

# **Programowanie Aplikacji w Chmurze Obliczeniowej**

**Sprawozdanie – Przemysław Zbiciak gr. 6/16**

===== ZADANIE 1 =====

## ===== CZĘŚĆ OBOWIĄZKOWA =====

```
FROM python:3.12-slim as builder

RUN pip install --upgrade pip
COPY requirements.txt .
RUN pip install --prefix=/install -r requirements.txt

FROM python:3.12-slim

LABEL maintainer="Przemek Zbiciak"

COPY --from=builder /install /usr/local
COPY app.py /app/app.py

WORKDIR /app

HEALTHCHECK --interval=30s --timeout=5s --start-period=5s --retries=3 \
    CMD python -c "import socket; s=socket.socket(); s.settimeout(2);
s.connect(('localhost', 5000))"

EXPOSE 5000

CMD ["python", "app.py"]
```

### 1. Zawartość pliku Dockerfile

```
Flask==3.0.3
requests==2.31.0
```

### 2. Zawartość pliku requirements.txt

```
from flask import Flask, render_template_string, request
import logging
import requests
from urllib.parse import quote

AUTHOR_NAME = "Przemek Zbiciak"
TCP_PORT = 5000

logging.basicConfig(level=logging.INFO, format="%(asctime)s - %(message)s")
logging.info(f"Aplikacja uruchomiona: Autor: {AUTHOR_NAME}, Port: {TCP_PORT}")

app = Flask(__name__)

locations = {
    "Polska": ["Warszawa", "Krakow", "Gdansk", "Wroclaw", "Lublin"],
    "Niemcy": ["Berlin", "Monachium", "Hamburg", "Frankfurt"],
    "USA": ["New York", "Los Angeles", "Chicago", "Miami", "San Francisco"],
    "Francja": ["Paris", "Lyon", "Marseille"],
    "Wielka Brytania": ["London", "Manchester", "Birmingham"]
}

API_KEY = "9cefd135ae494ef3ad480858252804"

@app.route("/", methods=["GET", "POST"])
def index():
    selected_country = request.form.get("country")
    selected_city = request.form.get("city")
    weather = None

    if selected_country and selected_city:
        city_encoded = quote(selected_city)
        url =
f"http://api.weatherapi.com/v1/current.json?key={API_KEY}&q={city_encoded}&aqi=no"
        try:
            response = requests.get(url)
```

```

        if response.ok:
            data = response.json()
            weather = {
                "time": data["location"]["localtime"].split(" ")[1],
                "temperature": data["current"]["temp_c"],
                "description": data["current"]["condition"]["text"],
                "humidity": data["current"]["humidity"],
            }
        else:
            weather = {"error": f"Nie udało się pobrać pogody.\n{url}"}
    except Exception as e:
        weather = {"error": f"Błąd: {str(e)}"}

    return render_template_string(TEMPLATE, locations=locations,
selected_country=selected_country, selected_city=selected_city,
weather=weather)

TEMPLATE = """
<!doctype html>
<html lang="pl">
<head><title>Prognoza pogody</title></head>
<body>
    <h1>Wybierz lokalizację</h1>
    <form method="post">
        <label for="country">Kraj:</label>
        <select name="country" id="country" onchange="this.form.submit()">
            <option value="">-- Wybierz kraj --</option>
            {% for country in locations.keys() %}
                <option value="{{ country }}" {% if selected_country ==
country %}selected{% endif %}>{{ country }}</option>
            {% endfor %}
        </select>
    </form>

    {% if selected_country %}
        <form method="post">
            <input type="hidden" name="country" value="{{ selected_country
}}">

