# КИиИ - Домашна 2: Docker

## Chapter 3

#### docker info

```
S docker info

Cilent:

Version: 27.3.1
Context: desktop-linux

Debug Mode: false

Plugins:
ai: Ask Gordon - Docker Agent (Docker Inc.)

Version: v0.1.0

Path: C:\Program Files\Docker\Cli-plugins\docker-ai.exe

buildx: Docker Buildx (Docker Inc.)

Version: v0.1.8

Version: v0.18.0-desktop.2

Path: C:\Program Files\Docker\Cli-plugins\docker-buildx.exe

compose: Docker Compose (Docker Inc.)

Version: v2.30.3-desktop.1

Path: C:\Program Files\Docker\cli-plugins\docker-compose.exe

debug: Get a shell into any image or container (Docker Inc.)

Version: v0.0.37

Path: C:\Program Files\Docker\Cli-plugins\docker-debug.exe

desktop: Docker Desktop commands (Alpha) (Docker Inc.)

Version: v0.0.15

Path: C:\Program Files\Docker\Cli-plugins\docker-desktop.exe

dev: Docker Dev Environments (Docker Inc.)

Version: v0.1.2

Path: C:\Program Files\Docker\cli-plugins\docker-dev.exe

extension: Manages Docker extensions (Docker Inc.)

Version: v0.2.27

Path: C:\Program Files\Docker\cli-plugins\docker-extension.exe

feedback: Provide feedback, right in your terminal! (Docker Inc.)

Version: v1.0.5

Path: C:\Program Files\Docker\cli-plugins\docker-extension.exe

feedback: Provide feedback, right in your terminal! (Docker Inc.)

Version: v1.4.0

Path: C:\Program Files\Docker\cli-plugins\docker-feedback.exe

init: Creates Docker-related starter files for your project (Docker Inc.)

Version: v1.4.0

Path: C:\Program Files\Docker\cli-plugins\docker-feedback.exe

init: Creates Docker-Felated starter files for your project (Docker Inc.)

Version: v1.4.0

Path: C:\Program Files\Docker\cli-plugins\docker-feedback.exe

init: Creates Docker-Felated starter files for your project (Docker Inc.)

Version: v1.4.0

Path: C:\Program Files\Docker\cli-plugins\docker-sbom.exe

sbom: View the packaged-based software Bill Of Materials (SBOM) for an image (Anchore Inc.)

Version: v1.15.0

Path: C:\Program Files\Docker\cli-plugins\docker-sbom.exe
```

```
Server:
Containers: 3
Running: 2
Paused: 0
Stopped: 1
Images: 3
Server Version: 27.3.1
Storage Driver: overlay2
Backing Filesystem: extfs
Supports d.type: true
Using metacopy: false
Native Overlay Diff: true
userxattr: false
Logging Driver: json-file
Cgroup Driver: cgroupfs
Cgroup Version: 1
Plugins:
Volume: local
Network: bridge host ipvlan macvlan null overlay
Log: awslogs fluentd gcplogs gelf journald json-file local splunk syslog
Swarm: inactive
Runtimes: io.containerd.runc.v2 nvidia runc
Default Runtime: runc
Init Binary: docker-init
containerd version: 472731909fa34bd7bc9c087e4c27943f9835f111
runc version: v1.1.13-0-g58aa920
init version: de40ad0
Security Options:
seccomp
Profile: unconfined
Kernel Version: 5.15.167.4-microsoft-standard-WSL2
Operating System: Docker Desktop
OSType: linux
Architecture: x86_64
CPUs: 8
Total Memory: 6.744GiB
Name: docker-desktop
ID: 64386e25-f2bc-439f-a511-5fda77b993d1
Docker Root Dir: /var/lib/docker
Debug Mode: false
HTTP Proxy: http.docker.internal:3128
HTTP Proxy: http.docker.internal:3128
HTTP Proxy: http.docker.internal:3128
HTTP Proxy: http.docker.internal:3128
OP Proxy: http.docker.internal:3128
Com.docker.desktop.address=npipe://\.\pipe\docker_cli
Experimental: false
```

