

# Lab Exercise 1- Docker Fundamental Commands

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**Batch-2(DevOps)**

## 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
```

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

C:\Users\Misha>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:    v2.40.2-desktop.1
  Path:       C:\Program Files\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.)
```

*Expected Output:* Docker version and system details.

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## Step 2: Pull an Image from Docker Hub

```
docker pull ubuntu:latest
```

```
C:\Users\Misha>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
```

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

Check available images:

```
docker images
```

```
C:\Users\Misha>docker images
REPOSITORY          TAG          IMAGE ID      CREATED       SIZE
ubuntu              latest       cd1dba651b30  5 days ago   117MB
smartcampus-frontend latest       584edc3d6c7f  7 weeks ago   85MB
misha1207/smartcampus-frontend latest       584edc3d6c7f  7 weeks ago   85MB
<none>              <none>       177318997aef  7 weeks ago   84.9MB
smartcampus         latest       bc572bac8bbe  7 weeks ago   199MB
misha1207/smartcampus latest       bc572bac8bbe  7 weeks ago   199MB
nginx-html-app      latest       f2185d94d89c  2 months ago  225MB
sonarqube           lts         f709975ab31d  4 months ago  1.02GB
hello-world         latest       f7931603f70e  5 months ago  20.3kB
```

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### Step 3: Run a Container

Run Ubuntu interactively:

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

```
C:\Users\Misha>docker run -it --name myubuntu ubuntu bash
root@93542becf8ad:/# |
```

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

Exit:

Exit

```
C:\Users\Misha>docker run -it --name myubuntu ubuntu bash
root@93542becf8ad:/# exit
exit
C:\Users\Misha>
```

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### Step 4: List Containers

- Show running containers:

```
docker ps
```

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

- Show all containers (including stopped):

```
docker ps -a
```

```
C:\Users\Misha>docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS        NAMES
93542becf8ad   ubuntu    "bash"                  About a minute ago    Exited (0) About a minute ago
d780008ef8b3   myubuntu  "/docker-entrypoint..." 7 weeks ago      Exited (0) 7 weeks ago
466a1f3515b4   youthful_gagarin 177318997aef "/docker-entrypoint..." 7 weeks ago      Created
3a844f4e1cb3   great_williams smartcampus "docker-entrypoint.s..." 7 weeks ago      Exited (255) 7 weeks ago      0.0.0.0:300
0->3000/tcp   youthful_lichterman smartcampus "docker-entrypoint.s..." 7 weeks ago      Created
6ec9ca2fd92a   quizzical_davinci hello-world "/hello"              2 months ago      Exited (0) 2 months ago
c4d7dc365d02   gifted_gates sonarqube:lts "/opt/sonarqube/dock..." 2 months ago      Exited (255) 8 weeks ago      0.0.0.0:900
0->9000/tcp   sonar
```

## Step 5: Start / Stop / Remove Containers

# Start a stopped container

```
docker start <container_id>
```

```
C:\Users\Misha>docker start 93542becf8ad
93542becf8ad
```

# Stop a running container

```
docker stop <container_id>
```

```
C:\Users\Misha>docker stop 93542becf8ad
93542becf8ad
```

# Remove a container

docker rm <container\_id>

```
C:\Users\Misha>docker rm c4d7dc365d02
c4d7dc365d02
```

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

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## Step 6: Remove Images

docker rmi ubuntu:latest

```
C:\Users\Misha>docker rmi ubuntu:latest
Error response from daemon: conflict: unable to delete ubuntu:latest (must be forced) - container 93542becf8ad is using
its referenced image cd1dba651b30
```

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

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