```

```

        <label for="city">Miasto:</label>
        <select name="city" id="city">
            {% for city in locations[selected_country] %}
                <option value="{{ city }}" {% if selected_city == city
%}selected{% endif %}>{{ city }}</option>
            {% endfor %}
        </select>
        <br>
        <button type="submit">Pokaż pogodę</button>
    </form>
{% endif %}

{% if weather %}
    <h2>Pogoda w {{ selected_city }}</h2>
    {% if weather.error %}
        <p>{{ weather.error }}</p>
    {% else %}
        <ul>
            <li>Godzina: {{ weather.time }}</li>
            <li>Temperatura: {{ weather.temperature }} °C</li>
            <li>Opis: {{ weather.description }}</li>
            <li>Wilgotność: {{ weather.humidity }} %</li>
        </ul>
    {% endif %}
{% endif %}
</body>
</html>
"""

if __name__ == "__main__":
    app.run(host="0.0.0.0", port=TCP_PORT)

```

### 3. Kod aplikacji app.py

```
Zadaniel> docker build -t zadaniel .
```

```
[+] Building 1.6s (13/13) FINISHED  
docker:desktop-linux
```

```
=> [internal] load build definition from Dockerfile  
0.0s
```

```
=> => transferring dockerfile: 550B  
0.0s
```

```
=> WARN: FromAsCasing: 'as' and 'FROM' keywords' casing do not match (line  
1)  
0.0s
```

```
=> [internal] load metadata for docker.io/library/python:3.12-slim  
1.3s
```

```
=> [auth] library/python:pull token for registry-1.docker.io  
0.0s
```

```
=> [internal] load .dockerignore  
0.0s
```

```
=> => transferring context: 2B  
0.0s
```

```
=> [internal] load build context  
0.0s
```

```
=> => transferring context: 63B  
0.0s
```

```
=> [builder 1/4] FROM docker.io/library/python:3.12-  
slim@sha256:85824326bc4ae27a1abb5bc0dd9e08847aa5fe73d8afb593b1b45b7cb4180f5  
7  
0.0s
```

```
=> => resolve docker.io/library/python:3.12-  
slim@sha256:85824326bc4ae27a1abb5bc0dd9e08847aa5fe73d8afb593b1b45b7cb4180f5
```

```
7
0.0s

=> CACHED [builder 2/4] RUN pip install --upgrade pip
0.0s

=> CACHED [builder 3/4] COPY requirements.txt .
0.0s

=> CACHED [builder 4/4] RUN pip install --prefix=/install -r
requirements.txt
0.0s

=> CACHED [stage-1 2/4] COPY --from=builder /install /usr/local
0.0s

=> CACHED [stage-1 3/4] COPY app.py /app/app.py
0.0s

=> CACHED [stage-1 4/4] WORKDIR /app
0.0s

=> exporting to image
0.2s

=> => exporting layers
0.0s

=> => exporting manifest
sha256:c60b9ca32cbcd47aaf6903a3d167c1d49f0b84975837512d1339bc4a87c3e27c
0.0s

=> => exporting config
sha256:94d045a4e4e6fb5f9827fc00f49d48373b7ec91a0e0a4b5404a5000828f87285
0.0s

=> => exporting attestation manifest
sha256:65bb49b354d00f4853e9662acde985b04623ede15b44c0d34e094b6e9854b373
0.0s

=> => exporting manifest list
sha256:b28856d650e6c2cc6ac47d5c3aada27728bee932d34209e29d52c32c574e8339
0.0s

=> => naming to docker.io/library/zadanie1:latest
0.0s

=> => unpacking to docker.io/library/zadanie1:latest
0.1s

View build details: docker-desktop://dashboard/build/desktop-linux/desktop-
linux/i3ffzvhp54az1vloiv2afpwh8
```

#### 4. Komenda tworząca obraz oraz jej wynik

```
PS D:\Studia\Docker\Zadanie1> docker run -d -p 5000:5000 --name zadanie1-
container zadanie1

ece98131d2f2a3342a32ca299601fd87b29ddd6251f703a0f79c7c562b1d29b9
```

#### 5. Komenda uruchamiająca kontener

**Zadanie1> docker logs zadanie1-container**

2025-04-28 13:04:33,993 - Aplikacja uruchomiona: Autor: Przemek Zbiciak, Port: 5000

\* Serving Flask app 'app'

\* Debug mode: off

2025-04-28 13:04:33,995 - WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.

