Experiment No. 09

AIM: To study and implement Docker basics

THEORY:

Containerization is a lightweight virtualization technique that allows applications to run in isolated environments called containers. Unlike traditional virtual machines, containers share the host operating system's kernel, making them more efficient and faster to start. Docker is one of the most popular platforms for containerization.

Docker allows developers to package an application along with all its dependencies, libraries, and configuration files into a single unit called a Docker container. This ensures the application runs consistently across different environments—whether it's development, testing, or production. Docker uses a file called a *Dockerfile* to automate the creation of images, which are then used to spin up containers.

With Docker, scaling applications becomes simpler, and deployment is faster and more reliable. It also helps in reducing conflicts between environments and improves CI/CD pipelines.

In this experiment, we aim to understand how Docker works, how to build Docker images, and how to run and manage containers. Through hands-on implementation, we'll explore Docker commands and learn how containerization can streamline development workflows.

IMPLEMENTATION:

```
| Mark | Abdoker run riginal | Abdoker run r
```

```
/d/MtscRepos/sepm_tab/files glt:(master)±9 (16.855s)

docker pull nginx

Using default tag: latest
latest: Pulling from library/nginx
6e909acdb790: Pull complete
97f5c0f51d43: Pull complete
5eaa34f5b9c2: Pull complete
417c4bcf53d: Pull complete
22eb46e871a: Pull complete
22eb46e871a: Pull complete
373fe654e984: Pull complete
bligest: sha256:124b44bfc9ccd1f3cedf4b592d4d1e8bddb78b51ec2ed5056c52d3692baebc19
Status: Downloaded newer image for nginx:latest

docker.io/library/nginx:latest

/d/MtscRepos/sepm_tab/files glt:(master)±9 (1.127s)
docker images

REPOSITORY TAG IMAGE ID CREATED SIZE
nginx latest 124b4dbfc9cc 7 weeks ago 279MB
nginx 1.23 f5747a42e3ad 22 months ago 214MB
```

```
/d/MiscRepos/sepm_lab/files git:(master)±9

docker run nginx:1.23

/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-line-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
/dozs/04/02 13:34:51 [notice] ##1: using the "epoll" event method
/dozs/04/02 13:34:51 [notice] ##1: bill by gcc 10-2.1 20210110 (Debian 10-2.1-6)
/dozs/04/02 13:34:51 [notice] ##1: 05: Linux 5.15.167.4-microsoft-standard-WSL2
/dozs/04/02 13:34:51 [notice] ##1: start worker processes
/dozs/04/02 13:34:51 [notice] ##1: start worker process 29
/dozs/04/02 13:34:51 [notice] ##1: start worker process 31
/dozs/04/02 13:34:51 [notice] ##1: start worker process 32
```

```
/d/MiscRepos/sepm_lab/files git:(master)±9 (2.813s)

docker run -d nginx:1.23

a8c8bd4b3b4912b37e3d487427e975a56fd722df627f0012e2c03c4199f77291

/d/MiscRepos/sepm_lab/files git:(master)±9 (0.784s)
docker ps

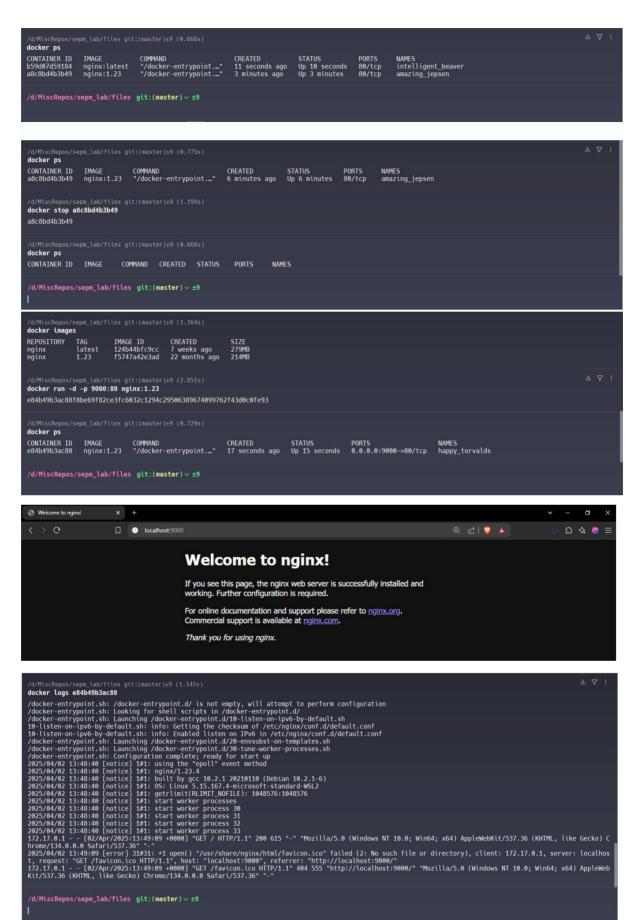
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
a8c8bd4b3b49 nginx:1.23 "/docker-entrypoint..." 8 seconds ago Up 6 seconds 88/tcp amazing_jepsen

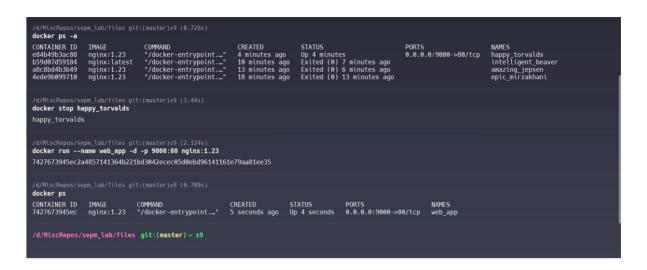
/d/MiscRepos/sepm_lab/files git:(master)±9 (0.647s)
docker logs a8c8bd4b3b49
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/ sunction you have been described by default sh: high listen on the property of the control of t
```

