# 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.

```
Microsoft Windows [Version 10.0.26200.7623]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>docker volume create my_data_volume
my_data_volume

C:\Users\HP>docker volume ls
DRIVER    VOLUME NAME
local     9ff6963323cf1465703c67afd0edc25a5460f7c021b7ab93d0f5e91adf2ef085
local     364fb4a9d9d1c9b2c53fc801d04875089922ea4f85c319a3c645f694a174b158
local     3594e594bab5595c11adcdcc7450f68dd59c9fe224747aec782344c9ac5c3795
local     54691638d4354f84e7e2343c5491839e9a296e12d8862a26bfb6cb32fc150c2d
local     my_data_volume
```

## 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.

```
C:\Users\HP>docker run -d --name Shivang_nginx -v my_data_volume:/usr/share/nginx/html -p 8008:80 nginx
31dbc7c4c78fd70035d9f92d9228ddee7aacfd7c0f68bb6ba42e3446bb743d48

C:\Users\HP>docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED         STATUS         PORTS                                       NAMES
31dbc7c4c78f   nginx     "/docker-entrypoint.…"   9 seconds ago   Up 9 seconds   0.0.0.0:8008->80/tcp, [::]:8008->80/tcp   Shivang_nginx
```

## Step 3: Interact with the Volume

Create a simple HTML file in the volume:

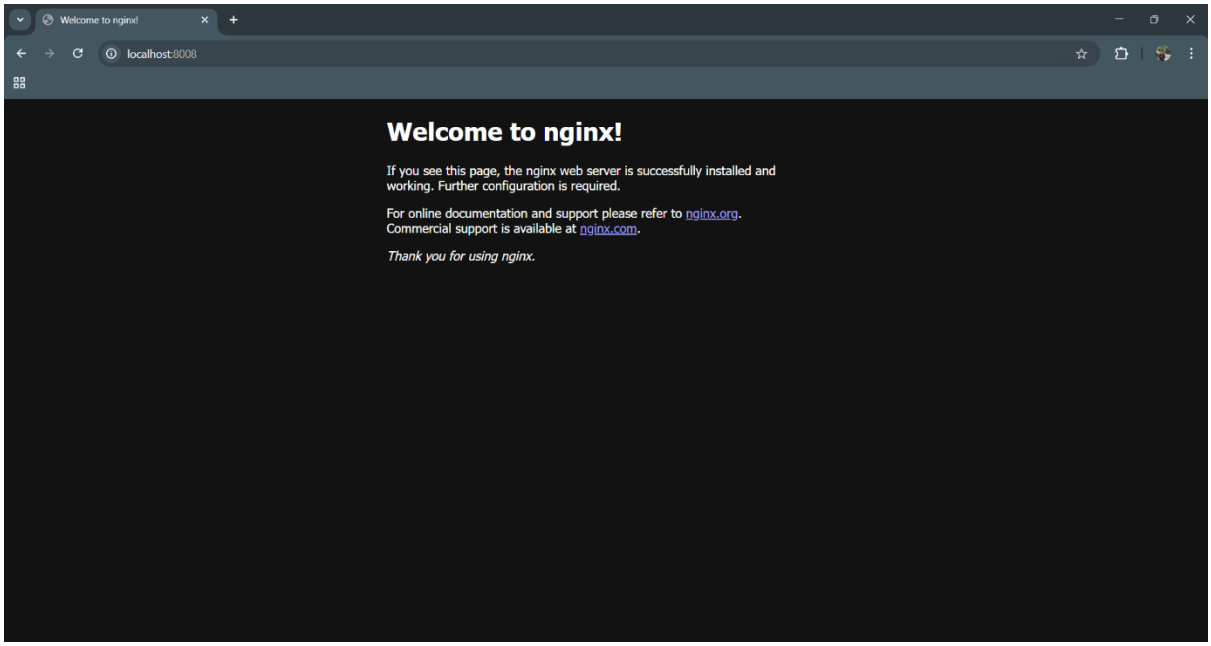
```
docker exec -it my_nginx bash

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.

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.




```
C:\Users\HP>docker exec -it Shivang_nginx bash
root@31dbc7c4c78f:/# echo "<h1>Hello, Docker Volume</h1>" > /usr/share/nginx/html/index.html
root@31dbc7c4c78f:/# exit
exit
```


**Hello, Docker Volume**

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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 Shivang_new_nginx -v my_data_volume:/usr/share/nginx/html -p 8007:80 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.

```
C:\Users\HP>docker stop Shivang_nginx
Shivang_nginx

C:\Users\HP>docker rm Shivang_nginx
Shivang_nginx

C:\Users\HP>docker run -d --name Shivang_new_nginx -v my_data_volume:/usr/share/nginx/html -p 8007:80 nginx
ddf4c797e8a46c3cddce3c172ded716a0b989e85bb3b1c661725badaf699dea6
```


**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\HP>docker stop Shivang_nginx
Shivang_nginx

C:\Users\HP>docker rm Shivang_nginx
Shivang_nginx

C:\Users\HP>docker run -d --name Shivang_new_nginx -v my_data_volume:/usr/share/nginx/html -p 8007:80 nginx
ddf4c797e8a46c3cddce3c172ded716a0b989e85bb3b1c661725badaf699dea6

C:\Users\HP>docker stop Shivang_new_nginx
Shivang_new_nginx

C:\Users\HP>docker rm Shivang_new_nginx
Shivang_new_nginx

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

C:\Users\HP>docker volume ls
DRIVER    VOLUME NAME
local     9ff6963323cf1465703c67afd0edc25a5460f7c021b7ab93d0f5e91adf2ef085
local     364fb4a9d9d1c9b2c53fc801d04875089922ea4f85c319a3c645f694a174b158
local     3594e594bab5595c11adcdcc7450f68dd59c9fe224747aec782344c9ac5c3795
local     54691638d4354f84e7e2343c5491839e9a296e12d8862a26bfb6cb32fc150c2d
```