

Docker Day 2 Assignment

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1 Assignment Questions

1.1 Question 1

- Run a container `nginx` with name `my-nginx` and attach 2 volumes to the container using volume mount
- Volume1 for containing static html file
- Volume2 for containing nginx configuration
- Edit the html content

```
~ ) docker volume create html_content
docker volume create nginx_config
html_content
nginx_config
~ ) docker run -d --name my-nginx -v html_content:/usr/share/nginx/html -v nginx_config:/etc/nginx/nginx.conf nginx
a776ed0c4040760cb3648663061f3b087a6c7fc7a394a2c08473e7ee3f077b48
~ ) docker container exec -it my-nginx bash
echo "<html><body><h1>Hello from N6INX with Docker Volumes > /usr/share/nginx/html/index.html"
exit
Found existing alias for "docker container exec -it". You should use: "dxcit"
```

Figure 1: Step 1

- Remove the container
- Run a new 2 containers with the following:
 - Attach the two volumes that were attached to the previous container using volume mount
 - Map port 80 to port 8080 on you host machine

```
~ ) docker container rm -f my-nginx
Found existing alias for "docker container rm -f". You should use: "drm!"
my-nginx
~ ) docker run -d --name nginx1 -v html_content:/usr/share/nginx/html -v nginx_config:/etc/nginx/nginx.conf -p 8080:80 nginx
docker run -d --name nginx2 -v html_content:/usr/share/nginx/html -v nginx_config:/etc/nginx/nginx.conf -p 8081:80 nginx
1ba6e5d1c994a0ad76feb55dc0f2d2405e86a361460fd43d65579c53ed3e7
4a7c91a117fd415e0b17eba3993f8a9fd0d7dff93486313e7799ee7aa069852
~ ) docker ps
Found existing alias for "docker ps". You should use: "dps"
CONTAINER ID   IMAGE    COMMAND                  CREATED        STATUS        PORTS
NAMES
4a7c91a117fd   nginx   "/docker-entrypoint..." 16 seconds ago Up 15 seconds 0.0.0.0:8081→80/tcp, [::]:8081→80/t
pp   nginx2
1ba6e5d1c994   nginx   "/docker-entrypoint..." 16 seconds ago Up 16 seconds 0.0.0.0:8080→80/tcp, [::]:8080→80/t
cp   nginx1
```

Figure 2: Step 2

- Access the html files from your browser

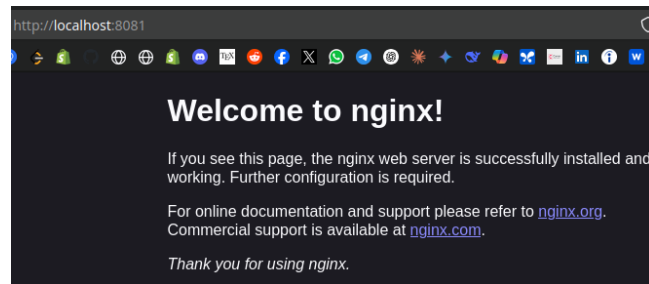


Figure 3: localhost:8081

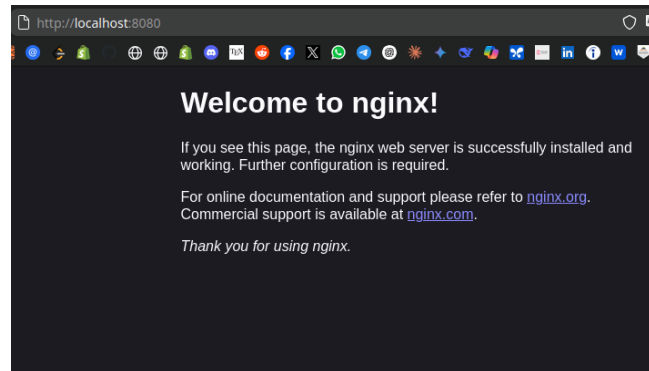


Figure 4: localhost:8080

1.2 Question 2

- Run a container Nginx with name `nginx-bind-mount` and attach 2 volumes using bind mount under any paths
- Remove the container
- Run a new container with the following:
 - Attach the two volumes that were attached to the previous container
 - Check the old data in the new containers

```
~ ) mkdir -p ~/nginx-data/html
mkdir -p ~/nginx-data/conf
Found existing alias for "mkdir -p". You should use: "md"
~ ) echo '<h1>Hello from bind mount!</h1>' > ~/nginx-data/html/index.html
~ ) docker run -d --name nginx-bind-mount -v ~/nginx-data/html:/usr/share/nginx/html -v ~/nginx-data/conf:/etc/nginx/conf.d -p 8080:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
c29f5b76f736: Pull complete
e19db8451adb: Pull complete
24ff42a0d907: Pull complete
c558df217949: Pull complete
976e8f6b25dd: Pull complete
6c78b0ba1a32: Pull complete
84cade77a831: Pull complete
Digest: sha256:91734281c0ebfc6f1aea979cffe5d5079cfe786228a71cc6f1f46a228cde6e34
Status: Downloaded newer image for nginx:latest
1e800ac2dd3068c1ddc4822a765033f94c5812cb4209d5d79d9f5aeacf72528e
~ ) docker rm -f nginx-bind-mount
nginx-bind-mount
~ ) docker run -d --name nginx-bind-mount-2 -v ~/nginx-data/html:/usr/share/nginx/html -v ~/nginx-data/conf:/etc/nginx/conf.d -p 8080:80 nginx
400f13078327920bf83e4f07cfa995ff7f8074155cd9774227b3a2eb9543353a
~ ) curl localhost:8080
curl: (56) Recv failure: Connection reset by peer
~ ) curl localhost:8080
curl: (56) Recv failure: Connection reset by peer
~ ) docker exec nginx-bind-mount-2 cat /usr/share/nginx/html/index.html
<h1>Hello from bind mount!</h1>
```