#### docker run -it ubuntu /bin/bash

```
PS C:\Users\ACER\Desktop> docker run -it ubuntu /bin/bash
Unable to find image 'ubuntu:latest' locally
latest: Pulling from library/ubuntu
5a7813e071bf: Pull complete
Digest: sha256:72297848456d5d37d1262630108ab308d3e9ec7ed1c3286a32fe09856619a782
Status: Downloaded newer image for ubuntu:latest
root@789a14624979:/#
```

# **Working with Ubuntu**

```
root@789a14624979:/# pwd
root@789a14624979:/# hostname
789a14624979
root@789a14624979:/# cat /etc/hosts
127.0.0.1
                localhost
::1
        localhost ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
172.17.0.2
               789a14624979
root@789a14624979:/# hostname -I
172.17.0.2
root@789a14624979:/# ps -aux
USER
           PID %CPU %MEM
                            VSZ
                                  RSS TTY
                                               STAT START
                                                             TIME COMMAND
             1 0.0 0.0
root
                           4588
                                 3960 pts/0
                                               Ss
                                                     21:38
                                                             0:00 /bin/bash
            12 0.0 0.0
                           7888
                                 3848 pts/0
                                               R+
                                                     21:42
                                                             0:00 ps -aux
root
root@789a14624979:/# exit
exit
```

#### docker ps -a

PS C:\Users\ACER\Desktop> docker ps -a								
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES		
789a14624979	ubuntu	"/bin/bash"	6 minutes ago	Exited (0) About a minute ago		eager_khayya		
m								
8f9774023e14	homework4-main_app	"python app.py"	4 weeks ago	Exited (255) 4 hours ago	0.0.0.0:5000->5000/tcp	main_app		
2f9684569323	homework4-prediction-service	"python prediction_s"	4 weeks ago	Exited (255) 4 hours ago	0.0.0.0:5003->5003/tcp	prediction-s		
ervice								

#### docker run --name bob\_the\_container -i -t ubuntu /bin/bash

```
PS C:\Users\ACER\Desktop> docker run --name bob_the_container -it ubuntu /bin/bash
root@0770224069fb:/# exit
exit

PS C:\Users\ACER\Desktop> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS

PORTS NAMES
0770224069fb ubuntu "/bin/bash" 14 seconds ago Exited (0) 2 seconds ago bob_the_containe
r
789a14624979 ubuntu "/bin/bash" 7 minutes ago Exited (0) 2 minutes ago eager_khayyam
879774022614 homework4-main_app "python app.py" 4 weeks ago Exited (255) 4 hours ago 0.0.0.0:5000->5000/tcp main_app
prediction-service
```

#### docker start bob\_the\_container

PS C:\Users\ACER\Desktop> docker start bob_the_container bob_the_container PS C:\Users\ACER\Desktop> docker ps -a								
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES		
0770224069fb	ubuntu	"/bin/bash"	About a minute ago	Up 11 seconds		bob_the_cont		
ainer 789a14624979 m	ubuntu	"/bin/bash"	9 minutes ago	Exited (0) 4 minutes ago		eager_khayya		
8f9774023e14	homework4-main_app	"python app.py"	4 weeks ago	Exited (255) 4 hours ago	0.0.0.0:5000->5000/tcp	main_app		
2f9684569323	homework4-prediction-service	"python prediction_s"	4 weeks ago	Exited (255) 4 hours ago	0.0.0.0:5003->5003/tcp	prediction-s		

# docker attach bob\_the\_container

```
PS C:\Users\ACER\Desktop> docker attach bob_the_container root@0770224069fb:/# exit exit
```

# docker run --name dave -d ubuntu /bin/sh -c "while true; do echo hello world; sleep 1; done"

PS C:\Users\ACER\Desktop> docker run --name dave -d ubuntu /bin/sh -c "while true; do echo hello world; sleep 1; done" 98902d7b18f928a3b83e54e5237d3f6ab41e27447fb22f9ffc797b6e899ea92e

# docker logs dave

```
PS C:\Users\ACER\Desktop> docker logs dave hello world hello world hello world hello world hello world
```

