Numbat_ - Release amd64 (20250215) noble
Release
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Get:5 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main i386 Packages [270 k
B]
Get:8 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [782
kB]
Get:10 http://archive.ubuntu.com/ubuntu noble-updates/main i386 Packages [456 kB
]
Get:11 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [147
kB]
```

19) create a symbolic link

```
ubuntu@ubuntu:~/Desktop$ ls -l
total 4
lrwxrwxrwx 1 ubuntu ubuntu 20 Apr 25 12:46 Desktop -> home/ubuntu/Desktop/
-rwxrwxrwx 1 ubuntu ubuntu 0 Apr 25 11:48 sai.txt
-rwxr-xr-x 1 ubuntu ubuntu 460 Apr 25 11:02 ubuntu-desktop-bootstrap_ubuntu-desk
top-bootstrap.desktop
ubuntu@ubuntu:~/Desktop$
```

20) Search for files using the find command.

```
ubuntu@ubuntu:~/Desktop$ ls -l
total 4
lrwxrwxrwx 1 ubuntu ubuntu 20 Apr 25 12:46 Desktop -> home/ubuntu/Desktop/
-rwxrwxrwx 1 ubuntu ubuntu 0 Apr 25 11:48 sai.txt
-rwxr-xr-x 1 ubuntu ubuntu 460 Apr 25 11:02 ubuntu-desktop-bootstrap_ubuntu-desk
top-bootstrap.desktop
ubuntu@ubuntu:~/Desktop$ find Desktop
Desktop
ubuntu@ubuntu:~/Desktop$
```

21) compress and decompress files using tar

```
ubuntu@ubuntu:~/Desktop$ tar -cvf .tar sai.txt
sai.txt
```

22) Monitor system resources with top or htop

```
top - 13:09:36 up 2:07, 1 user, load average: 0.03, 0.01, 0.00
Tasks: 226 total, 1 running, 225 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.3 us, 0.2 sy, 0.0 ni, 99.3 id, 0.0 wa, 0.0 hi, 0.1 si, 0.0 st
MiB Mem : 1967.1 total, 111.3 free, 1428.5 used, 885.2 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 538.5 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3111	ubuntu	20	0	4486544	304564	91812	S	0.7	15.1	1:17.32	gnome-shell
6565	ubuntu	20	0	23616	5988	3812	R	0.7	0.3	0:00.06	top
1312	systemd+	20	0	17556	7732	6836	S	0.3	0.4	0:03.29	systemd-oomd
2866	ubuntu	20	0	358512	70800	33520	S	0.3	3.5	1:12.15	Xorg
3502	ubuntu	20	0	398472	7892	6868	S	0.3	0.4	0:00.68	gvfs-afc-volume
6513	ubuntu	20	0	850476	52824	41716	S	0.3	2.6	0:02.51	gnome-terminal-
1	root	20	0	23348	13948	9212	S	0.0	0.7	0:03.69	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.01	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-slub_flushwq
7	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-netns
11	root	20	0	0	0	0	I	0.0	0.0	0:00.00	kworker/u12:0-ipv6_addrconf
12	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/R-mm_percpu_wq

23) Create and manage user groups.

```
ubuntu@ubuntu: ~/Desktop
ubuntu@ubuntu:~/Desktop$ sudo groupadd kiran
ubuntu@ubuntu:~/Desktop$ ls -ltr
total 4
-rwxr-xr-x 1 ubuntu ubuntu 460 Apr 26 04:22 ubuntu-desktop-bootstrap_ubuntu-desk
top-bootstrap.desktop
ubuntu@ubuntu:~/Desktop$ ls
ubuntu-desktop-bootstrap_ubuntu-desktop-bootstrap.desktop
ubuntu@ubuntu:~/Desktop$ ll
total 4
drwxr-xr-x  2 ubuntu ubuntu  60 Apr 26 04:22 ./
drwxr-x--- 15 ubuntu ubuntu 380 Apr 26 04:23 ../
-rwxr-xr-x  1 ubuntu ubuntu 460 Apr 26 04:22 ubuntu-desktop-bootstrap_ubuntu-des
ktop-bootstrap.desktop*
ubuntu@ubuntu:~/Desktop$
```

25) Monitor log files using tail or grep.

```
ubuntu@ubuntu:~/Desktop$ touch names.txt
ubuntu@ubuntu:~/Desktop$ vi names.txt
ubuntu@ubuntu:~/Desktop$ cat names.txt
ab
cd
ef
gh
ik
lm
no
pq
rs
tu
ubuntu@ubuntu:~/Desktop$ tail -3 names.txt
pq
rs
tu
```

26) set up a web server eg(Apache or nginx)

