What is Docker?

Docker is a containerization platform that enables developers to package applications and their dependencies into containers. These containers can then run consistently across various environments, improving portability, scalability, and deployment efficiency.

Docker Installation and Setup

Step 1: Launching an EC2 Instance

- Open AWS Console and go to EC2 Dashboard.
- Click on Launch Instance.
- Enter a name, e.g., `Docker-Server`.
- Choose Amazon Linux 2023 AMI.
- Select an instance type (e.g., `t2.micro`).
- Create or select an existing Key Pair (to SSH into instance).
- Configure Security Group to allow port 22 (SSH).
- Click Launch Instance.

Step 2: Connect to EC2 via SSH (Using Git Bash)

- `ssh -i "your-key.pem" ec2-user@your-ec2-public-ip`

Step 3: Install Docker on Amazon Linux 2023

- Update System Packages
  `sudo dnf update -y`
- Install Docker using `dnf`
  `sudo dnf install docker -y`
- Start Docker Service
  `sudo systemctl start docker`
- Enable Docker to Start on Boot
  `sudo systemctl enable docker`
- Check Docker Version
  `docker --version`
- Output: Docker version 25.0.8, build 019a596
- Verify Docker is Running
  `sudo systemctl status docker`
- Output should show: `active (running)`

Step 4: Access Docker Directory

- Navigate to the Docker root directory:

```
cd /var/lib/docker
ls
```

Step 5: Docker Image and Container Management

- List Docker Images
  `docker image ls`
- List Running Containers
  `docker ps`
- List All Containers (Including Stopped)
  `docker ps -a`
- Tag and Push Docker Image to Docker Hub

  Example using the `nginx` image:

  ```
  docker tag nginx:latest your-dockerhub-username/nginx-custom:latest
  ```

  ```
  docker push your-dockerhub-username/nginx-custom:latest
  ```