

Docker Assignment – 03

```
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ git branch
* main
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ ls
README.md
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker pull busybox
Using default tag: latest
[Latest: Pulling from library/busybox
[e59838ecfec5: Pull complete
Digest: sha256:e3652a00a2fabd16ce889f0aa32c38eec347b997e73bd09e69c962ec7f8732ee
Status: Downloaded newer image for busybox:latest
docker.io/library/busybox:latest
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$
```

The above image showcases that the docker image with the latest tag is downloaded via client(docker cli) commanding docker daemon to download the busybox image from dockerhub.

```
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
hello-world    latest    56433a6be3fd  3 months ago   20.3kB
busybox        latest    e3652a00a2fa  13 months ago  6.78MB
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker info
Client:
Version: 28.5.1
Context: desktop-linux
Debug Mode: false
Plugins:
ai: Docker AI Agent - Ask Gordon (Docker Inc.)
  Version: v1.9.11
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 

Server:
Containers: 1
Running: 0
Paused: 0
Stopped: 1
Images: 2
Server Version: 28.5.1
Storage Driver: overlayfs
  driver-type: io.containerd.snapshotter.v1
Logging Driver: json-file
Cgroup Driver: cgroups
Cgroup Version: 2
Plugins:
  Volume: local
```

Here we are pulling records to see how many images are present.

The Hello-world test image that was downloaded earlier and the current image pushybox.

The docker info also shows that there are 2 images downloaded to dockerdesktop. Only 1 container that basically is the test container that runs Hello-World.

```
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ 
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker run busybox echo "Hello LuluSheng! This]
  is a testfile to showcase that the text is running inside the busybox container"
Hello LuluSheng! This is a testfile to showcase that the text is running inside the busybox container
[MAC-BGITTNGER:assignment-3-intro-to-docker-c0950760 mhussain$ ]
```

Here we ran a new container for busybox and created a file with text in it.

when the container runs it shows the text output as proof that the container ran successfully.

```

MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
84f032019f03 busybox "echo 'Hello LuluShe...'" 2 minutes ago Exited (0) 2 minutes ago
504883bd09df hello-world "/hello" 38 minutes ago Exited (0) 38 minutes ago
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$

MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker ps -la
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES SIZE
84f032019f03 busybox "echo 'Hello LuluShe...'" 4 minutes ago Exited (0) 4 minutes ago priceless_difflie 4.1kB (virtual 4.6MB)
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █

```

This command – docker ps -a basically lists all the docker containers that are currently running on the dockerdesktop.

The flags in the second screenshot -l -a → pulls the latest container that was run- busybox, and prints its size with -s and -a in the previous screenshot lists all the dockercontianers.

```

MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker run -it busybox sh
/ # ls
bin dev etc home lib lib64 proc root sys tmp usr var
/ # cd home
/home # ls
/ /home # pwd
/ /home
/ /home # mkdir test
/ /home # echo "This is running inside BusyBox that we are currently running"
This is running inside BusyBox that we are currently running
/ /home # exit
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █

```

This basically is run with interactive and tty(termial shell) the flag -I basically keeps the stdin open and the flag -t keeps the terminal open

```

MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ # To remove the docker containers.
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
dfe2564fb08d busybox "sh" 14 minutes ago Exited (0) 5 minutes ago
84f032019f03 busybox "echo 'Hello LuluShe...'" 26 minutes ago Exited (0) 17 minutes ago
504883bd09df hello-world "/hello" About an hour ago Exited (0) 53 minutes ago
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker rm dfe2564fb08d 84f032019f03
dfe2564fb08d
84f032019f03
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
504883bd09df hello-world "/hello" About an hour ago Exited (0) About an hour ago
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ █

```

To remove the docker contianers. We list all and then copy the container ID's that we wish to delete and then have them removed.