#### docker logs -f dave

```
PS C:\Users\ACER\Desktop> docker logs -f dave hello world hello world
```

#### docker logs -ft dave

```
PS C:\Users\ACER\Desktop> docker logs -ft dave 2025-03-03T21:51:44.001394110Z hello world 2025-03-03T21:51:45.005299611Z hello world 2025-03-03T21:51:46.007909259Z hello world
```

# docker top dave

PS C:\Users\ACER\Desktop> docker top dave							
UID	PID	PPID		STIME	TTY	TIME	CMD
root	1159	1139	Θ	21:51		00:00:00	/bin/sh -c while
true; do echo hello world; sleep 1; done							
root	1472	1159	0	21:55		00:00:00	sleep 1

#### docker stats dave

```
PS C:\Users\ACER\Desktop> docker stats dave
                          CPU %
                                     MEM USAGE / LIMIT
CONTAINER ID
                NAME
                                                                                                 PIDS
                                                           MEM %
                                                                     NET I/O
                                                                                    BLOCK I/O
                                     880KiB / 6.744GiB
MEM USAGE / LIMIT
98902d7b18f9
                dave
                           0.01%
                                                           0.01%
                                                                     1.05kB / 0B
                                                                                    0B / 0B
                                                                                                 2
                                                                                    BLOCK I/O
                          CPU %
                                                                                                 PIDS
CONTAINER ID
                NAME
                                                          MEM %
                                                                     NET I/O
98902d7b18f9
               dave
                          0.21%
                                     828KiB / 6.744GiB
                                                           0.01%
                                                                     1.05kB / 0B
                                                                                    0B / 0B
                                                                                                 2
```

# docker exec -t -i daemon\_dave /bin/bash

```
PS C:\Users\ACER\Desktop> docker exec -it dave /bin/bash root@98902d7b18f9:/# exit exit
```

# docker stop dave

```
PS C:\Users\ACER\Desktop> docker stop dave
Post "http://%2F%2F.%2Fpipe%2FdockerDesktopLinuxEngine/v1.47/containers/dave/stop": context canceled
PS C:\Users\ACER\Desktop> docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
```

#### docker inspect dave

#### И така натаму..

#### docker rm dave

PS C:\Users\ACER\Desktop> docker rm dave								
dave								
PS C:\Users\AC	ER\Desktop> docker ps -a							
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES		
0770224069fb	ubuntu	"/bin/bash"	18 minutes ago	Exited (0) 13 minutes ago		bob_the_contain		
er								
789a14624979	ubuntu	"/bin/bash"	25 minutes ago	Exited (0) 20 minutes ago		eager_khayyam		
8f9774023e14	homework4-main_app	"python app.py"	4 weeks ago	Exited (255) 5 hours ago	0.0.0.0:5000->5000/tcp	main_app		
2f9684569323	homework4-prediction-service	"python prediction_s"	4 weeks ago	Exited (255) 5 hours ago	0.0.0.0:5003->5003/tcp	prediction-serv		
ice								

# **CHAPTER 4**

# docker images

PS C:\Users\ACER\Desktop> docker images							
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE			
homework4-main_app	latest	4c635b3bc654	4 weeks ago	358MB			
ubuntu	latest	a04dc4851cbc	5 weeks ago	78.1MB			
homework4-prediction-service	latest	5c0807de1fbe	6 weeks ago	351MB			

# docker pull ubuntu:18.04

```
PS C:\Users\ACER\Desktop> docker pull ubuntu:18.04
18.04: Pulling from library/ubuntu
7c457f213c76: Pull complete
Digest: sha256:152dc042452c496007f07ca9127571cb9c29697f42acbfad72324b2bb2e43c98
Status: Downloaded newer image for ubuntu:18.04
docker.io/library/ubuntu:18.04
```

#### docker run -t -i --name new\_container ubuntu:18.04 /bin/bash

```
PS C:\Users\ACER\Desktop> docker run -it --name new_container ubuntu:18.04 /bin/bash root@1989063b2d03:/# exit exit
```

