Linux command

1.ls — List files

```
brijesh@ip-172-31-33-60:~$ ls
brijesh@ip-172-31-33-60:~$ ls -a
.  ..  .bash_logout  .bashrc  .config  .profile
```

2 Detailed list

ls –l

```
ubuntu@ip-172-31-33-60:~$ ls -l
total 4
drwxrwxr-x 2 ubuntu ubuntu 4096 Dec 31 14:51 vishal
ubuntu@ip-172-31-33-60:~$
```

Permissions, owner, size, dates.

3 Show hidden files

Ls –la

```
ubuntu@ip-172-31-33-60:~$ ls -la
total 40
drwxr-x--- 6 ubuntu ubuntu 4096 Jan  1 07:05 .
drwxr-xr-x 4 root   root   4096 Jan  1 07:10 ..
-rw------- 1 ubuntu ubuntu  220 Jan  2 11:35 .bash_history
-rw-r--r-- 1 ubuntu ubuntu  220 Mar 31  2024 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Mar 31  2024 .bashrc
drwx------ 2 ubuntu ubuntu 4096 Dec 31 14:47 .cache
drwx------ 3 ubuntu ubuntu 4096 Dec 31 14:50 .config
-rw-r--r-- 1 ubuntu ubuntu  807 Mar 31  2024 .profile
drwx------ 2 ubuntu ubuntu 4096 Dec 31 14:47 .ssh
-rw-r--r-- 1 ubuntu ubuntu    0 Jan  1 07:05 .sudo_as_admin_successful
drwxrwxr-x 2 ubuntu ubuntu 4096 Dec 31 14:51 vishal
```

Cd

Change directory

```
ubuntu@ip-172-31-33-60:~$ cd
ubuntu@ip-172-31-33-60:~$ cd..
cd..: command not found
ubuntu@ip-172-31-33-60:~$ cd ..
ubuntu@ip-172-31-33-60:/home$
```

Pwd

For present work directory

Create folder

Mkdir

```
ubuntu@ip-172-31-33-60:~/vishal$ mkdir brijesh
ubuntu@ip-172-31-33-60:~/vishal$ pwd
/home/ubuntu/vishal
```

mkdir -p — Create nested directories

Example: mkdir -p a/b/c

```
ubuntu@ip-172-31-33-60:~/vishal$ mkdir -p brijesh/sem3/subject
ubuntu@ip-172-31-33-60:~/vishal$ ls
brijesh
ubuntu@ip-172-31-33-60:~/vishal$ cd brijesh
ubuntu@ip-172-31-33-60:~/vishal/brijesh$ ls
sem3
```

rmdir — Remove empty directory

Example: rmdir temp

```
ubuntu@ip-172-31-33-60:~/vishal/brijesh$ rmdir temp
ubuntu@ip-172-31-33-60:~/vishal/brijesh$
```

rm — Delete file

```
ubuntu@ip-172-31-33-60:~/vishal$ rm vishal.txt
ubuntu@ip-172-31-33-60:~/vishal$
```

rm -rf — Force delete directory recursively

```
ubuntu@ip-172-31-33-60:~/vishal$ rm -rf brijesh
ubuntu@ip-172-31-33-60:~/vishal$
```

Cp = for copy file

```
ubuntu@ip-172-31-33-60:~/vishal/brijesh$ vi text1.txt
ubuntu@ip-172-31-33-60:~/vishal/brijesh$ cp text1.txt text2.txt
ubuntu@ip-172-31-33-60:~/vishal/brijesh$
```

Copy directory

Cp –r vishal vishal_old

```
ubuntu@ip-172-31-33-60:~/vishal$ cp -r brijesh brijesh_old
ubuntu@ip-172-31-33-60:~/vishal$
```