PART 2:

```
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ #creating the project structure.  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ mkdir Dockerfile_project  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ mkdir html  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ cd html  
MAC-BGITTINGER:html mhussain$ vi index.html  
MAC-BGITTINGER:html mhussain$ vi index.html  
MAC-BGITTINGER:html mhussain$ cat index.html  
<!DOCTYPE html>  
<html>  
  <body>  
    <h1>CSD-4503 DevOps</h1>  
    <p>Example HTML page by <strong>YourFirstName YourLastName</strong></p>  
  </body>  
</html>  
  
MAC-BGITTINGER:html mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ cd ..  
MAC-BGITTINGER:html mhussain$ ls  
index.html  
MAC-BGITTINGER:html mhussain$ vi index.html  
MAC-BGITTINGER:html mhussain$  
MAC-BGITTINGER:html mhussain$  
MAC-BGITTINGER:html mhussain$ cat index.html  
<!DOCTYPE html>  
<html>  
  <body>  
    <h1>CSD-4503 DevOps</h1>  
    <p>Example HTML page by <strong>Murtuza Hussain Mohammed</strong></p>  
  </body>  
</html>  
  
MAC-BGITTINGER:html mhussain$
```

Here we are creating project file where we create static html page and host it on docker and run on localhost.

Changed the First Name and Last Name.

```
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ ls  
html      README.md  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ vi Dockerfile  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ ls  
Dockerfile      html      README.md  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ cat Dockerfile  
# Use official Nginx image as the base  
FROM nginx:latest  
  
# Copy your custom HTML files to the directory Nginx serves from  
COPY html /usr/share/nginx/html  
  
# Expose port 80 for web traffic  
EXPOSE 80  
  
# The default command that runs Nginx in the foreground  
CMD ["nginx", "-g", "daemon off;"]  
  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ ls  
Dockerfile      html      README.md
```

Created a Dockerfile with instructions.

here we are using the tag : latest that pulls the latest image, other options include alpine(which has the bare minimum components -NO AddOns or No Boatware- base version of NginxProxy server.

Here in this file we do Copy the current index.html file we created with Firstname and Lastname to the docker container containing Nginx Web Server /usr/share/nginx/html and it would replace any existing index.html file from there.

Notice it's the path its /usr/share/nginx/html. If it were the a separate nginx server not running on docker the path would have been /var/www/html. As it is not running as a separate server but on docker.

You cannot do scp -secure copy protocol to copy the changes of a index.html from local to a container running nginx as it is not running over SSH.

You would have to do

docker cp index.html <container_name>:/path/ and vice versa but make sure the docker container is active/running.

Also inside the docker we are exposing port 80 for webtraffic. Inside the docker on the other side you can have any other port running as it would act as port translation PAT/NAT for security.

