



UNIVERSITY WITH A PURPOSE

# **UNIVERSITY OF PETROLEUM & ENERGY STUDIES**

**Dehradun**

## **Application Containerization**

### **Experiment 6**

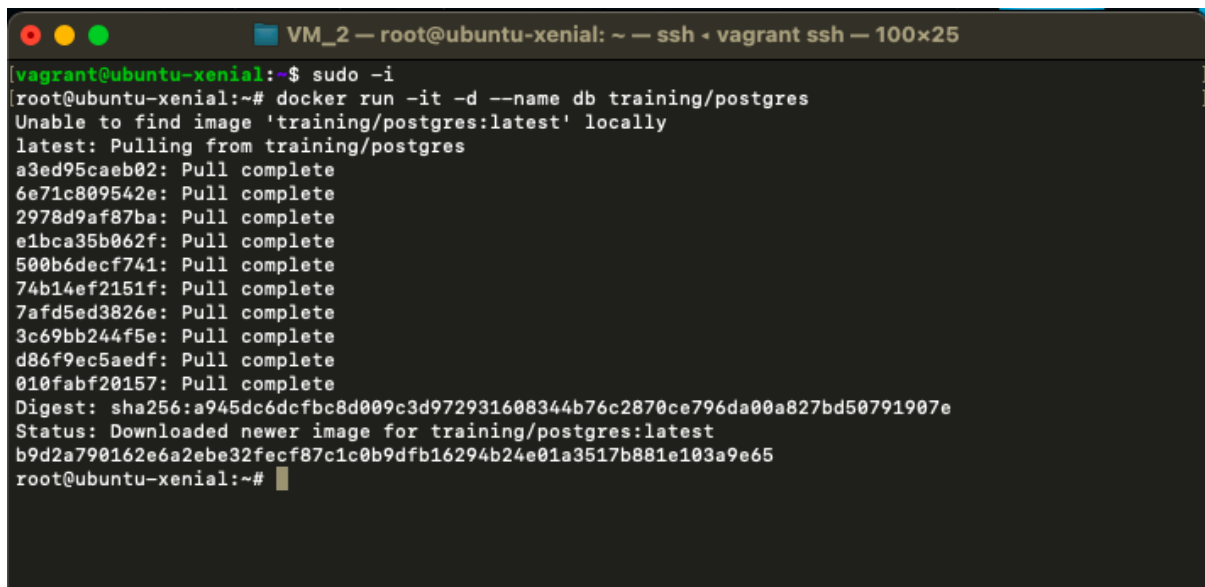
<b>Name:</b>	<b>Devashish Choudhary</b>
<b>Course:</b>	<b>B-Tech CSE DevOps (2018-22)</b>
<b>Roll number:</b>	<b>R171218122</b>
<b>Sap ID:</b>	<b>500070510</b>

# Docker Linking and Monitoring

## Creating docker containers and linking them

- Run a container in detached mode with name "db" from image "training/postgres"

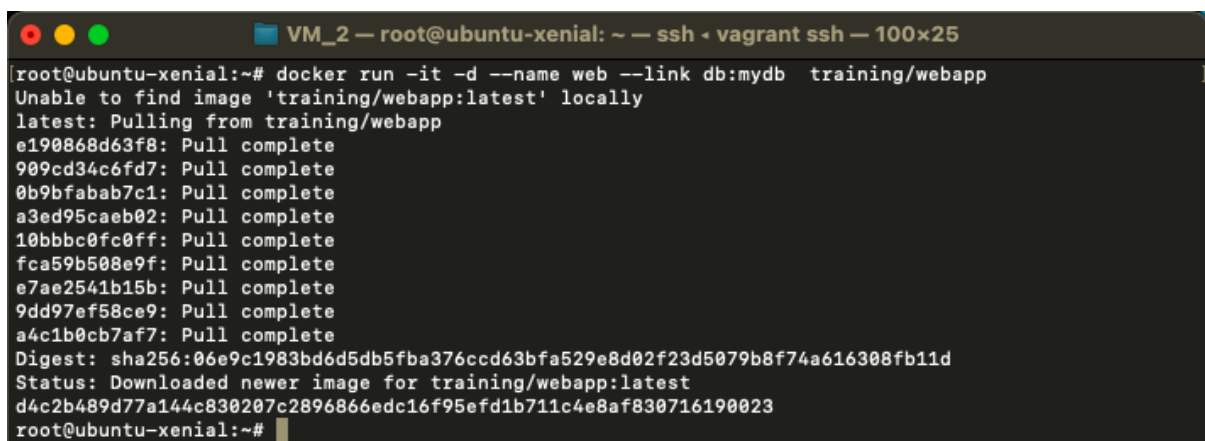
```
docker run -it -d --name db training/postgres
```



```
VM_2 — root@ubuntu-xenial: ~ — ssh • vagrant ssh — 100x25
vagrant@ubuntu-xenial:~$ sudo -i
root@ubuntu-xenial:~# docker run -it -d --name db training/postgres
Unable to find image 'training/postgres:latest' locally
latest: Pulling from training/postgres
a3ed95caeb02: Pull complete
6e71c809542e: Pull complete
2978d9af87ba: Pull complete
e1bca35b062f: Pull complete
500b66decf741: Pull complete
74b14ef2151f: Pull complete
7afd5ed3826e: Pull complete
3c69bb244f5e: Pull complete
d86f9ec5aedf: Pull complete
010fabf20157: Pull complete
Digest: sha256:a945dc6dcfbcb8d009c3d972931608344b76c2870ce796da00a827bd50791907e
Status: Downloaded newer image for training/postgres:latest
b9d2a790162e6a2ebe32fecf87c1c0b9dfb16294b24e01a3517b881e103a9e65
root@ubuntu-xenial:~#
```

