DEVOPS

DevOps is a set of practices that combines software development (Dev) and IT operations (ops). It aims to shorten the systems development life cycle and provide continuous delivery with high software quality.

DOCKER :

Docker is an open-source platform designed to automate the deployment, scaling and management of applications within a containerized environment.

Containers :

Containers are lightweight, portable which have software application code along with its dependencies,libraries and configurations.

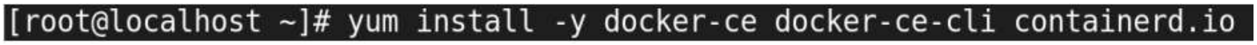
Benefits of using containers :

Isolation : Containers improve security and allow multiple applications to run on the same host without interfering with each other.

Scalability : Containers are lightweight and can be spun up or down quickly, making it easier to scale applications dynamically based on demand.

1.To install Docker in CentOs :

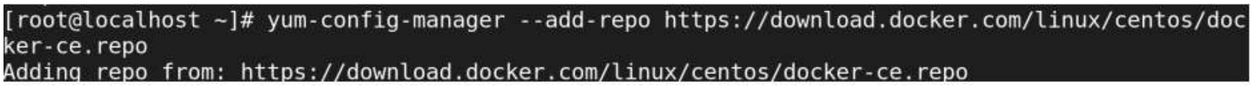
yum install -y docker-ce docker-ce-cli containerd.io



```
[root@localhost ~]# yum install -y docker-ce docker-ce-cli containerd.io
```

2. Add docker CE repositories :

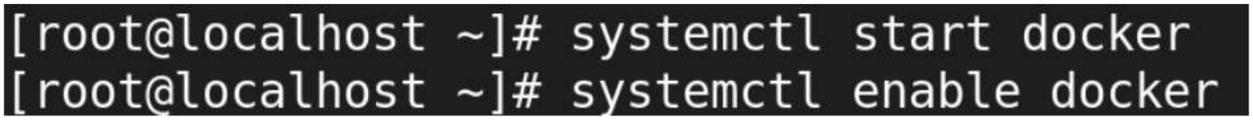
yum-config-manager --add-repo https://download.docker.com/linux/centos/docker-ce.repo



```
[root@localhost ~]# yum-config-manager --add-repo https://download.docker.com/linux/centos/doc
ker-ce.repo
Adding repo from: https://download.docker.com/linux/centos/docker-ce.repo
```

3. Start and enable Docker :

systemctl start docker
systemctl enable docker



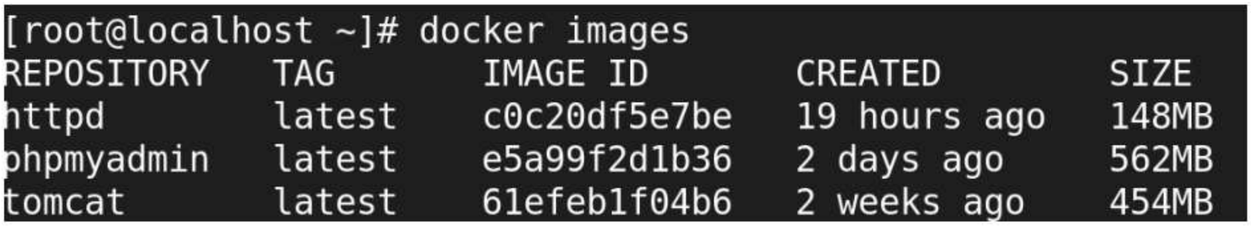
```
[root@localhost ~]# systemctl start docker
[root@localhost ~]# systemctl enable docker
```

4 . Pull image from hub.docker.com :

docker pull httpd
docker pull phpmyadmin

5. To see the images :

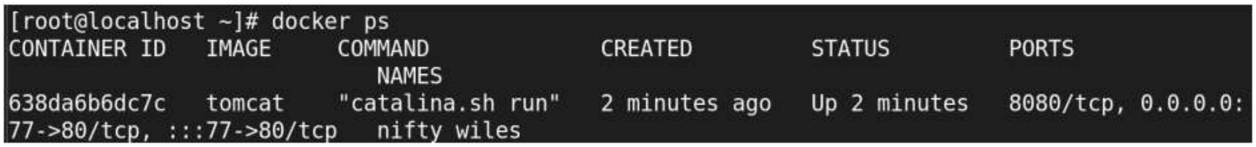
docker images



```
[root@localhost ~]# docker images
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
httpd        latest    c0c20df5e7be   19 hours ago     148MB
phpmyadmin   latest    e5a99f2d1b36   2 days ago       562MB
tomcat       latest    61efeb1f04b6   2 weeks ago      454MB
```

6 . To see the containers :

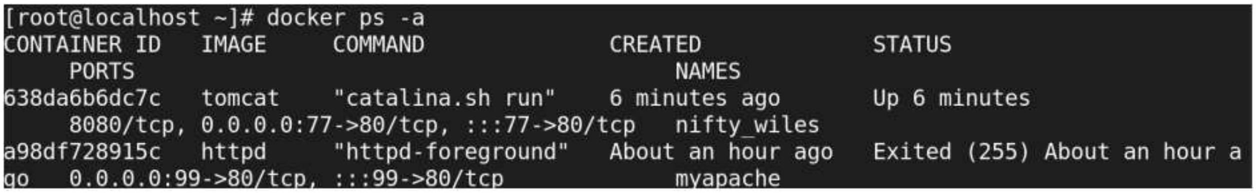
docker ps



```
[root@localhost ~]# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED         STATUS         PORTS
                           NAMES
638da6b6dc7c   tomcat    "catalina.sh run"   2 minutes ago   Up 2 minutes   8080/tcp, 0.0.0.0:
77->80/tcp, :::77->80/tcp   nifty wiles
```

