

# DevOps with Docker part 1

## Exercise 1: Getting start

```
(base) abdoulaye@kone-thinkpad-t450s:~$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
b4d181a07f80: Pull complete
edb81c9bc1f5: Pull complete
b21fed559b9f: Pull complete
03e6a2452751: Pull complete
b82f7f888feb: Pull complete
5430e98eba64: Pull complete
Digest: sha256:47ae43cdfc7064d28800bc42e79a429540c7c80168e8c8952778c0d5af1c09db
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
(base) abdoulaye@kone-thinkpad-t450s:~$ docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
nginx          latest    4f380adfc10f   3 days ago    133MB
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run -d nginx
851cfd8d4fb8da731526f75be907cee23315e990c1bab950c3b1689a13829562
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run -d nginx
8aaca1ef53a8f30dc011bf549b0d9548c64d7ef50b48b6b43754e83024a14ae
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run -d nginx
6f87a15eae3558246c7697a81b3fdc7919e861b7970487bf36ca35f8d543f9f
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
6f87a15eae3    nginx    "/docker-entrypoint..." 10 seconds ago Up 8 seconds   80/tcp         wonderful_tu
8aaca1ef53a8    nginx    "/docker-entrypoint..." 15 seconds ago Up 14 seconds   80/tcp         gracious_faraday
851cfd8d4fb8    nginx    "/docker-entrypoint..." 21 seconds ago Up 19 seconds   80/tcp         recurring_booth
(base) abdoulaye@kone-thinkpad-t450s:~$ docker stop 6f 8a
6f
8a
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps -a
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS          NAMES
6f87a15eae3    nginx    "/docker-entrypoint..." About a minute ago Exited (0) 10 seconds ago
8aaca1ef53a8    nginx    "/docker-entrypoint..." About a minute ago Exited (0) 10 seconds ago
851cfd8d4fb8    nginx    "/docker-entrypoint..." About a minute ago Up About a minute    80/tcp         recurring_booth
(base) abdoulaye@kone-thinkpad-t450s:~$
```

I used the command “docker pull nginx” to download the image, then ran the following “docker run -d nginx” command three time to get three different containers . The command “docker ps” was used to the running containers. The first two containers were stopped and the list of the containers was printed.

## Exercise 1.2: Cleanup

```
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS      NAMES
6f87a15eae3    nginx     "/docker-entrypoint..." About a minute ago Exited (0) 10 seconds ago      wonderful_tu
8aaca1ef53a8    nginx     "/docker-entrypoint..." About a minute ago Exited (0) 10 seconds ago      gracious_faraday
851cfd8d4fb8    nginx     "/docker-entrypoint..." About a minute ago Up About a minute      80/tcp      recursing_booth

(base) abdoulaye@kone-thinkpad-t450s:~$ docker stop 85
85
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS      NAMES
6f87a15eae3    nginx     "/docker-entrypoint..." 4 minutes ago Exited (0) 3 minutes ago      wonderful_tu
8aaca1ef53a8    nginx     "/docker-entrypoint..." 4 minutes ago Exited (0) 3 minutes ago      gracious_faraday
851cfd8d4fb8    nginx     "/docker-entrypoint..." 4 minutes ago Exited (0) 3 seconds ago      recursing_booth

(base) abdoulaye@kone-thinkpad-t450s:~$ docker system prune
WARNING! This will remove:
- all stopped containers
- all networks not used by at least one container
- all dangling images
- all dangling build cache

Are you sure you want to continue? [y/N] y
Deleted Containers:
6f87a15eae3558246c7697a81b3f3dc7919e861b7970487bf36ca35f8d543f9f
8aaca1ef53a8fe30dc011bf549b0d9548c64d7ef50b48b6b43754e83024a14ae
851cfd8d4fb8da731526f75be907cee23315e990c1bab950c3b1689a13829562

Total reclaimed space: 3.279kB
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS      NAMES
(base) abdoulaye@kone-thinkpad-t450s:~$ docker images
REPOSITORY    TAG        IMAGE ID      CREATED        SIZE
nginx         latest    4f380adfc10f  3 days ago    133MB
(base) abdoulaye@kone-thinkpad-t450s:~$ docker rmi nginx:latest
Untagged: nginx:latest
Untagged: nginx@sha256:47ae43cdfc7064d28800bc42e79a429540c7c80168e8c8952778c0d5af1c09db
Deleted: sha256:4f380adfc10f4cd34f775ae57a17d2835385efd5251d6dfe0f246b0018fb0399
Deleted: sha256:2855bbcefcf95050e64049447e99e77efa2bfff32374e586982d69be4612467ce
Deleted: sha256:bad169ad8b30eab551acbb8cd8fbdcd824528189e3dd0cc52dd88a37bbf121cd
Deleted: sha256:36d83ebf5fec7ae1be4c431f0945f2dbe682ecd936c604daa48f17c0b50ed7
Deleted: sha256:b4c9a251dc81d52dd1cca9b4c69ca9e4db602a9a7974019f212846577f739699
Deleted: sha256:038ca5b801cea48e9f40f6ffb4cda61a2fe0b6b0f378a7434a0d39d2575a4082
Deleted: sha256:764055ebc9a7a290b64d17cf9ea550f1099c202d83795aa967428ebdf335c9f7
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps -a
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS      NAMES
(base) abdoulaye@kone-thinkpad-t450s:~$ docker images
REPOSITORY    TAG        IMAGE ID      CREATED        SIZE
(base) abdoulaye@kone-thinkpad-t450s:~$
```