\* Running on all addresses (0.0.0.0)

\* Running on http://127.0.0.1:5000

\* Running on http://172.17.0.2:5000

2025-04-28 13:04:33,995 - Press CTRL+C to quit

2025-04-28 13:04:42,507 - 172.17.0.1 - - [28/Apr/2025 13:04:42] "GET / HTTP/1.1" 200 -

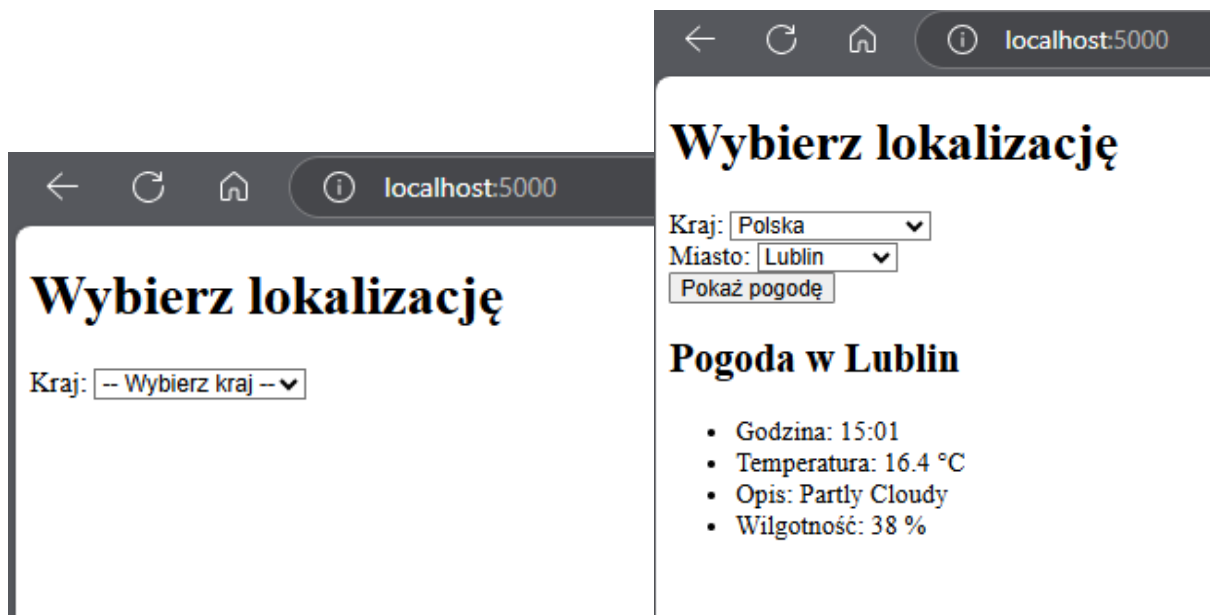
2025-04-28 13:04:44,611 - 172.17.0.1 - - [28/Apr/2025 13:04:44] "POST / HTTP/1.1" 200 -

2025-04-28 13:04:47,519 - 172.17.0.1 - - [28/Apr/2025 13:04:47] "POST / HTTP/1.1" 200 -healthy

**Zadanie1> docker ps**

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
PORTS		NAMES		
ece98131d2f2	zadanie1	"python app.py"	9 minutes ago	Up 2 minutes
(healthy)	0.0.0.0:5000->5000/tcp	zadanie1-container		

