MOHD SAIF UDDIN

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@Task on Linux:

==========

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

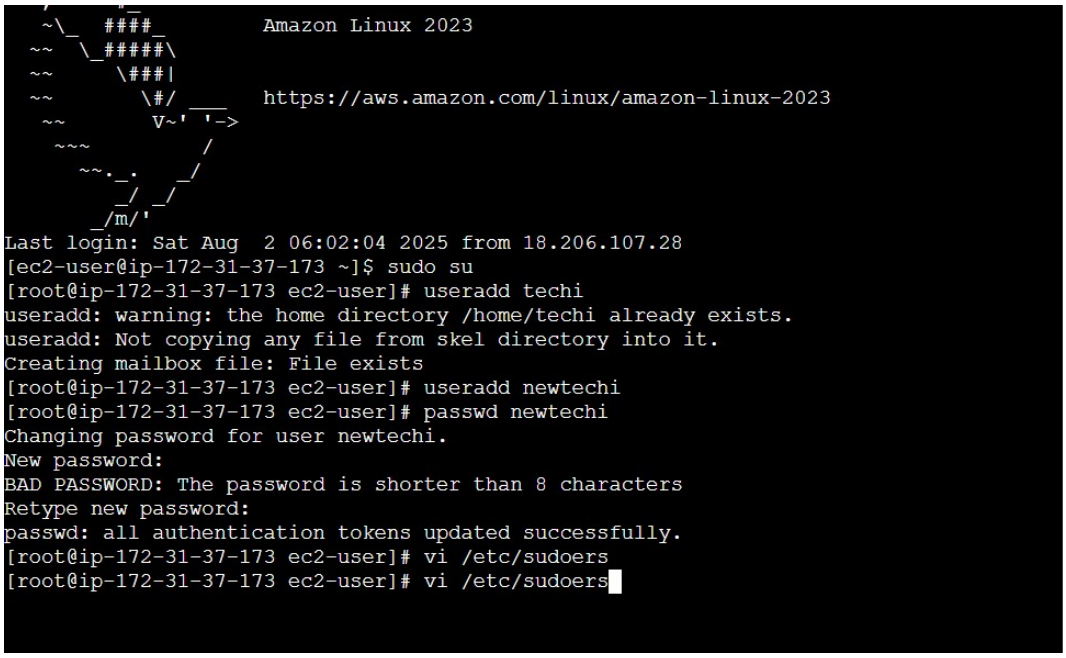
```
##
##      user    MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)       ALL

## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DRIVERS

## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)       ALL
%farooq ALL=(ALL)       ALL
## Same thing without a password
# %wheel        ALL=(ALL)       NOPASSWD: ALL
# %newtechi     ALL=(ALL)       NOPASSWD: ALL
## Allows members of the users group to mount and unmount the
## cdrom as root
# %users  ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom

## Allows members of the users group to shutdown this system
# %users  localhost=/sbin/shutdown -h now

## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)
#includedir /etc/sudoers.d
"/etc/sudoers" [readonly] 120L, 4437B
```



2) Navigate to the home directory.

3) Create a new directory.

4) List the contents of a directory.

5) Change the current directory.

6) Create a new empty file.

7) View the contents of a file.

```
[root@ip-172-31-37-173 ec2-user]# cd /home
[root@ip-172-31-37-173 home]# mkdir newdir
[root@ip-172-31-37-173 home]# ls
ec2-user  farooq  newdir  newtechi  saif  techi  techie
[root@ip-172-31-37-173 home]# rm -rf farooq newdir saif techi techie
[root@ip-172-31-37-173 home]# ls
ec2-user  newtechi
[root@ip-172-31-37-173 home]# rm -rf newtechi
[root@ip-172-31-37-173 home]# ls
ec2-user
[root@ip-172-31-37-173 home]# mkdir dir1
[root@ip-172-31-37-173 home]# ls
dir1  ec2-user
[root@ip-172-31-37-173 home]# cd dir1
[root@ip-172-31-37-173 dir1]# ls
[root@ip-172-31-37-173 dir1]# echo "hello world" >file1
[root@ip-172-31-37-173 dir1]# ls
file1
[root@ip-172-31-37-173 dir1]# catf
bash: catf: command not found
[root@ip-172-31-37-173 dir1]# cat file
cat: file: No such file or directory
[root@ip-172-31-37-173 dir1]# cat file1
hello world
```

8) Copy a file to another location.

9) Move a file to another location.

10) Rename a file.

11) Delete a file.

```
[root@ip-172-31-37-173 dir1]# cat file1
hello world
[root@ip-172-31-37-173 dir1]# cp file /home
cp: cannot stat 'file': No such file or directory
[root@ip-172-31-37-173 dir1]# cp file1 /home
[root@ip-172-31-37-173 dir1]# cd ..
[root@ip-172-31-37-173 home]# ls
dir1  ec2-user  file1
[root@ip-172-31-37-173 home]# mkdir dir2
[root@ip-172-31-37-173 home]# ls
dir1  dir2  ec2-user  file1
[root@ip-172-31-37-173 home]# mv file1 /home/dir2
[root@ip-172-31-37-173 home]# cd dir2
[root@ip-172-31-37-173 dir2]# ls
file1
[root@ip-172-31-37-173 dir2]# mv file1 file2
[root@ip-172-31-37-173 dir2]# ls
file2
[root@ip-172-31-37-173 dir2]# rm -f file2
[root@ip-172-31-37-173 dir2]# ls
[root@ip-172-31-37-173 dir2]# chmod 777 file2
chmod: cannot access 'file2': No such file or directory
[root@ip-172-31-37-173 dir2]# ls
[root@ip-172-31-37-173 dir2]# ls
[root@ip-172-31-37-173 dir2]# cd ..
[root@ip-172-31-37-173 home]# ls
dir1  dir2  ec2-user
```