## Exercise 1.3: Secret message

```
File Edit View Search Terminal Help
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run -d devopsdockeruh/simple-web-service:ubuntu
Unable to find image 'devopsdockeruh/simple-web-service:ubuntu' locally
ubuntu: Pulling from devopsdockeruh/simple-web-service
5d3b2c2d21bb: Pull complete
3fc2062ea667: Pull complete
75ad526d75b: Pull complete
965d4bbb586a: Pull complete
4f4fb70ef54: Pull complete
Digest: sha256:d44e1dce398732e18c7c2bad9416a072f719af33498302b02929d4c112e88d2a
Status: Downloaded newer image for devopsdockeruh/simple-web-service:ubuntu
0ce5d32ddb81cf2169f82646d80a1b215bfc93baccad577db12419ea70cc466d
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS      NAMES
0ce5d32ddb81  devopsdockeruh/simple-web-service:ubuntu  "/usr/src/app/server"  11 seconds ago Up 10 seconds      busy_bassi
(base) abdoulaye@kone-thinkpad-t450s:~$ docker exec -it busy_bassi bash
root@0ce5d32ddb81:/usr/src/app# tail -f ./text.log
2021-06-26 22:46:56 +0000 UTC
2021-06-26 22:46:58 +0000 UTC
Secret message is: 'You can find the source code here: https://github.com/docker-hy'
2021-06-26 22:47:00 +0000 UTC
2021-06-26 22:47:02 +0000 UTC
2021-06-26 22:47:04 +0000 UTC
2021-06-26 22:47:06 +0000 UTC
2021-06-26 22:47:08 +0000 UTC
Secret message is: 'You can find the source code here: https://github.com/docker-hy'
2021-06-26 22:47:10 +0000 UTC
2021-06-26 22:47:12 +0000 UTC
2021-06-26 22:47:14 +0000 UTC
2021-06-26 22:47:16 +0000 UTC
2021-06-26 22:47:18 +0000 UTC
Secret message is: 'You can find the source code here: https://github.com/docker-hy'
2021-06-26 22:47:20 +0000 UTC
2021-06-26 22:47:22 +0000 UTC
2021-06-26 22:47:24 +0000 UTC
^C
root@0ce5d32ddb81:/usr/src/app# exit
exit
(base) abdoulaye@kone-thinkpad-t450s:~$
```

The secret message is: “You can find the source code here: <https://github.com/docker-hy>”

## Exercise 4: Missing dependencies

```
(base) abdoulaye@kone-thlnkpad-t450s:~$ docker run --rm -it --name looper ubuntu:18.04 sh -c 'apt-get update; apt-get install curl; echo "Input website:"; read website; echo "Searching.."; sleep 1; curl h
http://$website;'
Get:1 http://archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [11.3 MB]
Get:7 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 Packages [473 kB]
Get:8 http://security.ubuntu.com/ubuntu bionic-security/main amd64 Packages [2220 kB]
Get:9 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:10 http://archive.ubuntu.com/ubuntu bionic/restricted amd64 Packages [13.5 kB]
Get:11 http://archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 Packages [33.5 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [2653 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 Packages [595 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [2188 kB]
Get:15 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 Packages [24.7 kB]
Get:16 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [1418 kB]
Get:17 http://archive.ubuntu.com/ubuntu bionic-backports/main amd64 Packages [11.3 kB]
Get:18 http://archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [11.4 kB]
Fetched 22.9 MB in 3s (6840 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ca-certificates krb5-locales libasn1-8-heimdall libcurl4 libgssapi-krb5-2 libgssapi3-heimdall libhcrypto4-heimdall libheimbase1-heimdall libheimntlm0-heimdall libhx509-5-heimdall libk5crypto3 libkeyutils1
  libkrb5-26-heimdall libkrb5-3 libkrb5support0 libldap-2.4-2 libldap-common libnghttp2-14 libpsl5 libroken18-heimdall librtmp1 libsass2-2 libsass2-modules libsass2-modules-db libsqlite3-0 libssl1.1
  libwind0-heimdall openssl publicsuffix
Suggested packages:
  krb5-doc krb5-user libsass2-modules-gssapi-mit | libsass2-modules-gssapi-heimdall libsass2-modules-ldap libsass2-modules-otp libsass2-modules-sql
The following NEW packages will be installed:
  ca-certificates curl krb5-locales libasn1-8-heimdall libcurl4 libgssapi-krb5-2 libgssapi3-heimdall libhcrypto4-heimdall libheimbase1-heimdall libheimntlm0-heimdall libhx509-5-heimdall libk5crypto3
  libkeyutils1 libkrb5-26-heimdall libkrb5-3 libkrb5support0 libldap-2.4-2 libldap-common libnghttp2-14 libpsl5 libroken18-heimdall librtmp1 libsass2-2 libsass2-modules libsass2-modules-db libsqlite3-0
  libssl1.1 libwind0-heimdall openssl publicsuffix
0 upgraded, 30 newly installed, 0 to remove and 4 not upgraded.
Need to get 4835 kB of archives.
After this operation, 14.8 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libssl1.1 amd64 1.1.1-1ubuntu2.1-18.04.9 [1301 kB]
```

```
Processing triggers for libc-bin (2.27-3ubuntu1.4) ...
Processing triggers for ca-certificates (20210119~18.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
Input website:
helsinki.fi
Searching..
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://www.helsinki.fi/">here</a>.</p>
</body></html>
(base) abdoulaye@kone-thlnkpad-t450s:~$
```

The command is : **docker run --rm -it --name looper ubuntu:18.04 sh -c 'apt-get update; apt-get install curl; echo "Input website:"; read website; echo "Searching.."; sleep 1; curl http://\$website;'**

## Exercise 5: Sizes of images

Pull both images and compare the image sizes.