# docker images ubuntu

PS C:\Users\ACER\Desktop> docker images ubuntu							
REPOSITORY	TAG	IMAGE ID	CREATED	SIZE			
ubuntu	latest	a04dc4851cbc	5 weeks ago	78.1MB			
ubuntu	18.04	f9a80a55f492	21 months ago	63.2MB			
20 0 111	\						

#### docker search postgres

```
PS C:\Users\ACER\Desktop> docker search postgres
NAME
                             DESCRIPTION
                                                                                  STARS
                                                                                             OFFICIAL
                                                                                             [OK]
                             The PostgreSQL object-relational database sy...
                                                                                  14168
circleci/postgres
                             The PostgreSQL object-relational database sy...
                                                                                  32
cimg/postgres
                             PostgreSQL is an open source object-relation...
ubuntu/postgres
                                                                                 40
                             Postgres, verified and packaged by Elestio
elestio/postgres
                                                                                  1
kasmweb/postgres
                             Postgres image maintained by Kasm Technologi...
                                                                                  5
chainguard/postgres
                             Build, ship and run secure software with Cha...
                                                                                  1
artifacthub/postgres
                                                                                 0
corpusops/postgres
                             https://github.com/corpusops/docker-images/
                                                                                 0
dockette/postgres
                             My PostgreSQL image with tunning and preinst...
                             Postgres with postgis + quantile and amqp ex...
geokrety/postgres
                                                                                 0
kobotoolbox/postgres
                             ONLY for upgrading KoboToolbox installations...
                                                                                  1
                             A Model Context Protocol server that provide...
mcp/postgres
                                                                                  1
wayofdev/postgres
                                                                                 0
rootpublic/postgres
                                                                                 0
uselagoon/postgres
openeuler/postgres
                                                                                 0
                                                                                  0
clarinpl/postgres
                                                                                  0
supabase/postgres
                             Unmodified Postgres with some useful plugins...
                             PostgreSQL 10.0 used in FredBoat's docker-co...
fredboat/postgres
                                                                                  1
                             Extended version of official Postgres https:...
Postgres Image for Atlassian Applications
trainlineeurope/postgres
                                                                                 0
blacklabelops/postgres
                                                                                 4
debezium/postgres
                             PostgreSQL for use with Debezium change data
                                                                                  28
```

#### docker build -t "static-web".

```
ACER8StefanTagarski MINGW64 ~/Desktop/static_web

$ cat Dockerfile

ACER8StefanTagarski MINGW64 ~/Desktop/static_web

$ nano Dockerfile

ACER8StefanTagarski MINGW64 ~/Desktop/static_web

$ cat Dockerfile

FROM ubuntu:18.04

RUN act-get update; apt-get install -y nginx

RUN echo 'Hi, I am in your container' > /var/www/html/index.html

EXPOSE 80

CMD [ "/bin/bash" ]

ACER8StefanTagarski MINGW64 ~/Desktop/static_web

$ docker build -t="static_web"

[ Building 33.75 (777) FINISHED

$ [internal] load build definition from Dockerfile

$ | 1.5 | 1.5 | 1.5 | 1.5 |

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$ | 1.5 | 1.5
```

#### docker history static-web

```
~/Desktop/static_web
$ docker history static-web
IMAGE CREATED
                                                                        CREATED BY

CMD ["/bin/bash"]

EXPOSE map[80/tcp:{}]

RUN /bin/sh -c echo 'Hi, I am in your contai...

RUN /bin/sh -c apt-get update; apt-get insta...

/bin/sh -c #(nop) CMD ["/bin/bash"]

/bin/sh -c #(nop) ADD file:3c74e7e08cbf9a876...
IMAGE
b9817e57a444
                                                                                                                                                                          STZE
                                                                                                                                                                                              COMMENT
                                                                                                                                                                                              buildkit.dockerfile.v0
buildkit.dockerfile.v0
buildkit.dockerfile.v0
                              About a minute ago
About a minute ago
                                                                                                                                                                         OB
OB
<missing>
                               About a minute ago
 <missing>
 <missing>
                              About a minute ago
                                                                                                                                                                          106MB
                                                                                                                                                                                              buildkit.dockerfile.v0
 <missing>
                              21 months ago
21 months ago
                                                                                                                                                                          0B
                                                                                                                                                                          63.2MB
 <missina>
```