6. Sprawdzenie logów oraz stanu kontenera



7. Zrzut ekranu działającej aplikacji



**Zadaniel> docker history zadaniel**

IMAGE SIZE	CREATED COMMENT	CREATED BY
b28856d650e6 0B	4 hours ago buildkit.dockerfile.v0	CMD ["python" "app.py"]
<missing> 0B	4 hours ago buildkit.dockerfile.v0	EXPOSE map[5000/tcp:{}]
<missing> 0B	4 hours ago buildkit.dockerfile.v0	HEALTHCHECK &{["CMD-SHELL" "python -c \"impo...
<missing> 4.1kB	4 hours ago buildkit.dockerfile.v0	WORKDIR /app
<missing> 12.3kB	4 hours ago buildkit.dockerfile.v0	COPY app.py /app/app.py # buildkit
<missing> 8.84MB	5 hours ago buildkit.dockerfile.v0	COPY /install /usr/local # buildkit
<missing> 0B	5 hours ago buildkit.dockerfile.v0	LABEL maintainer=Przemek Zbiciak
<missing> 0B	2 weeks ago buildkit.dockerfile.v0	CMD ["python3"]
<missing> 16.4kB	2 weeks ago buildkit.dockerfile.v0	RUN /bin/sh -c set -eux; for src in idle3 p...
<missing> 44.9MB	2 weeks ago buildkit.dockerfile.v0	RUN /bin/sh -c set -eux; savedAptMark="\$ (a...
<missing> 0B	2 weeks ago buildkit.dockerfile.v0	ENV PYTHON_SHA256=07ab697474595e06f06647417d...
<missing> 0B	2 weeks ago buildkit.dockerfile.v0	ENV PYTHON_VERSION=3.12.10
<missing> 0B	2 weeks ago buildkit.dockerfile.v0	ENV GPG_KEY=7169605F62C751356D054A26A821E680...
<missing> 10.4MB	2 weeks ago buildkit.dockerfile.v0	RUN /bin/sh -c set -eux; apt-get update; a...
<missing> 0B	2 weeks ago buildkit.dockerfile.v0	ENV LANG=C.UTF-8
<missing> 0B	2 weeks ago buildkit.dockerfile.v0	ENV PATH=/usr/local/bin:/usr/local/sbin:/usr...
<missing> 85.3MB	3 weeks ago debuerreotype 0.15	# debian.sh --arch 'amd64' out/ 'bookworm' '...

**PS D:\Studia\Docke\Zadaniel> docker images zadaniel**

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
zadaniel	latest	b28856d650e6	4 hours ago	197MB

#### 8. Sprawdzenie warstw i rozmiaru obrazu

## ===== CZĘŚĆ DODATKOWA =====

```
FROM --platform=$BUILDPLATFORM python:3.12-slim AS builder

LABEL maintainer="Przemek Zbiciak"

WORKDIR /app

COPY requirements.txt .

RUN pip install --no-cache-dir --prefix=/install -r requirements.txt && rm
-rf /root/.cache

FROM --platform=$TARGETPLATFORM python:3.12-slim

LABEL maintainer="Przemek Zbiciak"

WORKDIR /app

COPY --from=builder /install /usr/local/
COPY app.py .

HEALTHCHECK --interval=30s --timeout=5s --start-period=5s --retries=3 \
    CMD python -c "import socket; s=socket.create_connection(('localhost',
5000), timeout=2).close()"

EXPOSE 5000

CMD ["python", "app.py"]
```