“devopsdockeruh/simple-web-service:ubuntu” image (83MB) is bigger than  
“devopsdockeruh/simple-web-service:alpine” image (15.7MB).

```
File Edit View Search Terminal Help
(base) abdoulaye@kone-thinkpad-t450s:~$ docker pull devopsdockeruh/simple-web-service:ubuntu
ubuntu: Pulling from devopsdockeruh/simple-web-service
5d3b2c2d21bb: Pull complete
3fc2062ea667: Pull complete
75adf526d75b: Pull complete
965d4bbb586a: Pull complete
4f4fb700ef54: Pull complete
Digest: sha256:d44e1dce398732e18c7c2bad9416a072f719af33498302b02929d4c112e88d2a
Status: Downloaded newer image for devopsdockeruh/simple-web-service:ubuntu
docker.io/devopsdockeruh/simple-web-service:ubuntu
(base) abdoulaye@kone-thinkpad-t450s:~$ docker pull devopsdockeruh/simple-web-service:alpine
alpine: Pulling from devopsdockeruh/simple-web-service
ba3557a56b15: Pull complete
1dace236434b: Pull complete
4f4fb700ef54: Pull complete
Digest: sha256:dd4d367476f86b7d7579d3379fe446ae5dfce25480903fb0966fc2e5257e0543
Status: Downloaded newer image for devopsdockeruh/simple-web-service:alpine
docker.io/devopsdockeruh/simple-web-service:alpine
(base) abdoulaye@kone-thinkpad-t450s:~$ docker images
REPOSITORY              TAG          IMAGE ID          CREATED          SIZE
ubuntu                  18.04       7d0d8fa37224     10 days ago     63.1MB
devopsdockeruh/simple-web-service  ubuntu      4e3362e907d5     3 months ago    83MB
devopsdockeruh/simple-web-service  alpine      fd312adc88e0     3 months ago    15.7MB
(base) abdoulaye@kone-thinkpad-t450s:~$
```

Go inside the alpine container and make sure the secret message functionality is the same.

```
File Edit View Search Terminal Help
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run -d devopsdockeruh/simple-web-service:alpine
60be5b10a53b581ae416daf1263708242ff8094ca1b312a2f48ad47ad46a12d9
(base) abdoulaye@kone-thinkpad-t450s:~$ docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS          NAMES
60be5b10a53b   devopsdockeruh/simple-web-service:alpine  "/usr/src/app/server"   13 seconds ago Up 12 seconds          reverent_joliot
(base) abdoulaye@kone-thinkpad-t450s:~$ docker exec -it reverent_joliot sh
/usr/src/app # ls -la
.
..
server      text.log
/usr/src/app # tail -f ./text.log
Secret message is: 'You can find the source code here: https://github.com/docker-hy'
2021-06-28 22:51:27 +0000 UTC
2021-06-28 22:51:29 +0000 UTC
2021-06-28 22:51:31 +0000 UTC
2021-06-28 22:51:33 +0000 UTC
2021-06-28 22:51:35 +0000 UTC
Secret message is: 'You can find the source code here: https://github.com/docker-hy'
2021-06-28 22:51:37 +0000 UTC
2021-06-28 22:51:39 +0000 UTC
2021-06-28 22:51:41 +0000 UTC
2021-06-28 22:51:43 +0000 UTC
^C
/usr/src/app # exit
(base) abdoulaye@kone-thinkpad-t450s:~$
```

According to the figure above the secret message is the same.

## Exercise 6: Hello Docker Hub

Input that will get the application to answer a “secret message” is “basics”

```
File Edit View Search Terminal Tabs Help
abdoulaye@kone-thinkpad-t450s: ~
FROM node:alpine
This is the readme, use input "basics" to complete this exercise.
```

The secret message is: “This is the secret message”

```
File Edit View Search Terminal Tabs Help
abdoulaye@kone-thinkpad-t450s: ~
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run -it devopsdockeruh/pull_exercise
Unable to find image 'devopsdockeruh/pull_exercise:latest' locally
latest: Pulling from devopsdockeruh/pull_exercise
8e402f1a9c57: Pull complete
5e2195587d10: Pull complete
6f595b2fc66d: Pull complete
165f32bf4e94: Pull complete
67c4f504c224: Pull complete
Digest: sha256:7c0635934049afb9ca0481fb6a58b16100f990a0d62c8665b9cfb5c9ada8a99f
Status: Downloaded newer image for devopsdockeruh/pull_exercise:latest
Give me the password: basics
You found the correct password. Secret message is:
"This is the secret message"
(base) abdoulaye@kone-thinkpad-t450s:~$
```

Command(s) given to get the secret message as my answer are: CMD [“node”, “index.js”]

```
abdoulaye@kone-thinkpad-t450s: ~
FROM node:alpine
WORKDIR /usr/app
COPY . .
CMD ["node", "index.js"]
~
```

