Bansilal Ramnath Agarwal Charitable Trust's

VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY,

PUNE-48 Department of Information Technology

ITUA32202: CLOUD COMPUTING
Assignment-7

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AIM: Deploy a static website using Docker.

THEORY:

1) **What is Docker**
   Docker is a containerization platform that allows developers to package an application and its dependencies into a container that can run on any machine with Docker installed.
2) **Docker Architecture**
   Docker architecture includes three main components: the Docker daemon, the Docker client, and the Docker registry. The Docker daemon is the background service that manages the containers, images, and networks. The Docker client is a command-line interface that allows users to interact with the Docker daemon. The Docker registry is a place where Docker images can be stored and shared.
3) **Difference between Docker and Virtual machine**
   Docker is different from a virtual machine in that it shares the host operating system's kernel and doesn't require a separate operating system for each container. This means that Docker containers are much lighter and faster to start up than virtual machines.
4) **Docker Commands**

Docker commands include docker run, docker build, docker push, docker pull, docker ps, and docker logs. These commands are used to manage Docker containers, images, and networks.

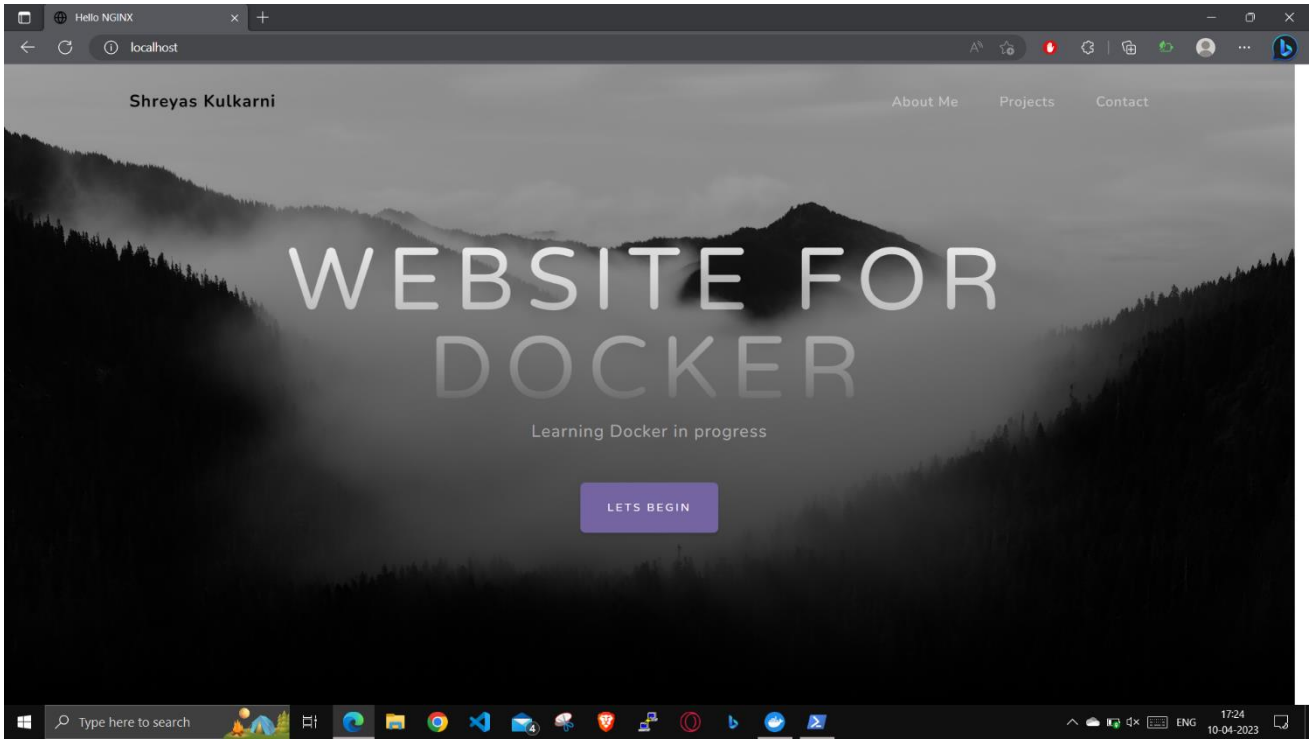
5) **Dockerfile**

A Dockerfile is a text file that contains instructions for building a Docker image. It specifies the base image, any additional software packages to install, and any configuration settings needed for the application to run.

