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## **Lab Exercise 2: Working with Docker Volumes**

### **Objective:**

- Learn how to create and manage Docker volumes.
- Understand how Docker volumes can be used to persist data across container restarts.
- Practice mounting Docker volumes to containers.

### **Prerequisites:**

- Docker installed on your system.
- Basic understanding of Docker commands and container concepts.

### **Step 1: Create a Docker Volume**

Create a new Docker volume:

```
docker volume create my_data_volume
```

This command creates a Docker volume named my\_data\_volume.

Verify that the volume was created:

```
docker volume ls
```

You should see my\_data\_volume listed among the volumes.

### **Step 2: Run a Container with the Volume Mounted**

Run an Nginx container with the volume mounted:

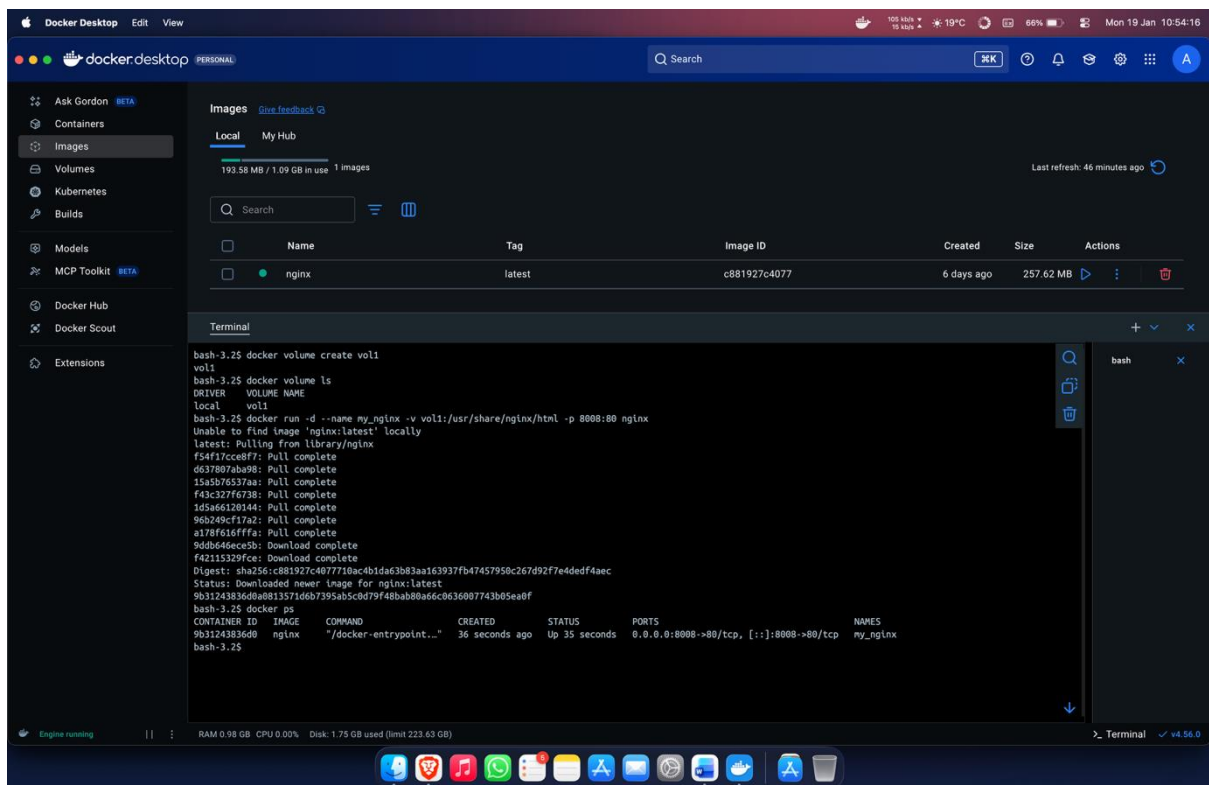
```
docker run -d --name my_nginx -v my_data_volume:/usr/share/nginx/html -p 8008:80 nginx
```

This command starts an Nginx container named `my_nginx` and mounts the `my_data_volume` volume to the `/usr/share/nginx/html` directory inside the container.

Verify that the container is running:

```
docker ps
```

You should see `my_nginx` listed as one of the running containers.



### Step 3: Interact with the Volume

Create a simple HTML file in the volume:

```
docker exec -it my_nginx bash

echo "<h1>Hello, Docker Volume</h1>" > /usr/share/nginx/html/index.html
```

```
exit
```

This command creates an HTML file inside the `/usr/share/nginx/html` directory, which is backed by `my_data_volume`.

```
root@9b31243836d0:/# exit
exit
```

Access the Nginx server to see your file: Open a browser and navigate to `http://localhost:8008`. You should see the message "Hello, Docker Volume!" displayed on the page.

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## Step 4: Test Data Persistence

Stop and remove the container:

```
docker stop my_nginx
```

```
docker rm my_nginx
```

Run a new Nginx container using the same volume:

```
docker run -d --name my_nginx -v my_data_volume:/usr/share/nginx/html -p 8008:80 nginx
```

```
bash-3.2$ docker stop my_nginx
my_nginx
bash-3.2$ docker rm my_nginx
my_nginx
bash-3.2$ docker run -d --name my_nginx -v vol1:/usr/share/nginx/html -p 8008:80 nginx
3a11214f50d00ae5fa27cbf16a086cbf71f0096f084a851d4faf0797c91df547
```

Access the Nginx server again: Navigate to <http://localhost> in your browser. You should still see the "Hello, Docker Volume!" message, demonstrating that the data persisted across container instances.

## Step 5: Clean Up

Stop and remove the container:

```
docker stop my_nginx  
  
docker rm my_nginx
```

Remove the Docker volume:

```
docker volume rm my_data_volume
```

Verify that the volume is removed:

```
docker volume ls
```

Ensure that `my_data_volume` is no longer listed.

```
bash-3.2$ docker stop my_nginx  
my_nginx  
bash-3.2$ docker rm my_nginx  
my_nginx  
bash-3.2$ docker volume rm vol1  
vol1  
bash-3.2$ docker volume ls  
DRIVER      VOLUME NAME  
bash-3.2$
```