Lab Exercise 1- Docker Fundamental Commands

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

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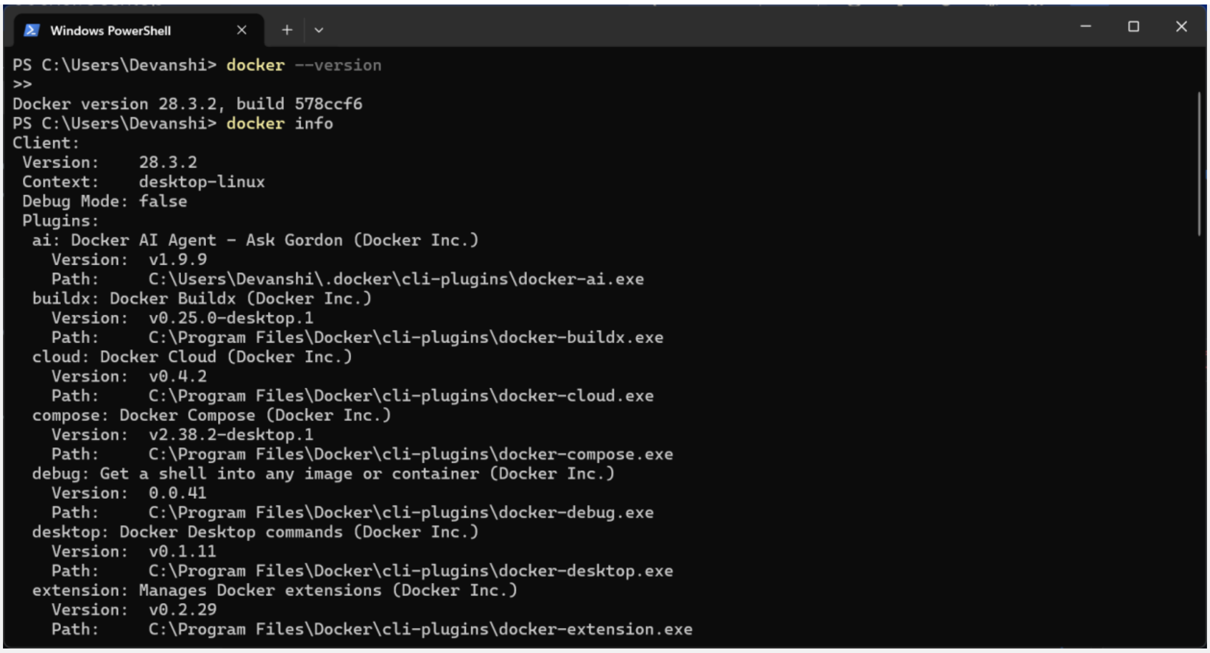
2. Basic Docker Commands

Step 1: Verify Installation

```
docker --version

docker info
```

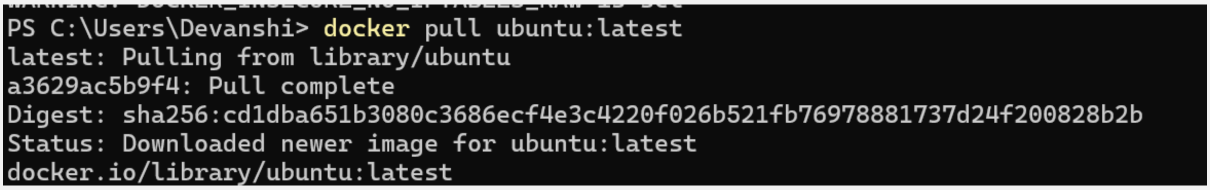


```
PS C:\Users\Devanshi> docker --version
>>
Docker version 28.3.2, build 578ccf6
PS C:\Users\Devanshi> docker info
Client:
 Version:    28.3.2
 Context:    desktop-linux
 Debug Mode: false
 Plugins:
  ai: Docker AI Agent - Ask Gordon (Docker Inc.)
    Version:  v1.9.9
    Path:     C:\Users\Devanshi\.docker\cli-plugins\docker-ai.exe
  buildx: Docker Buildx (Docker Inc.)
    Version:  v0.25.0-desktop.1
    Path:     C:\Program Files\Docker\cli-plugins\docker-buildx.exe
  cloud: Docker Cloud (Docker Inc.)
    Version:  v0.4.2
    Path:     C:\Program Files\Docker\cli-plugins\docker-cloud.exe
  compose: Docker Compose (Docker Inc.)
    Version:  v2.38.2-desktop.1
    Path:     C:\Program Files\Docker\cli-plugins\docker-compose.exe
  debug: Get a shell into any image or container (Docker Inc.)
    Version:  0.0.41
    Path:     C:\Program Files\Docker\cli-plugins\docker-debug.exe
  desktop: Docker Desktop commands (Docker Inc.)
    Version:  v0.1.11
    Path:     C:\Program Files\Docker\cli-plugins\docker-desktop.exe
  extension: Manages Docker extensions (Docker Inc.)
    Version:  v0.2.29
    Path:     C:\Program Files\Docker\cli-plugins\docker-extension.exe
```