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

```
[root@ip-172-31-37-173 dir2]# cd..
bash: cd..: command not found
[root@ip-172-31-37-173 dir2]# cd ..
[root@ip-172-31-37-173 home]# chmod 000 newdir
chmod: cannot access 'newdir': No such file or directory
[root@ip-172-31-37-173 home]# chmod 000 dir1
[root@ip-172-31-37-173 home]# ll dir1
total 4
-rw-r--r--. 1 root root 12 Aug  2 07:03 file1
[root@ip-172-31-37-173 home]# chmod 777 dir1
[root@ip-172-31-37-173 home]# ll -dir1
8523710 drwxr-xr-x. 5 root root 46 Aug  2 07:06 .
[root@ip-172-31-37-173 home]#
```

13) View the current date and time.

```
[root@ip-172-31-37-173 home]# ll -dir1
8523710 drwxr-xr-x. 5 root root 46 Aug  2 07:06 .
[root@ip-172-31-37-173 home]# date
Sat Aug  2 07:13:20 UTC 2025
[root@ip-172-31-37-173 home]#
```

14) Check the system uptime.

```
[root@ip-172-31-37-173 home]# uptime
 07:14:11 up  1:13,  2 users,  load average: 0.00, 0.00, 0.00
[root@ip-172-31-37-173 home]#
```

15) View the running processes.

```
[root@ip-172-31-37-173 home]# ps -a
    PID TTY          TIME CMD
   4361 pts/0    00:00:00 sudo
   4364 pts/1    00:00:00 su
   4365 pts/1    00:00:00 bash
   5042 pts/1    00:00:00 ps
[root@ip-172-31-37-173 home]#
```

16) Kill a running process.

```
   4365 pts/1    00:00:00 bash
   5042 pts/1    00:00:00 ps
[root@ip-172-31-37-173 home]# kill -9 4361
Killed
[ec2-user@ip-172-31-37-173 ~]$
```

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

```
  Verifying        : libjpeg-turbo-2.1.4-2.amzn2023.0.5.x86_64                                    31/35
  Verifying        : libpng-2:1.6.37-10.amzn2023.0.6.x86_64                                       32/35
  Verifying        : libxcb-1.17.0-1.amzn2023.0.1.x86_64                                          33/35
  Verifying        : pixman-0.43.4-1.amzn2023.0.4.x86_64                                          34/35
  Verifying        : xml-common-0.6.3-56.amzn2023.0.2.noarch                                      35/35

Installed:
  alsa-lib-1.2.7.2-1.amzn2023.0.2.x86_64                cairo-1.18.0-4.amzn2023.0.2.x86_64
  dejavu-sans-fonts-2.37-16.amzn2023.0.2.noarch         dejavu-sans-mono-fonts-2.37-16.amzn2023.0.2.noarch
  dejavu-serif-fonts-2.37-16.amzn2023.0.2.noarch        fontconfig-2.13.94-2.amzn2023.0.2.x86_64
  fonts-filesystem-1:2.0.5-12.amzn2023.0.2.noarch       freetype-2.13.2-5.amzn2023.0.1.x86_64
  giflib-5.2.1-9.amzn2023.0.1.x86_64                    google-noto-fonts-common-20240401-1.amzn2023.0.1.noarch
  google-noto-sans-vf-fonts-20240401-1.amzn2023.0.1.noarch graphite2-1.3.14-7.amzn2023.0.2.x86_64
  harfbuzz-7.0.0-2.amzn2023.0.2.x86_64                  java-24-amazon-corretto-1:24.0.2+12-1.amzn2023.1.x86_64
  java-24-amazon-corretto-headless-1:24.0.2+12-1.amzn2023.1.x86_64 javapackages-filesystem-6.0.0-7.amzn2023.0.6.noarch
  langpacks-core-font-en-3.0-21.amzn2023.0.4.noarch     libICE-1.1.1-3.amzn2023.0.1.x86_64
  libSM-1.2.4-3.amzn2023.0.1.x86_64                     libX11-1.8.10-2.amzn2023.0.1.x86_64
  libX11-common-1.8.10-2.amzn2023.0.1.noarch            libXau-1.0.11-6.amzn2023.0.1.x86_64
  libXext-1.3.6-1.amzn2023.0.1.x86_64                   libXi-1.8.2-1.amzn2023.0.1.x86_64
  libXinerama-1.1.5-6.amzn2023.0.1.x86_64               libXrandr-1.5.4-3.amzn2023.0.1.x86_64
  libXrender-0.9.11-6.amzn2023.0.1.x86_64               libXt-1.3.0-3.amzn2023.0.1.x86_64
  libXtst-1.2.5-1.amzn2023.0.1.x86_64                   libbrotli-1.0.9-4.amzn2023.0.2.x86_64
  libjpeg-turbo-2.1.4-2.amzn2023.0.5.x86_64             libpng-2:1.6.37-10.amzn2023.0.6.x86_64
  libxcb-1.17.0-1.amzn2023.0.1.x86_64                   pixman-0.43.4-1.amzn2023.0.4.x86_64
  xml-common-0.6.3-56.amzn2023.0.2.noarch

Complete!
[root@ip-172-31-37-173 ec2-user]# yum install java -y
```

18) Update the system packages.

```
[root@ip-172-31-37-173 ec2-user]# yum update net-tools
Last metadata expiration check: 0:09:46 ago on Sat Aug  2 07:18:08 2025.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-37-173 ec2-user]#
```

```
[root@ip-172-31-37-173 ec2-user]# yum update
Amazon Linux 2023 Kernel Livepatch repository
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-37-173 ec2-user]#
```

19) Create a symbolic link.

```
[root@ip-172-31-37-173 dir2]# cat file.txt
1.techie horizon
2.devops engineer
3.aws cloud associate
4.jenkins
5.maven
6.sonarqube
7.terraform
8.linux
9.ansible playbook
10.git
11.docker
[root@ip-172-31-37-173 dir2]# ls
file.txt
[root@ip-172-31-37-173 dir2]# ln -s file.txt
ln: failed to create symbolic link './file.txt': File exists
[root@ip-172-31-37-173 dir2]# ls -n file.txt
-rw-r--r--. 1 0 0 143 Aug  2 07:45 file.txt
[root@ip-172-31-37-173 dir2]# ln -s file.txt
ln: failed to create symbolic link './file.txt': File exists
[root@ip-172-31-37-173 dir2]# mv file.txt file1.txt
[root@ip-172-31-37-173 dir2]# ln -s file1.txt
ln: failed to create symbolic link './file1.txt': File exists
[root@ip-172-31-37-173 dir2]# cd ..
[root@ip-172-31-37-173 home]# ln -s file.txt
[root@ip-172-31-37-173 home]# ls
dir1  dir2  ec2-user  file.txt
[root@ip-172-31-37-173 home]#
```