7. To see all containers :

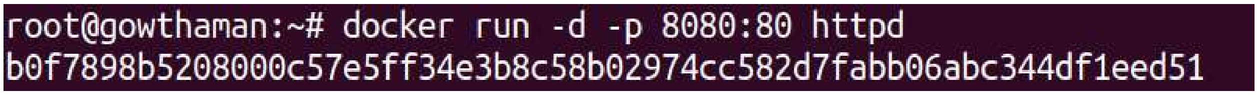
docker ps -a



```
[root@localhost ~]# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED              STATUS
     PORTS                                          NAMES
638da6b6dc7c   tomcat    "catalina.sh run"    6 minutes ago        Up 6 minutes
     8080/tcp, 0.0.0.0:77->80/tcp, :::77->80/tcp   nifty_wiles
a98df728915c   httpd     "httpd-foreground"   About an hour ago   Exited (255) About an hour a
go   0.0.0.0:99->80/tcp, :::99->80/tcp            myapache
```

8. To naming the container :

docker run -d –name myapache -p 8080:80 httpd

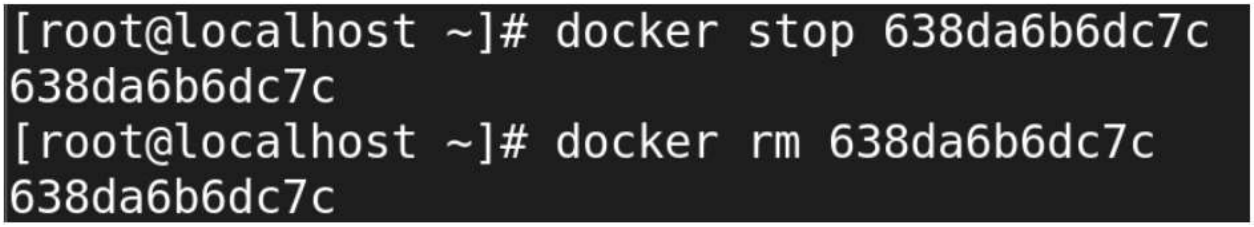


```
root@gowthaman:~# docker run -d -p 8080:80 httpd
b0f7898b5208000c57e5ff34e3b8c58b02974cc582d7fabb06abc344df1eed51
```

9. To stop and remove the container :

docker stop containerID

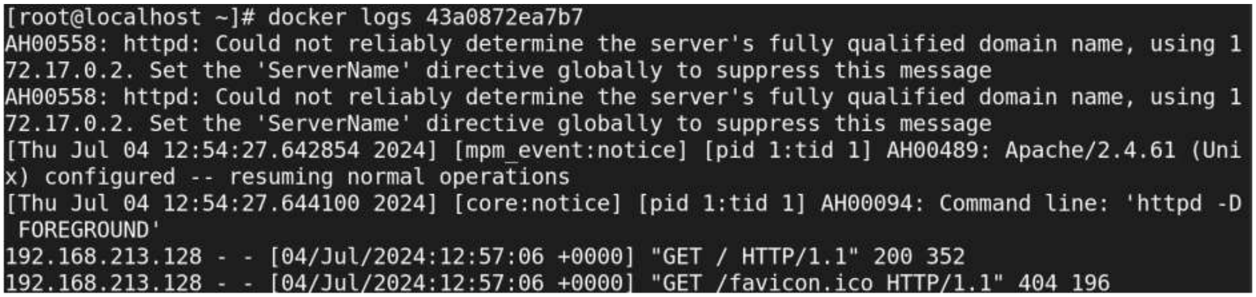
docker rm containerID



```
[root@localhost ~]# docker stop 638da6b6dc7c
638da6b6dc7c
[root@localhost ~]# docker rm 638da6b6dc7c
638da6b6dc7c
```

10. To check the container logs :

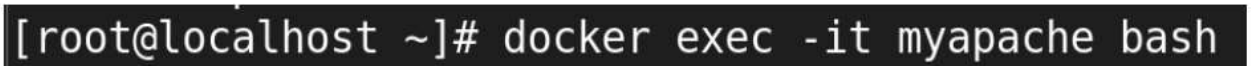
docker logs containerID



```
[root@localhost ~]# docker logs 43a0872ea7b7
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 1
72.17.0.2. Set the 'ServerName' directive globally to suppress this message
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using 1
72.17.0.2. Set the 'ServerName' directive globally to suppress this message
[Thu Jul 04 12:54:27.642854 2024] [mpm_event:notice] [pid 1:tid 1] AH00489: Apache/2.4.61 (Uni
x) configured -- resuming normal operations
[Thu Jul 04 12:54:27.644100 2024] [core:notice] [pid 1:tid 1] AH00094: Command line: 'httpd -D
 FOREGROUND'
192.168.213.128 - - [04/Jul/2024:12:57:06 +0000] "GET / HTTP/1.1" 200 352
192.168.213.128 - - [04/Jul/2024:12:57:06 +0000] "GET /favicon.ico HTTP/1.1" 404 196
```

11. To get the required homepage (httpd) :

docker exec -it myapache bash

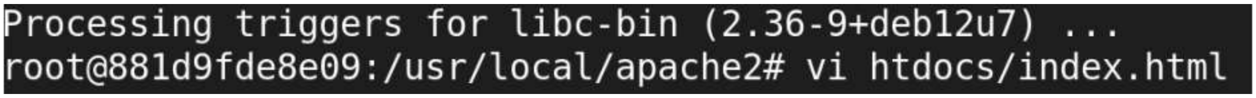


```
[root@localhost ~]# docker exec -it myapache bash
```

Now update by using apt-get update and install vim by using apt install vim command.