6) **Docker-Compose and Docker-swarm**

Docker-compose is a tool for defining and running multi-container Docker applications. Docker-swarm is a tool for managing a cluster of Docker nodes and deploying a Docker stack to that cluster.

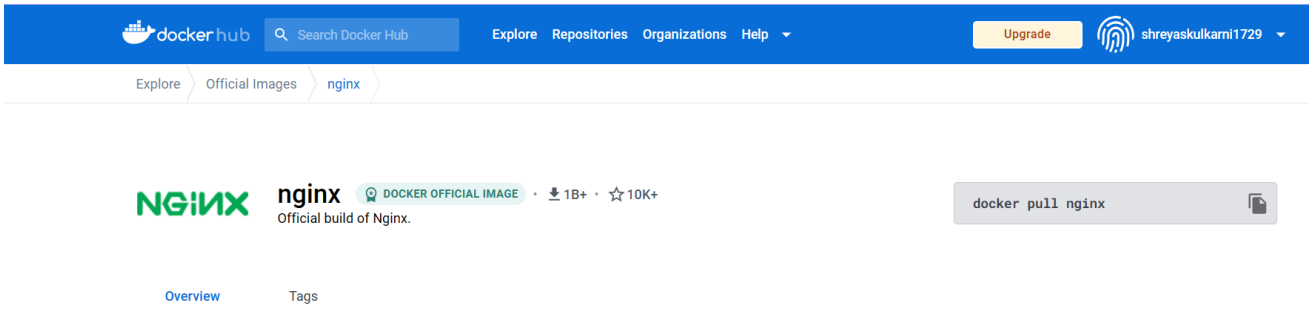
-> Run the website locally on nginx (PORT 80)