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

28) Set up a Application Server (e.g.,Apache Tomcat)

```
Complete!
root@ip-172-31-24-75 ec2-user]# sudo systemctl start tomcat
root@ip-172-31-24-75 ec2-user]# sudo systemctl status tomcat
* tomcat.service - Apache Tomcat Web Application Container
   Loaded: loaded (/usr/lib/systemd/system/tomcat.service; disabled; vendor preset: disabled)
   Active: active (running) since Sat 2025-04-26 05:51:09 UTC; 29s ago
     Main PID: 32502 (java)
    CGroup: /system.slice/tomcat.service
            └─32502 /usr/lib/jvm/jre/bin/java -classpath /usr/share/tomcat/bin/bootstrap.jar:/usr/share/tomcat/bin/tomcat-juli.jar:/usr/share/java/c...

apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: Apr 26, 2025 5:51:10 AM org.apache.catalina.startup.Catalina load
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: INFO: Initialization processed in 952 ms
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: Apr 26, 2025 5:51:10 AM org.apache.catalina.core.StandardService st...ern
l
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: INFO: Starting service Catalina
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: Apr 26, 2025 5:51:10 AM org.apache.catalina.core.StandardEngine sta...ern
l
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: INFO: Starting Servlet Engine: Apache Tomcat/7.0.76
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: Apr 26, 2025 5:51:10 AM org.apache.coyote.AbstractProtocol start
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: INFO: Starting ProtocolHandler ["http-bio-8080"]
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: Apr 26, 2025 5:51:10 AM org.apache.catalina.startup.Catalina start
apr 26 05:51:10 ip-172-31-24-75.eu-north-1.compute.internal server[32502]: INFO: Server startup in 97 ms
hint: Some lines were ellipsized, use -l to show in full.
root@ip-172-31-24-75 ec2-user]#
```

30) Print specific columns from a delimited file.

```
ubuntu@ubuntu:~/Desktop$ touch uday.txt
ubuntu@ubuntu:~/Desktop$ vi uday.txt
ubuntu@ubuntu:~/Desktop$ cat uday.txt
a,b
c,d
e,f
ubuntu@ubuntu:~/Desktop$ cut -d ',' -f2,2 uday.txt
b
d
f
ubuntu@ubuntu:~/Desktop$
```

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

```
ubuntu@ubuntu:~/Desktop$ cat uday.txt
a,b
c,d
e,f
ubuntu@ubuntu:~/Desktop$ awk -F ',' ' $3 == "e,f" ' uday.txt
e,f
ubuntu@ubuntu:~/Desktop$
```

32) Calculate and print the average, sum, or other statistics of a column.

```
ubuntu@ubun:~/nubeen$ cat age.txt
name,age
head,32
abhishek,26
kishan,25
klassen,30
aniket,24
nitish,35
pat,38
shami,42
harshal,34
zeeshan,22
ubuntu@ubun:~/nubeen$ awk -F ',' 'NR > 1 { sum += $2; count++; } END {print "sum =", sum, "\nAverage =", sum/count}' age.txt
sum = 308
Average = 30.8
```

33) Perform string manipulation, such as extracting substrings or changing case

```
1.ahmed
2.ayan
3.aryan
ubuntu@Ubu:~/Desktop$ awk '{print toupper($2)}' names

ubuntu@Ubu:~/Desktop$ awk '{print toupper($2)}' names
```

34) Count the occurrences of a specific pattern in a file.

```
ubuntu@ubuntu:~/Desktop$ grep -c laddu topper.txt
1
ubuntu@ubuntu:~/Desktop$
```

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

```
1
ubuntu@ubuntu:~/Desktop$ cat topper.txt
2 kiran
3 varma
1 laddu
ubuntu@ubuntu:~/Desktop$ sort topper.txt
1 laddu
2 kiran
3 varma
ubuntu@ubuntu:~/Desktop$
```

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

```
ubuntu@ubuntu:~/Desktop$ join f1 f2
join: f2:4: is not sorted: 21
join: f1:2: is not sorted: ad
join: input is not in sorted order
ubuntu@ubuntu:~/Desktop$ ls
f1 f2 ubuntu-desktop-bootstrap_ubuntu-desktop-bootstrap.desktop
ubuntu@ubuntu:~/Desktop$ join f1 f2
join: f2:4: is not sorted: 21
join: f1:2: is not sorted: ad
join: input is not in sorted order
ubuntu@ubuntu:~/Desktop$ paste f1 f2
sg      cv
ad      12
bc      ha
df      21
```

37) Delete specific lines based on a pattern or line number.

```
ubuntu@ubuntu:~/Desktop$ cat l1
r
12
23
34
45
56
67
78
ubuntu@ubuntu:~/Desktop$ sed /12/d l1
r
23
34
45
56
67
78
ubuntu@ubuntu:~/Desktop$
```

38) Append or insert text before or after a specific pattern or line.

```
ubuntu@ubuntu:~/Desktop$ cat l1
r
12
23
34
45
56
67
78
ubuntu@ubuntu:~/Desktop$ sed '/12/a 09' l1
r
12
09
23
34
45
56
67
78
```

