UNIT 4.4 GRADED ASSIGNMENT

Group members

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UNIT 4.4 GRADED ASSIGNMENT

Task:

- Browse to:
  tasks/4_microservices_development/day_4_best_practices/
  app_that_doesnt_follow_best_practices/
  Analyze the application - which Microservice best practices does it not follow?
  Think about what needs to be improved first. Have a look at the
  areas_for_improvement.txt file for hints.
  Improve the application.

Solution:

```
C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices>docker build -t new-image .
[+] Building 465.3s (11/11) FINISHED
 => [internal] load build definition from Dockerfile                                                    0.1s
 => => transferring dockerfile: 254B                                                                    0.0s
 => [internal] load .dockerignore                                                                       0.0s
 => => transferring context: 2B                                                                         0.0s
 => [internal] load metadata for docker.io/library/python:3.9                                          19.8s
 => [auth] library/python:pull token for registry-1.docker.io                                           0.0s
 => [1/5] FROM docker.io/library/python:3.9@sha256:6ea9dafc96d7914c5c1d199f1f0195c4e05cf017b10666ca84cb7ce8e269  403.7s
 => => resolve docker.io/library/python:3.9@sha256:6ea9dafc96d7914c5c1d199f1f0195c4e05cf017b10666ca84cb7ce8e2699d  0.1s
 => => sha256:6ea9dafc96d7914c5c1d199f1f0195c4e05cf017b10666ca84cb7ce8e2699d51 1.86kB / 1.86kB          0.0s
 => => sha256:c65dadac8789fed40962578392e99a0528dcb868442c75d144e68ba858984837 2.01kB / 2.01kB          0.0s
 => => sha256:27ac39eccd1fd7d6c7f78eefc98233e633a7178dd05910983ba905ecf71561f3 7.51kB / 7.51kB          0.0s
 => => sha256:5d79063a01c561833dc6546d4e647fda0121a59e1a9a17874a3e30854555475e 15.76MB / 15.76MB       77.5s
 => => sha256:918547b9432687b1e1d238e82dc1e0ea0b736aafbf3c402eea98c6db81a9cb65 55.05MB / 55.05MB      105.8s
 => => sha256:4eedd9c5abf7e5f63753a5e788cb0872a715fa1141e8ce5ea87638e6cd370a41 54.58MB / 54.58MB      180.9s
 => => sha256:9cdadd40055fb82fef74a0a38f29fb1ee7b6922e18370ebdc3502ec66f79fa3f 196.85MB / 196.85MB    377.6s
 => => sha256:2a12d0031f3fc457f41eaa0e29c0eaf4ba1376735aa940268ebccc76abb49f04 6.29MB / 6.29MB        123.4s
 => => extracting sha256:918547b9432687b1e1d238e82dc1e0ea0b736aafbf3c402eea98c6db81a9cb65               16.1s
 => => extracting sha256:5d79063a01c561833dc6546d4e647fda0121a59e1a9a17874a3e30854555475e                4.5s
 => => sha256:cea461a97d8717d5ef1eb563adaf205de17b9bf5b9bd57bc6bb2eae2296a8740 16.15MB / 16.15MB      171.5s
 => => sha256:a48c72dfa8c4e0da323ce32dac703c79d8f2de134e6a420cdfbc868323cfc68a 244B / 244B            177.1s
 => => sha256:c343b921680a19bf22934b83c02f42d8fdd0d8559417f63c1dcd2d7997c22da3 2.90MB / 2.90MB        185.3s
 => => extracting sha256:4eedd9c5abf7e5f63753a5e788cb0872a715fa1141e8ce5ea87638e6cd370a41               7.5s
 => => extracting sha256:9cdadd40055fb82fef74a0a38f29fb1ee7b6922e18370ebdc3502ec66f79fa3f              18.2s
 => => extracting sha256:2a12d0031f3fc457f41eaa0e29c0eaf4ba1376735aa940268ebccc76abb49f04               1.1s
 => => extracting sha256:cea461a97d8717d5ef1eb563adaf205de17b9bf5b9bd57bc6bb2eae2296a8740               1.9s
 => => extracting sha256:a48c72dfa8c4e0da323ce32dac703c79d8f2de134e6a420cdfbc868323cfc68a               0.0s
 => => extracting sha256:c343b921680a19bf22934b83c02f42d8fdd0d8559417f63c1dcd2d7997c22da3               0.5s
 => [internal] load build context                                                                       0.1s
 => => transferring context: 2.30kB                                                                     0.0s
 => [2/5] WORKDIR /app                                                                                  0.8s
 => [3/5] COPY requirements.txt .                                                                       0.2s
 => [4/5] RUN pip install --no-cache-dir -r requirements.txt                                           36.2s
 => [5/5] COPY . .                                                                                      2.5s
 => exporting to image                                                                                  1.5s
```