### 2. Zawartość pliku Dockerfile

```
Flask==3.0.3
requests==2.32.0
```

### 2. Zawartość pliku requirements.txt

*Kod aplikacji app.py taki sam jak w zadaniu obowiązkowym*

```
Zadanieldod> docker buildx create --name zadanie-builder --use --driver
docker-container --bootstrap
```

```
>>
```

```
[+] Building 3.6s (1/1) FINISHED
```

```
=> [internal] booting buildkit
3.5s
```

```
=> => pulling image moby/buildkit:buildx-stable-1
3.0s
```

```
=> => creating container buildx_buildkit_zadanie-builder0
0.5s
```

```
zadanie-builder
```

```
PS D:\Studia\Docker\Zadanieldod> docker buildx build --platform
linux/amd64,linux/arm64 --tag pszmeke/zadaniel:latest --push --cache-
from=type=registry,ref=pszmeke/zadaniel:cache --cache-to=type=inline .
```

```
[[+] Building 7.5s (18/18) FINISHED
docker-container:zadanie-builder
```

```
=> [internal] load build definition from Dockerfile
0.0s
```

```
=> => transferring dockerfile: 657B
0.0s
```

```
=> WARN: RedundantTargetPlatform: Setting platform to predefined
$TARGETPLATFORM in FROM is redundant as this is the default behavior (line
10)
0.0s
```

```
=> [linux/arm64 internal] load metadata for docker.io/library/python:3.12-
slim
0.6s
```

```
=> [linux/amd64 internal] load metadata for docker.io/library/python:3.12-
slim
0.6s
```

```
=> [internal] load .dockerignore
0.0s
```

```
=> => transferring context: 2B
0.0s
```

```
=> ERROR importing cache manifest from pszmeke/zadaniel:cache
0.4s
```

```
=> [internal] load build context
0.0s
```

```
=> => transferring context: 63B
0.0s
```

```
=> [linux/amd64 builder 1/4] FROM docker.io/library/python:3.12-
slim@sha256:85824326bc4ae27a1abb5bc0dd9e08847aa5fe73d8afb593b1b45b7cb4180f5
7
0.0s
```

```
=> => resolve docker.io/library/python:3.12-
slim@sha256:85824326bc4ae27a1abb5bc0dd9e08847aa5fe73d8afb593b1b45b7cb4180f5
```

7

0.0s

```
=> [linux/arm64 stage-1 1/4] FROM docker.io/library/python:3.12-  
slim@sha256:85824326bc4ae27a1abb5bc0dd9e08847aa5fe73d8afb593b1b45b7cb4180f5  
7                                0.0s
```

```
=> => resolve docker.io/library/python:3.12-  
slim@sha256:85824326bc4ae27a1abb5bc0dd9e08847aa5fe73d8afb593b1b45b7cb4180f5
```

```
7
0.0s

=> CACHED [linux/amd64 builder 2/4] WORKDIR /app
0.0s

=> CACHED [linux/amd64 builder 3/4] COPY requirements.txt .
0.0s

=> CACHED [linux/amd64 builder 4/4] RUN pip install --no-cache-dir --
prefix=/install -r requirements.txt && rm -rf /root/.cache
0.0s

=> CACHED [linux/amd64 stage-1 3/4] COPY --from=builder /install
/usr/local/
0.0s

=> CACHED [linux/amd64 stage-1 4/4] COPY app.py .
0.0s

=> CACHED [linux/arm64 stage-1 2/4] WORKDIR /app
0.0s

=> CACHED [linux/arm64 stage-1 3/4] COPY --from=builder /install
/usr/local/
0.0s

=> CACHED [linux/arm64 stage-1 4/4] COPY app.py .
0.0s

=> exporting to image
6.3s

=> => exporting layers
0.0s

=> => preparing layers for inline cache
0.0s

=> => exporting manifest
sha256:4c4bf969d9939f3ea700f221a41d6c4c06e7b917194c764168d54a83dda3da12
0.0s

=> => exporting config
sha256:3e20328b959c87774592620000190e74e2bd3a65db9a229e813582f98dc987d8
0.0s

=> => exporting attestation manifest
sha256:207db3bc718d44c361f249193d3108d42e19d27e3b8f663e4c810fa25c2fffd4
0.0s

=> => exporting manifest
sha256:05c54a6c0e3e84bb11de0586c46d5d522b7a66525dc0222137077231e738dec6
0.0s

=> => exporting config
sha256:f73d4086cc250f817f980d34c20e6c310c122650a4a893faf7a3dcdb6a500fbf
0.0s

=> => exporting attestation manifest
sha256:ee7fbc3d390280c0f0d6bf0de0060b1b20fd805e30f72834751f4bb211e670d3
0.0s

=> => exporting manifest list
sha256:9b79f0ec3ef4bdfbc8d83e51052c273ddd6d61fd6f21debb114523fe8dde5342
0.0s
```

```
=> => pushing layers
2.4s

=> => pushing manifest for
docker.io/pszmeke/zadanie1:latest@sha256:9b79f0ec3ef4bdfbc8d83e51052c273ddd
6d61fd6f21debb114523fe8dde5342
3.8s

=> [auth] pszmeke/zadanie1:pull,push token for registry-1.docker.io
0.0s

-----

> importing cache manifest from pszmeke/zadanie1:cache:

-----

View build details: docker-desktop://dashboard/build/zadanie-
builder/zadanie-builder0/ircjgdp1s8kwxt17l3gc1j56t
```