- Run another container in detached mode with name "web" from image "training/webapp", link container "db" with alias "mydb" to this container and finally pass an inline command "python app.py" while running container

```
docker run -it -d --name web --link db:mydb training/webapp
python app.py
```



```
VM_2 — root@ubuntu-xenial: ~ — ssh • vagrant ssh — 100x25
root@ubuntu-xenial:~# docker run -it -d --name web --link db:mydb training/webapp
Unable to find image 'training/webapp:latest' locally
latest: Pulling from training/webapp
e190868d63f8: Pull complete
909cd34c6fd7: Pull complete
0b9bfabab7c1: Pull complete
a3ed95caeb02: Pull complete
10bbbc0fc0ff: Pull complete
fca59b508e9f: Pull complete
e7ae2541b15b: Pull complete
9dd97ef58ce9: Pull complete
a4c1b0cb7af7: Pull complete
Digest: sha256:06e9c1983bd6d5db5fba376ccd63bfa529e8d02f23d5079b8f74a616308fb11d
Status: Downloaded newer image for training/webapp:latest
d4c2b489d77a144c830207c2896866edc16f95efd1b711c4e8af830716190023
root@ubuntu-xenial:~#
```

```

root@ubuntu-xenial:~# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS
d4c2b489d77a       training/webapp    "python app.py"     58 seconds ago     Up 57 seconds
5000/tcp
b9d2a790162e       training/postgres  "su postgres -c '/us..." 19 minutes ago     Up 19 minutes
5432/tcp
root@ubuntu-xenial:~#

```

- Take a bash terminal in "web" container and Test container linking by doing a ping to "mydb" and then use the ping command to run it

```
docker exec -it web bash
```

```
ping mydb
```

```

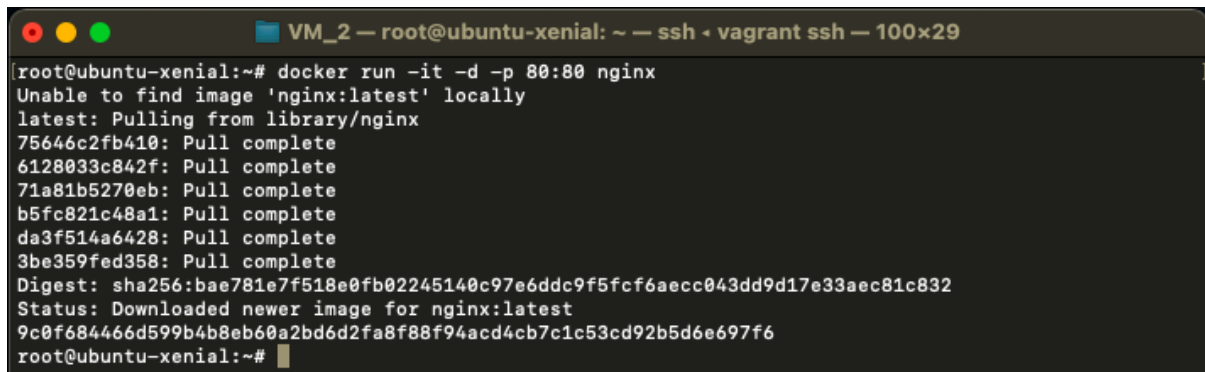
VM_2 — root@d4c2b489d77a: /opt/webapp — ssh - vagrant ssh — 100x29
root@ubuntu-xenial:~# docker exec -it web bash
root@d4c2b489d77a:/opt/webapp# ping mydb
PING mydb (172.17.0.2) 56(84) bytes of data.
64 bytes from mydb (172.17.0.2): icmp_seq=1 ttl=64 time=0.161 ms
64 bytes from mydb (172.17.0.2): icmp_seq=2 ttl=64 time=0.099 ms
64 bytes from mydb (172.17.0.2): icmp_seq=3 ttl=64 time=0.298 ms
64 bytes from mydb (172.17.0.2): icmp_seq=4 ttl=64 time=0.070 ms
64 bytes from mydb (172.17.0.2): icmp_seq=5 ttl=64 time=0.079 ms
64 bytes from mydb (172.17.0.2): icmp_seq=6 ttl=64 time=0.106 ms
64 bytes from mydb (172.17.0.2): icmp_seq=7 ttl=64 time=0.101 ms
64 bytes from mydb (172.17.0.2): icmp_seq=8 ttl=64 time=0.089 ms
64 bytes from mydb (172.17.0.2): icmp_seq=9 ttl=64 time=0.079 ms
64 bytes from mydb (172.17.0.2): icmp_seq=10 ttl=64 time=0.092 ms
64 bytes from mydb (172.17.0.2): icmp_seq=11 ttl=64 time=0.079 ms
64 bytes from mydb (172.17.0.2): icmp_seq=12 ttl=64 time=0.068 ms
64 bytes from mydb (172.17.0.2): icmp_seq=13 ttl=64 time=0.084 ms
64 bytes from mydb (172.17.0.2): icmp_seq=14 ttl=64 time=0.138 ms
64 bytes from mydb (172.17.0.2): icmp_seq=15 ttl=64 time=0.060 ms
64 bytes from mydb (172.17.0.2): icmp_seq=16 ttl=64 time=0.081 ms
64 bytes from mydb (172.17.0.2): icmp_seq=17 ttl=64 time=0.072 ms
64 bytes from mydb (172.17.0.2): icmp_seq=18 ttl=64 time=0.060 ms
64 bytes from mydb (172.17.0.2): icmp_seq=19 ttl=64 time=0.081 ms
64 bytes from mydb (172.17.0.2): icmp_seq=20 ttl=64 time=0.098 ms
64 bytes from mydb (172.17.0.2): icmp_seq=21 ttl=64 time=0.082 ms
^C
--- mydb ping statistics ---
21 packets transmitted, 21 received, 0% packet loss, time 20114ms
rtt min/avg/max/mdev = 0.060/0.098/0.298/0.052 ms
root@d4c2b489d77a:/opt/webapp#