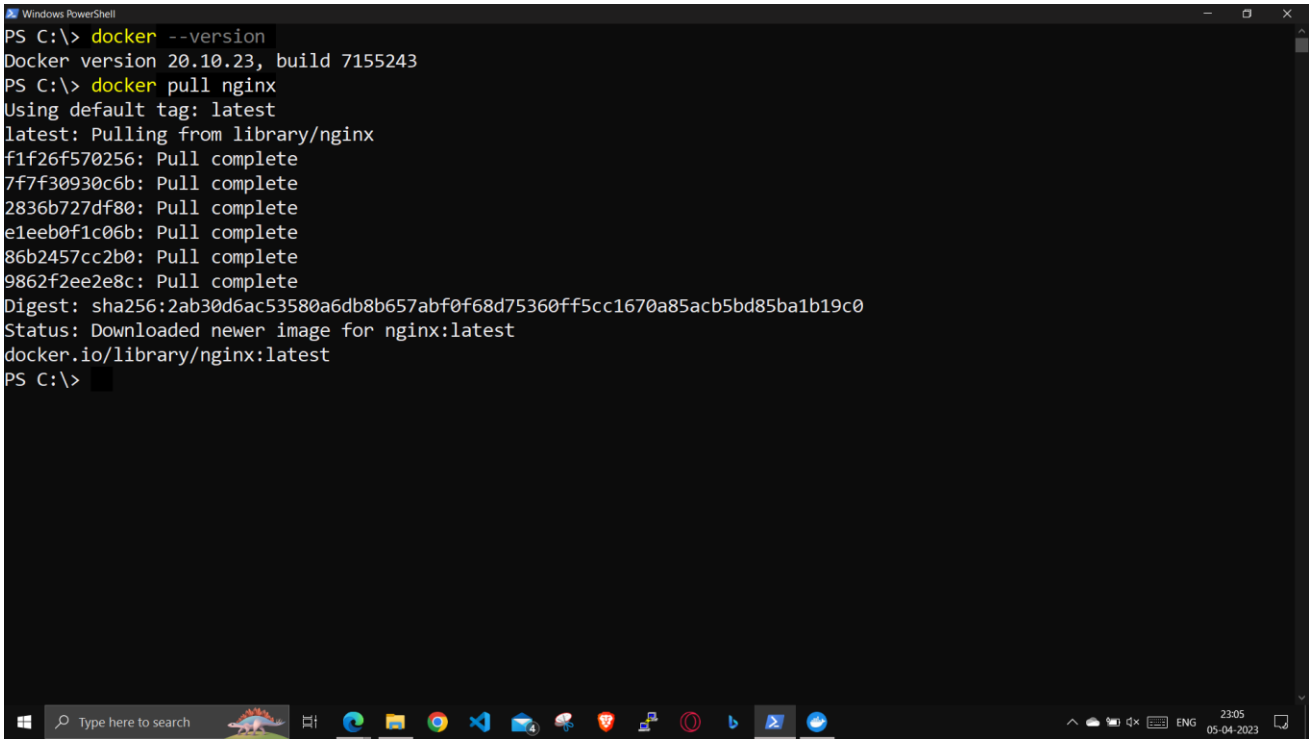


-> Open docker desktop and open PowerShell

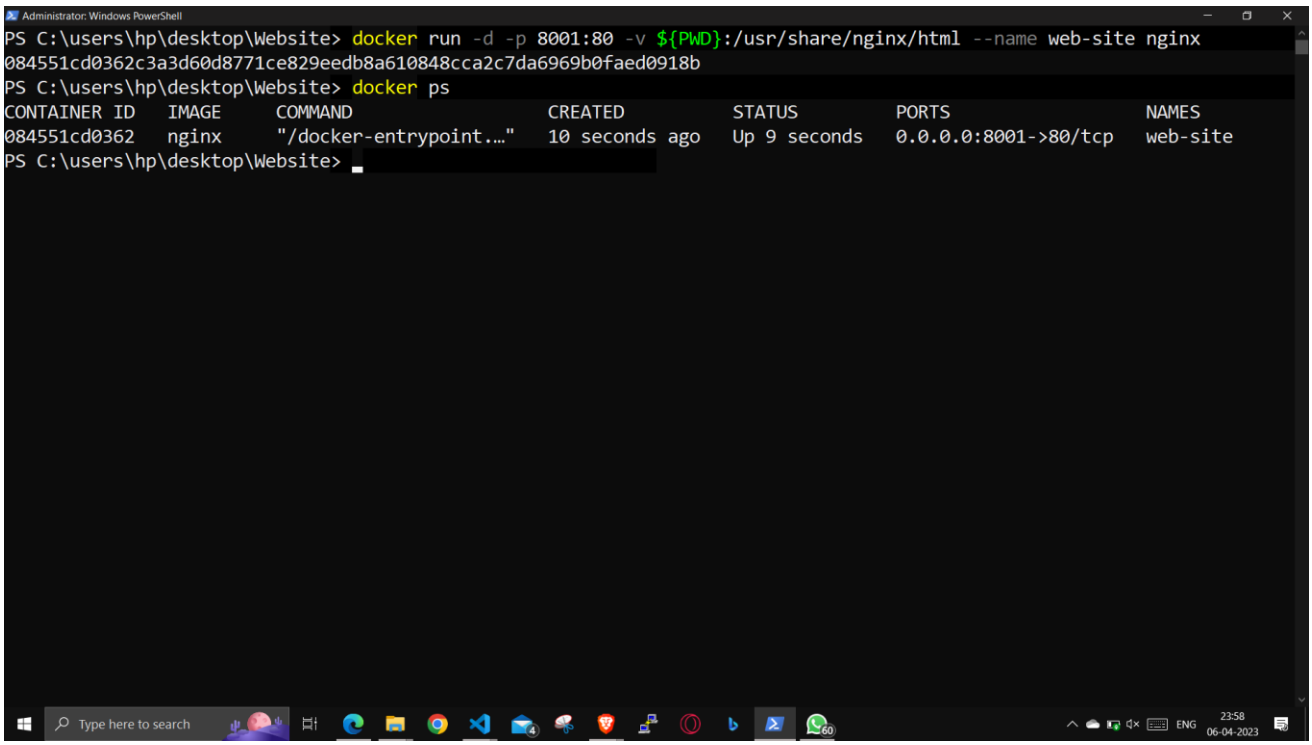
-> after checking the version, pull the nginx image from docker hub

```
docker pull nginx
```