20) Search for files using the find command.

```
[root@ip-172-31-37-173 /]# find / -type d -name "dir1"
/home/dir1
[root@ip-172-31-37-173 /]# find / -type f -name "file.txt"
[root@ip-172-31-37-173 /]# find / -type f -name "file1.txt"
/home/dir2/file1.txt
[root@ip-172-31-37-173 /]#
```

21) Compress and decompress files using tar.

```
[root@ip-172-31-37-173 home]# ls -R dir2
dir2:
file1.txt
[root@ip-172-31-37-173 home]# tar cvf dir2.tar dir2
dir2/
dir2/file1.txt
[root@ip-172-31-37-173 home]# ls
dir1  dir2  dir2.tar  ec2-user  file.txt
[root@ip-172-31-37-173 home]# tar xvf dir2.tar
dir2/
dir2/file1.txt
[root@ip-172-31-37-173 home]#
```

22) Monitor system resources with top or htop.

```
top - 07:54:41 up  1:53,  3 users,  load average: 0.00, 0.01, 0.00
Tasks: 107 total,   1 running, 106 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    904.8 total,    160.0 free,    204.5 used,    540.4 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    551.2 avail Mem

    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
      1 root      20   0  172336  17272  10680 S   0.0   1.9   0:01.28 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kthreadd
      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 rcu_par_gp
      5 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 slub_flushwq
      6 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 netns
      8 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-events_highpri
     10 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     11 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_kthread
     12 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_rude_kthread
     13 root      20   0       0      0      0 I   0.0   0.0   0:00.00 rcu_tasks_trace_kthread
     14 root      20   0       0      0      0 S   0.0   0.0   0:00.14 ksoftirqd/0
     15 root      20   0       0      0      0 I   0.0   0.0   0:00.15 rcu_preempt
     16 root      rt   0       0      0      0 S   0.0   0.0   0:00.02 migration/0
     18 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
     19 root      20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
     20 root      rt   0       0      0      0 S   0.0   0.0   0:00.05 migration/1
     21 root      20   0       0      0      0 S   0.0   0.0   0:00.15 ksoftirqd/1
     23 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/1:0H-events_highpri
     26 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kdevtmpfs
     27 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 inet_frag_wq
```

23) Create and manage user groups.

```
[root@ip-172-31-37-173 /]# groupadd devops
[root@ip-172-31-37-173 /]# usermod -aG devops techi
[root@ip-172-31-37-173 /]# groups
root
[root@ip-172-31-37-173 /]# tail -n 3 /etc/group
newtechi:x:1002:
devops-group:x:1003:
devops:x:1004:techi
[root@ip-172-31-37-173 /]#
```

24) Set up SSH password less authentication.

```
 test-kp.pem
 ubuntu-24.04.2-desktop-amd64.iso

DELL@DESKTOP-RCNKJC4 MINGW64 ~/downloads
$ ssh -i "test-kp.pem" ec2-user@54.144.98.173
The authenticity of host '54.144.98.173 (54.144.98.173)' can't be established.
ED25519 key fingerprint is SHA256:MzAj1PvP6K26+MOL1tlER67LWY5Xr8T4oUXTdExSbjE.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.144.98.173' (ED25519) to the list of known hosts.
       #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
Last login: Sat Aug  2 06:54:07 2025 from 18.206.107.29
[ec2-user@ip-172-31-37-173 ~]$
```

25) Monitor log files using tail or grep.

```
[root@ip-172-31-37-173 dir2]# tail -f /home/dir2/file1.txt
2.devops engineer
3.aws cloud associate
4.jenkins
5.maven
6.sonarqube
7.terraform
8.linux
9.ansible playbook
10.git
11.docker
^C
[root@ip-172-31-37-173 dir2]# tail -n 3 /home/dir2/file1.txt
9.ansible playbook
10.git
11.docker
[root@ip-172-31-37-173 dir2]# head -n 4 /file1.txt
head: cannot open '/file1.txt' for reading: No such file or directory
[root@ip-172-31-37-173 dir2]# head -n 4 /home/dir2/file1.txt
1.techie horizon
2.devops engineer
3.aws cloud associate
4.jenkins
[root@ip-172-31-37-173 dir2]# grep jenkins /home/dir2/file1.txt
4.jenkins
```

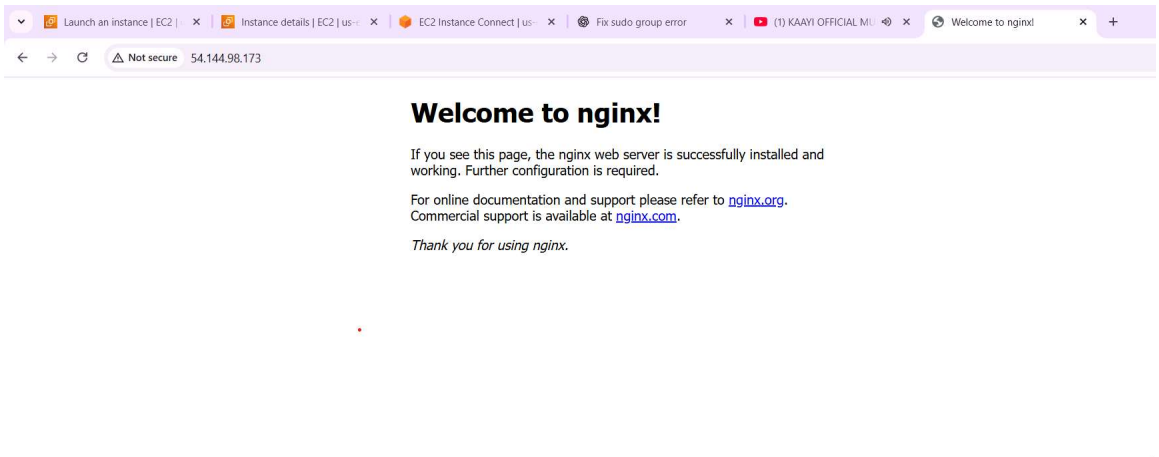
26) Set up a web server (e.g., Apache or Nginx).