Expected Output: Docker version and system details.

Step 2: Pull an Image from Docker Hub

```
docker pull ubuntu:latest
```

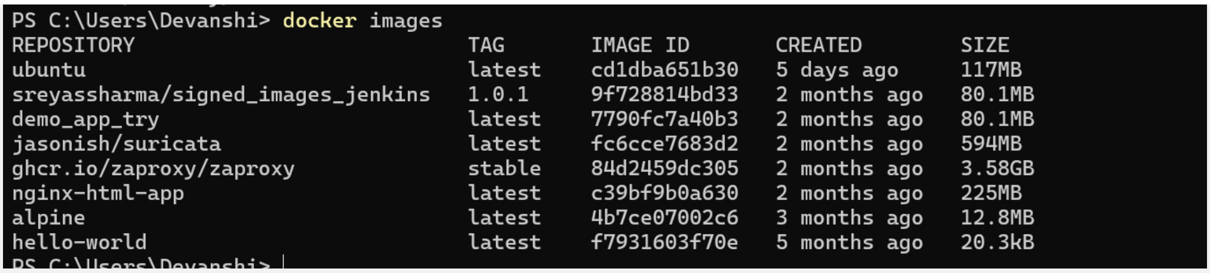


```
PS C:\Users\Devanshi> docker pull ubuntu:latest
latest: Pulling from library/ubuntu
a3629ac5b9f4: Pull complete
Digest: sha256:cd1dba651b3080c3686ecf4e3c4220f026b521fb76978881737d24f200828b2b
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

Explanation: Downloads the latest Ubuntu image from Docker Hub.

Check available images:

```
docker images
```

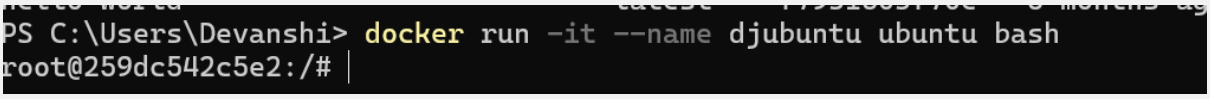


```
PS C:\Users\Devanshi> docker images
REPOSITORY                           TAG       IMAGE ID       CREATED         SIZE
ubuntu                               latest    cd1dba651b30   5 days ago      117MB
sreyassharma/signed_images_jenkins   1.0.1     9f728814bd33   2 months ago    80.1MB
demo_app_try                         latest    7790fc7a40b3   2 months ago    80.1MB
jasonish/suricata                    latest    fc6cce7683d2   2 months ago    594MB
ghcr.io/zaproxy/zaproxy              stable    84d2459dc305   2 months ago    3.58GB
nginx-html-app                       latest    c39bf9b0a630   2 months ago    225MB
alpine                               latest    4b7ce07002c6   3 months ago    12.8MB
hello-world                          latest    f7931603f70e   5 months ago    20.3kB
PS C:\Users\Devanshi>
```

Step 3: Run a Container

Run Ubuntu interactively:

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

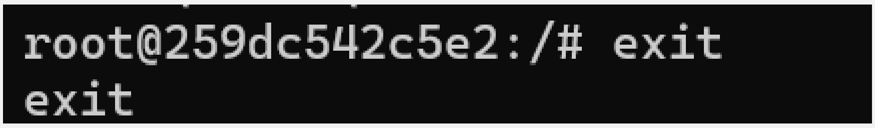


