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

Techstacks needs to be used :

- AWS EC2
- Docker

Installed the docker in the EC2

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Created / Pulled the image from the docker hub and created the container out of it

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```
[root@ip-172-31-29-252 ec2-user]# docker pull nginx:mainline
mainline: Pulling from library/nginx
38513bd72563: Pull complete
10d18f46ee97: Pull complete
a8d825a0683a: Pull complete
a131bc1d4bd5: Pull complete
3818929ac19f: Pull complete
1498b1cfda15: Pull complete
c50c84d0ed4d: Pull complete
Digest: sha256:029d4461bd98f124e531380505ceea2072418fdf28752aa73b7b273ba3048903
Status: Downloaded newer image for nginx:mainline
docker.io/library/nginx:mainline
[root@ip-172-31-29-252 ec2-user]# docker images
REPOSITORY   TAG        IMAGE ID       CREATED       SIZE
nginx        alpine     5e7abcdd2021   2 weeks ago   52.8MB
nginx        mainline   657fdcd1c365   2 weeks ago   152MB
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID   IMAGE          COMMAND                 CREATED         STATUS         PORTS                                      NAMES
e6cb5654ef00   nginx:alpine   "/docker-entrypoint…"   8 minutes ago   Up 8 minutes   0.0.0.0:100->80/tcp, :::100->80/tcp        demo-nginx
[root@ip-172-31-29-252 ec2-user]# docker run -d -p 200:81 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
Digest: sha256:029d4461bd98f124e531380505ceea2072418fdf28752aa73b7b273ba3048903
Status: Downloaded newer image for nginx:latest
bb37651e9fcbda1625b4cb75c8f23be210f3e2534944bb3b643e11f1b55ff47e
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID   IMAGE          COMMAND                 CREATED          STATUS          PORTS                                      NAMES
bb37651e9fcb   nginx          "/docker-entrypoint…"   11 seconds ago   Up 10 seconds   80/tcp, 0.0.0.0:200->81/tcp, :::200->81/tcp   gracious_villani
e6cb5654ef00   nginx:alpine   "/docker-entrypoint…"   9 minutes ago    Up 9 minutes    0.0.0.0:100->80/tcp, :::100->80/tcp        demo-nginx
[root@ip-172-31-29-252 ec2-user]# docker images
REPOSITORY   TAG        IMAGE ID       CREATED       SIZE
nginx        alpine     5e7abcdd2021   2 weeks ago   52.8MB
nginx        latest     657fdcd1c365   2 weeks ago   152MB
nginx        mainline   657fdcd1c365   2 weeks ago   152MB
[root@ip-172-31-29-252 ec2-user]# docker run -d -p 300:82 nginx:mainline
18b4222a7757b540fac3fc112115c9ae88853af4e3f11d90a16e20e9c3bfb313
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID   IMAGE            COMMAND                 CREATED              STATUS           PORTS                                      NAMES
18b4222a7757   nginx:mainline   "/docker-entrypoint…"   6 seconds ago        Up 5 seconds     80/tcp, 0.0.0.0:300->82/tcp, :::300->82/tcp   funny_solomon
bb37651e9fcb   nginx            "/docker-entrypoint…"   About a minute ago   Up About a minute   80/tcp, 0.0.0.0:200->81/tcp, :::200->81/tcp   gracious_villani
e6cb5654ef00   nginx:alpine     "/docker-entrypoint…"   10 minutes ago       Up 10 minutes    0.0.0.0:100->80/tcp, :::100->80/tcp        demo-nginx
```

Created image and container and intentionally stopped and deleted the container.