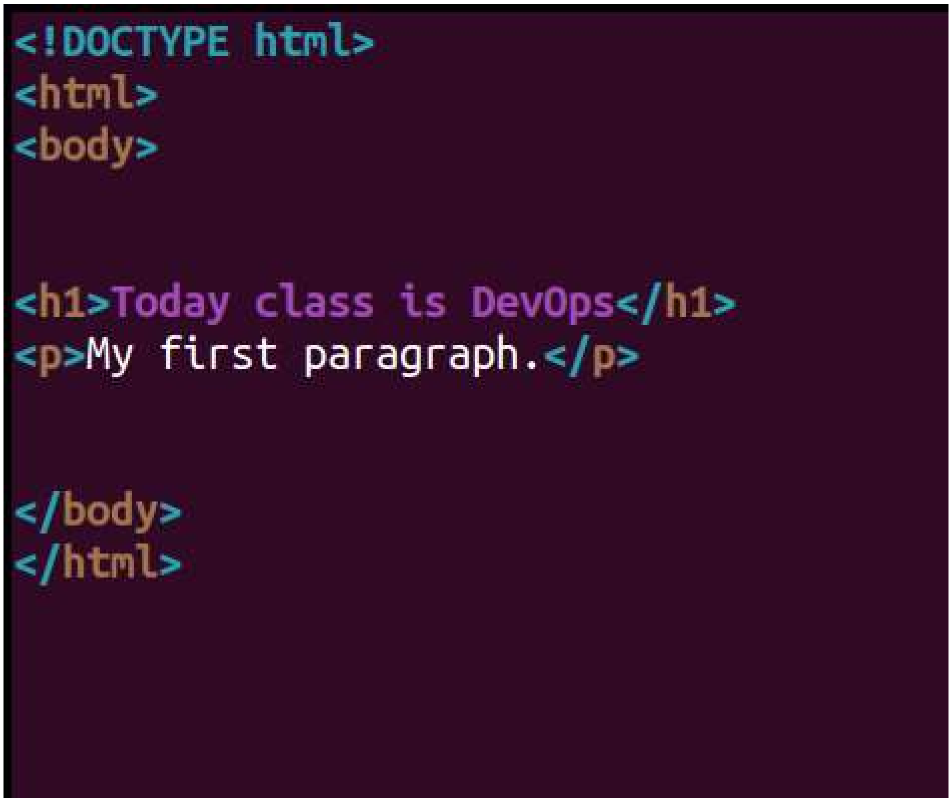
12 . Edit the htdocs/index.html file :

vi htdocs/index.html



```
Processing triggers for libc-bin (2.36-9+deb12u7) ...
root@881d9fde8e09:/usr/local/apache2# vi htdocs/index.html
```

Edit index.html :

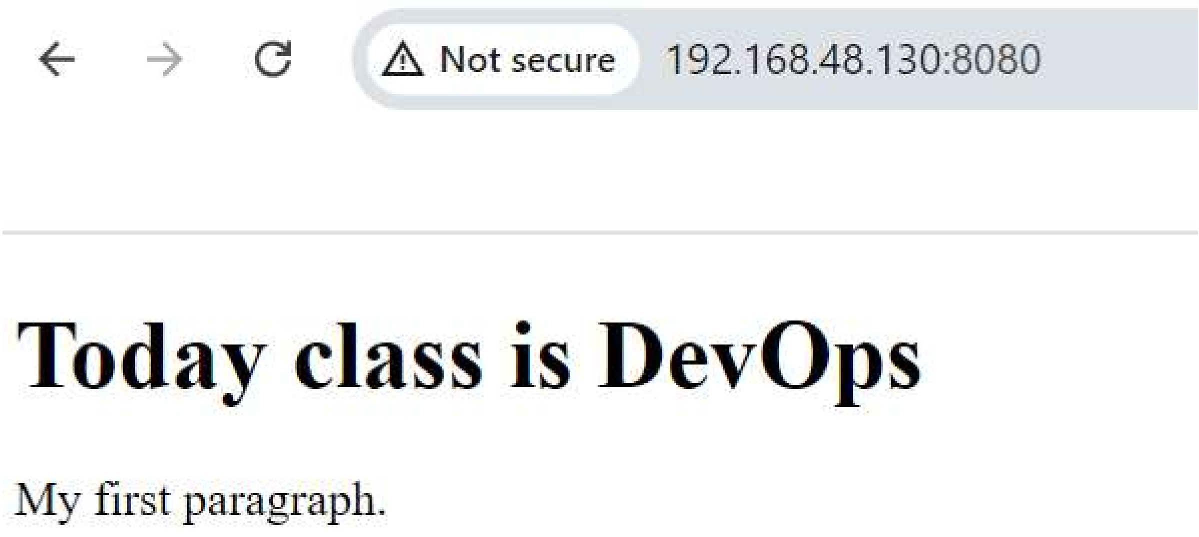


```
<!DOCTYPE html>
<html>
<body>


<h1>Today class is DevOps</h1>
<p>My first paragraph.</p>


</body>
</html>
```

13 . To check output :

Next will check on web page enter ipaddress

192.168.48.130:8080



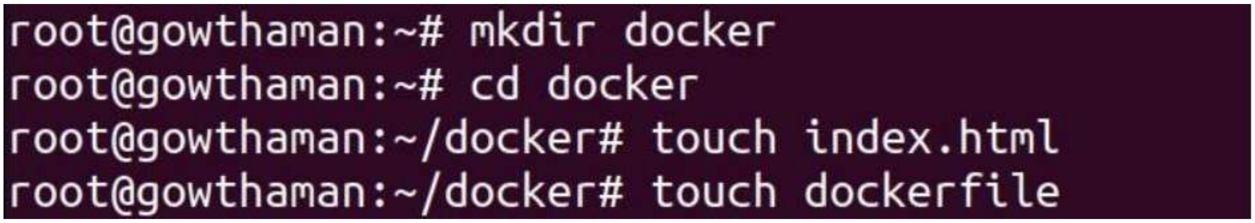
Today class is DevOps

My first paragraph.