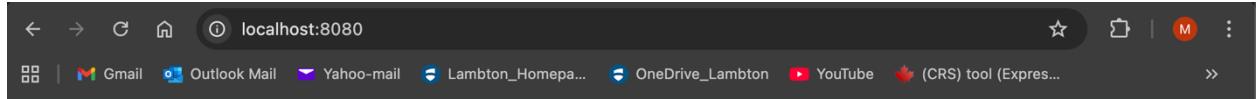
```
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker build -t my-nginx-image .  
[+] Building 5.2s (7/7) FINISHED  
=> [internal] load build definition from Dockerfile  
=> => transferring dockerfile: 331B  
=> [internal] load metadata for docker.io/library/nginx:latest  
=> [internal] load .dockerignore  
=> => transferring context: 2B  
=> [internal] load build context  
=> => transferring context: 226B  
=> [1/2] FROM docker.io/library/nginx:latest@sha256:1beed3ca46acebe9d3fb62e0067f03d05d5bfa97a00f30938a0a3580563272ad  
=> => resolve docker.io/library/nginx:latest@sha256:1beed3ca46acebe9d3fb62e0067f03d05d5bfa97a00f30938a0a3580563272ad  
=> sha256:e2f78e296d9df1dd5e2ddc81e5e758f9762fdb932e982ac6873e36692c3e3c983 1.49kB / 1.49kB  
=> sha256:52bc359bcbd74bb3d1b94cf3c6d94bcf9bd2d3e459483fb978124ceddb9ca57 1.21kB / 1.21kB  
=> sha256:9def903993e4ef9a3faa02bb893b0382768a4d466d51247bfff1ea80b119377a1 404B / 404B  
=> sha256:d921c57c6a81addac6ca451906699ca6ee8c01fd708805a928181c5370b0a30c 956B / 956B  
=> sha256:326bb9949be89766f7c6a8746f1971021a8e8c84928af00454c0f9cbe38ebf54c 628B / 628B  
=> sha256:266626526d42c7fe5f56b933db3f4c59c596b7e2c3a556ba5ec4981daf3e9d 29.97MB / 29.97MB  
=> sha256:d7ecded7702a5dbf6d0f79a71edc34b534d08f3951980e2c948fba72db3197fc 29.78MB / 29.78MB  
=> extracting sha256:266626526d42c7fe5f56b933db3f4c59c596b7e2c3a556ba5ec4981daf3e9d  
=> extracting sha256:326bb9949be89766f7c6a8746f1971021a8e8c84928af00454c0f9cbe38ebf54c  
=> extracting sha256:d921c57c6a81addac6ca451906699ca6ee8c01fd708805a928181c5370b0a30c  
=> extracting sha256:9def903993e4ef9a3faa02bb893b0382768a4d466d51247bfff1ea80b119377a1  
=> extracting sha256:52bc359bcbd74bb3d1b94cf3c6d94bcf9bd2d3e4504831b978124ceddb9ca57  
=> extracting sha256:e2f78e296d9df1dd5e2ddc81e5e758f9762fdb932e982ac6873e36692c3e3c983  
=> [2/2] COPY html /usr/share/nginx/html  
=> exporting to image  
=> => exporting layers  
=> => exporting manifest sha256:389f699d4b948f56e89caea2ba145ea47a32386cdda72a19057d3742c77432d5  
=> => exporting config sha256:de5e0de16ce7208e2a259eb068367ab3e3d120545d9d3938e2eef46f35fc53  
=> => exporting attestation manifest sha256:aac0b63a1e8a048f6c28b40b1747bf743fc660d50aa3fc30f34bc622592364b  
=> => exporting manifest list sha256:07047fd0d8dc2e6cc51ff87a940c230f5f47cef7c07bae6cd28939197f6eb6  
=> => naming to docker.io/library/my-nginx-image:latest  
=> => unpacking to docker.io/library/my-nginx-image:latest  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$
```

Image created using the command docker build -t my-nginx-image .

It selects Dockerfile from the current directory "." to build the image

```
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker run -d --rm -p 8080:80 --name my-nginx-server my-nginx-image  
47d168438cf9fbca91b991290527e8fd6699fff5531aba8adca1le81fa16bd5  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$
```

Start/run the docker container with the created image on port 8080 inside docker and 80 on localhost and run in detach mode -d runs separately.



CSD-4503 DevOps

Example HTML page by **Murtuza Hussain Mohammed**

The website open on port 80 of the localhost.

```
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker exec -it my-nginx-server sh  
|#  
# ls /usr/share/nginx/html  
cat /usr/share/nginx/html/index.html  
50x.html index.html  
# <!DOCTYPE html>  
<html>  
  <body>  
    <h1>CSD-4503 DevOps</h1>  
    <p>Example HTML page by <strong>Murtuza Hussain Mohammed</strong></p>  
  </body>  
</html>  
#  
# exit  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker stop my-nginx-server  
my-nginx-server  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$
```

Stopping docker container.

```
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$ docker ps -a  
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS          NAMES  
504883bd09df      hello-world        "/hello"           2 hours ago       Exited (0) 2 hours ago   ecstatic_hofstadter  
|MAC-BGITTINGER:assignment-3-intro-to-docker-c0950760 mhussain$
```

No container running.