```
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID   IMAGE          COMMAND                 CREATED          STATUS          PORTS                                      NAMES
bb37651e9fcb   nginx          "/docker-entrypoint…"   11 seconds ago   Up 10 seconds   80/tcp, 0.0.0.0:200->81/tcp, :::200->81/tcp   gracious_villani
e6cb5654ef00   nginx:alpine   "/docker-entrypoint…"   9 minutes ago    Up 9 minutes    0.0.0.0:100->80/tcp, :::100->80/tcp        demo-nginx
[root@ip-172-31-29-252 ec2-user]# docker images
REPOSITORY   TAG        IMAGE ID       CREATED       SIZE
nginx        alpine     5e7abcdd2021   2 weeks ago   52.8MB
nginx        latest     657fdcd1c365   2 weeks ago   152MB
nginx        mainline   657fdcd1c365   2 weeks ago   152MB
[root@ip-172-31-29-252 ec2-user]# docker run -d -p 300:82 nginx:mainline
18b4222a7757b540fac3fc112115c9ae88853af4e3f11d90a16e20e9c3bfb313
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID   IMAGE            COMMAND                 CREATED              STATUS           PORTS                                      NAMES
18b4222a7757   nginx:mainline   "/docker-entrypoint…"   6 seconds ago        Up About a minute   80/tcp, 0.0.0.0:300->82/tcp, :::300->82/tcp   funny_solomon
bb37651e9fcb   nginx            "/docker-entrypoint…"   About a minute ago   Up About a minute   80/tcp, 0.0.0.0:200->81/tcp, :::200->81/tcp   gracious_villani
e6cb5654ef00   nginx:alpine     "/docker-entrypoint…"   10 minutes ago       Up 10 minutes    0.0.0.0:100->80/tcp, :::100->80/tcp        demo-nginx
[root@ip-172-31-29-252 ec2-user]# docker stop $(docker ps -a -q)
18b4222a7757
bb37651e9fcb
e6cb5654ef00
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID   IMAGE   COMMAND   CREATED   STATUS   PORTS   NAMES
[root@ip-172-31-29-252 ec2-user]# docker ps -a
CONTAINER ID   IMAGE            COMMAND                 CREATED              STATUS                   PORTS   NAMES
18b4222a7757   nginx:mainline   "/docker-entrypoint…"   About a minute ago   Exited (0) 21 seconds ago         funny_solomon
bb37651e9fcb   nginx            "/docker-entrypoint…"   2 minutes ago        Exited (0) 21 seconds ago         gracious_villani
e6cb5654ef00   nginx:alpine     "/docker-entrypoint…"   11 minutes ago       Exited (0) 21 seconds ago         demo-nginx
[root@ip-172-31-29-252 ec2-user]# docker rm$(docker ps -a -q)
bash: syntax error near unexpected token `('
[root@ip-172-31-29-252 ec2-user]# docker rm $(docker ps -a -q)
18b4222a7757
bb37651e9fcb
e6cb5654ef00
[root@ip-172-31-29-252 ec2-user]# docker ps -a
CONTAINER ID   IMAGE   COMMAND   CREATED   STATUS   PORTS   NAMES
[root@ip-172-31-29-252 ec2-user]#
```

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Created the volume in the docker and mounted it into the container

```
[root@ip-172-31-29-252 ec2-user]# docker volume create my-volume
my-volume
[root@ip-172-31-29-252 ec2-user]# docker volume ls
DRIVER      VOLUME NAME
local       my-volume
```

```
[root@ip-172-31-29-252 /]# docker volume ls
DRIVER    VOLUME NAME
local     my-volume
[root@ip-172-31-29-252 /]# docker run -d --name dev-prod -p 1000:80 -v my-volume:/usr/share/nginx nginx:mainline
Unable to find image 'nginx:mainline' locally
mainline: Pulling from library/nginx
38513bd72563: Pull complete
10d18f46ee87: Pull complete
a8d825a0683a: Pull complete
a131bc1d4bd5: Pull complete
3818929ac19f: Pull complete
1498b1cfda15: Pull complete
c50c84d0ed4d: Pull complete
Digest: sha256:029d4461bd98f124e531380505ceea2072418fdf28752aa73b7b273ba3048903
Status: Downloaded newer image for nginx:mainline
2be31ce4d4ab8d9944c1042f4b20982bb0009b7a7bf944594ca4b69e6c3ea0b6
[root@ip-172-31-29-252 /]# docker ps
CONTAINER ID   IMAGE           COMMAND               CREATED         STATUS          PORTS                                         NAMES
2be31ce4d4ab   nginx:mainline  "/docker-entrypoint..."  11 seconds ago  Up 10 seconds   0.0.0.0:1000->80/tcp, :::1000->80/tcp   dev-prod
```

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To verify the mounting the volumes in container :