Move/Rename

mv file.txt /tmp/ Example: mv a.txt b.txt

touch — Create empty file Example: touch test.txt

cat — View file Example: cat config.yaml

tac — View reversed Example: tac access.log

```
ubuntu@ip-172-31-33-60:~/vishal$ tac vishal1.txt

so all about forme
now im working as Devops Engineer At Lintel Tech PVT
Currntly Im pursuing M.Sc.IT AT Msu Baroda
im a DevOps Engineer
im from deesa
im vishal
hello
```

nl — Add line numbers Example: nl script.sh

head — Show first lines Example: head file

head -20 — Show first 20 lines Example: head -20 file

tail — Show last lines Example: tail file

tail –f

— Follow log live Example: tail -f app.log

more — Paged viewer

Example: more README.md

less — Better file viewer

Example: less bigfile.log

file — Detect file type

Example: file image.png

stat — Show metadata

Example: stat file.txt

```
ubuntu@ip-172-31-33-60:~/vishal$ stat vishal1.txt
  File: vishal1.txt
  Size: 171             Blocks: 8          IO Block: 4096   regular file
Device: 259,1   Inode: 295091      Links: 1
Access: (0664/-rw-rw-r--)  Uid: ( 1000/  ubuntu)   Gid: ( 1000/  ubuntu)
Access: 2026-01-02 12:21:37.775038765 +0000
Modify: 2026-01-02 12:21:16.386879773 +0000
Change: 2026-01-02 12:21:16.386879773 +0000
 Birth: 2026-01-02 12:21:16.386879773 +0000
ubuntu@ip-172-31-33-60:~/vishal$
```

Searching & Filtering

grep pattern file — Search inside file Example: grep ERROR app.log

```
ubuntu@ip-172-31-33-60:~/vishal$ grep DevOps vishal1.txt
im a DevOps Engineer
ubuntu@ip-172-31-33-60:~/vishal$
```

grep -i — Case insensitive search Example: grep -i warning app.log

```
ubuntu@ip-172-31-33-60:~/vishal$ grep -i devOps vishal1.txt
im a DevOps Engineer
now im working as Devops Engineer At Lintel Tech PVT
ubuntu@ip-172-31-33-60:~/vishal$
```

• grep -r — Recursive search Example: grep -r password /etc

```
ubuntu@ip-172-31-33-60:~$ grep -ir "devops"
vishal/vishal1.txt:im a DevOps Engineer
vishal/vishal1.txt:now im working as Devops Engineer At Lintel Tech PVT
ubuntu@ip-172-31-33-60:~$
```

- grep -n — Show line numbers Example: grep -n main script.py
- • egrep 'a|b' — Search multiple patterns Example: egrep 'fail|error' app.log

```
ubuntu@ip-172-31-33-60:~/vishal$ egrep 'Engineer|Tech' vishal1.txt
im a DevOps Engineer
now im working as Devops Engineer At Lintel Tech PVT
ubuntu@ip-172-31-33-60:~/vishal$
```

- egrep 'a|b' — Search multiple patterns Example: egrep 'fail|error' app.log
- fgrep text — Literal search Example: fgrep '[INFO]' app.log

- find / -name — Find file by name

```
ubuntu@ip-172-31-33-60:~/vishal$ find / -name vishal1.txt
find: '/dev/shm/eic-hostkey-1zrxayuf': Permission denied
find: '/etc/polkit-1/rules.d': Permission denied
```

```
ubuntu@ip-172-31-33-60:~/vishal$ find . -name vishal1.txt
./vishal1.txt
```

- Quickly see all files in a project directory.
- 🔍 **Combine with** `-name`:

  `find . -type f -name "*.txt"`

```
ubuntu@ip-172-31-33-60:~/vishal$ find . -type f -name "*.txt"
./brijesh/text1.txt
./brijesh/text2.txt
./vishal1.txt
./brijesh_new/text1.txt
./brijesh_new/text2.txt
```

- 🗑️ **Delete files in bulk**:
  -

  Find . -type f –name “*.log” -delete

```
brijesh  brijesh_new  text1.txt  vishal.log  vishal1.txt
ubuntu@ip-172-31-33-60:~/vishal$ find . -type f -name "*.log" -delete
ubuntu@ip-172-31-33-60:~/vishal$ ls
brijesh  brijesh_new  text1.txt  vishal1.txt
```

- find . -mtime -1 — Modified today
  - Example: find . -mtime -1

```
ubuntu@ip-172-31-33-60:~/vishal$ find . -mtime -1
.
./text1.txt
./brijesh
./brijesh/text1.txt
./brijesh/text2.txt
./vishal1.txt
./brijesh_new
./brijesh_new/text1.txt
./brijesh_new/text2.txt
```

- locate filename — Fast lookup

```
ubuntu@ip-172-31-33-60:~$ locate vishal1.txt
/home/ubuntu/vishal/vishal1.txt
```

