

# **Lab Exercise 1- Docker Fundamental Commands**

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## **Objective**

Learn and practice the fundamental Docker CLI commands to:

- Manage images and containers
  - Understand container lifecycle
  - Build and run applications using Docker
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## **1. Setup**

### **Prerequisites**

- Docker installed on your system  
(Check using: docker --version)
  - Internet access to pull images
- 

## **2. Basic Docker Commands**

### **Step 1: Verify Installation**

```
docker --version
```

```
docker info
```

*Expected Output:* Docker version and system details.

```
C:\Users\ASUS>docker --version
Docker version 28.5.1, build e180ab8

C:\Users\ASUS>docker info
Client:
  Version:    28.5.1
  Context:   desktop-linux
  Debug Mode: false
  Plugins:
    ai: Docker AI Agent - Ask Gordon (Docker Inc.)
      Version: v1.9.11
      Path:   C:\Program Files\Docker\cli-plugins\docker-ai.exe
    buildx: Docker Buildx (Docker Inc.)
      Version: v0.29.1-desktop.1
      Path:   C:\Program Files\Docker\cli-plugins\docker-buildx.exe
    compose: Docker Compose (Docker Inc.)
      Version: v2.40.3-desktop.1
      Path:   C:\Users\ASUS\.docker\cli-plugins\docker-compose.exe
    debug: Get a shell into any image or container (Docker Inc.)
      Version: 0.0.45
      Path:   C:\Program Files\Docker\cli-plugins\docker-debug.exe
    desktop: Docker Desktop commands (Docker Inc.)
      Version: v0.2.0
      Path:   C:\Program Files\Docker\cli-plugins\docker-desktop.exe
    extension: Manages Docker extensions (Docker Inc.)
      Version: v0.2.31
      Path:   C:\Program Files\Docker\cli-plugins\docker-extension.exe
    init: Creates Docker-related starter files for your project (Docker Inc.)
      Version: v1.4.0
      Path:   C:\Program Files\Docker\cli-plugins\docker-init.exe
    mcp: Docker MCP Plugin (Docker Inc.)
      Version: v0.24.0
      Path:   C:\Program Files\Docker\cli-plugins\docker-mcp.exe
    model: Docker Model Runner (Docker Inc.)
      Version: v0.1.46
      Path:   C:\Users\ASUS\.docker\cli-plugins\docker-model.exe
    offload: Docker Offload (Docker Inc.)
      Version: v0.5.1
      Path:   C:\Program Files\Docker\cli-plugins\docker-offload.exe
    sandbox: Docker Sandbox (Docker Inc.)
      Version: v0.3.1
      Path:   C:\Program Files\Docker\cli-plugins\docker-sandbox.exe
    sbom: View the packaged-based Software Bill Of Materials (SBOM) for an image (Anchore Inc.)
      Version: 0.6.0
      Path:   C:\Program Files\Docker\cli-plugins\docker-sbom.exe
    scout: Docker Scout (Docker Inc.)
      Version: v1.18.3
      Path:   C:\Program Files\Docker\cli-plugins\docker-scout.exe

Server:
error during connect: Get "http://%2F%2F.%2Fpipe%2FdockerDesktopLinuxEngine/v1.51/info": open //./pipe
/dockerDesktopLinuxEngine: The system cannot find the file specified.
```

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## Step 2: Pull an Image from Docker Hub

```
docker pull ubuntu:latest
```

*Explanation:* Downloads the latest Ubuntu image from Docker Hub.

```
C:\Users\ASUS>docker pull ubuntu:latest
latest: Pulling from library/ubuntu
a3629ac5b9f4: Pull complete
Digest: sha256:cd1dba651b3080c3686ecf4e3c4220f026b521fb76978881737d24f200828b2b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

Check available images:

docker images

```
C:\Users\ASUS>docker images
REPOSITORY      TAG          IMAGE ID      CREATED       SIZE
ubuntu          latest        cd1dba651b30  2 weeks ago   117MB
nginx           latest        c881927c4077  2 weeks ago   237MB
```

### **Step 3: Run a Container**

Run Ubuntu interactively:

```
docker run -it --name myubuntu ubuntu bash
```

Now you're inside a running container (prompt will change).

```
C:\Users\ASUS>docker run -it --name myubuntu ubuntu bash
root@7cdded83b44e:/#
```

Exit:

Exit

```
C:\Users\ASUS>docker run -it --name myubuntu ubuntu bash
root@7cdded83b44e:/# exit
exit
```

## Step 4: List Containers

- Show running containers:

```
docker ps
```

```
C:\Users\ASUS>docker ps
CONTAINER ID      IMAGE      COMMAND      CREATED      STATUS      PORTS      NAMES
```

- Show all containers (including stopped):

```
docker ps -a
```

```
C:\Users\ASUS>docker ps -a
CONTAINER ID      IMAGE      COMMAND      CREATED      STATUS      PORTS      NAMES
7cdded83b44e      ubuntu      "bash"      About a minute ago      Exited (0) 42 seconds ago      myubuntu
```

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## Step 5: Start / Stop / Remove Containers

```
# Start a stopped container
```

```
docker start <container_id>
```

```
# Stop a running container
```

```
docker stop <container_id>
```

```
# Remove a container
```

```
docker rm <container_id>
```

*Tip:* Use docker ps -a to get container IDs.

```
C:\Users\ASUS>docker start 7cdded83b44e  
7cdded83b44e  
  
C:\Users\ASUS>docker stop 7cdded83b44e  
7cdded83b44e  
  
C:\Users\ASUS>docker rm 7cdded83b44e  
7cdded83b44e
```

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## Step 6: Remove Images

```
docker rmi ubuntu:latest
```

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*Note:* You must stop and remove all containers using that image first.

```
C:\Users\ASUS>docker rmi ubuntu:latest  
Untagged: ubuntu:latest  
Deleted: sha256:cd1dba651b3080c3686ecf4e3c4220f026b521fb76978881737d24f200828b2b
```

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