It works!

```
  Installing       : mod_http2-2.0.27-1.amzn2023.0.3.x86_64                                                  8/11
  Installing       : mod_lua-2.4.62-1.amzn2023.x86_64                                                        9/11
  Installing       : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch                                      10/11
  Installing       : httpd-2.4.62-1.amzn2023.x86_64                                                         11/11
  Running scriptlet: httpd-2.4.62-1.amzn2023.x86_64                                                         11/11
  Verifying        : apr-1.7.5-1.amzn2023.0.4.x86_64                                                         1/11
  Verifying        : apr-util-1.6.3-1.amzn2023.0.1.x86_64                                                    2/11
  Verifying        : apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64                                            3/11
  Verifying        : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch                                       4/11
  Verifying        : httpd-2.4.62-1.amzn2023.x86_64                                                          5/11
  Verifying        : httpd-core-2.4.62-1.amzn2023.x86_64                                                     6/11
  Verifying        : httpd-filesystem-2.4.62-1.amzn2023.noarch                                               7/11
  Verifying        : httpd-tools-2.4.62-1.amzn2023.x86_64                                                    8/11
  Verifying        : mailcap-2.1.49-3.amzn2023.0.3.noarch                                                    9/11
  Verifying        : mod_http2-2.0.27-1.amzn2023.0.3.x86_64                                                 10/11
  Verifying        : mod_lua-2.4.62-1.amzn2023.x86_64                                                       11/11

Installed:
  apr-1.7.5-1.amzn2023.0.4.x86_64                      apr-util-1.6.3-1.amzn2023.0.1.x86_64          apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64
  generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch    httpd-2.4.62-1.amzn2023.x86_64                httpd-core-2.4.62-1.amzn2023.x86_64
  httpd-filesystem-2.4.62-1.amzn2023.noarch            httpd-tools-2.4.62-1.amzn2023.x86_64          mailcap-2.1.49-3.amzn2023.0.3.noarch
  mod_http2-2.0.27-1.amzn2023.0.3.x86_64               mod_lua-2.4.62-1.amzn2023.x86_64

Complete!
[root@ip-172-31-37-173 dir2]# systemctl start httpd
[root@ip-172-31-37-173 dir2]# systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
[root@ip-172-31-37-173 dir2]#
```




```
  Preparing        :                                                                                                                                1/1
  Running scriptlet: nginx-filesystem-1:1.28.0-1.amzn2023.0.1.noarch                                                                                1/6
  Installing       : nginx-filesystem-1:1.28.0-1.amzn2023.0.1.noarch                                                                                1/6
  Installing       : nginx-mimetypes-2.1.49-3.amzn2023.0.3.noarch                                                                                   2/6
  Installing       : libunwind-1.4.0-5.amzn2023.0.2.x86_64                                                                                          3/6
  Installing       : gperftools-libs-2.9.1-1.amzn2023.0.3.x86_64                                                                                    4/6
  Installing       : nginx-core-1:1.28.0-1.amzn2023.0.1.x86_64                                                                                      5/6
  Installing       : nginx-1:1.28.0-1.amzn2023.0.1.x86_64                                                                                           6/6
  Running scriptlet: nginx-1:1.28.0-1.amzn2023.0.1.x86_64                                                                                           6/6
  Verifying        : gperftools-libs-2.9.1-1.amzn2023.0.3.x86_64                                                                                    1/6
  Verifying        : libunwind-1.4.0-5.amzn2023.0.2.x86_64                                                                                          2/6
  Verifying        : nginx-1:1.28.0-1.amzn2023.0.1.x86_64                                                                                           3/6
  Verifying        : nginx-core-1:1.28.0-1.amzn2023.0.1.x86_64                                                                                      4/6
  Verifying        : nginx-filesystem-1:1.28.0-1.amzn2023.0.1.noarch                                                                                5/6
  Verifying        : nginx-mimetypes-2.1.49-3.amzn2023.0.3.noarch                                                                                   6/6

Installed:
  gperftools-libs-2.9.1-1.amzn2023.0.3.x86_64          libunwind-1.4.0-5.amzn2023.0.2.x86_64                nginx-1:1.28.0-1.amzn2023.0.1.x86_64
  nginx-core-1:1.28.0-1.amzn2023.0.1.x86_64            nginx-filesystem-1:1.28.0-1.amzn2023.0.1.noarch      nginx-mimetypes-2.1.49-3.amzn2023.0.3.noarch

Complete!
[root@ip-172-31-37-173 dir2]# systemctl stop httpd
[root@ip-172-31-37-173 dir2]# systemctl start nginx
[root@ip-172-31-37-173 dir2]# systemctl enbale nginx
Unknown command verb enbale.
[root@ip-172-31-37-173 dir2]# systemctl enable nginx
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.
[root@ip-172-31-37-173 dir2]#
```

