Lab Exercise 2: Working with Docker Volumes

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Batch-2(DevOps)

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.

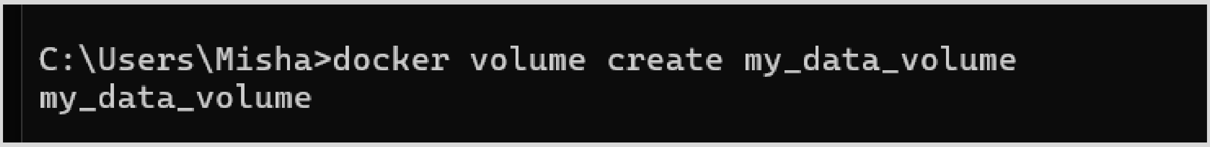
Prerequisites:

- 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
```

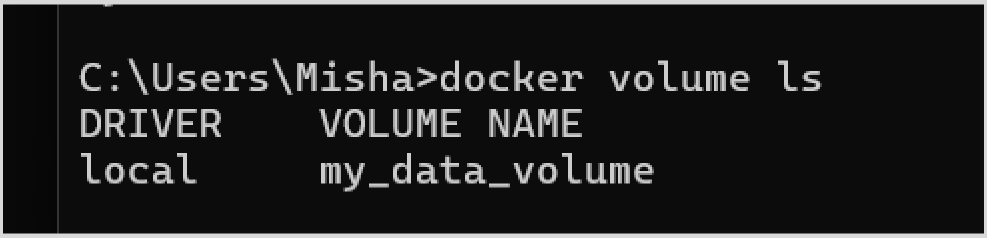


```
C:\Users\Misha>docker volume create my_data_volume
my_data_volume
```

This command creates a Docker volume named my_data_volume.

Verify that the volume was created:

```
docker volume ls
```



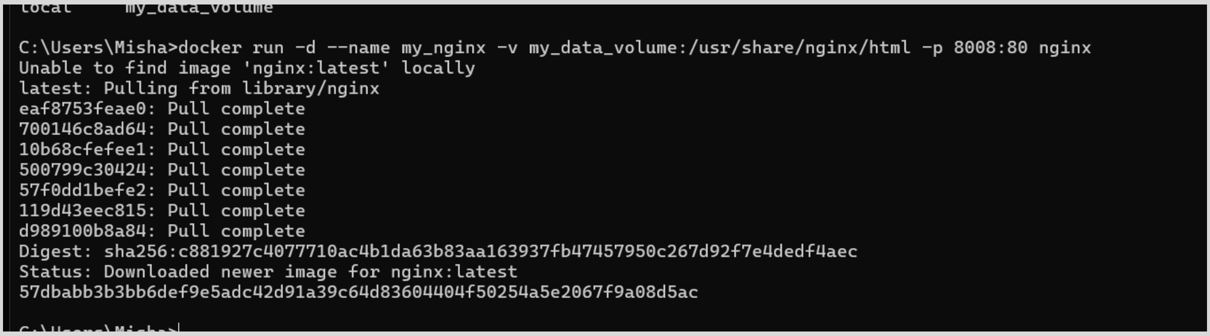
```
C:\Users\Misha>docker volume ls
DRIVER    VOLUME NAME
local     my_data_volume
```

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
```