## Exercise 7: Two lines Dockerfile

The command used is: CMD ["server"]

```
(base) abdoulaye@kone-thinkpad-t450s:~/TwoLineDockerfile$ docker build . -t web-server
Sending build context to Docker daemon 2.048kB
Step 1/2 : FROM devopsdockeruh/simple-web-service:alpine
alpine: Pulling from devopsdockeruh/simple-web-service
ba3557a56b15: Pull complete
1dace236434b: Pull complete
4f4fb700ef54: Pull complete
Digest: sha256:dd4d367476f86b7d7579d3379fe446ae5dfce25480903fb0966fc2e5257e0543
Status: Downloaded newer image for devopsdockeruh/simple-web-service:alpine
--> fd312adc88e0
Step 2/2 : CMD ["server"]
--> Running in 8316c91d4539
Removing intermediate container 8316c91d4539
--> 74eba3e633f8
Successfully built 74eba3e633f8
Successfully tagged web-server:latest
(base) abdoulaye@kone-thinkpad-t450s:~/TwoLineDockerfile$ docker images
REPOSITORY          TAG         IMAGE ID      CREATED        SIZE
web-server           latest      74eba3e633f8  7 seconds ago  15.7MB
devopsdockeruh/simple-web-service  alpine     fd312adc88e0  3 months ago  15.7MB
(base) abdoulaye@kone-thinkpad-t450s:~/TwoLineDockerfile$ docker run web-server
[GIN-debug] [WARNING] Creating an Engine instance with the Logger and Recovery middleware already attached.

[GIN-debug] [WARNING] Running in "debug" mode. Switch to "release" mode in production.
- using env:   export GIN_MODE=release
- using code:  gin.SetMode(gin.ReleaseMode)

[GIN-debug] GET    /*path      --> server.Start.func1 (3 handlers)
[GIN-debug] Listening and serving HTTP on :8080
```

## Dockerfile

```
Open  [icon] *dockerfile
~/TwoLineDockerfile

FROM devopsdockeruh/simple-web-service:alpine

CMD ["server"]
```

## Exercise 8: Image for script

```
curler.sh x

echo "Input website:"; read website; echo "Searching.."; sleep 1; curl http://$website;
```



```

File Edit View Search Terminal Help
(base) abdoulaye@kone-thinkpad-t450s:~$ cd ImageForScript/
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ gedit curler.sh
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ ls
curler.sh
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ chmod +x curler.sh
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ ./curler.sh
Input website:
helsinki.fi
Searching..
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://www.helsinki.fi/">here</a>.</p>
</body></html>
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$

```

Creating a script and running it before using dockerfile.

```

Open Dockerfile
FROM ubuntu:18.04
COPY curler.sh .
RUN apt-get update; apt-get install -y curl;|
CMD ./curler.sh

```

```

(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ gedit Dockerfile
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ docker build . -t curler
Sending build context to Docker daemon 3.072kB
Step 1/4 : FROM ubuntu:18.04
18.04: Pulling from library/ubuntu
25fa05cd42bd: Pull complete
Digest: sha256:139b3846cee2e63de9ced83cee7023a2d95763ee2573e5b0ab6dea9dfbd4db8f
Status: Downloaded newer image for ubuntu:18.04
--> 7d0d8fa37224
Step 2/4 : COPY curler.sh .
--> 3617019a1d3a
Step 3/4 : RUN apt-get update; apt-get install -y curl;
--> Running in a0834a8e0c67
Get:1 http://archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic/multiverse amd64 Packages [186 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/main amd64 Packages [1344 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/universe amd64 Packages [5325 kB]

```

```

Removing intermediate container a0834a8e0c67
--> 12e5c7c25f4b
Step 4/4 : CMD ./curler.sh
--> Running in ce5a904c2c1a
Removing intermediate container ce5a904c2c1a
--> e128bcf6445c
Successfully built e128bcf6445c
Successfully tagged curler:latest
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$ docker run -it curler
Input website:
helsinki.fi
Searching..
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>301 Moved Permanently</title>
</head><body>
<h1>Moved Permanently</h1>
<p>The document has moved <a href="https://www.helsinki.fi/">here</a>.</p>
</body></html>
(base) abdoulaye@kone-thinkpad-t450s:~/ImageForScript$

```

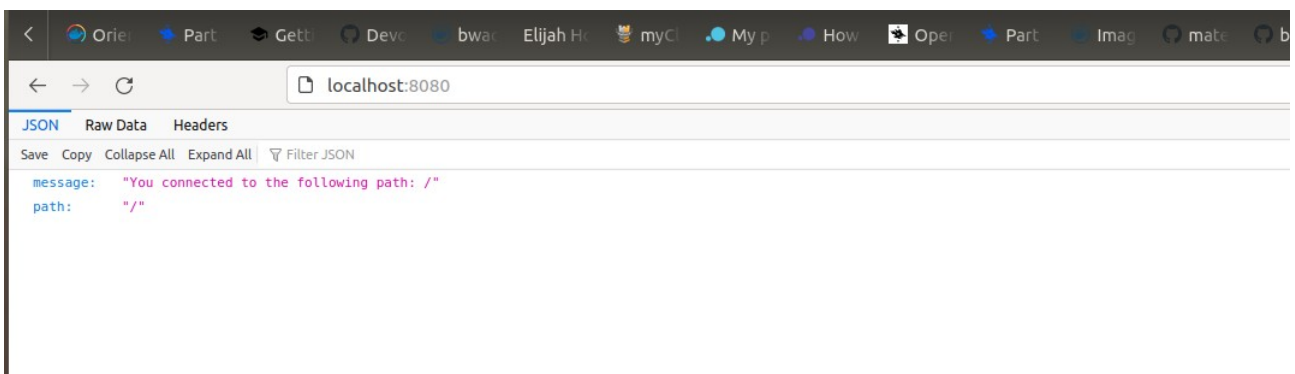
Dockerfile file and docker image were created and the command “docker run -it culer” was used to run the container.