27) Configure and secure a MySQL Database.

```
Remove test database and access to it? (Press y|Y for Yes, any other key for No) : n

 ... skipping.
Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
[root@ip-172-31-37-173 ec2-user]# sudo systemctl start mysqld
[root@ip-172-31-37-173 ec2-user]# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 8.0.43 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```
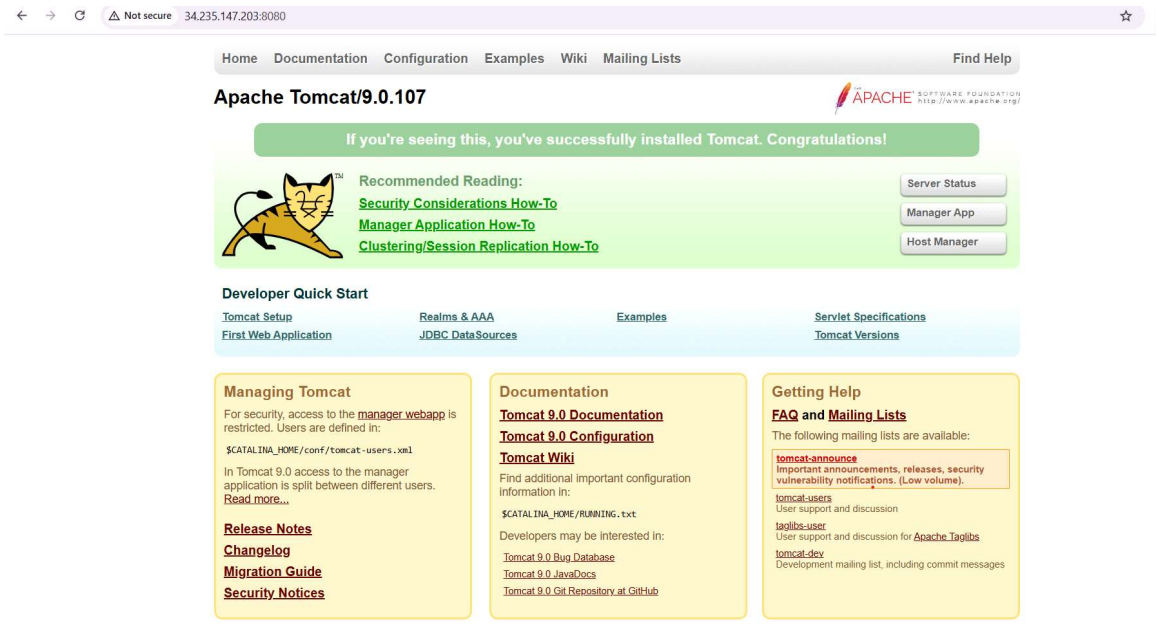
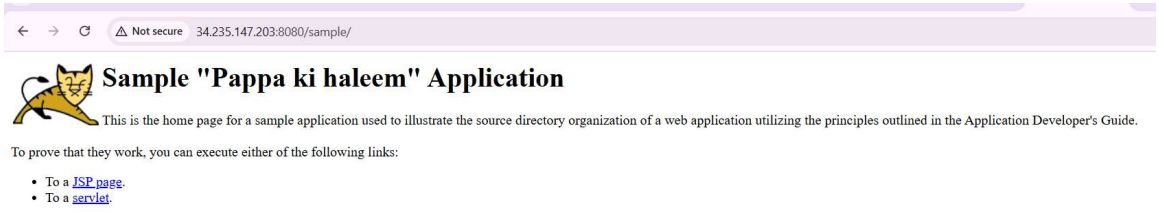

28) Set up a Application Server (e.g.,Apache Tomcat)

```
[root@ip-172-31-87-197 tomcat]# ls
apache-tomcat-9.0.107  apache-tomcat-9.0.107.tar.gz
[root@ip-172-31-87-197 tomcat]# mv apache-tomcat-9.0.107 tomcat
[root@ip-172-31-87-197 tomcat]# ls
apache-tomcat-9.0.107.tar.gz  tomcat
[root@ip-172-31-87-197 tomcat]# cd tomcat
[root@ip-172-31-87-197 tomcat]# ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
[root@ip-172-31-87-197 tomcat]# cd bin
[root@ip-172-31-87-197 bin]# ls
bootstrap.jar       catalina.sh  commons-daemon-native.tar.gz  configtest.sh  digest.sh     setclasspath.bat  shutdown.sh  tomcat-juli.jar       tool-wrapper.sh
catalina-tasks.xml  ciphers.bat  commons-daemon.jar            daemon.sh      makebase.bat  setclasspath.sh   startup.bat  tomcat-native.tar.gz  version.bat
catalina.bat        ciphers.sh   configtest.bat                digest.bat     makebase.sh   shutdown.bat      startup.sh   tool-wrapper.bat      version.sh
[root@ip-172-31-87-197 bin]# startup.sh
bash: startup.sh: command not found
[root@ip-172-31-87-197 bin]# startup.sh tomcat
bash: startup.sh: command not found
[root@ip-172-31-87-197 bin]# startup.sh /tomcat
bash: startup.sh: command not found
[root@ip-172-31-87-197 bin]# ./startup.sh tomcat
Using CATALINA_BASE:   /opt/tomcat/tomcat
Using CATALINA_HOME:   /opt/tomcat/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/tomcat/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/tomcat/tomcat/bin/bootstrap.jar:/opt/tomcat/tomcat/bin/tomcat-juli.jar
Using CATALINA_OPTS:
```



29) create a service file for Apache Tomcat.(Should execute by using systemtctl command)



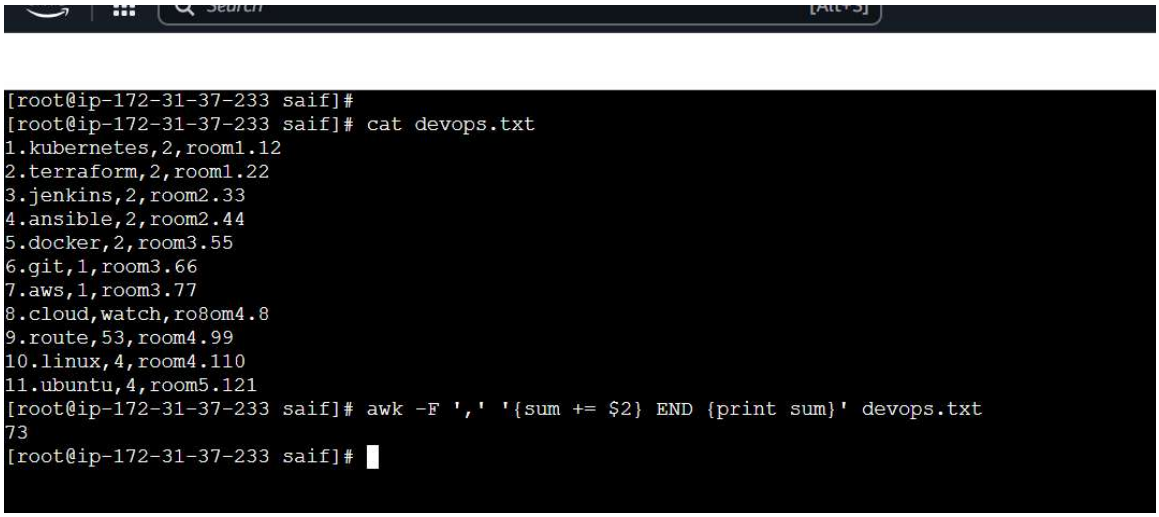
30) Print specific columns from a delimited file.

