Ganpat University | Institute of Computer Technology

॥ विद्यया समाजोत्कर्षः ॥

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Sub: MICROSEVICES

Branch: CBA

Batch:51

---------------------------PRACTICAL 12----------------------------

❖ Question (TASK) :

Create an image that sandboxes a small Flask application. The goal of this exercise is to create a Docker image which will run a Flask app.

Docker, Inc. sponsors a dedicated team that is responsible for reviewing and publishing all Official Repositories content.

This team works in collaboration with upstream software maintainers, security experts, and the broader Docker community. These are not prefixed by an organization or user name. In the list of images above, the python, node, alpine and nginx images are official (base) images.

User images are images created and shared by users like you. They build on base images and add additional functionality.

Typically these are formatted as user/image-name. The user value in the image name is your Docker Store user or organization name. Hence,

1. Create a Python Flask app that displays random data.

2. Write a Dockerfile.

3. Build the image.

4. Run your image.

5. Push your image

🔗 **Github Link :** https://github.com/Tushar007079/MICROSERVICES_PRACTICALS/tree/main/12

➤1. Create a Python Flask App :

✓ **app.js :-**

```
from flask import Flask
import random

app = Flask(__name__)

@app.route('/')
def random_number():
    return f"Random Number: {random.randint(1, 100)}"

if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000)
```

➤ 2. Write a Dockerfile :

✓ **Dockerfile :**

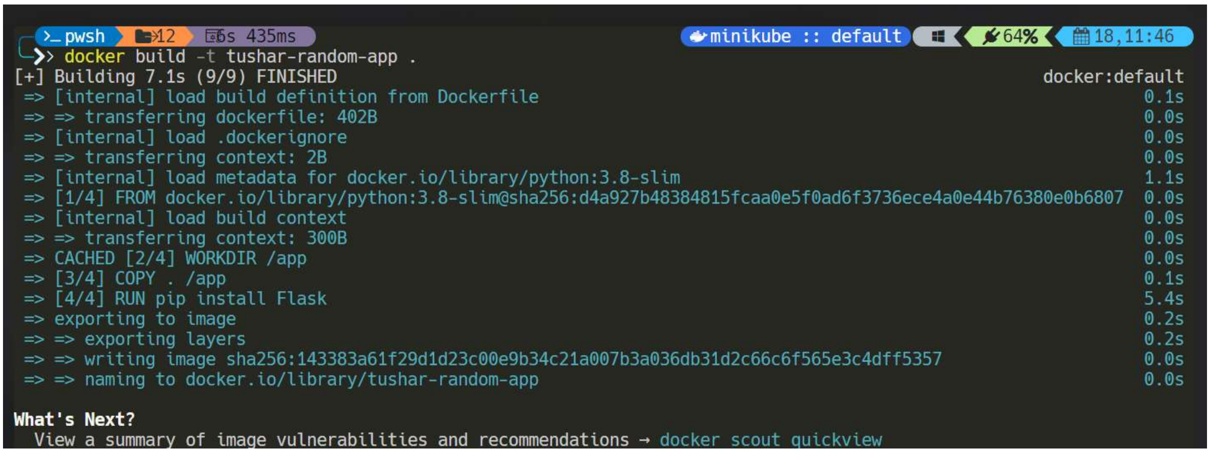
```
# Use the official Python image as the base image
FROM python:3.8-slim

# Set the working directory in the container
WORKDIR /app

# Copy the current directory contents into the container at /app
COPY . /app

# Install Flask
RUN pip install Flask

# Expose port 5000 for Flask
EXPOSE 5000

# Command to run the Flask app
CMD ["python", "app.py"]
```

➤3. Build the Image :

» Open a terminal in the directory containing your Dockerfile and app.py, and build the Docker image using the following command :

```
docker build -t tushar-random-app .
```

- This command will build an image tagged as tushar-random-app.

