

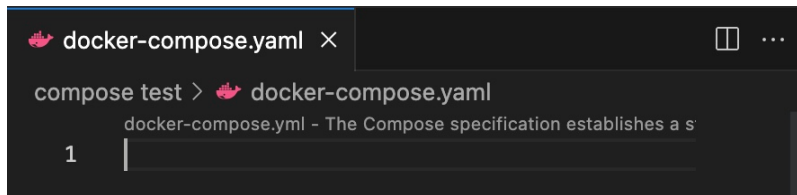
Docker Compose

Create a folder and a docker compose file

I create a project folder and cd into it by using 'mkdir compose test' and 'cd compose test'

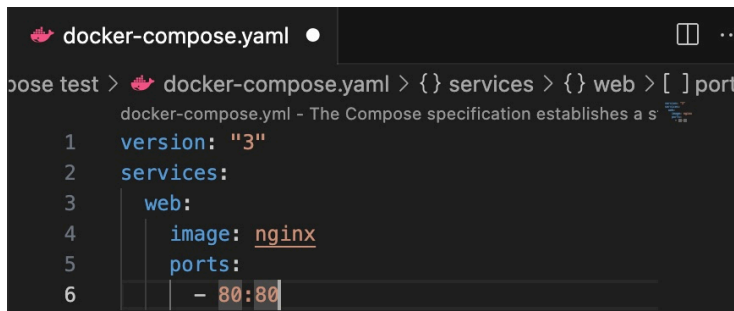
```
● muhammedumit@Umits-MacBook compose test % pwd
/Users/muhammedumit/docker1/compose test
○ muhammedumit@Umits-MacBook compose test %
```

I create a docker-compose.yaml file



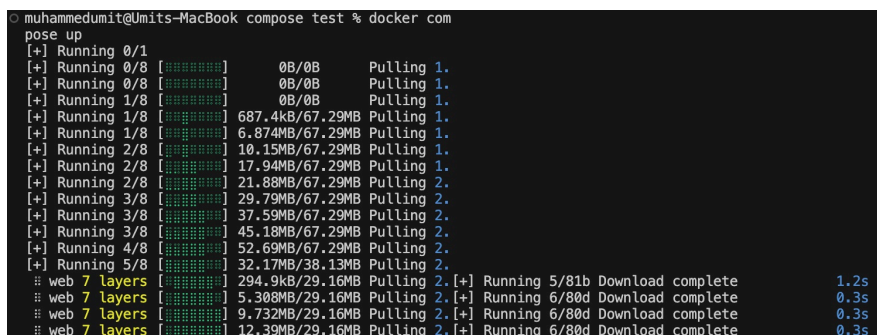
```
docker-compose.yaml
compose test > docker-compose.yaml
1 |
```

Version is 3, image Nginx, ports 80:80.



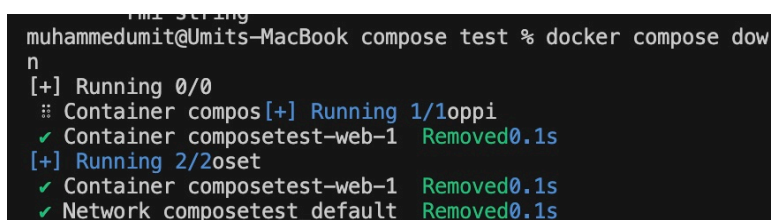
```
docker-compose.yaml
compose test > docker-compose.yaml > {} services > {} web > [ ] ports
1 version: "3"
2 services:
3   web:
4     image: nginx
5     ports:
6     - 80:80
```

After creating yaml file, I use 'docker compose up' command. Compose codes define and run multi container applications with Docker.



```
○ muhammedumit@Umits-MacBook compose test % docker compose up
pose up
[+] Running 0/1
[+] Running 0/8 [#####] 0B/0B Pulling 1.
[+] Running 0/8 [#####] 0B/0B Pulling 1.
[+] Running 1/8 [#####] 0B/0B Pulling 1.
[+] Running 1/8 [#####] 687.4kB/67.29MB Pulling 1.
[+] Running 1/8 [#####] 6.874MB/67.29MB Pulling 1.
[+] Running 2/8 [#####] 10.15MB/67.29MB Pulling 1.
[+] Running 2/8 [#####] 17.94MB/67.29MB Pulling 1.
[+] Running 2/8 [#####] 21.88MB/67.29MB Pulling 2.
[+] Running 3/8 [#####] 29.79MB/67.29MB Pulling 2.
[+] Running 3/8 [#####] 37.59MB/67.29MB Pulling 2.
[+] Running 3/8 [#####] 45.18MB/67.29MB Pulling 2.
[+] Running 4/8 [#####] 52.69MB/67.29MB Pulling 2.
[+] Running 5/8 [#####] 32.17MB/38.13MB Pulling 2.
# web 7 layers [#####] 294.9kB/29.16MB Pulling 2. [+] Running 5/81b Download complete 1.2s
# web 7 layers [#####] 5.308MB/29.16MB Pulling 2. [+] Running 6/80d Download complete 0.3s
# web 7 layers [#####] 9.732MB/29.16MB Pulling 2. [+] Running 6/80d Download complete 0.3s
# web 7 layers [#####] 12.39MB/29.16MB Pulling 2. [+] Running 6/80d Download complete 0.3s
```

I use 'docker compose down' command. This command does containers, networks stop and remove.



```
muhammedumit@Umits-MacBook compose test % docker compose down
n
[+] Running 0/0
# Container composetest-web-1 Removed0.1s
[+] Running 2/2oset
# Container composetest-web-1 Removed0.1s
# Network composetest_default Removed0.1s
```

Modify Docker Compose File

I modify docker-compose.yml file. I add another service. The services should be on the same vertical line.