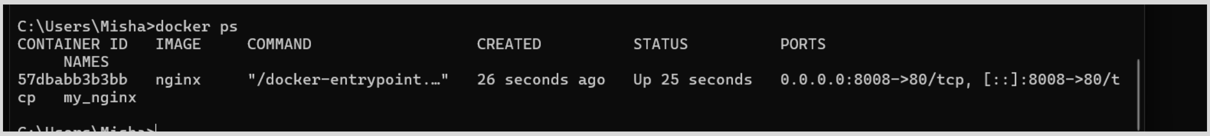


```
local     my_data_volume

C:\Users\Misha>docker run -d --name my_nginx -v my_data_volume:/usr/share/nginx/html -p 8008:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
eaf8753feae0: Pull complete
700146c8ad64: Pull complete
10b68cfefee1: Pull complete
500799c30424: Pull complete
57f0dd1befe2: Pull complete
119d43eec815: Pull complete
d989100b8a84: Pull complete
Digest: sha256:c881927c4077710ac4b1da63b83aa163937fb47457950c267d92f7e4dedf4aec
Status: Downloaded newer image for nginx:latest
57dbabb3b3bb6def9e5adc42d91a39c64d83604404f50254a5e2067f9a08d5ac

C:\Users\Misha>
```

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
```



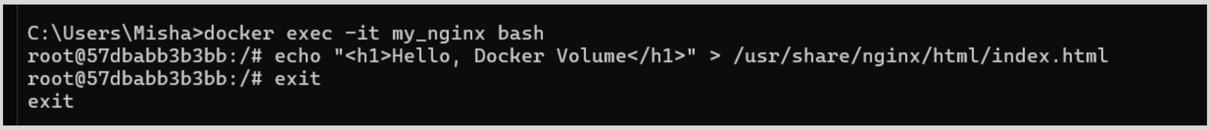
```
C:\Users\Misha>docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED          STATUS          PORTS
     NAMES
57dbabb3b3bb   nginx     "/docker-entrypoint.…"   26 seconds ago   Up 25 seconds   0.0.0.0:8008->80/tcp, [::]:8008->80/t
cp   my_nginx

C:\Users\Misha>
```

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:

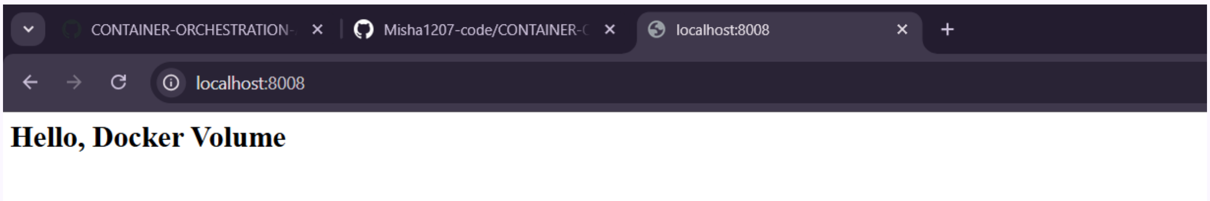
```
docker exec -it my_nginx bash

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

exit
```



```
C:\Users\Misha>docker exec -it my_nginx bash
root@57dbabb3b3bb:/# echo "<h1>Hello, Docker Volume</h1>" > /usr/share/nginx/html/index.html
root@57dbabb3b3bb:/# exit
exit
```

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.

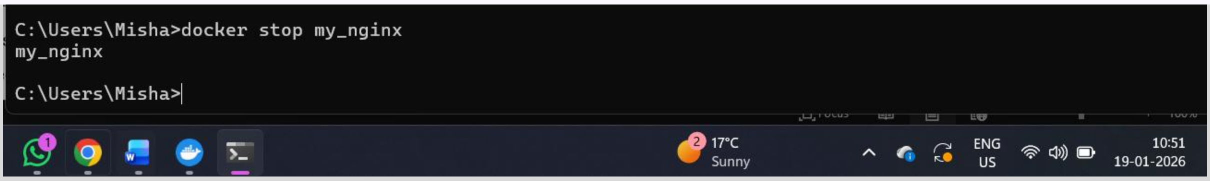


Hello, Docker Volume

Step 4: Test Data Persistence

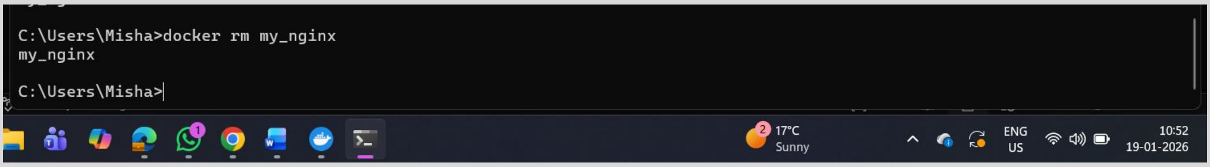
Stop and remove the container:

