Lab Exercise 3: Working with Docker Volumes

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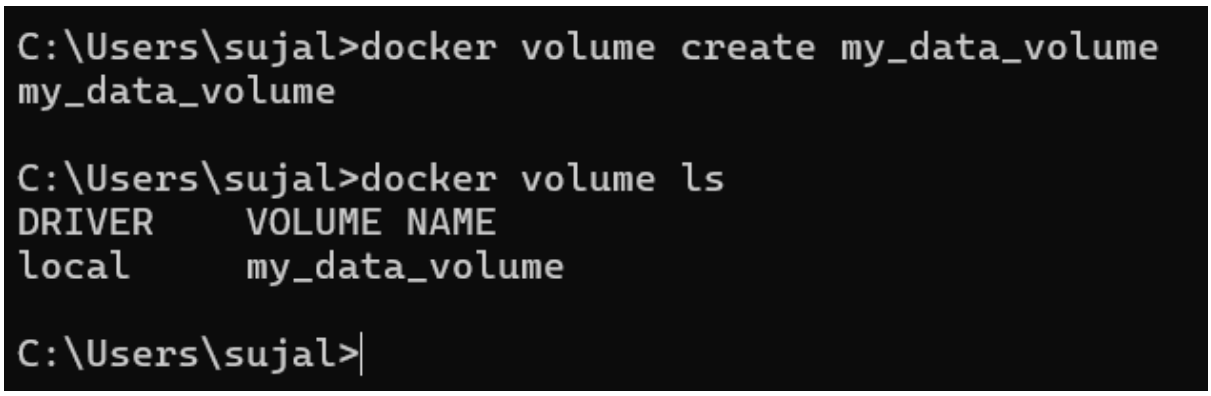
Objective:

- 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.

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
```

```
C:\Users\sujal>docker volume create my_data_volume
my_data_volume

C:\Users\sujal>docker volume ls
DRIVER    VOLUME NAME
local     my_data_volume

C:\Users\sujal>
```

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:

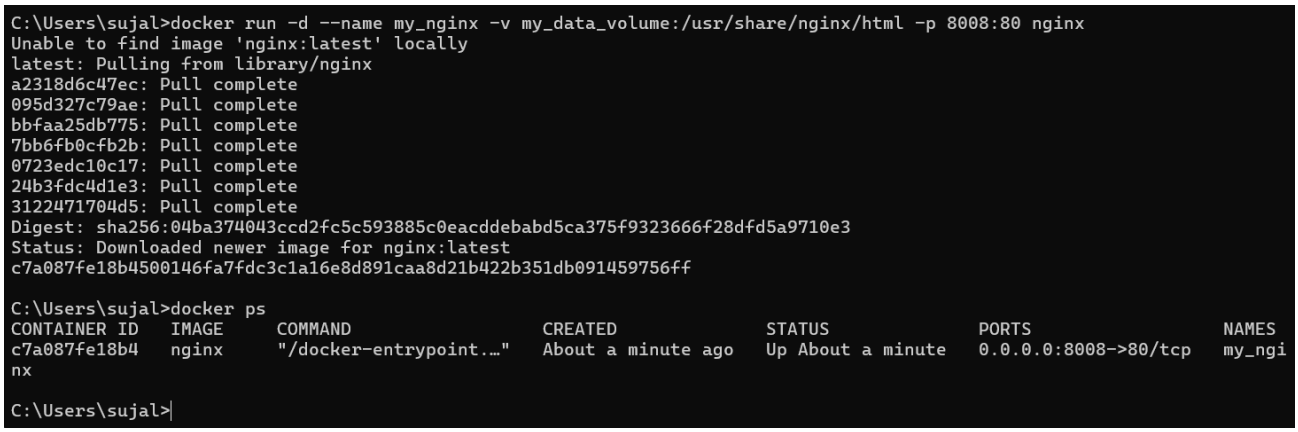
```
docker run -d --name my_nginx -v my_data_volume:/usr/share/nginx/html -p 8008:80 nginx
```

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

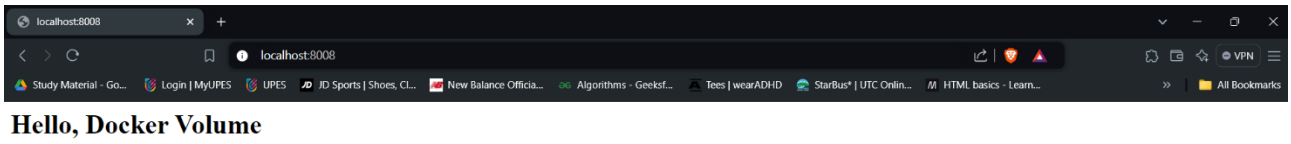
Create a simple HTML file in the volume:

```
docker exec -it my_nginx bash

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

exit
```

```
C:\Users\sujal>docker exec -it my_nginx bash
root@c7a087fe18b4:/# echo "<h1>Hello, Docker Volume</h1>" > /usr/share/nginx/html/index.html
root@c7a087fe18b4:/# exit
exit

C:\Users\sujal>
```

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

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.

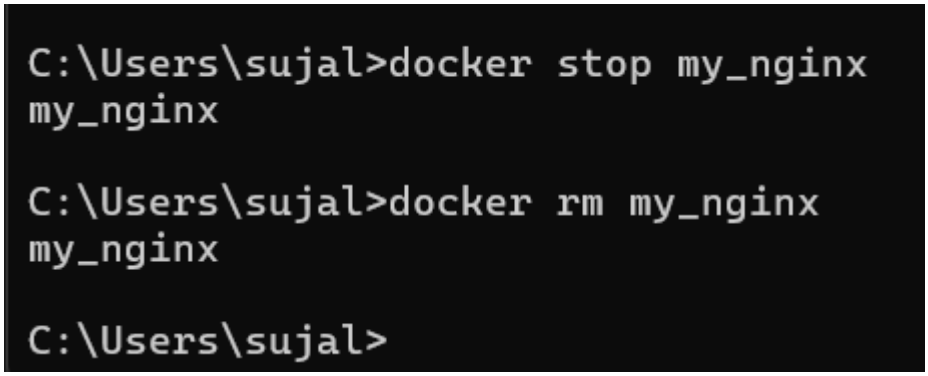


Hello, Docker Volume

Step 4: Test Data Persistence

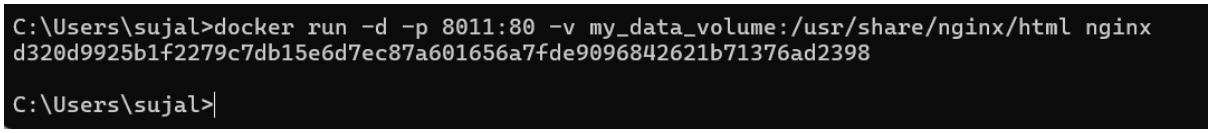
Stop and remove the container:

```
docker stop my_nginx

docker rm my_nginx
```



Run a new Nginx container using the same volume:

```
docker run -d -p 8011:80 -v my_data_volume:/usr/share/nginx/html nginx
```

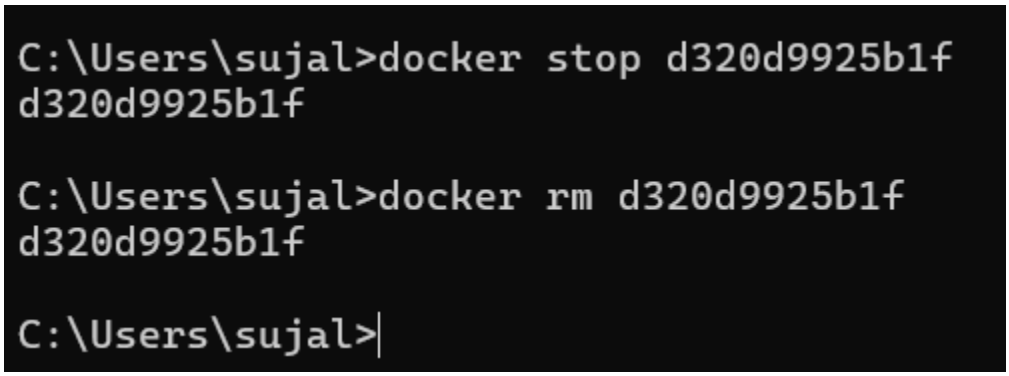


Access the Nginx server again: Navigate to http://localhost in your browser. You should still see the "Hello, Docker Volume!" message, demonstrating that the data persisted across container instances.

Step 5: Clean Up

Stop and remove the container:

```
docker stop new_nginx

docker rm new_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.

```
C:\Users\sujal>docker volume rm my_data_volume
my_data_volume

C:\Users\sujal>docker volume ls
DRIVER    VOLUME NAME

C:\Users\sujal>
```