```
[root@ip-172-31-37-233 saif]# awk -F ',' '{print $3}' devops.txt
room1.12
room1.22
room2.33
room2.44
room3.55
room3.66
room3.77
ro8om4.8
room4.99
room4.110
room5.121
[root@ip-172-31-37-233 saif]#
```

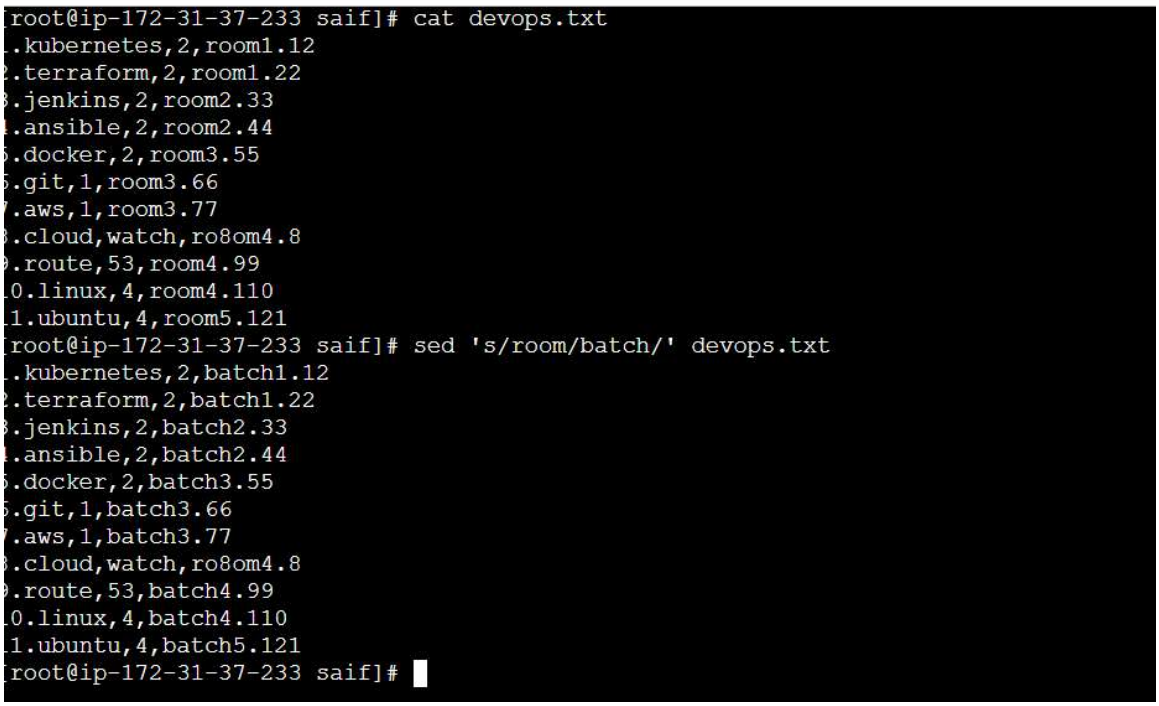
31) Filter and print lines based on a specific pattern or condition.

```
[root@ip-172-31-37-233 saif]# grep "room" devops.txt
1.kubernetes,2,room1.12
2.terraform,2,room1.22
3.jenkins,2,room2.33
4.ansible,2,room2.44
5.docker,2,room3.55
6.git,1,room3.66
7.aws,1,room3.77
9.route,53,room4.99
10.linux,4,room4.110
11.ubuntu,4,room5.121
[root@ip-172-31-37-233 saif]# grep devops.txt
```

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



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



```
[root@ip-172-31-37-233 saif]# cat devops.txt
1.kubernetes,2,room1.12
2.terraform,2,room1.22
3.jenkins,2,room2.33
4.ansible,2,room2.44
5.docker,2,room3.55
6.git,1,room3.66
7.aws,1,room3.77
8.cloud,watch,ro8om4.8
9.route,53,room4.99
10.linux,4,room4.110
11.ubuntu,4,room5.121
[root@ip-172-31-37-233 saif]# sed -i 's/room/batch/g' devops.txt
[root@ip-172-31-37-233 saif]# cat devops.txt \
> ^C
[root@ip-172-31-37-233 saif]# cat devops.txt
1.kubernetes,2,batch1.12
2.terraform,2,batch1.22
3.jenkins,2,batch2.33
4.ansible,2,batch2.44
5.docker,2,batch3.55
6.git,1,batch3.66
7.aws,1,batch3.77
8.cloud,watch,ro8om4.8
9.route,53,batch4.99
10.linux,4,batch4.110
11.ubuntu,4,batch5.121
[root@ip-172-31-37-233 saif]#
```

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