```
[root@ip-172-31-29-252 /]# docker ps
CONTAINER ID   IMAGE           COMMAND               CREATED         STATUS          PORTS                                         NAMES
2be31ce4d4ab   nginx:mainline  "/docker-entrypoint..."  11 seconds ago  Up 10 seconds   0.0.0.0:1000->80/tcp, :::1000->80/tcp   dev-prod
[root@ip-172-31-29-252 /]# docker inspect ^C
[root@ip-172-31-29-252 /]# docker inspect 2be31ce4d4ab
```

```
        },
        "Mounts": [
            {
                "Type": "volume",
                "Name": "my-volume",
                "Source": "/var/lib/docker/volumes/my-volume/_data",
                "Destination": "/usr/share/nginx",
                "Driver": "local",
                "Mode": "z",
                "RW": true,
                "Propagation": ""
            }
        ],
```

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Deleted the persistence volume intentionally by stopping and removing the container

```
[root@ip-172-31-29-252 ec2-user]# docker volume ls
DRIVER    VOLUME NAME
local     my-volume
[root@ip-172-31-29-252 ec2-user]# docker volume prune
WARNING! This will remove anonymous local volumes not used by at least one container.
Are you sure you want to continue? [y/N] y
Total reclaimed space: 0B
[root@ip-172-31-29-252 ec2-user]# docker volume ls
DRIVER    VOLUME NAME
local     my-volume
[root@ip-172-31-29-252 ec2-user]# docker volume rm my-volume
my-volume
[root@ip-172-31-29-252 ec2-user]# docker volume ls
DRIVER    VOLUME NAME
[root@ip-172-31-29-252 ec2-user]# ||
```

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Created the docker network,attached it to the container and deleted it intentionally

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```
[root@ip-172-31-29-252 ec2-user]# docker network create my-network
411269b9249b47d1c7726378323284f2e019a0caf1a5023fc4391381afc2eec2
[root@ip-172-31-29-252 ec2-user]# docker network ls
NETWORK ID      NAME           DRIVER     SCOPE
3f9717469f11    bridge         bridge     local
555d16fbfd08    host           host       local
411269b9249b    my-network     bridge     local
1c788abe8b26    none           null       local
[root@ip-172-31-29-252 ec2-user]# docker network inspect my-network
[
    {
        "Name": "my-network",
        "Id": "411269b9249b47d1c7726378323284f2e019a0caf1a5023fc4391381afc2eec2",
        "Created": "2025-10-22T21:11:28.585513882Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]
```

```
[root@ip-172-31-29-252 ec2-user]# docker run -d --name web1 --network my-network nginx:alpine
Unable to find image 'nginx:alpine' locally
alpine: Pulling from library/nginx
2d35ebdb57d9: Pull complete
f80aba050ead: Pull complete
621a51978ed7: Pull complete
03e63548f209: Pull complete
83ce83cd9960: Pull complete
e2d0ea5d3690: Pull complete
7fb80c2f28bc: Pull complete
76c9bcaa4163: Pull complete
Digest: sha256:61e01287e546aac28a3f56839c136b31f590273f3b41187a36f46f6a03bbfe22
Status: Downloaded newer image for nginx:alpine
9c569febae21df16e46174e2004e19758fe84bbfff8b5a445c12e39aca6b3ac7
```

```
[root@ip-172-31-29-252 ec2-user]# docker ps
CONTAINER ID    IMAGE          COMMAND              CREATED         STATUS          PORTS      NAMES
9c569febae21    nginx:alpine   "/docker-entrypoint.…"  3 minutes ago   Up 3 minutes    80/tcp     web1
```

```
[root@ip-172-31-29-252 ec2-user]# docker stop 9c569febae21
9c569febae21
```

```
[root@ip-172-31-29-252 ec2-user]# docker network ls
NETWORK ID      NAME            DRIVER      SCOPE
3f9717469f11    bridge          bridge      local
555d16fbfd08    host            host        local
411269b9249b    my-network      bridge      local
1c788abe8b26    none            null        local
[root@ip-172-31-29-252 ec2-user]# docker rm my-network
Error response from daemon: No such container: my-network
[root@ip-172-31-29-252 ec2-user]# docker network rm my-network
my-network
```