```
docker stop my_nginx
```



```
C:\Users\Misha>docker stop my_nginx
my_nginx

C:\Users\Misha>
```

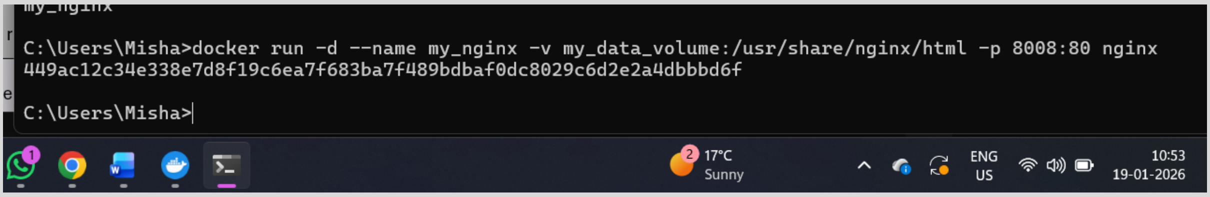
docker rm my_nginx



```
C:\Users\Misha>docker rm my_nginx
my_nginx

C:\Users\Misha>
```

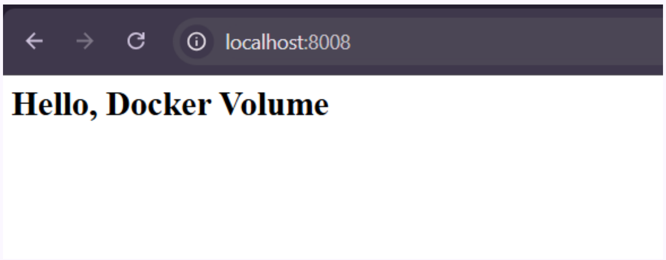
Run a new Nginx container using the same volume:

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



```
my_nginx

C:\Users\Misha>docker run -d --name my_nginx -v my_data_volume:/usr/share/nginx/html -p 8008:80 nginx
449ac12c34e338e7d8f19c6ea7f683ba7f489bdbaf0dc8029c6d2e2a4dbbbd6f

C:\Users\Misha>
```

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.



Hello, Docker Volume

Step 5: Clean Up

Stop and remove the container:

docker stop my_nginx

```
docker rm my_nginx
```

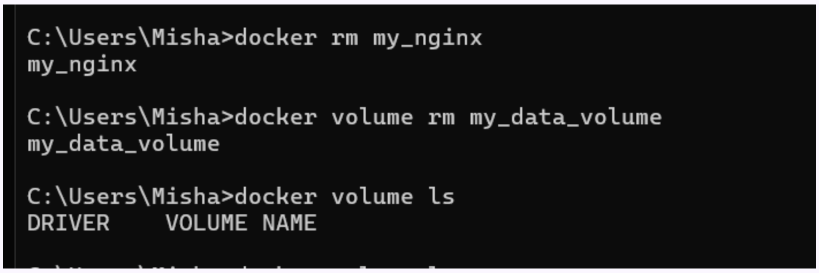
Remove the Docker volume:

```
docker volume rm my_data_volume
```

Verify that the volume is removed:

```
docker volume ls
```

Ensure that my_data_volume is no longer listed.



```
C:\Users\Misha>docker rm my_nginx
my_nginx

C:\Users\Misha>docker volume rm my_data_volume
my_data_volume

C:\Users\Misha>docker volume ls
DRIVER    VOLUME NAME
```