

1. Utworzenie pliku Dockerfile i zbudowanie na jego podstawie obrazu o nazwie 'web100'

- Wykorzystanie narzędzia 'docker init' do utworzenia pliku Dockerfile

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w c
hmurze obliczeniowej\lab04>docker init

Welcome to the Docker Init CLI!

This utility will walk you through creating the following files with sensibl
e defaults for your project:
- .dockerignore
- Dockerfile
- compose.yaml
- README.Docker.md

Let's get started!

? What application platform does your project use? Other

✓ Created → .dockerignore
✓ Created → Dockerfile
✓ Created → compose.yaml
✓ Created → README.Docker.md

→ Your Docker files are ready!
Review your Docker files and tailor them to your application.
Consult README.Docker.md for information about using the generated files.

What's next?
Start your application by running → docker compose up --build
```

- Utworzenie pliku Dockerfile

```
Dockerfile X
Dockerfile
1  # pobranie obrazu Ubuntu w najnowszej wersji
2  FROM ubuntu:latest
3
4  # podanie autora
5  LABEL surname="Kierepka" email="s99573@pollub.edu.pl"
6
7  # system Ubuntu ma być zaktualizowany
8  RUN apt-get update && apt-get upgrade -y
9
10 # instalacja serwera HTTP Apache w najnowszej wersji
11 RUN apt-get install -y apache2
12
13 # skopiowanie dowolnej strony WWW do serwera Apache
14 COPY index.html /var/www/html/
15
16 # Expose the port for access
17 EXPOSE 80/tcp
18
19 # Uruchomienie serwera Apache
20 ENTRYPOINT ["apache2ctl"]
21 CMD ["-D", "FOREGROUND"]
```

- Treść pliku index.html

```
index.html X
index.html > html
1 lab04\index.html
2 <!DOCTYPE html>
3 <html lang="pl">
4 <head>
5   <meta charset="utf-8">
6   <meta name="viewport" content="width=device-width, initial-scale=1.0">
7   <title>Zadanie dodatkowe</title>
8 </head>
9 <body>
10 <div>
11   <p>Imię i nazwisko: Mateusz Kierepka</p>
12   <p>Grupa dziekańska: 6.6</p>
13 </div>
14 </body>
15 </html>
```

- Zbudowanie obrazu za pomocą Dockerfile

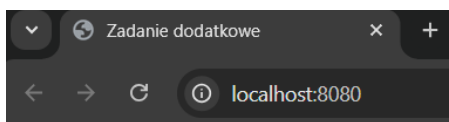
```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker build -f Dockerfile -t web100 .
[+] Building 4.6s (10/10) FINISHED
=> [internal] load build definition from Dockerfile                                docker:desktop-linux 0.0s
=> transferring dockerfile: 551B                                                  0.0s
=> [internal] load metadata for docker.io/library/ubuntu:latest                  1.6s
=> [auth] library/ubuntu:pull token for registry-1.docker.io                     0.0s
=> [internal] load .dockerignore                                                  0.0s
=> transferring context: 671B                                                    0.0s
=> [1/4] FROM docker.io/library/ubuntu:latest@sha256:72297848456d5d37d1262630108ab308d3e9ec7ed1c3286a32fe09856619a782
=> resolve docker.io/library/ubuntu:latest@sha256:72297848456d5d37d1262630108ab308d3e9ec7ed1c3286a32fe09856619a782 0.0s
=> [internal] load build context                                                0.0s
=> transferring context: 32B                                                    0.0s
=> CACHED [2/4] RUN apt-get update && apt-get upgrade -y                        0.0s
=> CACHED [3/4] RUN apt-get install -y apache2                                  0.0s
=> CACHED [4/4] COPY index.html /var/www/html/                                  0.0s
=> exporting to image                                                            2.7s
=> exporting layers                                                             0.0s
=> exporting manifest sha256:e1072e1dc52d7c947705a20829fb7863f8b02aea7bd1b5e7b92e22a31599168e 0.0s
=> exporting config sha256:f9b004b248432431937578b5516d1c4eb288305b36d5cc70ca624bd80872cf3b 0.0s
=> exporting attestation manifest sha256:2e5621eeb328a59f912ab2c876ecaabfef85d1906d004320eb5354654560e5b 0.0s
=> exporting manifest list sha256:f8c4dca2163bd94bc8afe3f8e76388dea2b818660a68d44a4f758391a7594afa 0.0s
=> naming to docker.io/library/web100:latest                                   0.0s
=> unpacking to docker.io/library/web100:latest                                2.6s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-linux/zv18kwlp19glsex6xi819xt14
```

- Uruchomienie kontenera

```
Wiersz polecenia X + v
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker run -d -p 8080:80 web100
37212dc85b14cf80d61e4a0ed49db4ed812b56d74b45ab9966b08ea9c6efeebb
```

- Działanie strony



lab04\index.html

Imię i nazwisko: Mateusz Kierepka

Grupa dziekańska: 6.6

2. Dokonanie modyfikacji pliku Dockerfile

- Połączenie polecenia RUN w jedno, co zmniejsza liczbę warstw, ponieważ każda instrukcja RUN tworzy nową warstwę w obrazie. Dodatkowo dodanie polecenia 'rm -rf /var/lib/apt/lists/*', które usuwa pliki pakietów po instalacji, zmniejszając rozmiar obrazu.

