

Dockers

Why dockers?

- . Libraries installations issues between different computers
- . Use containers → A way to package an application with all the necessary dependencies and configurations
- . Portable artifact → easily share and move this package to any environment
- . Makes development easy and efficient and sync

What is a container ?

- . Container → putting all the packages together and use it on different machines
- . Take a container, run the container in the QA and same in the production
- . Docker help creating container images
- . Container → different layers of images
- . Container → combination of images

Docker images ?

- . Docker image → combination of all the different images
- . Run the docker image → will build an environment and then run the application

Difference between a docker image and a container?

- . Docker images are the image or artifact, move or share this artifact
- . When we run the docker image → the container will be created and then we will be able to run the app.

Difference between docker images and vm, advantages and disadvantages?

- . Difference between docker images and vm, docker images are really small
- . Os → hardware , os kernel(layer 1), app (layer 2)
- . Docker will virtualize only the app layer, vm virtualized(app layer and os kernel)
- . Docker image size smaller, vm will big cuz it virtualizes the 2 layers
- . Dockers containers run faster and stop faster
- . We can install vm on any os, so there are no compatibility issues. However, in docker there may be a compatibility issue

Commands

- . To **build** the docker image **docker build -t <image_name>** .
- . To **run** the image **docker run -p <host_port>:<local_port> <docker_image_name>**
- . To **stop** the container **docker stop <container_id>**, can **get the container id** using command: **docker ps**
- . To **see** the different images Command: **docker images**, bring different images
- . To **push** an image, from the terminal → **docker login**, type the credentials, username: mohannad29

To rename the image 2 ways:

. First way: remove the image and build another one, the other way is changing the name

. 1st way: To remove the image: `docker image rm -f <docker_image_name>`

. The naming convention to push on the hub `username/<image_name>-->`

mohannad29/welcome-app

. Then build the new image

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker build -t mohannad29/welcome-app .
[+] Building 1.5s (10/10) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 137B
=> [internal] load metadata for docker.io/library/python:3.7
=> [auth] library/python:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> transferring context: 2B
=> [internal] load build context
=> transferring context: 139B
=> [1/4] FROM docker.io/library/python:3.7@sha256:eedf63967cdb57d8214db38ce21f105003ed4e4d0358f02bedc057341bcf92a0
=> CACHED [2/4] COPY . /app
=> CACHED [3/4] WORKDIR /app
```

. The image is created, check it using `docker images`

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker images
REPOSITORY          TAG       IMAGE ID       CREATED        SIZE
mohannad29/welcome-app latest    d7c64f36defd   15 hours ago   1.15GB
docker101tutorial   latest    f58847cf6372   20 hours ago   49.5MB
alpine/git           latest    a4860b4741a4   3 days ago     89.4MB
```

. The 2nd way of changing it is by: `docker tag <the_old_name> <the_new_name>`

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker tag mohannad29/welcome-app mohannad29/welcome-app1
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker images
REPOSITORY          TAG       IMAGE ID       CREATED        SIZE
mohannad29/welcome-app1 latest    d7c64f36defd   15 hours ago   1.15GB
mohannad29/welcome-app latest    d7c64f36defd   15 hours ago   1.15GB
docker101tutorial   latest    f58847cf6372   20 hours ago   49.5MB
alpine/git           latest    a4860b4741a4   3 days ago     89.4MB
```

Pushing requirements

- . To **push** the image → the **username(mohannad29)** should be at the start
- . The push command: **docker push <the image_name>: latest** → to get the latest version of the image if there is more than one

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker push mohannad29/welcome-app:latest
The push refers to repository [docker.io/mohannad29/welcome-app]
02bff725daa7: Pushing [=>] 6.1MB/156MB
5f70bf18a086: Pushed
618c11aa6086: Pushed
45c430b35dba: Mounted from library/python
8e23f007f16f: Mounted from library/python
aef22e07d5d7: Mounted from library/python
c26432533a6a: Mounted from library/python
01d6cdeac539: Waiting
a981ddddd4c65: Waiting
f6589095d5b5: Waiting
7c85cfa30cb1: Waiting
```

Pull images:

- . First i'll remove it locally

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker images
REPOSITORY          TAG         IMAGE ID      CREATED       SIZE
mohannad29/welcome-app1  latest     d7c64f36defd  16 hours ago  1.15GB
docker101tutorial    latest     f58847cf6372  20 hours ago  49.5MB
alpine/git           latest     a4860b4741a4  3 days ago   89.4MB
```

- . Pull up command: **docker pull**

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker pull mohannad29/welcome-app:latest
latest: Pulling from mohannad29/welcome-app
Digest: sha256:c065d46ace402cd881814c112df01ee22265f255913cf750080110f3b20ffcae
Status: Downloaded newer image for mohannad29/welcome-app:latest
docker.io/mohannad29/welcome-app:latest
```

- . Then run the image: **docker run -d(for detached mode) -p <host_portal>:<container_portal> <image_name>**

```
(base) mohannadrateb@MacBook-Pro-2 Simple_app % docker run -d -p 5000:5000 mohannad29/welcome-app:latest
979be95afb93028eed40918db328fe2e5b28293171a2b69e805e87b7cf989ac6
```

localhost:5000
Hello World

Docker compose:

.Docker compose: **For multi container configurations** so they can communicate together

- . Command:**Docker compose up:** → runs the docker compose yml file
- . More than **one image** can get built up
- . More than **one container** will be running and communicating together.
- .To stop → **docker compose stop**

Docker volumes

- . Docker volumes → if **u make changes inside** the app → **instead of stopping** the container and starting it again → **use docker volumes**

1. After the push, it will be available on the hub

- General
- Tags
- Builds
- Collaborators
- Webhooks
- Settings

mohannad29/welcome-app

Updated 1 minute ago

This repository does not have a description   INCOMPLETE

This repository does not have a category   INCOMPLETE

Docker commands



Public View

To push a new tag to this repository:

```
docker push mohannad29/welcome-app:tagname
```

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
 latest		Image	---	a minute ago

[See all](#)

Automated Builds

Manually pushing images to Hub? Connect your account to GitHub or Bitbucket to automatically build and tag new images whenever your code is updated, so you can focus your time on creating.

Available with Pro, Team and Business subscriptions. [Read more about automated builds](#)

Upgrade