```
hello-world                          latest    f7931603f70e   5 months ag
PS C:\Users\Devanshi> docker run -it --name djubuntu ubuntu bash
root@259dc542c5e2:/#
```

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

Exit:

```
Exit
```

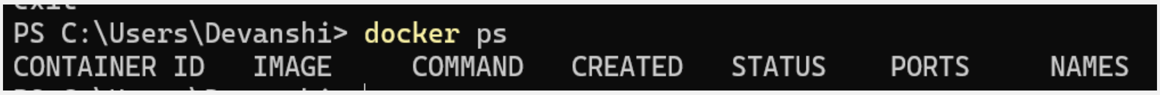


```
root@259dc542c5e2:/# exit
exit
```

Step 4: List Containers

- Show running containers:

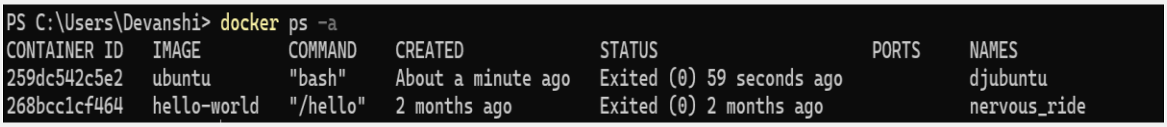
```
docker ps (no running containers for now)
```



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

- Show all containers (including stopped):

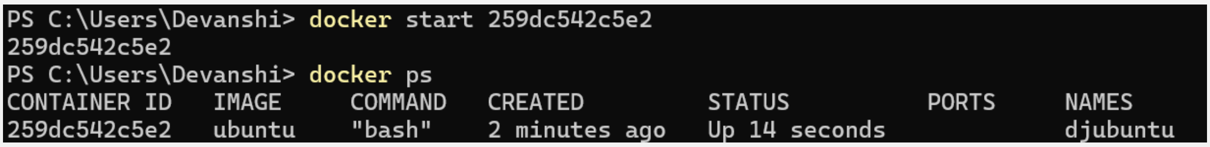
```
docker ps -a
```



```
PS C:\Users\Devanshi> docker ps -a
CONTAINER ID   IMAGE         COMMAND    CREATED              STATUS                     PORTS     NAMES
259dc542c5e2   ubuntu        "bash"     About a minute ago   Exited (0) 59 seconds ago            djubuntu
268bcc1cf464   hello-world   "/hello"   2 months ago         Exited (0) 2 months ago              nervous_ride
```

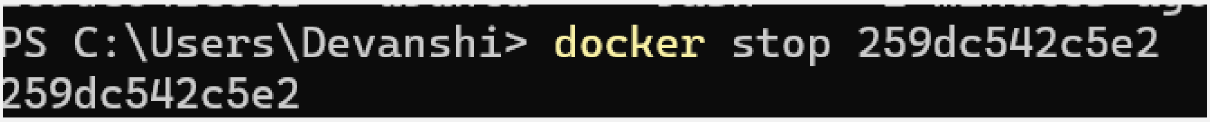
Step 5: Start / Stop / Remove Containers