1. **The code uses the logging module and configures it to log to the console by adding a StreamHandler to the root logger. This ensures that logs are output to the container output**.

```python
logging.basicConfig(
    level=logging.INFO,
    format="%(asctime)s,%(msecs)d %(name)s %(levelname)s %(message)s",
    datefmt="%H:%M:%S",
    handlers=[logging.StreamHandler()]
)
```

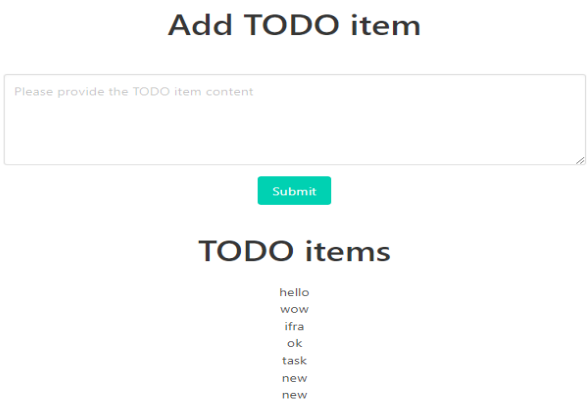
```
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices> docker run -d -p 7000:7000 -
v C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices\data:/app/data -e FLASK_ENV=de
velopment new-image
a00b1f59ec09bc142ab4db00e7f596fe19e3568170f3a4372e62e99fbe77dfb9
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices> docker ps
CONTAINER ID   IMAGE       COMMAND           CREATED          STATUS          PORTS                    NAMES
a00b1f59ec09   new-image   "python main.py"  14 seconds ago   Up 11 seconds   0.0.0.0:7000->7000/tcp   wizardly_euclid
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices> docker logs a00b1f59ec09
'FLASK_ENV' is deprecated and will not be used in Flask 2.3. Use 'FLASK_DEBUG' instead.
'FLASK_ENV' is deprecated and will not be used in Flask 2.3. Use 'FLASK_DEBUG' instead.
'FLASK_ENV' is deprecated and will not be used in Flask 2.3. Use 'FLASK_DEBUG' instead.
 * Serving Flask app 'main'
 * Debug mode: on
18:53:49,481 werkzeug INFO WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instea
d.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:7000
 * Running on http://172.17.0.2:7000
18:53:49,481 werkzeug INFO Press CTRL+C to quit
18:53:49,491 werkzeug INFO  * Restarting with stat
'FLASK_ENV' is deprecated and will not be used in Flask 2.3. Use 'FLASK_DEBUG' instead.
'FLASK_ENV' is deprecated and will not be used in Flask 2.3. Use 'FLASK_DEBUG' instead.
'FLASK_ENV' is deprecated and will not be used in Flask 2.3. Use 'FLASK_DEBUG' instead.
18:53:50,644 werkzeug WARNING  * Debugger is active!
18:53:50,646 werkzeug INFO  * Debugger PIN: 114-119-573
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices>
```