# docker run -d -p 80:80 --name static-web static-web nginx -g "daemon off;"

#### docker port static-web

```
ACER@StefanTagarski MINGW64 ~/Desktop/static_web
$ docker port static-web-container
80/tcp -> 0.0.0.0:8081
```

# Heкoj docker image што имам градено по друг предмет:

```
EER®StefanTagarski M
cat Dockerfile
main_app Dockerfile
ROM python:3.9-slim
 # Install dependencies
COPY requirements.txt /app/
RUN pip install --no-cache-dir -r requirements.txt
 Copy the application code OPY . /app
 Set environment variable for prediction service URL
ENV PREDICTION_SERVICE_URL=http://prediction-service:5003/predict
 Run the app
MD ["python", "app.py"]
 CERSStefanTagarski MINGW64 ~/Desktop/DIANS/Homework4/main_app (master)
docker ps -a
ONTAINER ID IMAGE COMMAND C
3d837579e00 homework4-main_app "python app.py" A
                                                              COMMAND CREATED STATUS
"python app.py" About a minute ago Exited (0) About a minute ago
                                                              "/bin/bash" About an hour ago
  arson
6f0da328644 static-web
                                                                                                                                         Up 8 minutes
                                                                                                                                                                                           0.0.0.0:8081->80/tcp
                                                                                                                                                                                                                                 static-w
  -container
989063b2d03 ubuntu:18.04
                                                                                                                                         Exited (0) 28 minutes ago
                                                                                                                                                                                                                                 new cont
    0224069fb ubuntu
                                                                                                                                          Exited (0) 53 minutes ago
                                                                                                                                                                                                                                 bob the
   9a14624979 ubuntu
                                                                                                     About an hour ago Exited (0) About an hour ago
  vam
f9774023e14 homework4-main_app "python app.py" 4 weeks ago
f9684569323 homework4-prediction-service "python prediction_s_" 4 weeks ago
-service
                                                                                                                                          Exited (255) 5 hours ago
Exited (255) 5 hours ago
ACER®StefanTagarski MINGW64 ~/Desktop/DIANS/Homework4/main_app (master)
$ docker run -d homework4-main_app
81f8bf5e7b7895b26a00e176817af9db54904b7cda62b2e386e791f389366013
```

#### docker push на Docker Hub за горенаведениот image (претходна слика)

```
| Company | Comp
```

```
ACER@StefanTagarski MINGW64 ~/Desktop/DIANS/Homework4 (master)

$ docker push stefantagarski/main_app
Using default tag: latest
The push refers to repository [docker.io/stefantagarski/main_app]
cb77569411cd: Pushed
751b7e5bb784: Pushed
7bbcf83610f6: Pushed
4f5d2e4754ac: Pushed
4f5d2e4754ac: Pushed
70fff1cc441b: Mounted from library/python
62f5a620d172: Mounted from library/python
4a0e2c276a6a: Mounted from library/python
5flee22ffb5e: Mounted from library/python
latest: digest: sha256:9026736df6d7f172cd33043f1cf9d16783f2efea300129f298e9b839cd55145e size: 1995
```

https://hub.docker.com/r/stefantagarski/main\_app

#### docker rmi static-web

```
ACER@StefanTagarski MINGW64 ~/Desktop/DIANS/Homework4 (master)
$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
81f8bf5e7b78 homework4-main_app "python app.py" 22 minutes ago Up 22 minutes 5000/tcp nostalgic_proskuriakova
36f0da328644 static-web "nginx -g 'daemon of..." 31 minutes ago Up 31 minutes 0.0.0.0:8081->80/tcp static-web-container
```

```
ACER@StefanTagarski MINGW64 ~/Desktop/DIANS/Homework4 (master)
$ docker rm static-web-container
static-web-container

ACER@StefanTagarski MINGW64 ~/Desktop/DIANS/Homework4 (master)
$ docker rmi static-web
Untagged: static-web:latest
Deleted: sha256:b9817e57a444008a2773a37e0cc48cd95f6c6ef0c2cbbc033b4293c48b4a9187
```