- awk '{print $1}' — Print column

```
ubuntu@ip-172-31-33-60:~/vishal$ awk '{print $1}' vishal1.txt
ello
im
im
im
Currntly
now
so
h
ubuntu@ip-172-31-33-60:~/vishal$
```

- Use a custom delimiter (like commas in a CSV):
    - `awk -F, '{print $1}' data.csv`

```
ubuntu@ip-172-31-33-60:~/vishal$ awk -F, '{print $1}' vishal1.txt
ello
im vishal
im from deesa
im a DevOps Engineer
Currntly Im pursuing M.Sc.IT AT Msu Baroda
now im working as Devops Engineer At Lintel Tech PVT
so all about forme
h
```

sed 's/x/y/g' — Replace text

Example: sed 's/dev/prod/g' config.txt

```
ubuntu@ip-172-31-33-60:~/vishal$ echo -e "environment=dev\npath=/var/dev/app\nmode=dev" > config.txt
ubuntu@ip-172-31-33-60:~/vishal$ ls
brijesh  brijesh_new  config.txt  employees.csv  text1.txt  vishal1.txt
ubuntu@ip-172-31-33-60:~/vishal$ cat config.txt
environment=dev
path=/var/dev/app
mode=dev
ubuntu@ip-172-31-33-60:~/vishal$ sed 's/dev/prod/g' config.txt
environment=prod
path=/var/prod/app
mode=prod
```

cut -d: -f1 — Extract fields Example: cut -d: -f1 /etc/passwd

cut -d: -f1 /etc/passwd

Explanation

- `cut` → command to extract sections of each line in a file.
- `-d:` → sets the **delimiter** to `:` (colon).
- `-f1` → selects the **first field** (column).
- `/etc/passwd` → the file that stores user account information on Linux.

```
ubuntu@ip-172-31-33-60:~/vishal$ cut -d: -f1 /etc/passwd
root
daemon
bin
sys
sync
games
man
lp
mail
news
uucp
proxy
www-data
backup
list
irc
_apt
nobody
systemd-network
systemd-timesync
dhcpcd
```

sort — Sort lines Example: sort names.txt

```
ubuntu@ip-172-31-33-60:~/vishal$ sort employees.csv

1,Alice,Engineering,75000
2,Bob,Design,65000
3,Carol,Marketing,60000
4,David,Engineering,80000
5,Eva,HR,55000
id,name,department,salary
```

uniq — Remove duplicates Example: uniq emails.tx

```
ubuntu@ip-172-31-33-60:~/vishal$ cat emails.txt
alice@example.com
bob@example.com
alice@example.com
carol@example.com
bob@example.com
dave@example.com
ubuntu@ip-172-31-33-60:~/vishal$ uniq emails.txt
alice@example.com
bob@example.com
alice@example.com
carol@example.com
bob@example.com
dave@example.com
```

wc -l — Count lines Example: wc -l app.log

```
ubuntu@ip-172-31-33-60:~/vishal$ wc -l emails.txt
6 emails.txt
```

Users & Permissions

- whoami — Current user

- whoami — Current user Example: whoami
- • id — User & group info Example: id
- • adduser — Create user
  - Example: sudo adduser devuser
- • userdel — Delete user
  - Example: sudo userdel devuser
- • passwd — Set password
  - Example: passwd devuser
- groupadd — Create group
  - Example: sudo groupadd devops

• chown — Change owner

- Example: sudo chown user:group file

• chmod 755 — Set permissions

- Example: chmod 755 script.sh

• chmod +x — Make executable

- Example: chmod +x deploy.sh

• umask — Default permissions mask

- Example: umask

• sudo — Run as root

- Example: sudo cat /etc/shadow

• visudo — Edit sudoers safely

- Example: sudo visudo

Processes & Monitoring

• ps — Show processes

- Example: ps

• ps aux — All processes

- Example: ps aux

• top — Live system view

- Example: top

• htop — Improved monitor

- Example: htop

• kill PID — Terminate process

- Example: kill 2345

• kill -9 PID — Force terminate

- Example: kill -9 2345

• pkill name — Kill by name

- Example: pkill nginx

• nice — Set process priority

- Example: nice -n 10 command

renice — Change priority

- Example: renice 5 -p 2345

• bg — Background a job

- Example: bg %1

• fg — Bring job forward

- Example: fg %1

• jobs — List jobs

- Example: jobs

• uptime — Load averages

- Example: uptime

• dmesg — Kernel messages

- Example: dmesg | tail

• free -m — Memory usage

- Example: free -m

• vmstat — System stats

- Example: vmstat 1 5

• sar — Activity reports

- Example: sar -u 1 3

Networking

- ip a
  Show all IP addresses and network interfaces on the system.
  Example: ip a
- ip r
  Display the routing table (how packets travel through networks).
  Example: ip r
- ifconfig
  Legacy tool to show network info like IPs and interfaces.
  Example: ifconfig