3. To build a own image and Push it to Docker Repository :

1. Create a directory and 2 file index.html and dockerfile :

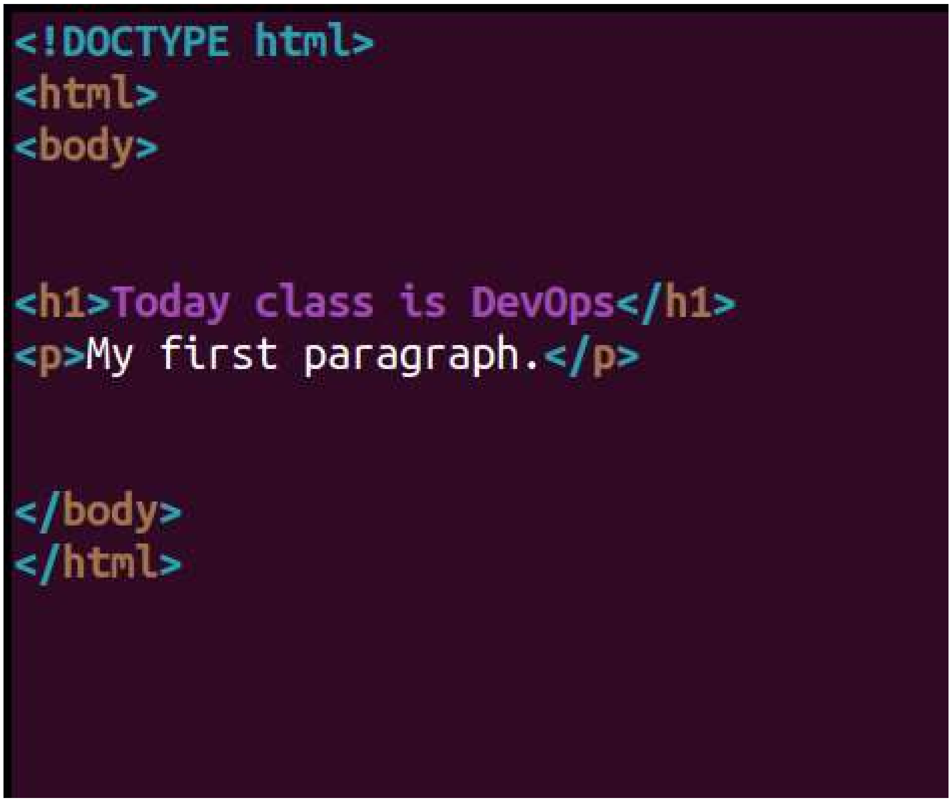
```
touch index.html
touch dockerfile
```



```
root@gowthaman:~# mkdir docker
root@gowthaman:~# cd docker
root@gowthaman:~/docker# touch index.html
root@gowthaman:~/docker# touch dockerfile
```

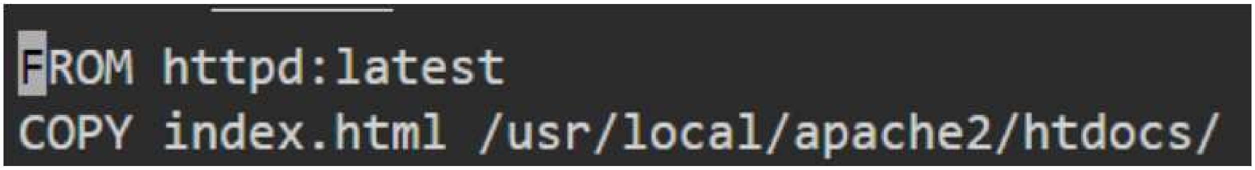
2. Edit both file dockerfile :

vi index.html



```
<!DOCTYPE html>
<html>
<body>


<h1>Today class is DevOps</h1>
<p>My first paragraph.</p>


</body>
</html>
```

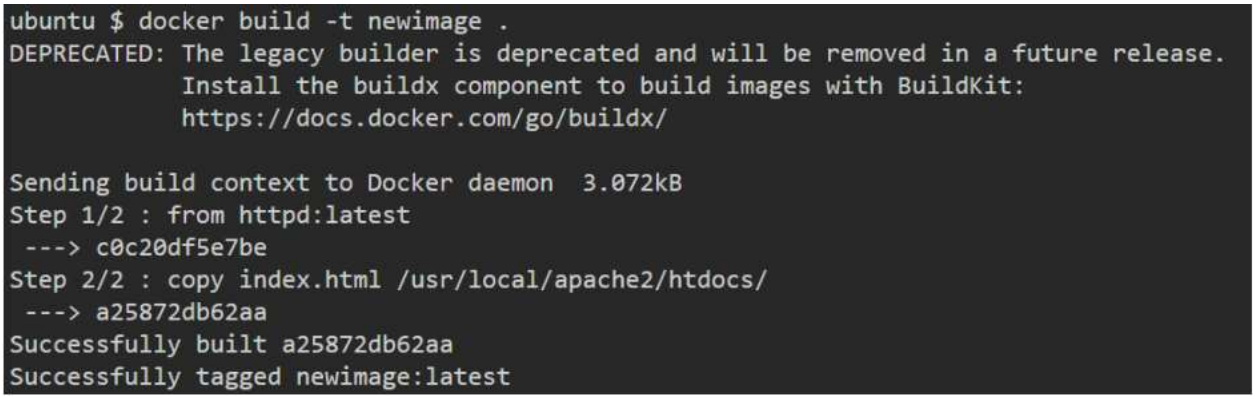
vi dockerfile



```
FROM httpd:latest
COPY index.html /usr/local/apache2/htdocs/
```

3. To Build a new image :

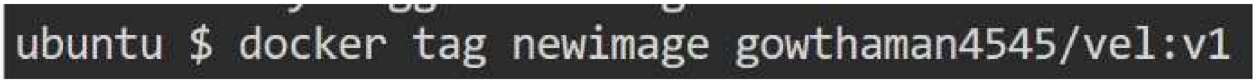
docker build -t newimage .



```
ubuntu $ docker build -t newimage .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  3.072kB
Step 1/2 : from httpd:latest
 ---> c0c20df5e7be
Step 2/2 : copy index.html /usr/local/apache2/htdocs/
 ---> a25872db62aa
Successfully built a25872db62aa
Successfully tagged newimage:latest
```