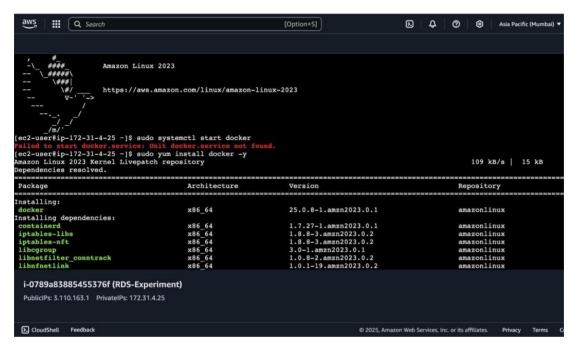
```
/d/MiscRepos/sepm_lab/files git:(master)±9

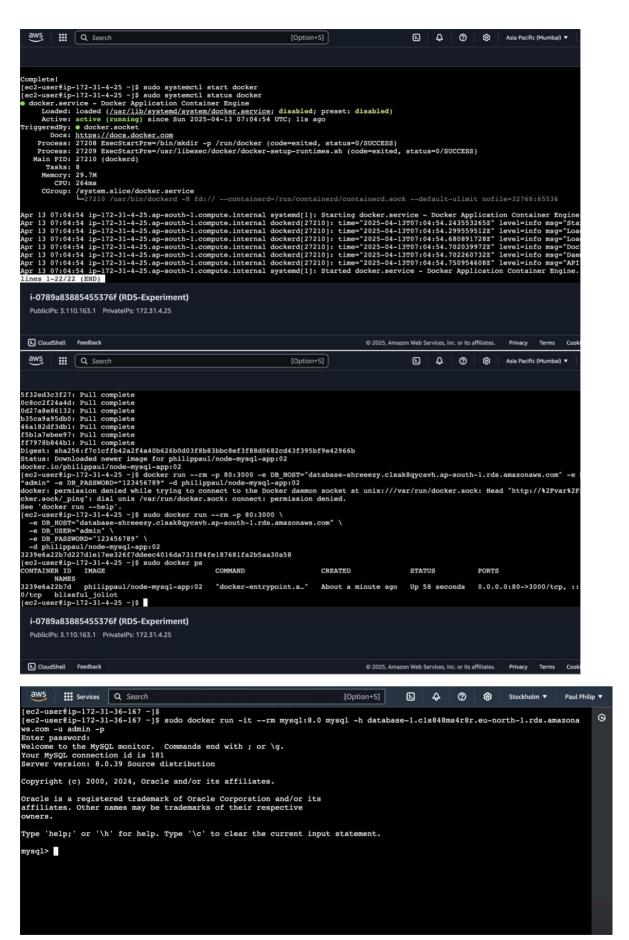
docker run nginx:latest

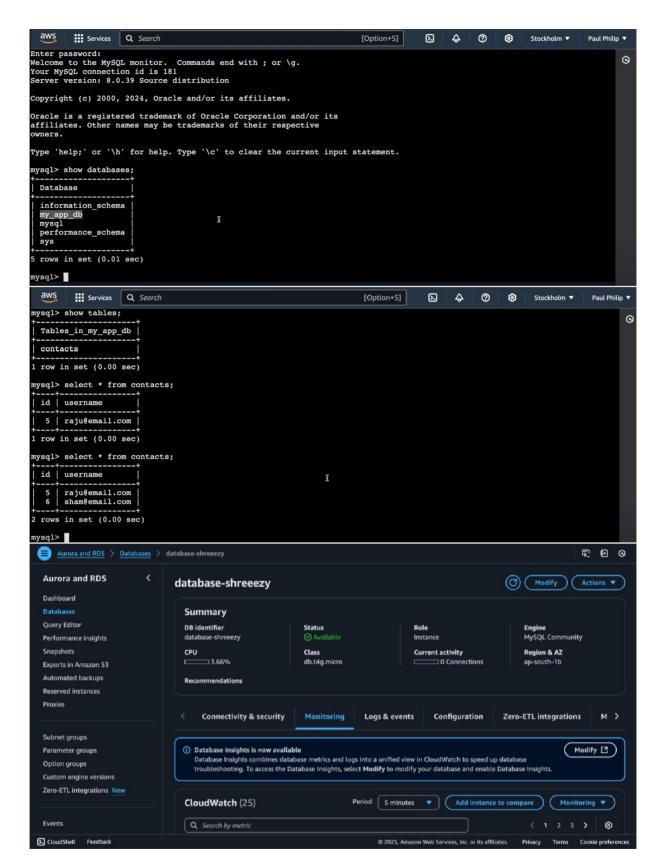
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /detrynginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/12-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2025/94/02 13:43:21 [notice] 1#1: using the "epoll" event method
2025/94/02 13:43:21 [notice] 1#1: using the "epoll" event method
2025/94/02 13:43:21 [notice] 1#1: OS: Linux 5.15.167.4-microsoft-standard-WSL2
2025/94/02 13:43:21 [notice] 1#1: start worker processes
2025/94/02 13:43:21 [notice] 1#1: start worker process 29
2025/94/02 13:43:21 [notice] 1#1: start worker process 31
2025/94/02 13:43:21 [notice] 1#1: start worker process 32
```











CONCLUSION: Hence, we have successfully studied and implemented the basics of Docker.