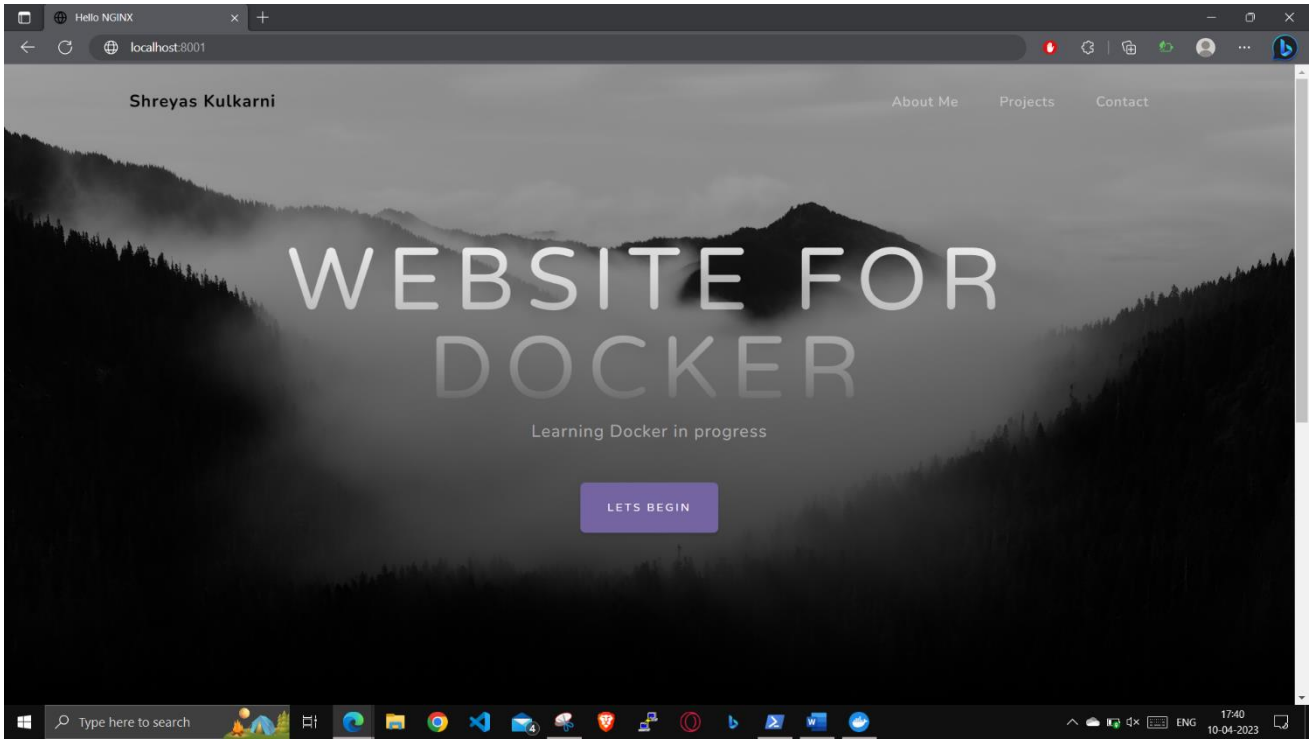




-> Perform Mount Bind which will create a container using the docker command and sync the Website folder with the folder inside the container



-> Verify the website by opening localhost:8001



We have successfully deployed your web application in the container.