Figure 5: Answer

1.3 Question 3

- Create 2 nginx containers with 2 different network of type bridge, enter to one of them and use curl command to view the content of the other container.

```
~ ) docker network create network1
docker network create network2
Found existing alias for "docker network create". You should use: "dnc"
1f1129e2328cee259b2594bdfc7461447b25be0716c83112ec22d5431d503c62
8c0854f0bf155450a768a69fcced955764968de21421f71864fff796f89a4f04a
~ ) mkdir -p ~/nginx-test
echo '<h1>Hello from nginx2!</h1>' > ~/nginx-test/index.html
Found existing alias for "mkdir -p". You should use: "md"
~ ) docker run -d --name nginx1 --network network1 nginx
1c55043712d0b06184d5963c3ed6879ae073fcb31cf2d7652e55921e2d2aa731
~ ) docker run -d --name nginx2 --network network2 -v ~/nginx-test/index.html:/usr/share/nginx/html/index.html nginx
f887054ecf51436ed7959c8879574ac9b94fc8bf02e388509121e591a6a1ba82
~ ) docker network connect network2 nginx1
Found existing alias for "docker network connect". You should use: "dncn"
~ ) docker exec -it nginx1 bash
root@1c55043712d0:/# apt-get update && apt-get install -y curl
Get:1 http://deb.debian.org/debian bookworm InRelease [151 kB]
Get:2 http://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:3 http://deb.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Get:4 http://deb.debian.org/debian bookworm/main amd64 Packages [8792 kB]
Get:5 http://deb.debian.org/debian bookworm-updates/main amd64 Packages [13.5 kB]
Get:6 http://deb.debian.org/debian-security bookworm-security/main amd64 Packages [246 kB]
Fetched 9306 kB in 15s (631 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
curl is already the newest version (7.88.1-10+deb12u8).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
root@1c55043712d0:/# curl nginx2
<h1>Hello from nginx2!</h1>
root@1c55043712d0:/#
```

Figure 6: Answer

1.4 Question 4

- Create docker compose with:
 - Two services nginx and mysql
 - Add needed ports and environments for both services
 - nginx service is depending on mysql service

```
~ ) mkdir ~/nginx-mysql-compose
cd ~/nginx-mysql-compose
mkdir nginx
touch docker-compose.yml
echo '<h1>Welcome to Nginx!</h1>' > nginx/index.html
nginx-mysql-compose ) l
Permissions Size User Date Modified Name
drwxr-xr-x - emary 22 Feb 23:18 .
drwx----- - emary 22 Feb 23:18 ..
drwxr-xr-x - emary 22 Feb 23:18 nginx
-rw-r--r-- 0 emary 22 Feb 23:18 docker-compose.yml
```

Figure 7: Step 1

YAML file content:

```
version: "3.8"

services:
  nginx:
    image: nginx:latest
    ports:
```