4. To assigns a new tag for newimage :

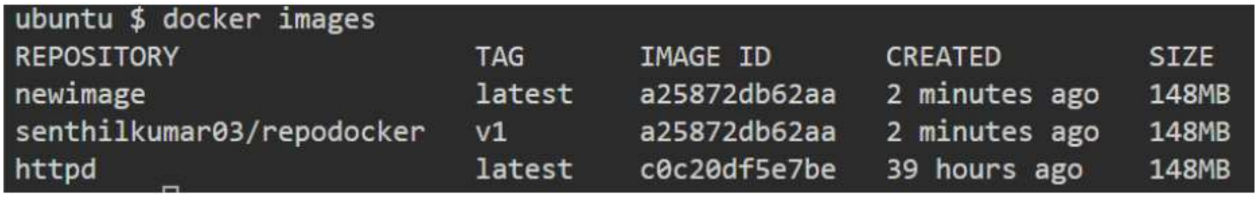
docker tag newimage username/reponame:v1



```
ubuntu $ docker tag newimage gowthaman4545/vel:v1
```

4.To check the images :

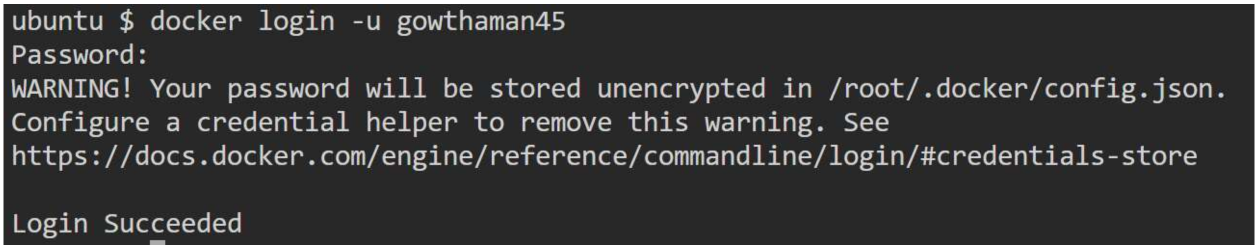
docker images



```
ubuntu $ docker images
REPOSITORY                 TAG       IMAGE ID       CREATED          SIZE
newimage                   latest    a25872db62aa   2 minutes ago    148MB
senthilkumar03/repodocker  v1        a25872db62aa   2 minutes ago    148MB
httpd                      latest    c0c20df5e7be   39 hours ago     148MB
```

5. Login to Your Docker Account :

docker login -u gowthaman45

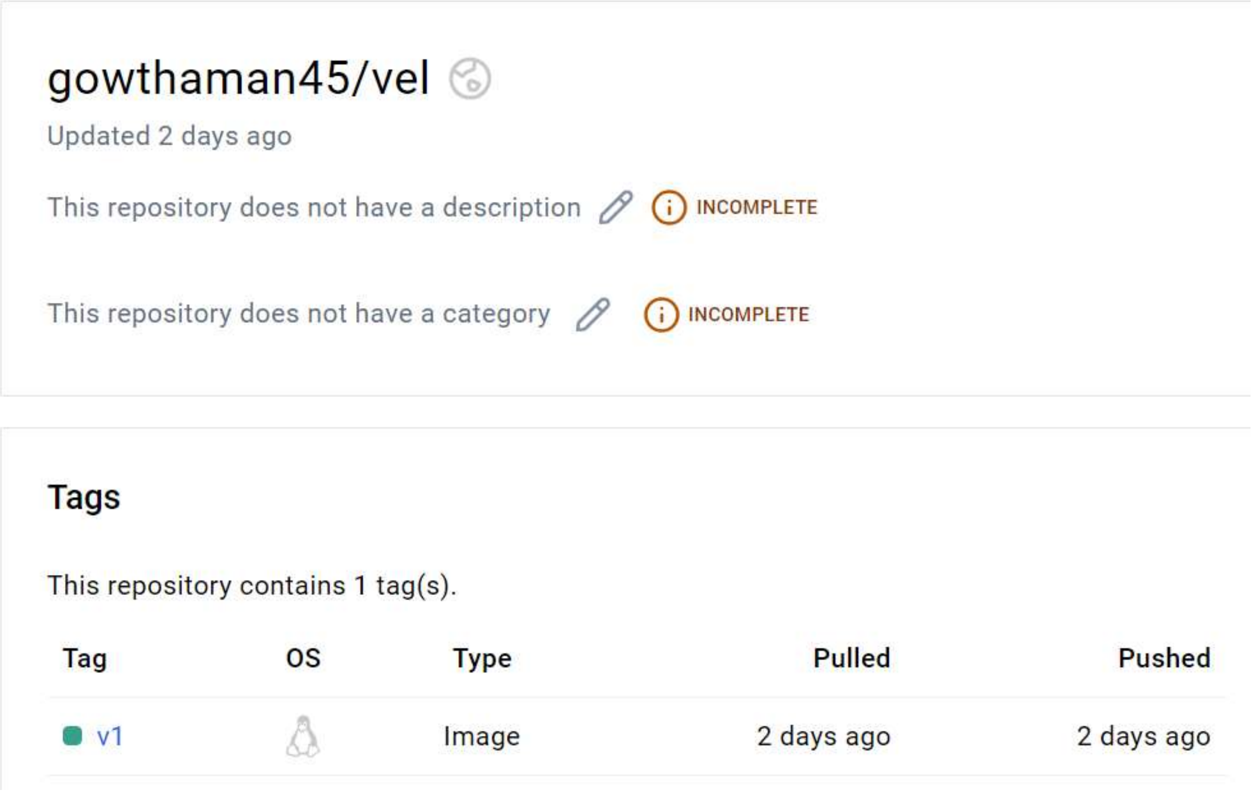


```
ubuntu $ docker login -u gowthaman45
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
```