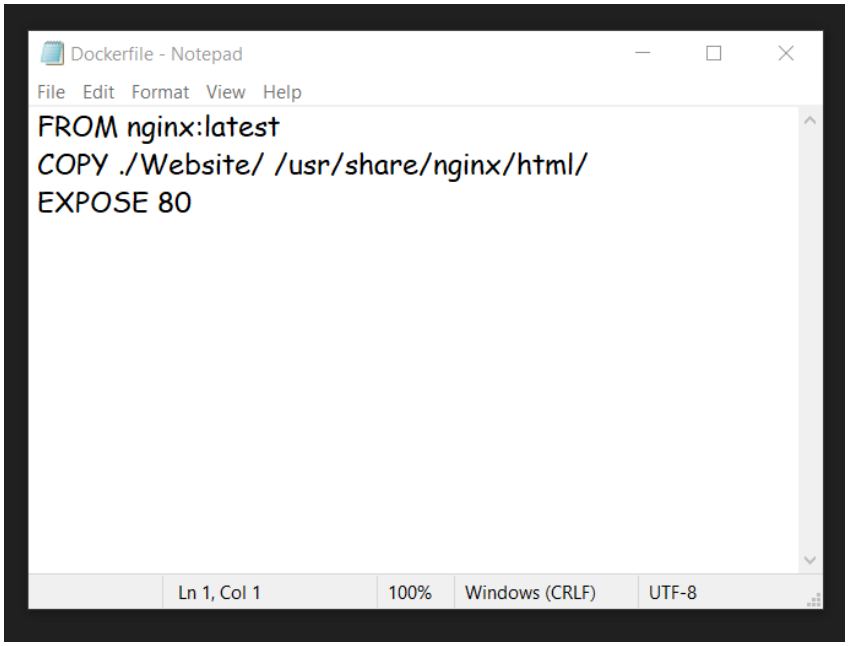
#DOCKERFILE

Create a Directory structure like

APP

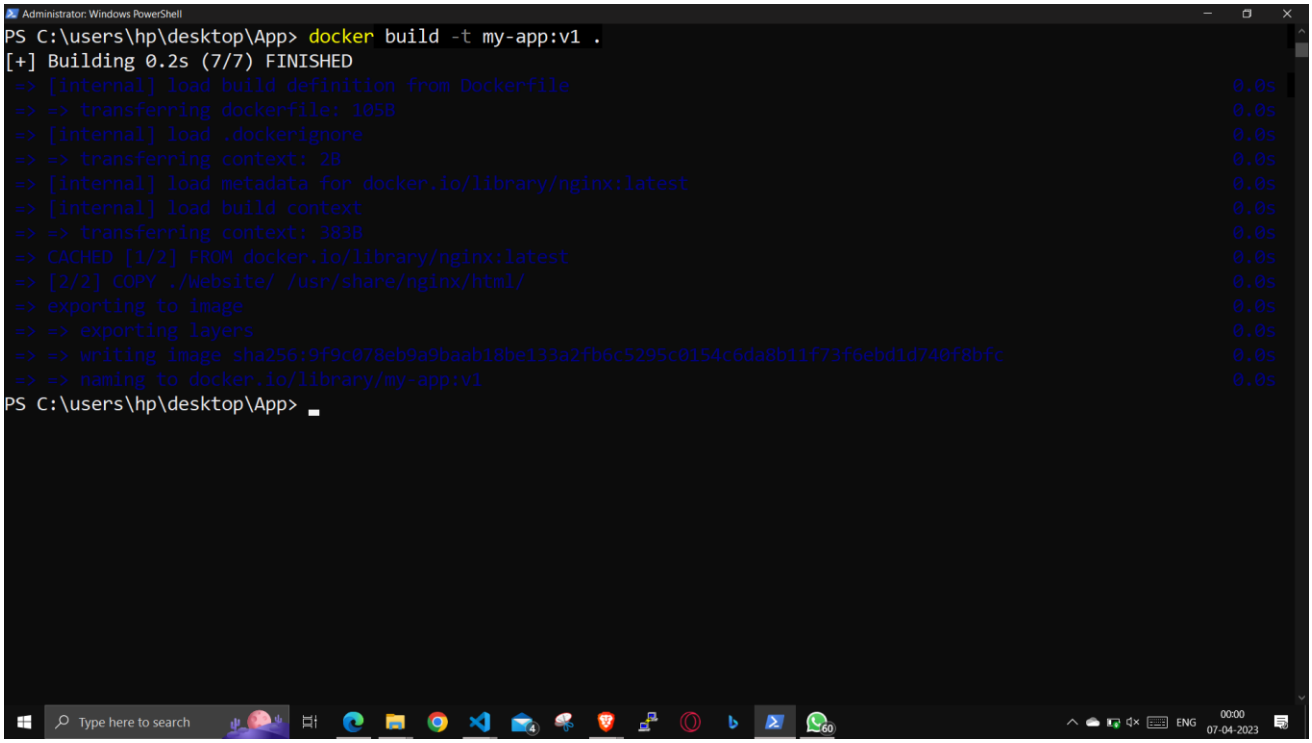
|--- Website

|--- Dockerfile



-> Build image from docker file using the build command

```
docker build -t my-app:v1 .
```