#### *4. Komenda tworzące obraz w repozytorium na Docker Hubie*

```
Zadanieldod> docker manifest inspect pszmeke/zadaniel:latest

>>
{
  "schemaVersion": 2,
  "mediaType": "application/vnd.oci.image.index.v1+json",
  "manifests": [
    {
      "mediaType": "application/vnd.oci.image.manifest.v1+json",
      "size": 1623,
      "digest":
"sha256:4c4bf969d9939f3ea700f221a41d6c4c06e7b917194c764168d54a83dda3da12",
      "platform": {
        "architecture": "amd64",
        "os": "linux"
      }
    },
    {
      "mediaType": "application/vnd.oci.image.manifest.v1+json",
      "size": 1623,
      "digest":
"sha256:05c54a6c0e3e84bb11de0586c46d5d22b7a66525dc0222137077231e738dec6",
      "platform": {
        "architecture": "arm64",
        "os": "linux"
      }
    }
  ],
}
```

## 5. Komenda sprawdzająca manifest

```
Python (python-pkg)
=====
Total: 1 (UNKNOWN: 0, LOW: 0, MEDIUM: 1, HIGH: 0, CRITICAL: 0)
```

Library	Vulnerability	Severity	Status	Installed Version	Fixed Version	Title
requests (METADATA)	CVE-2024-35195	MEDIUM	fixed	2.31.0	2.32.0	requests: subsequent requests to the same host ignore cert verification <a href="https://avd.aquasec.com/nvd/cve-2024-35195">https://avd.aquasec.com/nvd/cve-2024-35195</a>

```
C:\Users\zbici>trivy image pszmeke/zadaniel:latest --format json --output trivy_report.json
2025-04-28T16:14:19+02:00 INFO [vuln] Vulnerability scanning is enabled
2025-04-28T16:14:19+02:00 INFO [secret] Secret scanning is enabled
2025-04-28T16:14:19+02:00 INFO [secret] If your scanning is slow, please try '--scanners vuln' to disable secret scanning
2025-04-28T16:14:19+02:00 INFO [secret] Please see also https://trivy.dev/v0.61/docs/scanner/secret#recommendation for faster secret detection
2025-04-28T16:14:21+02:00 INFO Detected OS family="alpine" version="3.21.3"
2025-04-28T16:14:21+02:00 INFO [alpine] Detecting vulnerabilities... os_version="3.21" repository="3.21" pkg_num=37
2025-04-28T16:14:21+02:00 INFO Number of language-specific files num=1
2025-04-28T16:14:21+02:00 INFO [python-pkg] Detecting vulnerabilities...
2025-04-28T16:14:21+02:00 WARN Using severities from other vendors for some vulnerabilities. Read https://trivy.dev/v0.61/docs/scanner/vulnerability#severity-selection for details.
```

## 6. Sprawdzenie obrazu pod względem podatności na zagrożenia