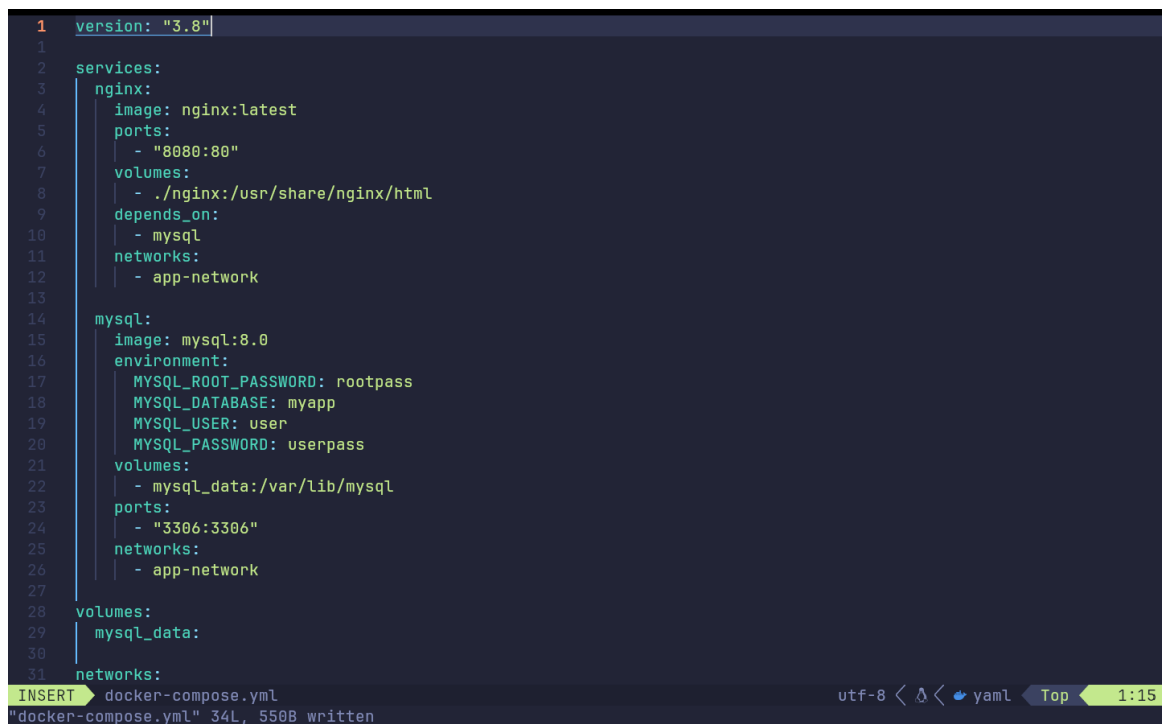
Question 4

```
- "8080:80"
volumes:
  - ./nginx:/usr/share/nginx/html
depends_on:
  - mysql
networks:
  - app-network

mysql:
  image: mysql:8.0
  environment:
    MYSQL_ROOT_PASSWORD: rootpass
    MYSQL_DATABASE: myapp
    MYSQL_USER: user
    MYSQL_PASSWORD: userpass
  volumes:
    - mysql_data:/var/lib/mysql
  ports:
    - "3306:3306"
  networks:
    - app-network

volumes:
  mysql_data:

networks:
  app-network:
    driver: bridge
```



```
1  version: "3.8"
2
3  services:
4    nginx:
5      image: nginx:latest
6      ports:
7        - "8080:80"
8      volumes:
9        - ./nginx:/usr/share/nginx/html
10     depends_on:
11       - mysql
12     networks:
13       - app-network
14
15     mysql:
16       image: mysql:8.0
17       environment:
18         MYSQL_ROOT_PASSWORD: rootpass
19         MYSQL_DATABASE: myapp
20         MYSQL_USER: user
21         MYSQL_PASSWORD: userpass
22       volumes:
23         - mysql_data:/var/lib/mysql
24       ports:
25         - "3306:3306"
26       networks:
27         - app-network
28
29     volumes:
30       mysql_data:
31
32     networks:
33       app-network:
34         driver: bridge
```

INSERT docker-compose.yml utf-8 < > yml Top 1:15
"docker-compose.yml" 34L, 550B written

Figure 8: YAML file in nvim

Question 4

```
nginx-mysql-compose > docker compose up -d 28s 3.11.9
WARN[0000] /home/emary/nginx-mysql-compose/docker-compose.yml: the attribute `version` is obsolete, it will be ignored,
please remove it to avoid potential confusion
[+] Running 12/12
✓ mysql Pulled 185.4s
  ✓ 43759093d4f6 Pull complete 95.4s
  ✓ 126d8d3809b3 Pull complete 95.6s
  ✓ 157a7408a55d Pull complete 95.7s
  ✓ c405af89949f Pull complete 96.1s
  ✓ c92147eb3382 Pull complete 96.2s
  ✓ b3ec9882b976 Pull complete 96.2s
  ✓ ad072341f26b Pull complete 107.2s
  ✓ bda7c2eca56f Pull complete 107.3s
  ✓ b6b5c46ac97d Pull complete 181.9s
  ✓ 8cd34fa224e6 Pull complete 182.0s
  ✓ b414aa75def Pull complete 182.0s
[+] Running 4/4
✓ Network nginx-mysql-compose_app-network Created 0.2s
✓ Volume "nginx-mysql-compose_mysql_data" Created 0.0s
✓ Container nginx-mysql-compose-mysql-1 Started 0.3s
✓ Container nginx-mysql-compose-nginx-1 Started 0.5s
nginx-mysql-compose > docker compose ps 3m 6s 3.11.9
WARN[0000] /home/emary/nginx-mysql-compose/docker-compose.yml: the attribute `version` is obsolete, it will be ignored,
please remove it to avoid potential confusion


| NAME                        | IMAGE        | COMMAND                  | SERVICE | CREATED       | STATUS       | PORTS                                                |
|-----------------------------|--------------|--------------------------|---------|---------------|--------------|------------------------------------------------------|
| nginx-mysql-compose-mysql-1 | mysql:8.0    | "docker-entrypoint.s..." | mysql   | 3 minutes ago | Up 3 minutes | 0.0.0.0:3306→3306/tcp, [::]:3306→3306/tcp, 33060/tcp |
| nginx-mysql-compose-nginx-1 | nginx:latest | "/docker-entrypoint..."  | nginx   | 3 minutes ago | Up 3 minutes | 0.0.0.0:8080→80/tcp, [::]:8080→80/tcp                |


```

Figure 9: Step 2