-> Using the docker images command check images

-> Login to DockerHub with credentials

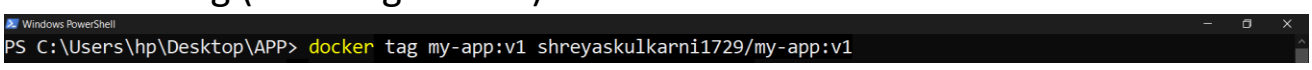
```
PS C:\Users\hp\Desktop\APP> docker images
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
my-app       v1        aeee2b85e233   11 seconds ago   144MB
nginx        latest    6efc10a0510f   2 weeks ago      142MB
PS C:\Users\hp\Desktop\APP> docker login -u shreyaskulkarni1729
Password:
Login Succeeded

Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/
PS C:\Users\hp\Desktop\APP> docker images
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
my-app       v1        aeee2b85e233   53 seconds ago   144MB
nginx        latest    6efc10a0510f   2 weeks ago      142MB
PS C:\Users\hp\Desktop\APP> docker tag my-web:v1 shreyaskulkarni1729/newapp
```

PUSH Images to DockerHub

-> docker images

```
PS C:\Users\hp\Desktop\APP> docker images
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
my-app       v1        aeee2b85e233   53 seconds ago   144MB
nginx        latest    6efc10a0510f   2 weeks ago      142MB
```

-> docker tag (old image name)



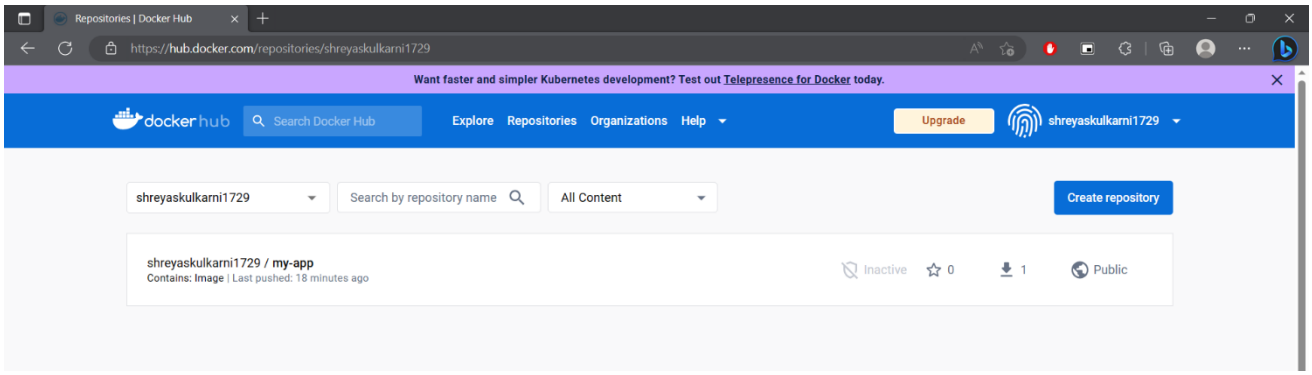
-> docker images

```
PS C:\Users\hp\Desktop\APP> docker images
REPOSITORY                    TAG       IMAGE ID       CREATED             SIZE
my-app                        v1        aeee2b85e233   About an hour ago   144MB
shreyaskulkarni1729/my-app    v1        aeee2b85e233   About an hour ago   144MB
nginx                         latest    6efc10a0510f   2 weeks ago         142MB
```

-> docker push shreyaskulkarni1729/my-app

```
PS C:\Users\hp\Desktop\APP> docker push shreyaskulkarni1729/my-app:v1
The push refers to repository [docker.io/shreyaskulkarni1729/my-app]
b044e0594e2a: Pushed
9d907f11dc74: Mounted from library/nginx
79974a1a12aa: Mounted from library/nginx
f12d4345b7f3: Mounted from library/nginx
935b5bd454e1: Mounted from library/nginx
fb6d57d46ad5: Mounted from library/nginx
ed7b0ef3bf5b: Mounted from library/nginx
v1: digest: sha256:bfbba6b90a50a053e403bffbce85c641830c10e5ed7a6625c83b17b37d9e5520 size: 1781
PS C:\Users\hp\Desktop\APP>
```

-> The docker image is now pushed on the DockerHub !



Now we can share this image with anyone with running nginx and our web application.

Conclusion: We have successfully deployed a static website using Docker.