This flask_app can run in multiple instances. And it will share the same data.

```
C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices>docker run -p 7001:7000 -v %cd%\data:/app/data new-image
 * Serving Flask app 'main'
 * Debug mode: on
17:36:54,360 werkzeug INFO 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://127.0.0.1:7000
 * Running on http://172.17.0.3:7000
17:36:54,360 werkzeug INFO Press CTRL+C to quit
17:36:54,364 werkzeug INFO  * Restarting with stat
17:36:55,73 werkzeug WARNING  * Debugger is active!
17:36:55,79 werkzeug INFO  * Debugger PIN: 227-321-563
```

```
C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices>docker run -p 7000:7000 -v %cd%\data:/app/data new-image
 * Serving Flask app 'main'
 * Debug mode: on
17:10:24,373 werkzeug INFO 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://127.0.0.1:7000
 * Running on http://172.17.0.2:7000
17:10:24,373 werkzeug INFO Press CTRL+C to quit
17:10:24,379 werkzeug INFO  * Restarting with stat
17:10:25,136 werkzeug WARNING  * Debugger is active!
17:10:25,141 werkzeug INFO  * Debugger PIN: 996-009-275
17:10:41,765 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:10:41] "GET / HTTP/1.1" 200 -
17:10:41,939 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:10:41] "GET /static/styles/bulma.min.css HTTP/1.1" 200 -
17:10:42,131 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:10:42] "GET /favicon.ico HTTP/1.1" 404 -
17:16:46,66 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:16:46] "POST / HTTP/1.1" 200 -
17:16:46,127 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:16:46] "GET /static/styles/bulma.min.css HTTP/1.1" 304 -
17:16:57,835 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:16:57] "POST / HTTP/1.1" 200 -
17:16:57,881 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:16:57] "GET /static/styles/bulma.min.css HTTP/1.1" 304 -
17:17:09,748 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:17:09] "POST / HTTP/1.1" 200 -
17:17:09,807 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:17:09] "GET /static/styles/bulma.min.css HTTP/1.1" 304 -
17:37:29,165 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:37:29] "GET / HTTP/1.1" 200 -
17:37:29,313 werkzeug INFO 172.17.0.1 - - [15/May/2023 17:37:29] "GET /static/styles/bulma.min.css HTTP/1.1" 304 -
```

2. **It should be stateless, so that:**
   - **it can easily be restarted without loss of data,**
   - **it is easy to spawn multiple instances of the application.**



So, even after exiting the container, the data can persist and after running the container again we can access the same data.

3. **App should be able to be executed both during development, with debugging enabled, and in production, with debugging disabled.**

```
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices> docker run -d -p 7000:7000 -e FLASK_ENV=dev
elopment new-image
900df5e93a3cd2b6b6621619069d05fe88bfc328ea6e2d2e491c38fe1172989d
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices> docker run -d -p 8000:8000 -
e FLASK_ENV=production new-image
f74a4d22dd6dde3fe57ecfe853e6cfeb9b699b0b4da37fb95a6395c3bd368dc2
```

```
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices> docker run -d -p 7000:7000 -
v C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices\data:/app/data -e FLASK_ENV=de
velopment new-image
d741bd3a305c6ad88d09925803453fa226e28e9b9234e655f29f1ab0b6ec4208
PS C:\Users\asdd\Downloads\Compressed\app_that_doesnt_follow_best_practices\app_that_doesnt_follow_best_practices>
```

4. **Requirements installation should be moved from runtime to build time.**

```
Dockerfile > ...
1   FROM python:3.9
2
3   WORKDIR /app
4
5   COPY requirements.txt .
6   RUN pip install --no-cache-dir -r requirements.txt
7
8   COPY . .
9
10  VOLUME /app/data
11
12  CMD ["python", "main.py"]
13
```

In this Dockerfile, the requirements are copied and installed before copying the rest of the application code. This ensures that the requirements are installed at build time.