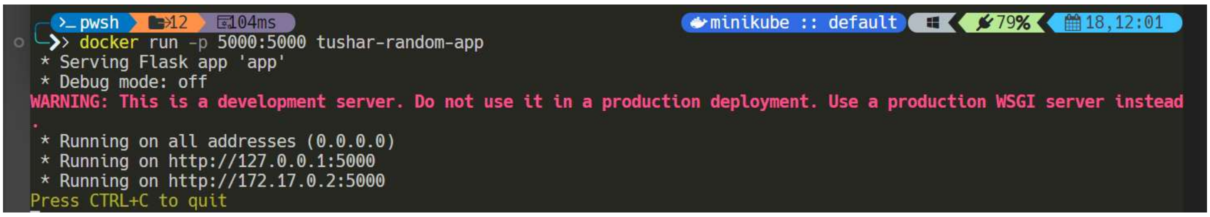


```
>_ pwsh  12  6s 435ms                                              minikube :: default   64%  18,11:46
>> docker build -t tushar-random-app .
[+] Building 7.1s (9/9) FINISHED                                                                 docker:default
 => [internal] load build definition from Dockerfile                                                       0.1s
 => => transferring dockerfile: 402B                                                                       0.0s
 => [internal] load .dockerignore                                                                          0.0s
 => => transferring context: 2B                                                                            0.0s
 => [internal] load metadata for docker.io/library/python:3.8-slim                                         1.1s
 => [1/4] FROM docker.io/library/python:3.8-slim@sha256:d4a927b48384815fcaa0e5f0ad6f3736ece4a0e44b76380e0b6807  0.0s
 => [internal] load build context                                                                          0.0s
 => => transferring context: 300B                                                                          0.0s
 => CACHED [2/4] WORKDIR /app                                                                              0.0s
 => [3/4] COPY . /app                                                                                      0.1s
 => [4/4] RUN pip install Flask                                                                            5.4s
 => exporting to image                                                                                     0.2s
 => => exporting layers                                                                                    0.2s
 => => writing image sha256:143383a61f29d1d23c00e9b34c21a007b3a036db31d2c66c6f565e3c4dff5357               0.0s
 => => naming to docker.io/library/tushar-random-app                                                       0.0s

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview
```

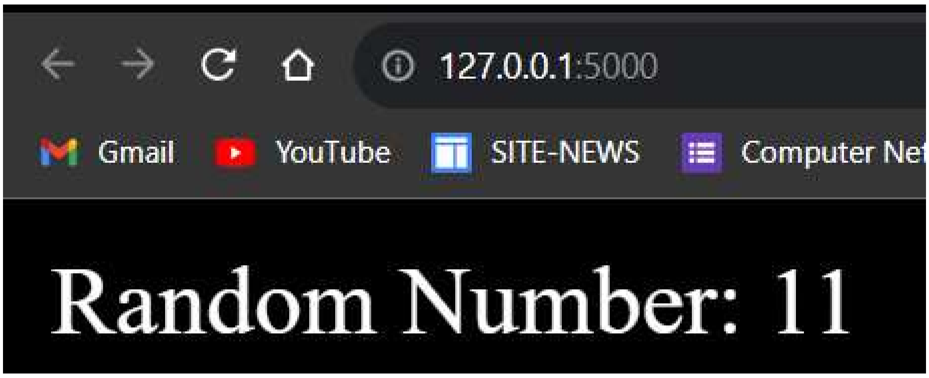
4. Run Your Image :

- You can run your Docker image as a container using the following command :

```
docker run -p 5000:5000 tushar-random-app
```



```
>_ pwsh  12  104ms                                                 minikube :: default   79%  18,12:01
>> docker run -p 5000:5000 tushar-random-app
 * Serving Flask app 'app'
 * Debug mode: off
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
Press CTRL+C to quit
```



Random Number: 11

- This command maps port 5000 on your host to port 5000 in the Docker container.

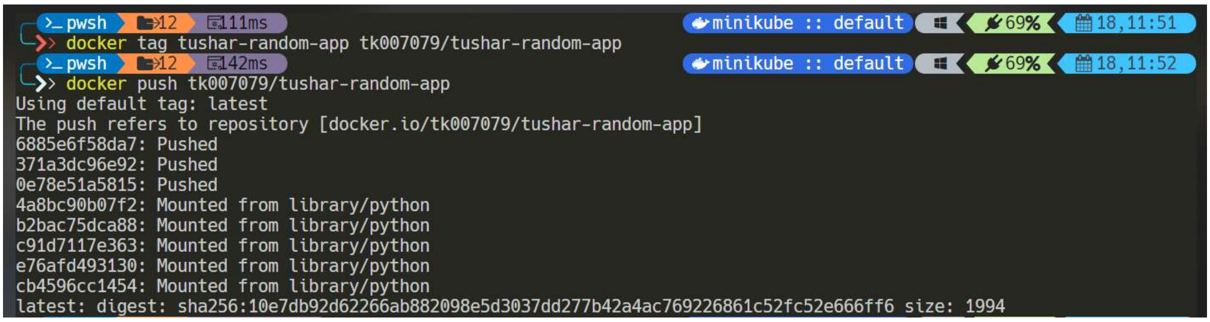
5. Push Your Image :