6. Push the new image to repository :

docker push username/reponame:v1

7 . Checking new image is added in your repository :



gowthaman45/vel

Updated 2 days ago

This repository does not have a description ⓘ INCOMPLETE

This repository does not have a category ⓘ INCOMPLETE

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
● v1	🐧	Image	2 days ago	2 days ago

8. Now check whether we can able to pull our created image:

For that first remove the existing image :

```
docker rmi gowthaman45/vel
```

8.1 To pull our created image:

```
docker pull gowthaman45/vel
```

Own image has been pulled :

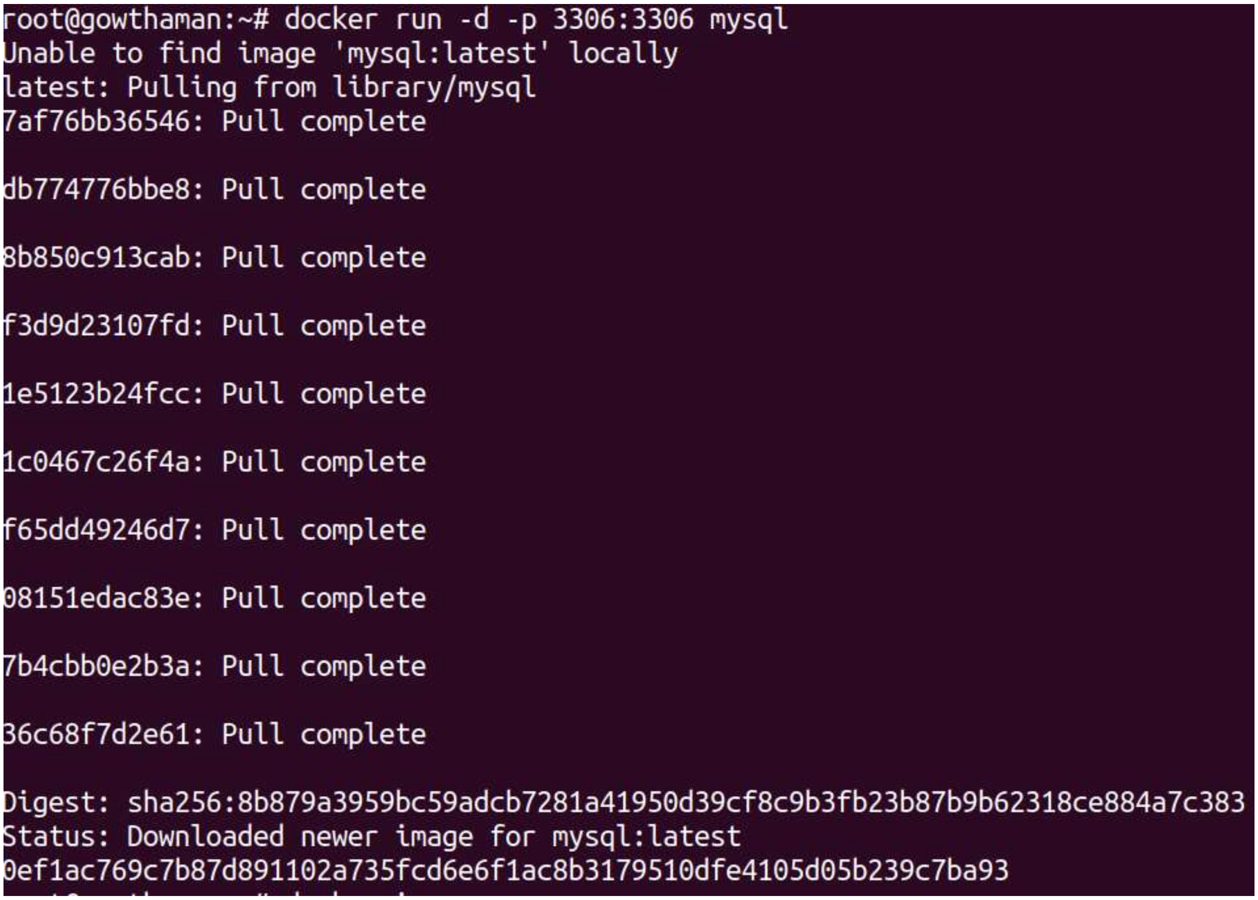
```
docker images
```

9. To run the pulled image :

```
docker run -d -p gowthaman45/vel
```

1.Running to the mysql

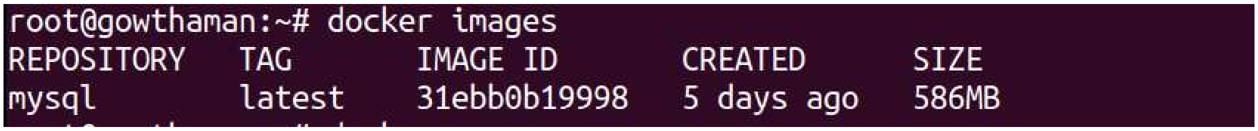
docker run -d -p 3306:3306 mysql



```
root@gowthaman:~# docker run -d -p 3306:3306 mysql
Unable to find image 'mysql:latest' locally
latest: Pulling from library/mysql
7af76bb36546: Pull complete

db774776bbe8: Pull complete

8b850c913cab: Pull complete

f3d9d23107fd: Pull complete

1e5123b24fcc: Pull complete

1c0467c26f4a: Pull complete

f65dd49246d7: Pull complete

08151edac83e: Pull complete

7b4cbb0e2b3a: Pull complete

36c68f7d2e61: Pull complete

Digest: sha256:8b879a3959bc59adcb7281a41950d39cf8c9b3fb23b87b9b62318ce884a7c383
Status: Downloaded newer image for mysql:latest
0ef1ac769c7b87d891102a735fcd6e6f1ac8b3179510dfe4105d05b239c7ba93
```

2.Next will the images to be viewed :