## Exercise 9: Volumes

```
(base) abdoulaye@kone-thinkpad-t450s:~$ touch /tmp/log.txt
(base) abdoulaye@kone-thinkpad-t450s:~$ cd /tmp/
(base) abdoulaye@kone-thinkpad-t450s:/tmp$ docker run -v ${pwd}/tmp/log.txt:/usr/src/app/text.log devopsdockeruh/simple-web-service
Starting log output
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
Wrote text to /usr/src/app/text.log
^CWrote text to /usr/src/app/text.log
(base) abdoulaye@kone-thinkpad-t450s:/tmp$ more log.txt
2021-07-19 21:09:38 +0000 UTC
2021-07-19 21:09:40 +0000 UTC
2021-07-19 21:09:42 +0000 UTC
2021-07-19 21:09:44 +0000 UTC
2021-07-19 21:09:46 +0000 UTC
Secret message is: 'You can find the source code here: https://github.com/docker-hy'
2021-07-19 21:09:48 +0000 UTC
2021-07-19 21:09:50 +0000 UTC
2021-07-19 21:09:52 +0000 UTC
(base) abdoulaye@kone-thinkpad-t450s:/tmp$
```

## Exercise 10: Ports open

```
(base) abdoulaye@kone-thinkpad-t450s:~$ docker run --rm -d -it -p 8080:8080 devopsdockeruh/simple-web-service sh -c 'server'
87936445d2ffea13e7326af8ffa9c6564c27f4072daa31cdf6d24abfe08046b
(base) abdoulaye@kone-thinkpad-t450s:~$ curl localhost:8080
{"message":"You connected to the following path: /","path":"/"}(base) abdoulaye@kone-thinkpad-t450s:~$
```





## Exercise 11: Spring

```
Open  Dockerfile
~/Spring/material-applications/spring-example-project

FROM openjdk:11

WORKDIR /src/usr/app/

COPY . .

RUN ./mvnw package

CMD ["java", "-jar", "./target/docker-example-1.1.3.jar"]

EXPOSE 8080
```

```
(base) abdoulaye@kone-thinkpad-t450s:~$ mkdir Spring
(base) abdoulaye@kone-thinkpad-t450s:~$ cd Spring/
(base) abdoulaye@kone-thinkpad-t450s:~/Spring$ git clone https://github.com/docker-hy/material-applications.git
Cloning into 'material-applications'...
remote: Enumerating objects: 526, done.
remote: Counting objects: 100% (526/526), done.
remote: Compressing objects: 100% (333/333), done.
remote: Total 526 (delta 169), reused 477 (delta 122), pack-reused 0
Receiving objects: 100% (526/526), 486.75 KiB | 2.91 MiB/s, done.
Resolving deltas: 100% (169/169), done.
(base) abdoulaye@kone-thinkpad-t450s:~/Spring$ ls
material-applications
(base) abdoulaye@kone-thinkpad-t450s:~/Spring$ cd material-applications/spring-example-project/
(base) abdoulaye@kone-thinkpad-t450s:~/Spring/material-applications/spring-example-project$ ls -la
.  .. .gitignore .mvn mvnw mvnw.cmd pom.xml README.md src
(base) abdoulaye@kone-thinkpad-t450s:~/Spring/material-applications/spring-example-project$ gedit Dockerfile
(base) abdoulaye@kone-thinkpad-t450s:~/Spring/material-applications/spring-example-project$
```

```
(base) abdoulaye@kone-thinkpad-t450s:~/Spring/material-applications/spring-example-project$ gedit Dockerfile
(base) abdoulaye@kone-thinkpad-t450s:~/Spring/material-applications/spring-example-project$ docker build . -t spring
Sending build context to Docker daemon 44.54kB
Step 1/6 : FROM openjdk:11
11: Pulling from library/openjdk
sha256:405f1... Already exists
```

```
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 43.891 s
[INFO] Finished at: 2021-07-19T22:27:04Z
[INFO] -----
Removing intermediate container 2cb2477bc37e
--> b4952fbf619f
Step 5/6 : CMD ["java", "-jar", "./target/docker-example-1.1.3.jar"]
--> Running in e51cfddb37be
Removing intermediate container e51cfddb37be
--> 775b79589c21
Step 6/6 : EXPOSE 8080
--> Running in c185358b5a5d
Removing intermediate container c185358b5a5d
--> 911d8565f2c2
Successfully built 911d8565f2c2
Successfully tagged spring:latest
(base) abdoulaye@kone-thinkpad-t450s:~/Spring/material-applications/spring-example-project$
```

```
(base) abdoulajekone-thinkpad-T450s:/Spring/material-applications/spring-example-project$ docker run -p 8080:8080 spring
```

```
=====
:: Spring Boot ::      (v2.1.3.RELEASE)
```

```
2021-07-19 22:31:04.292 INFO 1 --- [arted by root in /src/usr/app]   main] c.d.dockerexample.DemoApplication : Starting DemoApplication v1.1.3 on 93e5148d9df0 with PID 1 (/src/usr/app/target/docker-example-1.1.3.jar st
2021-07-19 22:31:04.298 INFO 1 --- [main] c.d.dockerexample.DemoApplication : No active profile set, falling back to default profiles: default
2021-07-19 22:31:06.324 INFO 1 --- [main] o.s.b.w.embedded.Tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-07-19 22:31:06.366 INFO 1 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2021-07-19 22:31:06.387 INFO 1 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.16]
2021-07-19 22:31:06.410 INFO 1 --- [main] o.a.catalina.core.AprLifecycleListener : The APR based Apache Tomcat Native library which allows optimal performance in production environments was
```

