Lesson 07 Demo 02

Performing CRUD Operations on Containers

Objective: To perform CRUD operations on Docker containers for demonstrating create, read, update, and delete functionalities

Tools required: Docker Configuration

Pre-requisites: Ubuntu Configuration, Docker

Steps to be followed:

1. Pull a Docker image
2. Create a new container
3. Stop the container
4. List all the containers
5. Delete the container
6. Remove the image

Step 1: Pull a Docker image

1.1 Open the terminal and pull an image using the following command:
sudo docker pull nginx

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
b4d181a07f80: Pull complete
edb81c9bc1f5: Pull complete
b21fed559b9f: Pull complete
03e6a2452751: Pull complete
b82f7f888feb: Pull complete
5430e98eba64: Pull complete
Digest: sha256:47ae43cdfc7064d28800bc42e79a429540c7c80168e8c8952778c0d5af1c09db
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
manikumarsimpli@ip-172-31-71-23:~$
```

1.2 List all the docker images to check the newly pulled nginx image using the following command:
sudo docker images

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
nginx         latest    4f380adfc10f   9 days ago     133MB
hello-world   latest    d1165f221234   3 months ago   13.3kB
manikumarsimpli@ip-172-31-71-23:~$
```

Step 2: Create a new container

2.1 Create a new container from the nginx image using the following command:
sudo docker run -dt -p 81:81 nginx

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker run -dt -p 81:81 nginx
b7ff44ef088332054a4a89647725b7a4af7ded5093905eff26024003f8e8bfdb
manikumarsimpli@ip-172-31-71-23:~$
```

2.2 Use the following command to list all the running containers and check the newly created container.
sudo docker ps

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED              STATUS          PORTS                                   N
AMES
b7ff44ef0883   nginx     "/docker-entrypoint.…"   About a minute ago   Up 59 seconds   80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp   c
ompassionate_tereshkova
manikumarsimpli@ip-172-31-71-23:~$
```

You may find various details like port of container, time of creation, and ID.

Step 3: Stop the container

3.1 Use the following command to stop the running container.
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.

(You may also use the container ID to stop the container: *sudo docker stop CONTAINER_ID.***)**

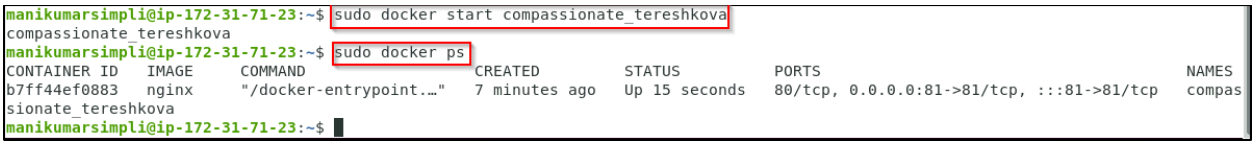
```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker stop compassionate_tereshkova
compassionate_tereshkova
manikumarsimpli@ip-172-31-71-23:~$
```

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

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
manikumarsimpli@ip-172-31-71-23:~$
```

3.3 You can start the container again and check the running containers.
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:



(You can also use the container ID to start the container: *sudo docker start CONTAINER_ID.***)**

3.4 Use the following command to start the container in interactive mode:
sudo docker run -it --name=Test_1 ubuntu

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker run -it --name=Test_1 ubuntu
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
c549ccf8d472: Pull complete
Digest: sha256:aba80b77e27148d99c034a987e7da3a287ed455390352663418c0f2ed40417fe
Status: Downloaded newer image for ubuntu:latest
root@27c5cf4b821b:/#
```

Step 4: List all the containers

4.1 Use the following command to list all the containers started and the ones which are stopped:

sudo docker ps -a

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker ps -a
CONTAINER ID   IMAGE         COMMAND                  CREATED             STATUS                     PORTS
               NAMES
27c5cf4b821b   ubuntu        "bash"                   About a minute ago  Exited (0) 8 seconds ago
               Test_1
b7ff44ef0883   nginx         "/docker-entrypoint.…"   10 minutes ago      Up 4 minutes               80/tcp, 0.0.0.0:81->81/tcp, :
::81->81/tcp   compassionate_tereshkova
6afe34b45750   nginx         "/docker-entrypoint.…"   11 minutes ago      Created
               wonderful_galois
84a1611f6fa7   hello-world   "/hello"                 27 minutes ago      Exited (0) 27 minutes ago
               angry_pike
manikumarsimpli@ip-172-31-71-23:~$
```

4.2 Use the following command to list the containers by their ID:

sudo docker ps -aq

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker ps -aq
27c5cf4b821b
b7ff44ef0883
6afe34b45750
84a1611f6fa7
manikumarsimpli@ip-172-31-71-23:~$
```

You can see the containers with ID are listed.

4.3 Use the following command to list the total file size of each container:

sudo docker ps -s

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker ps -s
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS         PORTS                                      NAMES
               SIZE
b7ff44ef0883   nginx     "/docker-entrypoint.…"   13 minutes ago   Up 6 minutes   80/tcp, 0.0.0.0:81->81/tcp, :::81->81/tcp   compas
sionate_tereshkova   1.09kB (virtual 133MB)
manikumarsimpli@ip-172-31-71-23:~$
```

4.4 Use the following command to list the latest created containers:

sudo docker ps -l

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker ps -l
CONTAINER ID   IMAGE     COMMAND   CREATED          STATUS                      PORTS     NAMES
27c5cf4b821b   ubuntu    "bash"    5 minutes ago    Exited (0) 4 minutes ago              Test_1
manikumarsimpli@ip-172-31-71-23:~$
```

Step 5: Delete 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

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker stop compassionate_tereshkova
compassionate_tereshkova
manikumarsimpli@ip-172-31-71-23:~$ sudo docker container rm compassionate_tereshkova
compassionate_tereshkova
manikumarsimpli@ip-172-31-71-23:~$
```

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

Step 6: Remove the image

6.1 Remove the image using the command:
sudo docker image rm nginx

```
manikumarsimpli@ip-172-31-71-23:~$ sudo docker image rm nginx
Untagged: nginx:latest
Untagged: nginx@sha256:47ae43cdfc7064d28800bc42e79a429540c7c80168e8c8952778c0d5af1c09db
Deleted: sha256:4f380adfc10f4cd34f775ae57a17d2835385efd5251d6dfe0f246b0018fb0399
Deleted: sha256:2855bbcefcf95050e64049447e99e77efa2bff32374e586982d69be4612467ce
Deleted: sha256:bad169ad8b30eab551acbb8cd8fbdcd824528189e3dd0cc52dd88a37bbf121cd
Deleted: sha256:36d83ebf5fec7ae1be4c431f0945f2dbe6828ecdc936c604daa48f17c0b50ed7
Deleted: sha256:b4c9a251dc81d52dd1cca9b4c69ca9e4db602a9a7974019f212846577f739699
Deleted: sha256:038ca5b801cea48e9f40f6ffb4cda61a2fe0b6b0f378a7434a0d39d2575a4082
Deleted: sha256:764055ebc9a7a290b64d17cf9ea550f1099c202d83795aa967428ebdf335c9f7
manikumarsimpli@ip-172-31-71-23:~$
```

By following the above steps, you have successfully performed CRUD operations on docker containers for demonstrating create, read, update, and delete functionalities.