

Lab Exercise 1

Performing CRUD Operation on Containers

Objective: Performing CRUD Operation on Containers

Tools required: Docker Configuration

Pre-requisites: Ubuntu Configuration, Docker

Steps to be followed:

1. Pulling a Docker image
2. Creating a new container
3. Stopping the container
4. Listing all the containers
5. Deleting the container
6. Removing the image

Step 1: Pulling a Docker image

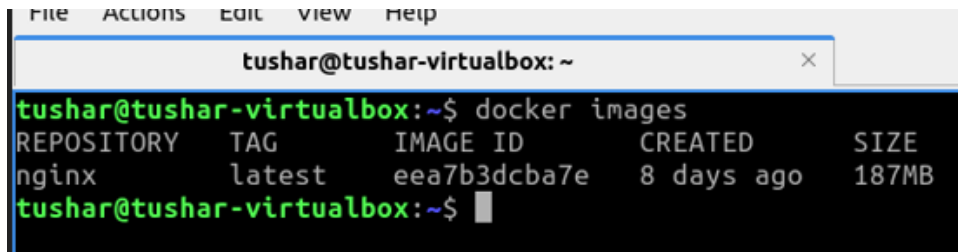
1.1 Open the terminal and pull an image using the command:

sudo docker pull nginx

```
tushar@tushar-virtualbox:~$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
52d2b7f179e3: Pull complete
fd9f026c6310: Pull complete
055fa98b4363: Pull complete
96576293dd29: Pull complete
a7c4092be904: Pull complete
e3b6889c8954: Pull complete
da761d9a302b: Pull complete
Digest: sha256:104c7c5c54f2685f0f46f3be607ce60da7085da3eaa5ad22d3d9f01594295e9c
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
tushar@tushar-virtualbox:~$
```

1.2 List all the docker images to check the newly pulled *nginx* image:

sudo docker images

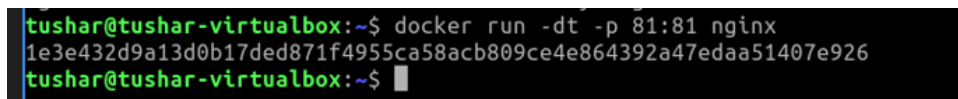


```
tushar@tushar-virtualbox:~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
nginx         latest    eea7b3dcba7e   8 days ago    187MB
tushar@tushar-virtualbox:~$
```

Step 2: Creating a new container

2.1 Create a new container from the *nginx* image:

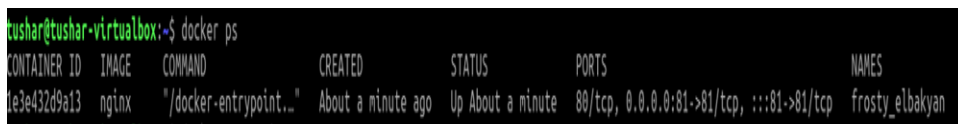
sudo docker run -dt -p 81:81 nginx



```
tushar@tushar-virtualbox:~$ docker run -dt -p 81:81 nginx
1e3e432d9a13d0b17ded871f4955ca58acb809ce4e864392a47edaa51407e926
tushar@tushar-virtualbox:~$
```

2.2 List all the running containers to check the newly created container. You can find various details like port of container, it's time of creation and ID.

sudo docker ps



```
tushar@tushar-virtualbox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
1e3e432d9a13   nginx    "/docker-entrypoint..." About a minute ago Up About a minute 80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp frosty_elbakyan
```

Step 3: Stopping the container

3.1 Use the following command to stop the running container. (You can also use the container ID to stop the container: ***sudo docker stop CONTAINER_ID***)

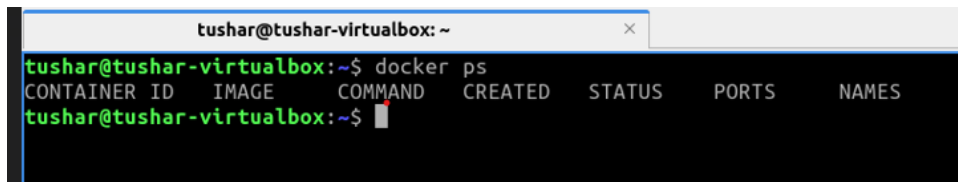
sudo docker stop CONTAINER_NAME

Note: Replace CONTAINER_NAME with the name of the newly created container. In this case CONTAINER_NAME is stoic_darwin. The container name may differ from the one shown in the image below.

```
tushar@tushar-virtualbox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS
3faf765b850d   nginx    "/docker-entrypoint...." 16 seconds ago Up 14
tushar@tushar-virtualbox:~$ docker stop laughing_ardinghelli
laughing_ardinghelli
tushar@tushar-virtualbox:~$
```

3.2 Use the following command to list all the running containers and verify if the container has stopped running:

sudo docker ps



```
tushar@tushar-virtualbox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS        NAMES
3faf765b850d   nginx    "/docker-entrypoint...." 16 seconds ago Up 14
tushar@tushar-virtualbox:~$
```