```
[root@ip-172-31-37-233 saif]# grep -c "batch" devops.txt
10
[root@ip-172-31-37-233 saif]# grep -n "batch" devops.txt
1:1.kubernetes,2,batch1.12
2:2.terraform,2,batch1.22
3:3.jenkins,2,batch2.33
4:4.ansible,2,batch2.44
5:5.docker,2,batch3.55
6:6.git,1,batch3.66
7:7.aws,1,batch3.77
9:9.route,53,batch4.99
10:10.linux,4,batch4.110
11:11.ubuntu,4,batch5.121
[root@ip-172-31-37-233 saif]# grep -o "batch" devops.txt
batch
batch
batch
batch
batch
batch
batch
batch
batch
batch
[root@ip-172-31-37-233 saif]# grep -o "batch" devops.txt |wc
     10      10      60
[root@ip-172-31-37-233 saif]#
```

```
3:3.jenkins,2,batch2.33
4:4.ansible,2,batch2.44
5:5.docker,2,batch3.55
6:6.git,1,batch3.66
7:7.aws,1,batch3.77
9:9.route,53,batch4.99
10:10.linux,4,batch4.110
11:11.ubuntu,4,batch5.121
[root@ip-172-31-37-233 saif]# grep -o "batch" devops.txt
batch
batch
batch
batch
batch
batch
batch
batch
batch
batch
[root@ip-172-31-37-233 saif]# grep -o "batch" devops.txt |wc
     10      10      60
[root@ip-172-31-37-233 saif]# grep -wc devops.txt



^C
[root@ip-172-31-37-233 saif]# grep -c "batch" devops.txt | wc
      1       1       3
```

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

```
[root@ip-172-31-37-233 saif]# sort -k 2 devops.txt
1.kubernetes,2,batch1.12
10.linux,4,batch4.110
11.ubuntu,4,batch5.121
2.terraform,2,batch1.22
3.jenkins,2,batch2.33
4.ansible,2,batch2.44
5.docker,2,batch3.55
6.git,1,batch3.66
7.aws,1,batch3.77
8.cloud,watch,ro8om4.8
9.route,53,batch4.99
[root@ip-172-31-37-233 saif]# sort -k 3 devops.txt
1.kubernetes,2,batch1.12
10.linux,4,batch4.110
11.ubuntu,4,batch5.121
2.terraform,2,batch1.22
3.jenkins,2,batch2.33
4.ansible,2,batch2.44
5.docker,2,batch3.55
6.git,1,batch3.66
7.aws,1,batch3.77
8.cloud,watch,ro8om4.8
9.route,53,batch4.99
[root@ip-172-31-37-233 saif]# sort -k 4 devops.txt
1.kubernetes,2,batch1.12
10.linux,4,batch4.110
11.ubuntu,4,batch5.121
```

```
sort: stray character in field spec: invalid field speci
[root@ip-172-31-37-233 saif]# sort -k2 - n devops.txt
sort: cannot read: n: No such file or directory
[root@ip-172-31-37-233 saif]# sort -k2 -n devops.txt
1.kubernetes,2,batch1.12
10.linux,4,batch4.110
11.ubuntu,4,batch5.121
2.terraform,2,batch1.22
3.jenkins,2,batch2.33
4.ansible,2,batch2.44
5.docker,2,batch3.55
6.git,1,batch3.66
7.aws,1,batch3.77
8.cloud,watch,ro8om4.8
9.route,53,batch4.99
[root@ip-172-31-37-233 saif]# sort -k2 -nr devops.txt
9.route,53,batch4.99
8.cloud,watch,ro8om4.8
7.aws,1,batch3.77
6.git,1,batch3.66
5.docker,2,batch3.55
4.ansible,2,batch2.44
3.jenkins,2,batch2.33
2.terraform,2,batch1.22
11.ubuntu,4,batch5.121
10.linux,4,batch4.110
1.kubernetes,2,batch1.12
[root@ip-172-31-37-233 saif]#
```

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

```
[root@ip-172-31-37-233 saif]# touch student.txt
[root@ip-172-31-37-233 saif]# mv student.txt students.txt
[root@ip-172-31-37-233 saif]# touch scores.txt
[root@ip-172-31-37-233 saif]# ls
scores.txt  students.txt
[root@ip-172-31-37-233 saif]# vi students.txt
[root@ip-172-31-37-233 saif]# vi scores.txt
[root@ip-172-31-37-233 saif]# sort students.txt > students_sorted.txt
sort scores.txt > scores_sorted.txt

join students_sorted.txt scores_sorted.txt

101 Alice 85
102 Bob 90
103 Charlie 88
[root@ip-172-31-37-233 saif]#
```

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

```
[root@ip-172-31-37-233 saif]# cat students.txt
101 Alice
102 Bob
103 Charlie

[root@ip-172-31-37-233 saif]# sed -i 's/saif/alice/g' students.txt
[root@ip-172-31-37-233 saif]# cat students.txt
101 Alice
102 Bob
103 Charlie

[root@ip-172-31-37-233 saif]# rm -rf *
[root@ip-172-31-37-233 saif]# ls
[root@ip-172-31-37-233 saif]# touch file.txt
[root@ip-172-31-37-233 saif]# vi file.txt
[root@ip-172-31-37-233 saif]# sed -i 's/batch/room/g' file.txt
[root@ip-172-31-37-233 saif]# cat file.txt
room1 mujahed
room2 saif
room3 omer
room4 mohammed
[root@ip-172-31-37-233 saif]# sed -i 's/room/batch/g' file.txt
[root@ip-172-31-37-233 saif]# cat file.txt
batch1 mujahed
batch2 saif
batch3 omer
batch4 mohammed
[root@ip-172-31-37-233 saif]#
```

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