```

Dockerfile X
Dockerfile
1 # pobranie obrazu Ubuntu w najnowszej wersji
2 FROM ubuntu:latest
3
4 # podanie autora
5 LABEL surname="Kierepka" email="s99573@pollub.edu.pl"
6
7 # system Ubuntu ma być zaktualizowany, instalacja serwera HTTP Apache w najnowszej wersji
8 RUN apt-get update && \
9     apt-get upgrade -y && \
10    apt-get install -y apache2 && \
11    rm -rf /var/lib/apt/lists/*
12
13 # skopiowanie dowolnej strony WWW do serwera Apache
14 COPY index.html /var/www/html/
15
16 # Expose the port for access
17 EXPOSE 80/tcp
18
19 # Uruchomienie serwera Apache
20 ENTRYPOINT ["apache2ctl"]
21 CMD ["-D", "FOREGROUND"]

```

- Zbudowanie obrazu

```

C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker build -f Dockerfile -t web100:v2 .
[+] Building 117.7s (9/9) FINISHED
=> [internal] load build definition from Dockerfile 0.0s
=> => transferring dockerfile: 597B 0.0s
=> [internal] load metadata for docker.io/library/ubuntu:latest 2.0s
=> [auth] library/ubuntu:pull token for registry-1.docker.io 0.0s
=> [internal] load .dockerignore 0.0s
=> => transferring context: 671B 0.0s
=> CACHED [1/3] FROM docker.io/library/ubuntu:latest@sha256:72297848 0.0s
=> => resolve docker.io/library/ubuntu:latest@sha256:72297848456d5d3 0.0s
=> [internal] load build context 0.0s
=> => transferring context: 32B 0.0s
=> [2/3] RUN apt-get update && apt-get upgrade -y && apt-g 105.0s
=> [3/3] COPY index.html /var/www/html/ 0.1s
=> exporting to image 10.2s
=> => exporting layers 8.4s
=> => exporting manifest sha256:24935533dbc11bbabdb68befbd81f07564 0.0s
=> => exporting config sha256:d858507716688876f00a691e10f0517ec3a43a 0.0s
=> => exporting attestation manifest sha256:fc6e342b0c029044896b5b85 0.1s
=> => exporting manifest list sha256:fdac4085aa9394b9028bea2ab3d2f13 0.0s
=> => naming to docker.io/library/web100:v2 0.0s
=> => unpacking to docker.io/library/web100:v2 1.6s

```

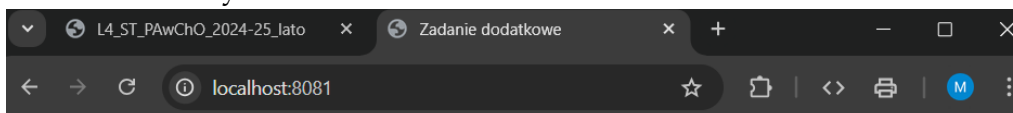
- Uruchomienie kontenera

```

C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker run -d -p 8081:80 web100:v2
976261b7ac14bad91ad3e028f168abdee07afc4be777654728488d2d029970c2

```

- Działanie strony



lab04\index.html

Imię i nazwisko: Mateusz Kierepka

Grupa dziekańska: 6.6

- Liczba warstw obrazu z ETAPU 1 - 13