## Exercise 12: Hello, frontend

```
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$ docker build . -t frontend
Sending build context to Docker daemon 729.1kB
Step 1/9 : FROM ubuntu:18.04
--> 7d0d8fa37224
Step 2/9 : WORKDIR /usr/src/app
--> Running in edede94b2aa3
Removing intermediate container edede94b2aa3
--> da13552c18db
Step 3/9 : COPY . .
--> 543787ce7a88
Step 4/9 : RUN apt-get update && apt-get install curl -y
```

```

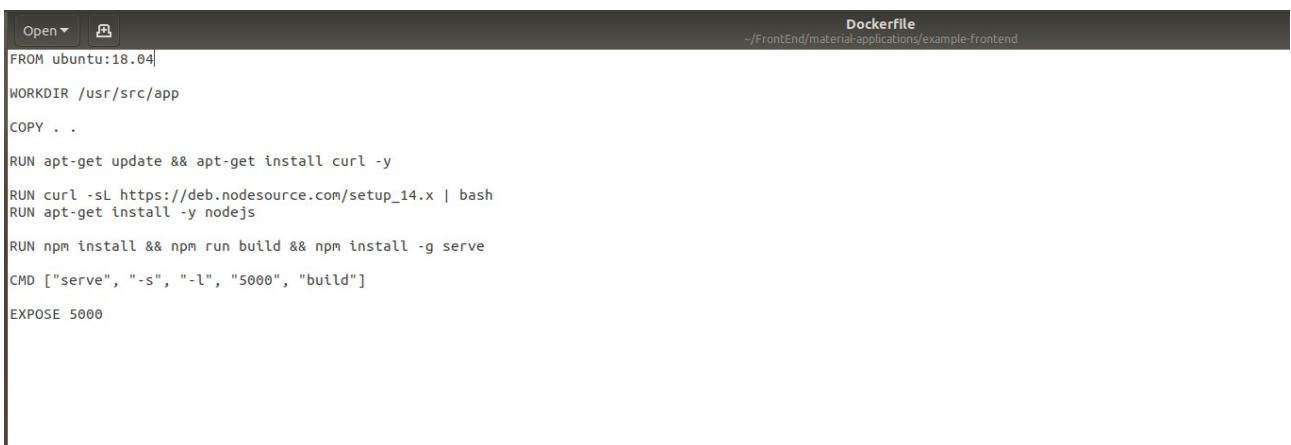
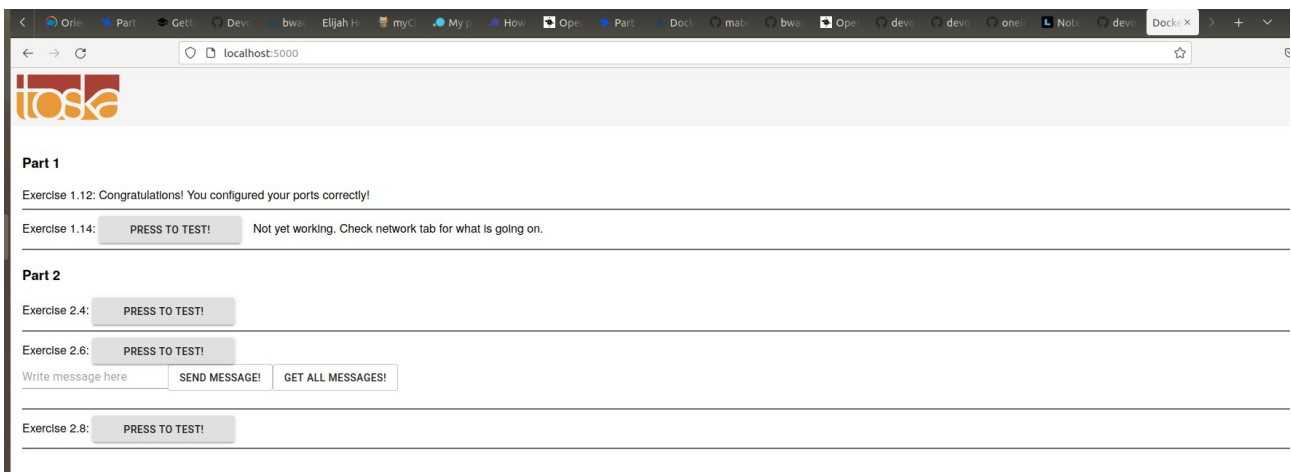
/usr/bin/serve -> /usr/lib/node_modules/serve/bin/serve.js
+ serve@12.0.0
added 88 packages from 42 contributors in 5.508s
Removing intermediate container 714d302c6940
---> 1e02072c79ad
Step 8/9 : CMD ["serve", "-s", "-l", "5000", "build"]
---> Running in 108146aa7037
Removing intermediate container 108146aa7037
---> 8af381b9a910
Step 9/9 : EXPOSE 5000
---> Running in 5868306a3f97
Removing intermediate container 5868306a3f97
---> 08646f73eba3
Successfully built 08646f73eba3
Successfully tagged frontend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$

