Docker Task

Task Description:

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

➔ Step1: Create an EC2 Instance, upgrade the os and add Docker's official GPG key

```
 ubuntu @ session #1: sshd[1031,1482]
ubuntu@ip-172-31-36-111:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
OK
```

➔ Step2: Add Docker Repository

```
ubuntu@ip-172-31-36-111:~$ sudo add-apt-repository \
  "deb [arch=amd64] https://download.docker.com/linux/ubuntu \
  $(lsb_release -cs) \
  stable"
Repository: 'deb [arch=amd64] https://download.docker.com/linux/ubuntu noble stable'
Description:
Archive for codename: noble components: stable
More info: https://download.docker.com/linux/ubuntu
Adding repository.
```

➔ Step3: Install the Docker

```
ubuntu@ip-172-31-36-111:~$ sudo apt install docker-ce -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  containerd.io docker-buildx-plugin docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libslirp0 pigz slirp4netns
Suggested packages:
  cgroupfs-mount | cgroup-lite docker-model-plugin
The following NEW packages will be installed:
  containerd.io docker-buildx-plugin docker-ce docker-ce-cli docker-ce-rootless-extras docker-compose-plugin libslirp0 pigz slirp4netns
0 upgraded, 9 newly installed, 0 to remove and 0 not upgraded.
Need to get 103 MB of archives.
After this operation, 430 MB of additional disk space will be used.
```

➔ Step4: Start the Docker, enable it and check the status.

```
ubuntu@ip-172-31-36-111:~$ sudo systemctl start docker
ubuntu@ip-172-31-36-111:~$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable docker
ubuntu@ip-172-31-36-111:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
     Active: active (running) since Mon 2025-08-18 13:11:35 UTC; 32s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 16566 (dockerd)
      Tasks: 8
     Memory: 95.3M (peak: 95.6M)
        CPU: 390ms
     CGroup: /system.slice/docker.service
             └─16566 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
```

➔ Step5: Explore the Docker commands for:
➔ Images

```
ubuntu@ip-172-31-36-111:~$ sudo docker images
REPOSITORY    TAG        IMAGE ID    CREATED    SIZE
ubuntu@ip-172-31-36-111:~$ sudo docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
b1badc6e5066: Pull complete
a2da0c0f2353: Pull complete
e5d9bb0b85cc: Pull complete
14a859b5ba24: Pull complete
716cdf61af59: Pull complete
14e422fd20a0: Pull complete
c3741b707ce6: Pull complete
Digest: sha256:33e0bbc7ca9ecf108140af6288c7c9d1ecc77548cbfd3952fd8466a75edefe57
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
```

➔ Containers

```
ubuntu@ip-172-31-36-111:~$ sudo docker images
REPOSITORY    TAG        IMAGE ID    CREATED    SIZE
ubuntu@ip-172-31-36-111:~$ sudo docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
b1badc6e5066: Pull complete
a2da0c0f2353: Pull complete
e5d9bb0b85cc: Pull complete
14a859b5ba24: Pull complete
716cdf61af59: Pull complete
14e422fd20a0: Pull complete
c3741b707ce6: Pull complete
Digest: sha256:33e0bbc7ca9ecf108140af6288c7c9d1ecc77548cbfd3952fd8466a75edefe57
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
ubuntu@ip-172-31-36-111:~$ sudo docker run -d --name mynginx -p 8080:80 nginx
39d0726be7c928c68684f6703e324508a3ad7c5b4e6c4f60c5bcf62117e650ef
ubuntu@ip-172-31-36-111:~$ sudo docker ps
CONTAINER ID   IMAGE   COMMAND              CREATED          STATUS         PORTS                                        NAMES
39d0726be7c9   nginx   "/docker-entrypoint.…"   11 seconds ago   Up 10 seconds   0.0.0.0:8080->80/tcp, [::]:8080->80/tcp   mynginx
ubuntu@ip-172-31-36-111:~$ sudo docker ps -a
CONTAINER ID   IMAGE   COMMAND              CREATED          STATUS         PORTS                                        NAMES
39d0726be7c9   nginx   "/docker-entrypoint.…"   20 seconds ago   Up 19 seconds   0.0.0.0:8080->80/tcp, [::]:8080->80/tcp   mynginx
```

➔ Volumes

```
ubuntu@ip-172-31-36-111:~$ sudo docker volume ls
DRIVER    VOLUME NAME
ubuntu@ip-172-31-36-111:~$ sudo docker volume create myvolume
myvolume
ubuntu@ip-172-31-36-111:~$ sudo docker volume ls
DRIVER    VOLUME NAME
local     myvolume
ubuntu@ip-172-31-36-111:~$ sudo docker run -d --name mycontainer -v myvolume:/data nginx
7c76ea792786b970eb1bc587386d50a4ae879abeaea506fde830d9ca41880ef2
ubuntu@ip-172-31-36-111:~$ sudo docker volume inspect myvolume
[
    {
        "CreatedAt": "2025-08-18T13:19:06Z",
        "Driver": "local",
        "Labels": null,
        "Mountpoint": "/var/lib/docker/volumes/myvolume/_data",
        "Name": "myvolume",
        "Options": null,
        "Scope": "local"
    }
]
```

➔ Network

```
ubuntu@ip-172-31-36-111:~$ sudo docker network ls
NETWORK ID      NAME        DRIVER      SCOPE
3935329c3213    bridge      bridge      local
92ffe1c76fee    host        host        local
474703cfe865    none        null        local
ubuntu@ip-172-31-36-111:~$ sudo docker network create mynetwork
487252f54d5936c451e7a9b8ebb810fb924f98e7678ed6b4ad650ae9e56756d8
ubuntu@ip-172-31-36-111:~$ sudo docker run -d --name web1 --network mynetwork nginx
e1355491c0053551a468163b34e7a7ddc2859de8db41623717600d23a6cd9f4d
ubuntu@ip-172-31-36-111:~$ sudo docker network inspect mynetwork
[
    {
        "Name": "mynetwork",
        "Id": "487252f54d5936c451e7a9b8ebb810fb924f98e7678ed6b4ad650ae9e56756d8",
        "Created": "2025-08-18T13:22:44.980728253Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv4": true,
        "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": {
```