```

C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker history web100
IMAGE      CREATED      CREATED BY          SIZE      COMMENT
f8c4dca2163b 42 minutes ago CMD ["-D" "FOREGROUND"] 0B        buildkit.dockerfile.v0
<missing>    42 minutes ago ENTRYPOINT ["apache2ctl"] 0B        buildkit.dockerfile.v0
<missing>    42 minutes ago EXPOSE map[80/tcp:{}] 0B        buildkit.dockerfile.v0
<missing>    42 minutes ago COPY index.html /var/www/html/ # buildkit 20.5kB    buildkit.dockerfile.v0
<missing>    42 minutes ago RUN /bin/sh -c apt-get install -y apache2 # ... 117MB    buildkit.dockerfile.v0
<missing>    44 minutes ago RUN /bin/sh -c apt-get update && apt-get upg... 88.3MB    buildkit.dockerfile.v0
<missing>    44 minutes ago LABEL surname=Kierepka email=s99573@pollub.e... 0B        buildkit.dockerfile.v0
<missing>    7 weeks ago /bin/sh -c #(nop) CMD ["/bin/bash"] 0B
<missing>    7 weeks ago /bin/sh -c #(nop) ADD file:6df775300d76441aa... 87.6MB
<missing>    7 weeks ago /bin/sh -c #(nop) LABEL org.opencontainers... 0B
<missing>    7 weeks ago /bin/sh -c #(nop) LABEL org.opencontainers... 0B
<missing>    7 weeks ago /bin/sh -c #(nop) ARG LAUNCHPAD_BUILD_ARCH 0B
<missing>    7 weeks ago /bin/sh -c #(nop) ARG RELEASE 0B

```

- Liczba warstw obrazu z ETAPU 2 - 12

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker history web100:v2
IMAGE          CREATED          CREATED BY          SIZE      COMMENT
fdac4085aa93   4 minutes ago    CMD ["-D" "FOREGROUND"]    0B        buildkit.dockerfile.v0
<missing>      4 minutes ago    ENTRYPOINT ["apache2ctl"]  0B        buildkit.dockerfile.v0
<missing>      4 minutes ago    EXPOSE map[80/tcp:{}]      0B        buildkit.dockerfile.v0
<missing>      4 minutes ago    COPY index.html /var/www/html/ # buildkit    20.5kB    buildkit.dockerfile.v0
<missing>      4 minutes ago    RUN /bin/sh -c apt-get update && apt-get... 157MB    buildkit.dockerfile.v0
<missing>      4 minutes ago    LABEL surname=Kierepka email=s99573@pollub.e... 0B        buildkit.dockerfile.v0
<missing>      7 weeks ago     /bin/sh -c #(nop) CMD ["/bin/bash"]          0B
<missing>      7 weeks ago     /bin/sh -c #(nop) ADD file:6df775300d76441aa... 87.6MB
<missing>      7 weeks ago     /bin/sh -c #(nop) LABEL org.opencontainers... 0B
<missing>      7 weeks ago     /bin/sh -c #(nop) LABEL org.opencontainers... 0B
<missing>      7 weeks ago     /bin/sh -c #(nop) ARG LAUNCHPAD_BUILD_ARCH   0B
<missing>      7 weeks ago     /bin/sh -c #(nop) ARG RELEASE                 0B
```

3. Wykonanie zadania z lab. 3 wykorzystując obraz zbudowany na etapie 2

- Otagowanie obrazu z etapu 2

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w c
hmurze obliczeniowej\lab04>docker tag web100:v2 localhost:5000/web100:v2
```

- Wysłanie obrazu do lokalnego rejestru

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker push localhost:5000/web100:v2
The push refers to repository [localhost:5000/web100]
3c785fd51c35: Pushed
5a7813e871bf: Pushed
4612dbf40352: Pushed
b8f93a621729: Pushed
v2: digest: sha256:fdac4085aa9394b9028bea2ab3d2f13308522eead98fa140f8f6dd37877108ed size: 855
```

- Sprawdzenie zawartości rejestru

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>curl -X GET https://localhost:5000/v2/_catalog
{"repositories":["web100","zadaniedodatkowe"]}
```

- Sprawdzenie jakie tagi obrazu „web100” są dostępne

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>curl -X GET https://localhost:5000/v2/web100/tags/list
{"name":"web100","tags":["v2"]}
```

- Pobranie obrazu z lokalnego rejestru

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>docker pull localhost:5000/web100:v2
v2: Pulling from web100
Digest: sha256:fdac4085aa9394b9028bea2ab3d2f13308522eead98fa140f8f6dd37877108ed
Status: Downloaded newer image for localhost:5000/web100:v2
localhost:5000/web100:v2
```

- Usunięcie obrazu z lokalnego rejestru

```
C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>curl -X DELETE -v --insecure https://localhost:5000/v2/web100/manifests/sha256:fdac4085aa9394b9028bea2ab3d2f13308522eead98fa140f8f6dd37877108ed
* Host localhost:5000 was resolved.
* IPv6: ::1
* IPv4: 127.0.0.1
* Trying [::1]:5000...
* schannel: disabled automatic use of client certificate
* ALPN: curl offers http/1.1
* ALPN: server accepted http/1.1
* Connected to localhost (::1) port 5000
* using HTTP/1.x
> DELETE /v2/web100/manifests/sha256:fdac4085aa9394b9028bea2ab3d2f13308522eead98fa140f8f6dd37877108ed HTTP/1.1
Host: localhost:5000
User-Agent: curl/8.10.1
Accept: */*
>
* schannel: remote party requests renegotiation
* schannel: renegotiating SSL/TLS connection
* schannel: SSL/TLS connection renegotiated
* Request completely sent off
< HTTP/1.1 202 Accepted
< Docker-Distribution-API-Version: registry/2.0
< X-Content-Type-Options: nosniff
< Date: Sun, 23 Mar 2025 12:48:35 GMT
< Content-Length: 0
<
* Connection #0 to host localhost left intact

C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>curl -X GET https://localhost:5000/v2/_catalog
{"repositories":["web100","zadaniedodatkowe"]}

C:\Users\mateu\Desktop\Studia\university-part-vi\Programowanie aplikacji w chmurze obliczeniowej\lab04>curl -X GET https://localhost:5000/v2/web100/tags/list
{"name":"web100","tags":null}
```