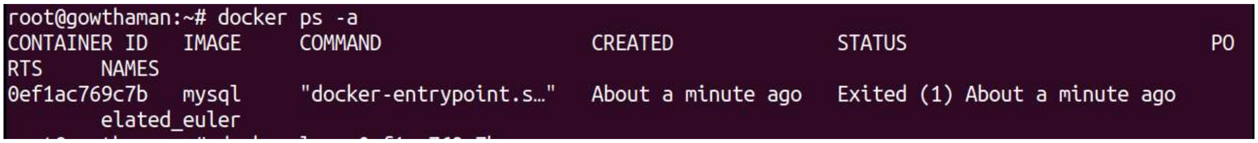
docker images



```
root@gowthaman:~# docker images
REPOSITORY   TAG       IMAGE ID       CREATED      SIZE
mysql        latest    31ebb0b19998   5 days ago   586MB
```

3.will check the status in Docker ps -a

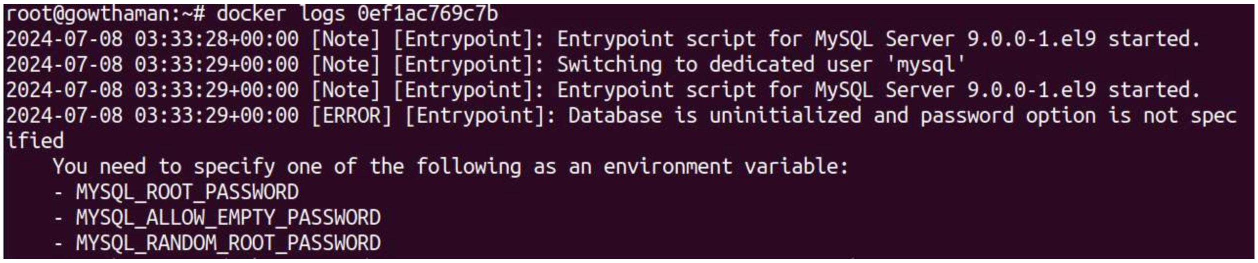
docker ps -a



```
root@gowthaman:~# docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED              STATUS                          PO
RTS     NAMES
0ef1ac769c7b   mysql     "docker-entrypoint.s…"   About a minute ago   Exited (1) About a minute ago
        elated_euler
```

4.Next will checking the logs and Container ID (or) Container Name

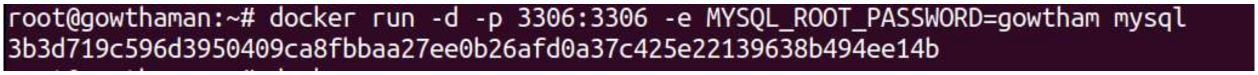
docker logs Container id or name



```
root@gowthaman:~# docker logs 0ef1ac769c7b
2024-07-08 03:33:28+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 9.0.0-1.el9 started.
2024-07-08 03:33:29+00:00 [Note] [Entrypoint]: Switching to dedicated user 'mysql'
2024-07-08 03:33:29+00:00 [Note] [Entrypoint]: Entrypoint script for MySQL Server 9.0.0-1.el9 started.
2024-07-08 03:33:29+00:00 [ERROR] [Entrypoint]: Database is uninitialized and password option is not spec
ified
    You need to specify one of the following as an environment variable:
    - MYSQL_ROOT_PASSWORD
    - MYSQL_ALLOW_EMPTY_PASSWORD
    - MYSQL_RANDOM_ROOT_PASSWORD
```

5.will set the password and run the mysql

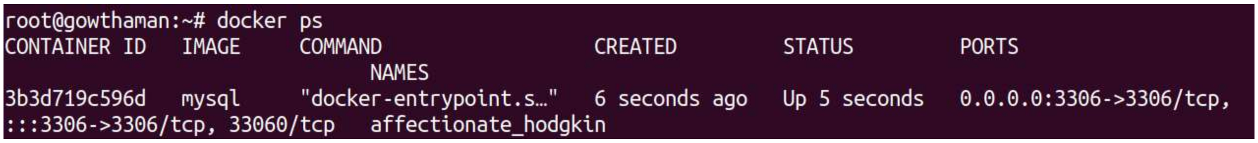
docker run -d -p 3306:3306 -e MYSQL_ROOT_PASSWORD=gowtham mysql



```
root@gowthaman:~# docker run -d -p 3306:3306 -e MYSQL_ROOT_PASSWORD=gowtham mysql
3b3d719c596d3950409ca8fbbaa27ee0b26afd0a37c425e22139638b494ee14b
```

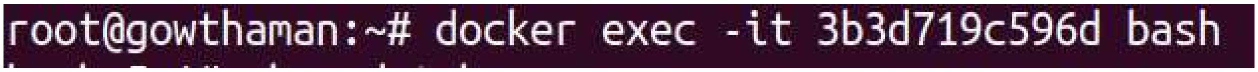
6.Docker ps will check the status

Docker ps

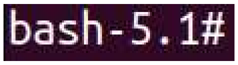


```
root@gowthaman:~# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED         STATUS         PORTS
                    NAMES
3b3d719c596d   mysql     "docker-entrypoint.s…"   6 seconds ago   Up 5 seconds   0.0.0.0:3306->3306/tcp,
:::3306->3306/tcp, 33060/tcp   affectionate_hodgkin
```