Image is httpd and ports 8080:80.

```
docker-compose.yml
1 version: "3"
2 services:
3   web:
4     image: nginx
5     ports:
6       - 80:80
7   web2:
8     image: httpd
9     ports:
10      - 8080:80
```

I bring up the services again by using 'docker compose up -d' command. -d is detached mode.

```
muhammedumit@Umits-MacBook compose test % docker compose up
-d
[+] Running 6/6
  ✓ web2 5 layers [#####] 0B/0B Pulled 3.5s
  ✓ 90524f7dc01b Already exists 0.0s
  ✓ 3398ac8b1a30 Pull complete 0.4s
  ✓ d17dcb45d570 Pull complete 0.7s
  ✓ b4d7481a64dc Pull complete 1.8s
  ✓ c29613c36e2c Pull complete 1.8s
[+] Running 3/3
  ✓ Network composetest_default Created 0.0s
  ✓ Container composetest-web-1 Started 0.3s
  ✓ Container composetest-web2-1 Started 0.3s
```

In order to check the running containers 'docker ps'. 2 containers running.

```
muhammedumit@Umits-MacBook compose test % docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS
PORTS         NAMES
0a7d26d77f52   nginx     "/docker-entrypoint...." 48 seconds ago Up 47 seconds
0.0.0.0:80->80/tcp composetest-web-1
ab5b7f037fa4   httpd     "httpd-foreground"        48 seconds ago Up 47 seconds
0.0.0.0:8080->80/tcp composetest-web2-1
```

In order to check the network list 'docker network ls'. Docker compose creates its own network.

```
muhammedumit@Umits-MacBook compose test % docker network ls
NETWORK ID     NAME                        DRIVER    SCOPE
dbf49b275178   bridge                    bridge    local
fcc677789e24   composetest_default       bridge    local
4c6d4d8b205d   host                      host      local
```

I tear down the service by using 'docker compose down' command.

```
muhammedumit@Umits-MacBook compose test % docker compose down
[+] Running 3/2
✓ Container composetest-web2-1 Removed 1.1s
✓ Container composetest-web-1 Removed 0.1s
✓ Network composetest_default Removed 0.0s
```

The containers and network is gone as well.

```
muhammedumit@Umits-MacBook compose test % docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
muhammedumit@Umits-MacBook compose test % docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
muhammedumit@Umits-MacBook compose test % docker network ls
NETWORK ID     NAME      DRIVER    SCOPE
dbf49b275178   bridge   bridge    local
4c6d4d8b205d   host     host      local
b70fee996c84   mongo    bridge    local
980957a92d0c   none     null      local
```

Modify Docker Compose file for Networks

I add networks to the docker-compose.yaml file. This way, docker compose creates user-defined network.

```
docker-compose.yaml
compose test > docker-compose.yaml > {} services > {} web2 > [] networks > 0
docker-compose.yaml - The Compose specification establishes a standard for the definition of mu
1  version: "3"
2  services:
3    web:
4      image: nginx
5      networks:
6        - web-net
7      ports:
8        - 80:80
9    web2:
10     image: httpd
11     networks:
12       - web-net
13     ports:
14       - 8080:80
15  networks:
16    web-net:
```

I bring up the services by using 'docker compose up -d' command.

```
muhammedumit@Umits-MacBook compose test % docker compose up -d
[+] Running 3/3
✓ Network composetest_web-net Created 0.0s
✓ Container composetest-web2-1 Started 0.2s
✓ Container composetest-web-1 Started 0.2s
```

I check the network names by using 'docker network ls' command.

```
muhammedumit@Umits-MacBook compose test % docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS
PORTS
418b12a8f6da   nginx    "/docker-entrypoint...." 33 seconds ago Up 32 seconds
0.0.0.0:80->80/tcp    composetest-web-1
21ad949fa402   httpd    "httpd-foreground"        33 seconds ago Up 32 seconds
0.0.0.0:8080->80/tcp    composetest-web2-1
muhammedumit@Umits-MacBook compose test % docker network ls
NETWORK ID     NAME                DRIVER    SCOPE
8c622c7c8ef5   bridge              bridge    local
60f616fe2433   composetest_web-net bridge    local
4c6d4d8b205d   host                 host      local
980957a92d0c   none                 null      local
```

I check the containers by using 'docker compose ps' command.

```
muhammedumit@Umits-MacBook compose test % docker compose ps
NAME                IMAGE     COMMAND                  SERVICE
CREATED            STATUS    PORTS
composetest-web-1   nginx    "/docker-entrypoint...." web
20 hours ago       Up 19 hours    0.0.0.0:80->80/tcp
composetest-web2-1   httpd    "httpd-foreground"      web2
20 hours ago       Up 19 hours    0.0.0.0:8080->80/tcp
```

Check Network Connectivity

I connect to one of the containers by using 'docker exec -it containerID' command.

```
muhammedumit@Umits-MacBook compose test % docker exec -it composetest-web-1 sh
#
```

I used curl for making HTTP requests by using 'curl containerName' command.

```
muhammedumit@Umits-MacBook compose test % docker exec -it composetest-web-1 sh
# curl composetest-web2-1
<html><body><h1>It works!</h1></body></html>
#
```

I notice that with user defined network and docker compose, services can communicate with each other using their names.

I tear down the service by using 'docker compose down' command.

```
muhammedumit@Umits-MacBook compose test % docker compose down
[+] Running 3/3
✓ Container composetest-web-1   Removed    0.2s
✓ Container composetest-web2-1  Removed    1.2s
✓ Network composetest_web-net   Removed    0.0s
```