```
# Start a stopped container

docker start <container_id>
```



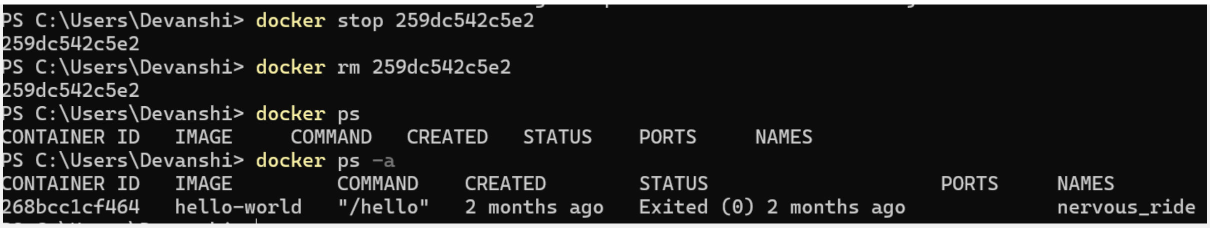
```
PS C:\Users\Devanshi> docker start 259dc542c5e2
259dc542c5e2
PS C:\Users\Devanshi> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED         STATUS          PORTS     NAMES
259dc542c5e2   ubuntu    "bash"    2 minutes ago   Up 14 seconds             djubuntu
```

```
# Stop a running container

docker stop <container_id>
```



```
PS C:\Users\Devanshi> docker stop 259dc542c5e2
259dc542c5e2
```

```
# Remove a container

docker rm <container_id>
```

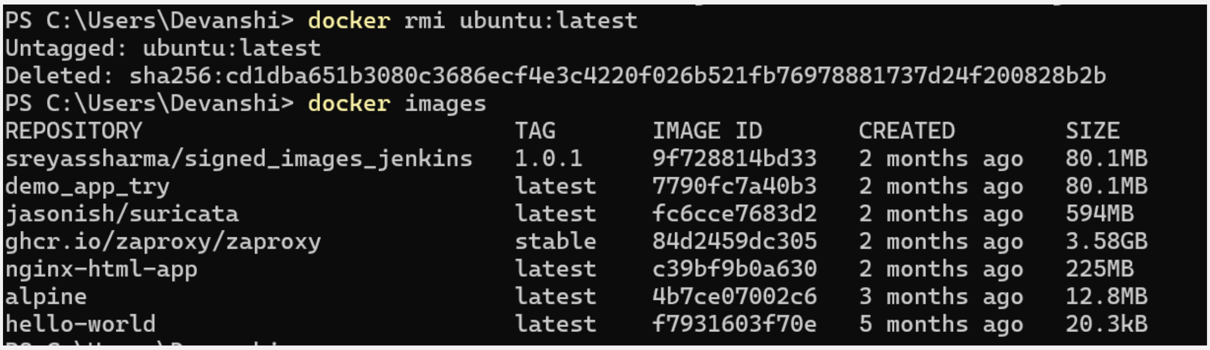


```
PS C:\Users\Devanshi> docker stop 259dc542c5e2
259dc542c5e2
PS C:\Users\Devanshi> docker rm 259dc542c5e2
259dc542c5e2
PS C:\Users\Devanshi> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
PS C:\Users\Devanshi> docker ps -a
CONTAINER ID   IMAGE         COMMAND    CREATED        STATUS                    PORTS     NAMES
268bcc1cf464   hello-world   "/hello"   2 months ago   Exited (0) 2 months ago             nervous_ride
```

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

Step 6: Remove Images

docker rmi ubuntu:latest



```
PS C:\Users\Devanshi> docker rmi ubuntu:latest
Untagged: ubuntu:latest
Deleted: sha256:cd1dba651b3080c3686ecf4e3c4220f026b521fb76978881737d24f200828b2b
PS C:\Users\Devanshi> docker images
REPOSITORY                        TAG       IMAGE ID       CREATED        SIZE
sreyassharma/signed_images_jenkins   1.0.1     9f728814bd33   2 months ago   80.1MB
demo_app_try                      latest    7790fc7a40b3   2 months ago   80.1MB
jasonish/suricata                 latest    fc6cce7683d2   2 months ago   594MB
ghcr.io/zaproxy/zaproxy           stable    84d2459dc305   2 months ago   3.58GB
nginx-html-app                    latest    c39bf9b0a630   2 months ago   225MB
alpine                            latest    4b7ce07002c6   3 months ago   12.8MB
hello-world                       latest    f7931603f70e   5 months ago   20.3kB
```

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