```

## Creating docker containers and linking them

- Run a container from nginx image and map container port 80 to system port 80.

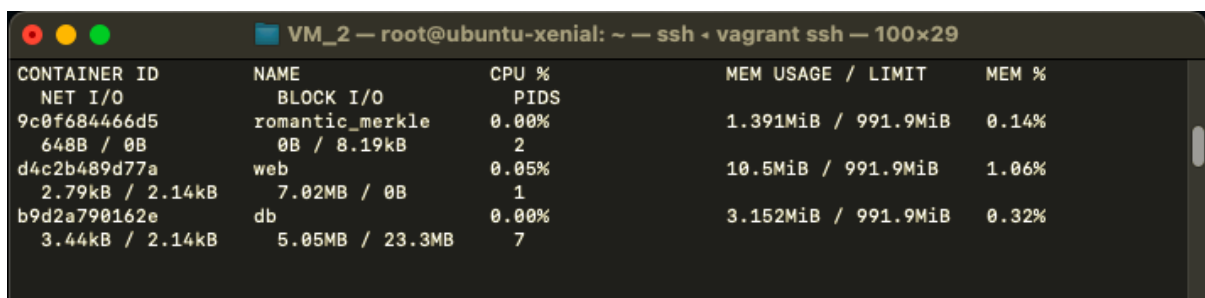
```
docker run -it -d -p 80:80 nginx
```



```
VM_2 — root@ubuntu-xenial: ~ — ssh • vagrant ssh — 100x29
root@ubuntu-xenial:~# docker run -it -d -p 80:80 nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
75646c2fb410: Pull complete
6128033c842f: Pull complete
71a81b5270eb: Pull complete
b5fc821c48a1: Pull complete
da3f514a6428: Pull complete
3be359fed358: Pull complete
Digest: sha256:bae781e7f518e0fb02245140c97e6ddc9f5fcf6aecc043dd9d17e33aec81c832
Status: Downloaded newer image for nginx:latest
9c0f684466d599b4b8eb60a2bd6d2fa8f88f94acd4cb7c1c53cd92b5d6e697f6
root@ubuntu-xenial:~#
```

- And run the below command to see the stats of running container and monitor them

```
docker stats
```



CONTAINER ID	NAME	CPU %	MEM USAGE / LIMIT	MEM %
9c0f684466d5	romantic_merkle	0.00%	1.391MiB / 991.9MiB	0.14%
648B / 0B	0B / 8.19kB	2		
d4c2b489d77a	web	0.05%	10.5MiB / 991.9MiB	1.06%
2.79kB / 2.14kB	7.02MB / 0B	1		
b9d2a790162e	db	0.00%	3.152MiB / 991.9MiB	0.32%
3.44kB / 2.14kB	5.05MB / 23.3MB	7		