```

```

Successfully tagged frontend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$ docker run -d -p 5000:5000 frontend
dd7d1a5f01669adfd00618f940945a88eb1ad11e56e54a75d4200f9cb0d2d184
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$

```

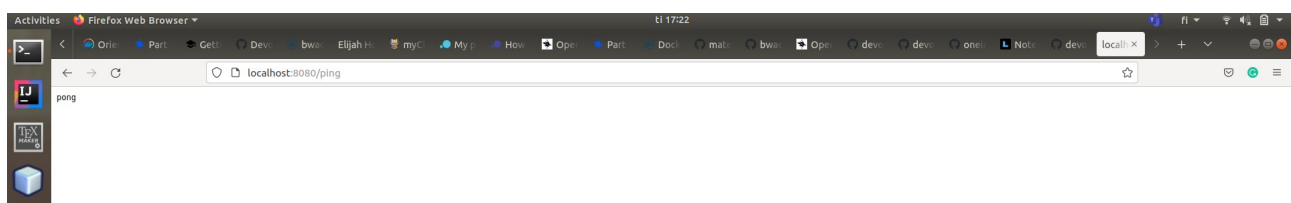


## Exercise 13: Hello, backend

```
File Edit View Search Terminal Help
abdoulaye@kone-thinkpad-t450s: ~/BackEnd/material-applications/example-backend
(base) abdoulaye@kone-thinkpad-t450s:~$ mkdir BackEnd
(base) abdoulaye@kone-thinkpad-t450s:~$ cd BackEnd/
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd$ git clone https://github.com/docker-hy/material-applications.git
Cloning into 'material-applications'...
remote: Enumerating objects: 526, done.
remote: Counting objects: 100% (526/526), done.
remote: Compressing objects: 100% (333/333), done.
remote: Total 526 (delta 169), reused 477 (delta 122), pack-reused 0
Receiving objects: 100% (526/526), 486.75 KiB | 3.29 MiB/s, done.
Resolving deltas: 100% (169/169), done.
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd$ ls
material-applications
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd$ ls material-applications/
example-application-cypress  node-dev-env  scaling-exercise
example-backend             rails-example-project  simple-web-service
example-frontend            README.md      spring-example-project
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd$ cd material-applications/example-backend/
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$ ls -la
.. app.go cache controller .gitignore go.sum README.md
.. app_test.go common .dockerignore go.mod pgconnection router
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$ gedit Dockerfile
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$ docker build . -t backend
```

```
Removing intermediate container cca77f2fb5a8
---> 699ba2646191
Step 11/13 : RUN go test ./...
---> Running in 05d0c934de95
ok      server    0.007s
?       server/cache    [no test files]
ok      server/common  0.002s
?       server/controller [no test files]
?       server/pgconnection [no test files]
?       server/router   [no test files]
Removing intermediate container 05d0c934de95
---> 00d3d874ff26
Step 12/13 : CMD ./server
---> Running in 039bc24e5a46
Removing intermediate container 039bc24e5a46
---> a860818ac56a
Step 13/13 : EXPOSE 8080
---> Running in 3fbf9c6b7a2f
Removing intermediate container 3fbf9c6b7a2f
---> 9d31ca4c26b1
Successfully built 9d31ca4c26b1
Successfully tagged backend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$
```

```
Removing intermediate container 3fbf9c6b7a2f
---> 9d31ca4c26b1
Successfully built 9d31ca4c26b1
Successfully tagged backend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$ docker run -d -it -p 8080:8080 backend
842033e5e4c01a626e105be6b25f3bde327b4b708744a8155c0f47351d38e86a
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$
```







## Exercise 14: Environment

```

(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd$ cd material-applications/example-backend/
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$ docker build . -t backend
Sending build context to Docker daemon 42.5kB
Step 1/14 : FROM ubuntu:18.04
--> 7d0d8fa37224
Step 2/14 : WORKDIR /usr/src/app
--> Using cache

```

```

Removing intermediate container a83287b9e6c0
--> a6f8c09986f9
Step 12/14 : RUN go test ./...
--> Running in ea373d7c053e
ok      server 0.007s
?       server/cache [no test files]
ok      server/common 0.007s
?       server/controller [no test files]
?       server/pgconnection [no test files]
?       server/router [no test files]
Removing intermediate container ea373d7c053e
--> 93adb4810e25
Step 13/14 : CMD ./server
--> Running in 9e3c07c77872
Removing intermediate container 9e3c07c77872
--> 4f4a2d0e7c28
Step 14/14 : EXPOSE 8080
--> Running in 54b4fccb9d44
Removing intermediate container 54b4fccb9d44
--> eca9ef996da0
Successfully built eca9ef996da0
Successfully tagged backend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$

```

```

(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$ docker run -d -p 8080:8080 backend
aa47414d7be1243a29cfea503786b66ef253615d52aadacd178e032b9df851bf
(base) abdoulaye@kone-thinkpad-t450s:~/BackEnd/material-applications/example-backend$

```

```
Activities Text Editor ti 17:59
Dockerfile
~/Backend/material-applications/example-backend

FROM ubuntu:18.04

WORKDIR /usr/src/app

COPY . .

RUN apt-get update && apt-get install curl gcc -y
RUN rm -rf /usr/local/go
RUN curl -L -O -# https://golang.org/dl/go1.16.3.linux-amd64.tar.gz
RUN tar -xzf go1.16.3.linux-amd64.tar.gz -C /usr/local/

ENV PATH=$PATH:/usr/local/go/bin
ENV REQUEST_ORIGIN http://localhost:5000

RUN go version
RUN go build
RUN go test ./...

CMD ./server

EXPOSE 8080
```