- ping
  Test connectivity to a host by sending ICMP packets.
  Example: ping google.com
- curl
  Make an HTTP request to a website and show the response.
  Example: curl https://example.com
- curl -I
  Fetch only the HTTP headers from a site.
  Example: curl -I https://example.com
- wget
  Download a file from the internet.
  Example: wget https://site/file.zip
- nc -vz
  Check if a port is open on a host.
  Example: nc -vz localhost 8080
- telnet
  Try connecting to a service (e.g., SSH on port 22).
  Example: telnet localhost 22
- nslookup
  Perform a DNS lookup to resolve a domain to IP.
  Example: nslookup google.com
- dig
  Do a detailed DNS query with more info than nslookup.
  Example: dig google.com
- traceroute
  Show the path packets take to reach a destination.
  Example: traceroute google.com
- ss -tulpn
  List open sockets and processes using them.
  Example: ss -tulpn
- netstat -tulpn
  Legacy tool to list open ports and connections.
  Example: netstat -tulpn
- route -n
  Show the routing table in numeric format (IP addresses instead of names).
  Example: route –n

Docker command for deployment

Prerequisites (One-Time Setup)

Commands:

```
sudo apt update -y
sudo apt install -y docker.io git
sudo systemctl start docker
sudo systemctl enable docker
sudo usermod -aG docker $USER
exit
ssh ubuntu@<SERVER_IP>
```

Standard Directory Structure

```
/home/ubuntu/devops/projects/
├── static-site/
└── django-app/
```

Dockerfile for Static Website

Dockerfile:

```
FROM nginx:alpine
RUN rm -rf /usr/share/nginx/html/*
COPY . /usr/share/nginx/html
EXPOSE 80
CMD ["nginx", "-g", "daemon off;"]
```

Deploy Static Website

Commands:

```
docker build -t static-site .
docker run -d -p 80:80 --name static-site static-site
```

URL: http://SERVER_IP

Dockerfile for Django Full-Stack App

Dockerfile:

```
FROM python:3.10-slim
ENV PYTHONDONTWRITEBYTECODE=1
ENV PYTHONUNBUFFERED=1
WORKDIR /app
COPY requirements.txt .
RUN pip install --no-cache-dir -r requirements.txt
COPY . .
EXPOSE 8000
CMD ["python", "manage.py", "runserver", "0.0.0.0:8000"]
```

Django requirements.txt (Base)

```
Django>=4.2,<5.0
asgiref
sqlparse
tzdata
```

Deploy Django Application

Commands:

```
git clone <REPO_URL>
cd project
docker build -t django-app .
docker run -d -p 8000:8000 --name django-app django-app
```

URL: http://SERVER_IP:8000

Admin Panel Setup

Create admin:

```
docker exec -it django-app python manage.py createsuperuser
```

Admin URL: http://SERVER_IP:8000/admin

Static & Media Configuration (Django)

settings.py:

```
STATIC_URL = '/static/'
STATIC_ROOT = BASE_DIR / 'staticfiles'
MEDIA_URL = '/media/'
MEDIA_ROOT = BASE_DIR / 'media'
```

urls.py:

```
from django.conf import settings
from django.conf.urls.static import static
if settings.DEBUG:
   urlpatterns += static(settings.MEDIA_URL, document_root=settings.MEDIA_ROOT)
   urlpatterns += static(settings.STATIC_URL, document_root=settings.STATIC_ROOT)
```

Collect Static Files

```
docker exec -it django-app python manage.py collectstatic --noinput
```

Re-Deployment (Code Update)

```
git pull
docker rm -f django-app
docker build -t django-app .
docker run -d -p 8000:8000 --name django-app django-app
```

Common Debug Commands

```
docker ps
docker logs django-app
docker exec -it django-app bash
docker restart django-app
```

AWS Security Group Ports

SSH 22
HTTP 80
Django 8000