3.3 You can start the container again and check the running containers. (You can also use the container ID to start the container: *sudo docker start CONTAINER_ID*)

sudo docker start CONTAINER_NAME

sudo docker ps

Note: Replace CONTAINER_NAME with the name of the newly created container. In this case CONTAINER_NAME is stoic_darwin. The container name may differ from the one shown in the image below.

```
tushar@tushar-virtualbox:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS
3faf765b850d   nginx    "/docker-entrypoint...." 16 seconds ago Up 14
tushar@tushar-virtualbox:~$ docker stop laughing_ardinghelli
laughing_ardinghelli
tushar@tushar-virtualbox:~$
```

3.4 To start the container in interactive mode, use the *-i* and *-t* options.

sudo docker run -it --name=Test_1 ubuntu

```
tushar@tushar-virtualbox:~$ docker run -it --name=Test1 ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
b237fe92c417: Pull complete
Digest: sha256:ec050c32e4a6085b423d36ecd025c0d3ff00c38ab93a3d71a460ff1c44fa6d77
Status: Downloaded newer image for ubuntu:latest
root@ece53066f2ee:/# ls
bin boot dev etc home lib lib32 lib64 libx32 media mnt opt proc root run sbin srv sys tmp usr var
root@ece53066f2ee:/# docker ps -a
bash: docker: command not found
root@ece53066f2ee:/# exit
exit
```

Step 4: Listing all the containers

4.1 Use the below command to list all the containers started and the once which are stopped:

sudo docker ps -a

```
tushar@tushar-virtualbox:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS              PORTS          NAMES
ece53066f2ee   ubuntu   "/bin/bash"             2 minutes ago Exited (127) 4 seconds ago          Test1
3faf765b850d   nginx    "/docker-entrypoint..." 8 minutes ago Exited (0) 7 minutes ago          laughing_ardinghelli
652566d7b7b3   nginx    "/docker-entrypoint..." 8 minutes ago Exited (0) 8 minutes ago          objective_mahavira
26ae6b26db74   nginx    "/docker-entrypoint..." 9 minutes ago Exited (0) 9 minutes ago          flamboyant_germain
42d4d75dd440   nginx    "/docker-entrypoint..." 9 minutes ago Exited (126) 9 minutes ago          lucid_fermi
1e3e432d9a13   nginx    "/docker-entrypoint..." 17 minutes ago Exited (0) 12 minutes ago          frosty_elbakyan
```

4.2 To list the containers by their ID, use the below command

sudo docker ps -aq

```
tushar@tushar-virtualbox:~$ docker ps -aq
ece53066f2ee
3faf765b850d
652566d7b7b3
26ae6b26db74
42d4d75dd440
1e3e432d9a13
```

You can see the containers with ID are listed.

4.3 To list the total file size of each container, use the below command:

sudo docker ps -s

```
tushar@tushar-virtualbox:~$ docker ps -s
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES          SIZE
tushar@tushar-virtualbox:~$ █
```

4.4 To list the latest created containers, use the following command:

sudo docker ps -l

```
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES   SIZE
tushar@tushar-virtualbox:~$ docker ps -l
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES   SIZE
ace53066f2ee   ubuntu   "/bin/bash"   3 minutes ago   Exited (127)   About a minute ago   Test1
```

Step 5: Deleting the container

5.1 Stop the running container and remove it using the following commands:

sudo docker stop CONTAINER_NAME

sudo docker container rm CONTAINER_NAME

```
1e3e432d9a13   nginx     "/docker-entrypoint..."   25 minutes ago   Exit
tushar@tushar-virtualbox:~$ docker container rm objective_mahavira
objective_mahavira
tushar@tushar-virtualbox:~$
```

Note: Replace CONTAINER_NAME with the name of the newly created container. In this case CONTAINER_NAME is sweet_brown. The container name may differ from the one shown in the image below.

Step 6: Removing the image

6.1 Remove the image using the command:

sudo docker image rm nginx

```
tushar@tushar-virtualbox:~$ docker rmi nginx
Untagged: nginx:latest
Untagged: nginx@sha256:104c7c5c54f2685f0f46f3be607ce60da7085da3eaa5ad22d3d9f01594295e9c
Deleted: sha256:eee7b3dcba7ee47c0d16a60cc85d2b977d166be3960541991f3e6294d795ed24
Deleted: sha256:589bcc284f24d6548cd3cef06ace5f6ebc4f23a48a5763f2f9d3d30b0f9dadf5
Deleted: sha256:b3addc7069fafd183d88d1a40bb3dfe51227d45e4fe8e59b81a2fda7614ebbc1
Deleted: sha256:5bf28af6a2188fa2d657e451213761b03e115e4c24ee72c41da34a241fe81ca1
Deleted: sha256:2496134da21702d935bee1334ae42baf26d0197af91275e5c1a11eee31299121
Deleted: sha256:c7e60968a54882c23483c3acb0ff1f415ce0f98184dfbed3fb9080447d79b313
Deleted: sha256:49bfd4a4ea578aefcacdfd87efdc4999d6a4e4b7f00322484cac67ff7671389e
Deleted: sha256:511780f88f80081112aea1bfdca6c800e1983e401b338e20b2c6e97f384e4299
tushar@tushar-virtualbox:~$
```