```
saif 630000000 2 500
omer 5000000 2 600
qayyum 40000 2 700
[root@ip-172-31-37-233 saif]# sed '/fees/d' file.txt
saif 630000000 2 500
omer 5000000 2 600
qayyum 40000 2 700
[root@ip-172-31-37-233 saif]# sed '/name/d' file.txt
saif 630000000 2 500
omer 5000000 2 600
qayyum 40000 2 700
[root@ip-172-31-37-233 saif]# sed '/qayyum/d' file.txt
name mobile room fees
saif 630000000 2 500
omer 5000000 2 600
[root@ip-172-31-37-233 saif]# sed '/k -qayyum/d' file.txt
name mobile room fees
saif 630000000 2 500
omer 5000000 2 600
qayyum 40000 2 700
[root@ip-172-31-37-233 saif]# sed i '/qayyum/d' file.txt
sed: -e expression #1, char 1: expected \ after `a', `c' or `i'
[root@ip-172-31-37-233 saif]# sed -i '/qayyum/d' file.txt
[root@ip-172-31-37-233 saif]# cat file.txt
name mobile room fees
saif 630000000 2 500
omer 5000000 2 600
[root@ip-172-31-37-233 saif]#
```

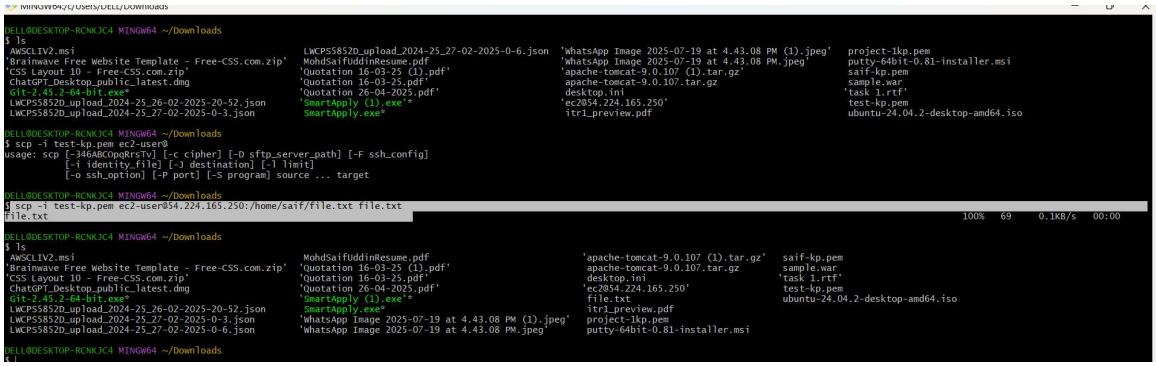
39) Append or insert text before or after a specific pattern or line.

```
[root@ip-172-31-37-233 saif]# cat file.txt
name mobile room fees
saif 630000000 2 500
omer 5000000 2 600
[root@ip-172-31-37-233 saif]# sed -i '/omer/i\farooq' file.txt
[root@ip-172-31-37-233 saif]# cat file.txt
name mobile room fees
saif 630000000 2 500
farooq
omer 5000000 2 600
[root@ip-172-31-37-233 saif]#
```

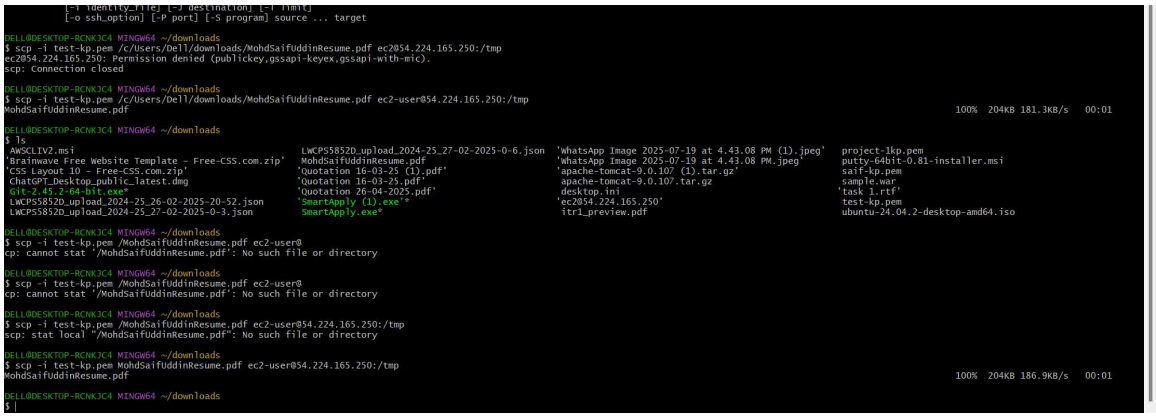
40) Print only specific lines from a file.

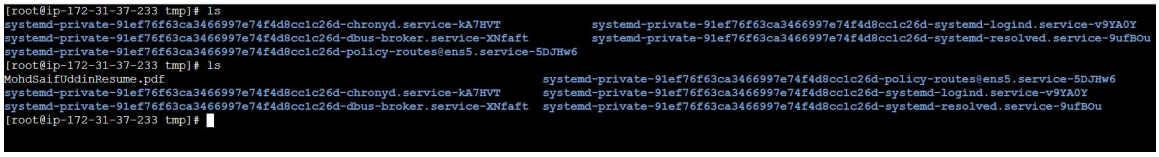
```
[root@ip-172-31-37-233 saif]# sed -n '2p' file.txt
saif 630000000 2 500
[root@ip-172-31-37-233 saif]# head -2 file.txt
name mobile room fees
saif 630000000 2 500
[root@ip-172-31-37-233 saif]# tail -2 file.txt
farooq
omer 5000000 2 600
[root@ip-172-31-37-233 saif]#
```

41) Copy file from linux to windows machine



(copy a file from windows to linux)





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

AWK USE CASE

Print specific columns{awk '{print $2, $4}' filename}

Filter lines based on condition{awk '$3 > 100' filename}

Calculate sum or average of a column{awk '{sum += $2} END {print sum}' filename}

Find and print lines matching a pattern{awk '/ERROR/' filename}

Modify specific fields and print{awk '{$3 = $3 + 10; print}' filename}

SED USE CASE

Search and replace text{sed 's/apple/orange/g' filename}

Delete lines matching a pattern{sed '/DEBUG/d' filename}

Insert a line before a pattern{sed '/Title/i\Header line' filename}

Append a line after a pattern{sed '/End/a\Footer line' filename}

Print only specific lines{sed -n '10,20p' filename}

:drawing_pin: Note:

Please document all task executions along with a brief description based on your understanding, and share the .doc file in the #devops-cloud-status-14 channel. :memo::white_tick: