

## **DOCKER Task Description:**

Install docker on EC2 and explore the docker commands (docker images, containers, volumes, network)

### **Techstacks needs to be used :**

- AWS EC2
- Docker

Step 1: Install Docker on EC2

#### **1 Update system**

```
sudo apt-get update -y
```

```
ubuntu@ip-172-31-7-218:~$ sudo su
root@ip-172-31-7-218:/home/ubuntu# apt-get update -y
```

#### **2 Install Docker**

```
sudo apt-get install docker.io
```

```
root@ip-172-31-7-218:/home/ubuntu# apt-get install docker.io
```

#### **3 Start Docker service**

```
sudo systemctl enable docker
```

```
sudo systemctl status docker
```

```
sudo systemctl start docker
```

```
root@ip-172-31-7-218:/home/ubuntu# systemctl enable docker
root@ip-172-31-7-218:/home/ubuntu# systemctl status docker
```

#### **4 Verify Docker**

```
docker --version
```

```
root@ip-172-31-7-218:/home/ubuntu# docker --version
Docker version 28.2.2, build 28.2.2-0ubuntu1~24.04.1
```

## Run Docker without sudo (Recommended)

```
root@ip-172-31-7-218:/home/ubuntu# sudo usermod -aG docker ubuntu
```

Reconnect to EC2:

```
root@ip-172-31-7-218:/home/ubuntu# ssh -i "2026key.pem" ubuntu@ec2-13-204-53-231.ap-south-1.compute.amazonaws.com
```

Test:

```
docker ps
```

```
root@ip-172-31-7-218:/home/ubuntu# docker ps
CONTAINER ID   IMAGE      COMMAND   CREATED     STATUS      PORTS      NAMES
root@ip-172-31-7-218:/home/ubuntu#
```

---

## Docker IMAGES

### Pull an image

```
docker pull nginx
```

```
root@ip-172-31-7-218:/home/ubuntu# docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
1733a4cd5954: Pull complete
5b219a92f92a: Pull complete
ee3a09d2248a: Pull complete
7382b41547b8: Pull complete
9ee60c6c0558: Pull complete
114e699da838: Pull complete
5b5fa0b64d74: Pull complete
Digest: sha256:fb01117203ff38c2f9af91db1a7409459182a37c87cced5cb442d1d8fcc66d19
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
root@ip-172-31-7-218:/home/ubuntu#
```

### List images

```
docker images
```

```
root@ip-172-31-7-218:/home/ubuntu# docker images
REPOSITORY      TAG          IMAGE ID      CREATED        SIZE
nginx           latest       576306625d79   13 days ago   152MB
```

## Remove image

```
docker rmi nginx
```

```
root@ip-172-31-7-218:/home/ubuntu# docker rmi nginx
Untagged: nginx:latest
Untagged: nginx@sha256:fb01117203ff38c2f9af91db1a7409459182a37c87cced5cb442d1d8fcc66d19
Deleted: sha256:576306625d797a52045ad158b601d5a011f7a7f16e4ccc909809f02dd6047c37
Deleted: sha256:b97c52357821ac794246c890299695624c55b94551032ab74b9de33af039834d
Deleted: sha256:c8b5930fc7001a520bb8b378e277b64a877b8e7bbcf2b812a9a45e5dd7ac6f36
Deleted: sha256:596475b6a963eaebf8d0e020364fbe3edcc4b008e041ef0b18e78d5686b6fa08
Deleted: sha256:b30188818a3abd03efb99369c740d650c14ea93d2e20bbbbd5283082b647f287
Deleted: sha256:bd1491aa457e9bcc06fdde660276d1338fdeedc53de2eeee16343de184c40e54
Deleted: sha256:28717e334a4a71473fd8c28a688e704e2f3aa05b5efff1b17be9e10f374a872c
Deleted: sha256:77a2b55fbe8b9984ce0af3ffc0b0ab62507668e63306ec161a585e587a3eb164
root@ip-172-31-7-218:/home/ubuntu#
```

## Docker CONTAINERS

### Run a container

```
docker run -d --name webserver -p 80:80 nginx
```

```
root@ip-172-31-7-218:/home/ubuntu# docker run -d --name webserver -p 80:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
1733a4cd5954: Pull complete
5b219a92f92a: Pull complete
ee3a09d2248a: Pull complete
7382b41547b8: Pull complete
9ee60c6c0558: Pull complete
114e699da838: Pull complete
5b5fa0b64d74: Pull complete
Digest: sha256:fb01117203ff38c2f9af91db1a7409459182a37c87cced5cb442d1d8fcc66d19
Status: Downloaded newer image for nginx:latest
009e3b265ef89a27b9ca58eff66a686314748cf4c5c8ac1104014b855aa84ee9
root@ip-172-31-7-218:/home/ubuntu#
```

### List running containers

```
docker ps
```

```
root@ip-172-31-7-218:/home/ubuntu# docker ps
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS                 N
AMES
009e3b265ef8        nginx              "/docker-entrypoint..."   3 minutes ago       Up 3 minutes      0.0.0.0:80->80/tcp, [::]:80->80/tcp   w
root@ip-172-31-7-218:/home/ubuntu#
```

### List all containers

```
docker ps -a
```

## **Stop container**

```
docker stop webserver
```

```
root@ip-172-31-7-218:/home/ubuntu# docker stop webserver
webserver
root@ip-172-31-7-218:/home/ubuntu#
```

## **Start container**

```
docker start webserver
```

```
root@ip-172-31-7-218:/home/ubuntu# docker start webserver
webserver
root@ip-172-31-7-218:/home/ubuntu# |
```

## **Remove container**

```
docker rm webserver
```

```
root@ip-172-31-7-218:/home/ubuntu# docker stop webserver
webserver
root@ip-172-31-7-218:/home/ubuntu# docker rm webserver
webserver
root@ip-172-31-7-218:/home/ubuntu# docker ps
CONTAINER ID   IMAGE      COMMAND   CREATED    STATUS     PORTS      NAMES
root@ip-172-31-7-218:/home/ubuntu#
```



## **Docker VOLUMES**

### **Create volume**

```
docker volume create myvolume
```

```
root@ip-172-31-7-218:/home/ubuntu# docker volume create myvolume
myvolume
root@ip-172-31-7-218:/home/ubuntu# |
```

### **List volumes**

```
docker volume ls
```

```
root@ip-172-31-7-218:/home/ubuntu# docker volume ls
DRIVER      VOLUME NAME
local      myvolume
```

## Use volume in container

```
docker run -d \
--name vol-test \
-v myvolume:/usr/share/nginx/html \
nginx
```

## Inspect volume

```
docker volume inspect myvolume
```

```
root@ip-172-31-7-218:/home/ubuntu# docker run -d \
--name vol-test \
-v myvolume:/usr/share/nginx/html \
nginx
35f45cdc6e838c46fe16970a063da7860073e17968a27b0744abf57c9bab9a4f
root@ip-172-31-7-218:/home/ubuntu# docker volume inspect myvolume
[
  {
    "CreatedAt": "2025-12-23T12:01:19Z",
    "Driver": "local",
    "Labels": null,
    "Mountpoint": "/var/lib/docker/volumes/myvolume/_data",
    "Name": "myvolume",
    "Options": null,
    "Scope": "local"
  }
]
root@ip-172-31-7-218:/home/ubuntu#
```

## Remove volume

```
docker volume rm myvolume
```

```
root@ip-172-31-7-218:/home/ubuntu# docker volume rm myvolume
myvolume
root@ip-172-31-7-218:/home/ubuntu#
```

# Docker NETWORKS

## List networks

```
docker network ls
```

```
root@ip-172-31-7-218:/home/ubuntu# docker network ls
NETWORK ID      NAME      DRIVER      SCOPE
aa7e32e87b02    bridge    bridge      local
0e7aec4d3d18    host      host       local
6cb3a703abeb    none      null       local
```

## Create network

```
docker network create mynetwork
```

```
root@ip-172-31-7-218:/home/ubuntu# docker network create mynetwork
f560e6f1729cc12b817b539151fcc07712449ff69656e6e5d6d4b8762d569047
```

## Run container in custom network

```
docker run -d --name app1 --network mynetwork nginx
```

```
docker run -d --name app2 --network mynetwork nginx
```

```
root@ip-172-31-7-218:/home/ubuntu# docker run -d --name app1 --network mynetwork nginx
231fd5f2be22525aa2cb9aacb7a195876280512e26eefdbde0add09c1a15a617
root@ip-172-31-7-218:/home/ubuntu# docker run -d --name app2 --network mynetwork nginx
60f4f26d301b17a4c7ab688885dbd636eedb1822b107c70ca29f3d8a03feb212
root@ip-172-31-7-218:/home/ubuntu#
```

## Inspect network

```
docker network inspect mynetwork
```

```
root@ip-172-31-7-218:/home/ubuntu# docker network inspect mynetwork
[{"Name": "mynetwork", "Id": "f560e6f1729cc12b817b539151fcc07712449ff69656e6e5d6d4b8762d569047", "Created": "2025-12-23T12:29:44.076Z", "Scope": "local", "Driver": "bridge", "EnableIPv4": true, "EnableIPv6": false, "IPAM": {"Driver": "default", "Options": {}, "Config": [{"Subnet": "172.18.0.0/16", "Gateway": "172.18.0.1"}]}}
```

### To connect and disconnect

docker network connect [network\_name] [container\_name]: Connect a container to a network.

docker network disconnect [network\_name] [container\_name]: Disconnect a container from a network.

```
root@ip-172-31-7-218:/home/ubuntu# docker network disconnect mynetwork app1
root@ip-172-31-7-218:/home/ubuntu# docker network connect mynetwork app1
```

### Remove network

docker network rm mynetwork

```
root@ip-172-31-7-218:/home/ubuntu# docker network disconnect mynetwork app1
root@ip-172-31-7-218:/home/ubuntu# docker network disconnect mynetwork app2
root@ip-172-31-7-218:/home/ubuntu# docker network rm mynetwork
mynetwork
root@ip-172-31-7-218:/home/ubuntu#
```