7.To inside the docker

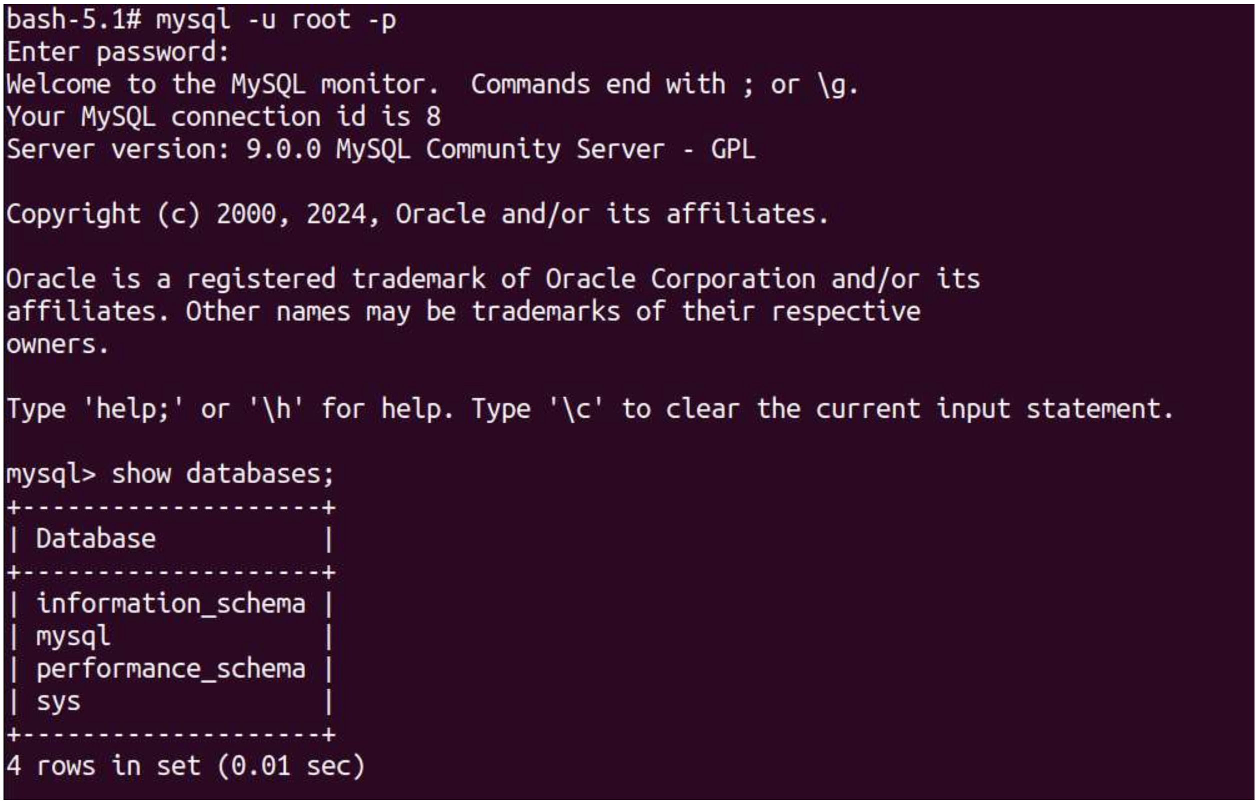


```
root@gowthaman:~# docker exec -it 3b3d719c596d bash
```



```
bash-5.1#
```

8.Inside the docker to enter the command is mysql -u root -p



```
bash-5.1# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 9.0.0 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.01 sec)
```
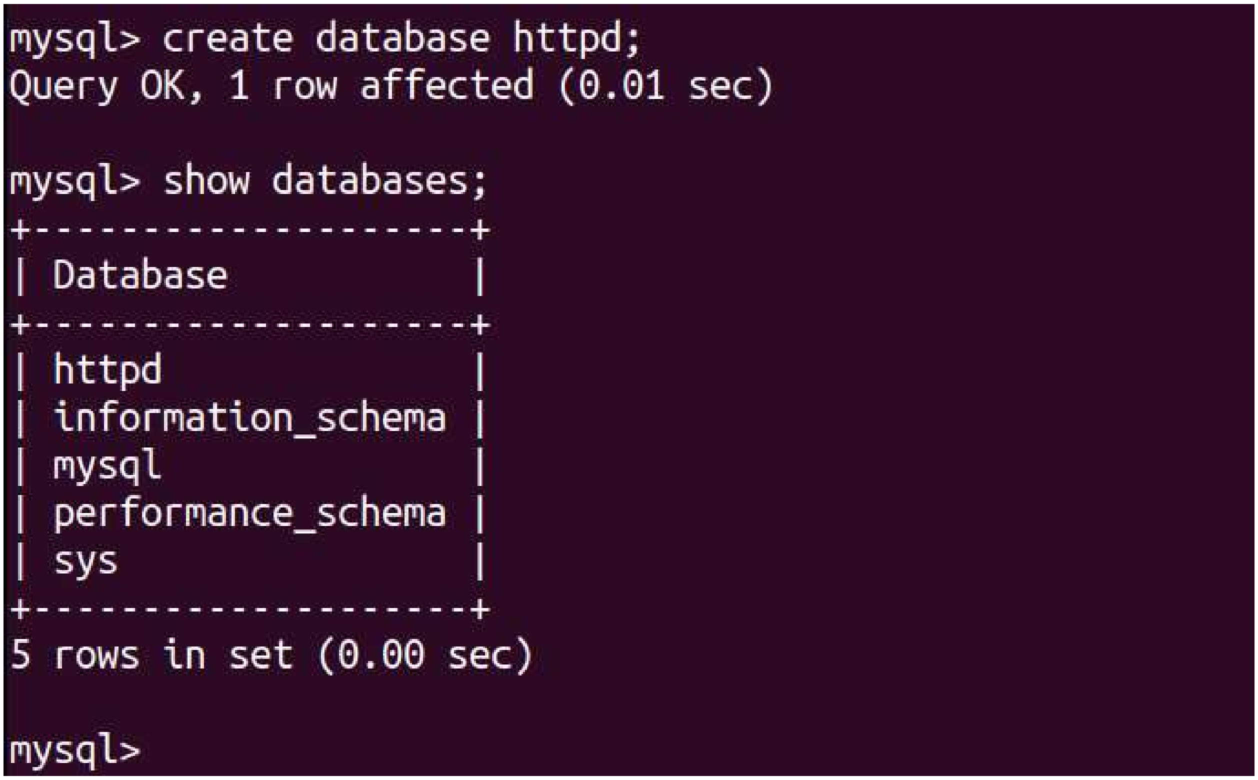

9.And extra created the content to be added



```
mysql> create database httpd;
Query OK, 1 row affected (0.01 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| httpd              |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)

mysql>
```