## Backend dockerfile.

```
(base) abdoulaye@kone-thinkpad-t450s:~$ cd F
Firefox_Dev_Ex/ Frontend/ FrontEnd/ FULLSTACK/
(base) abdoulaye@kone-thinkpad-t450s:~$ cd FrontEnd/
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd$ cd material-applications/example-frontend/
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$ docker build . -t frontend
Sending build context to Docker daemon 729.1kB
Step 1/10 : FROM ubuntu:18.04
--> 7d0d8fa37224
Step 2/10 : WORKDIR /usr/src/app
--> Using cache
--> da13552c18db
Step 3/10 : COPY . .
--> Using cache
--> 543787ce7a88
Step 4/10 : ENV REACT_APP_BACKEND_URL=http://localhost:8080/
--> Running in e650a67cb1ae
Removing intermediate container e650a67cb1ae
--> 0dbba2af97ea
```

```
Find out more about deployment here:
https://cra.link/deployment

/usr/bin/serve -> /usr/lib/node_modules/serve/bin/serve.js
+ serve@12.0.0
added 88 packages from 42 contributors in 3.879s
Removing intermediate container 298cae4c2e8d
--> 76b3ecfd1ac1
Step 9/10 : CMD ["serve", "-s", "-l", "5000", "build"]
--> Running in 5e58d3e8c440
Removing intermediate container 5e58d3e8c440
--> 1d7329acab49
Step 10/10 : EXPOSE 5000
--> Running in 959378cc9a2c
Removing intermediate container 959378cc9a2c
--> a9baebb93cf9
Successfully built a9baebb93cf9
Successfully tagged frontend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$
```

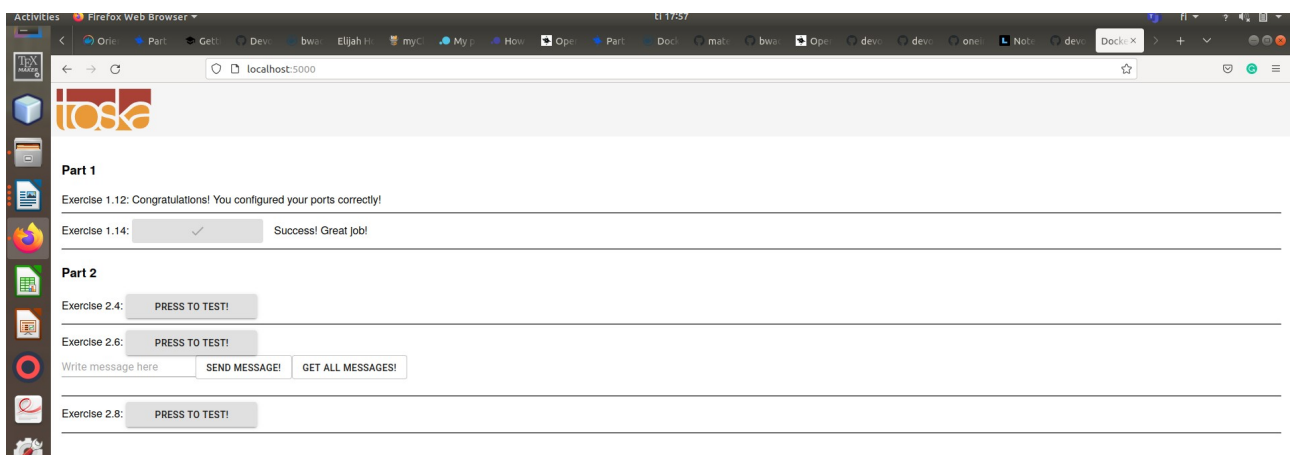
```
--> a9baebb93cf9
Successfully built a9baebb93cf9
Successfully tagged frontend:latest
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$ docker run -d -p 5000:5000 frontend
56692cd0765d3e27a72937941ed565f28390735463e008bdd7aec0cd7914878b
(base) abdoulaye@kone-thinkpad-t450s:~/FrontEnd/material-applications/example-frontend$
```



```
Activities Text Editor ti 17:57
Dockerfile
~/frontend/material-applications/example-frontend
Save

FROM ubuntu:18.04
WORKDIR /usr/src/app
COPY . .
ENV REACT_APP_BACKEND_URL=http://localhost:8080/
RUN apt-get update && apt-get install curl -y
RUN curl -sL https://deb.nodesource.com/setup_14.x | bash
RUN apt-get install -y nodejs
RUN npm install && npm run build && npm install -g serve
CMD ["serve", "-s", "-l", "5000", "build"]
EXPOSE 5000
```

## Frontend dockerfile.



## Exercise 15: Homework

<https://hub.docker.com/repository/docker/bwadjass/lokki-server>

<https://github.com/bwadjass/lokki-server#readme>

dockerfile

```
FROM ubuntu:18.04

WORKDIR /usr/src/app

COPY . .

RUN apt-get update && apt-get install curl -y

RUN curl -sL https://deb.nodesource.com/setup_14.x | bash
RUN apt-get install -y nodejs

RUN apt-get update && apt-get install redis-server
RUN nano /etc/redis/redis.conf
ENV supervised=systemd

RUN npm install && npm run build && npm install -g server

RUN node lokki-server.js

RUN NODE_ENV=production node lokki-server.js

CMD ["NODE_ENV=production", "node", "lokki-server.js"]
```