- To push your Docker image to a Docker registry (e.g., Docker Hub), you need to tag it with your Docker Hub username (or your organization name) and then push it, Replace <your_username> with your Docker Hub username or organization name. :

```
docker tag flask-random-app <your_username>/flask-random-app
docker push <your_username>/flask-random-app
```

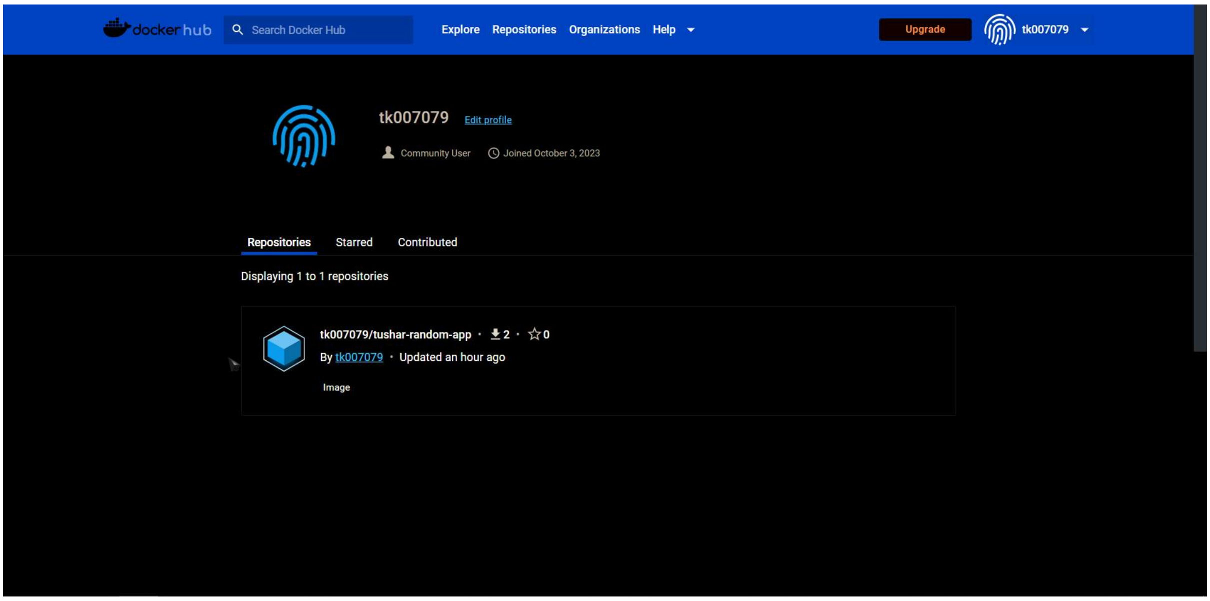
This is my command to push my docker image :

```
docker tag tushar-random-app tk007079/tushar-random-app
docker push tk007079/tushar-random-app
```



```
 >_ pwsh  12  111ms                                          minikube :: default    69%   18,11:51
 >> docker tag tushar-random-app tk007079/tushar-random-app
 >_ pwsh  12  142ms                                          minikube :: default    69%   18,11:52
 >> docker push tk007079/tushar-random-app
Using default tag: latest
The push refers to repository [docker.io/tk007079/tushar-random-app]
6885e6f58da7: Pushed
371a3dc96e92: Pushed
0e78e51a5815: Pushed
4a8bc90b07f2: Mounted from library/python
b2bac75dca88: Mounted from library/python
c91d7117e363: Mounted from library/python
e76afd493130: Mounted from library/python
cb4596cc1454: Mounted from library/python
latest: digest: sha256:10e7db92d62266ab882098e5d3037dd277b42a4ac769226861c52fc52e666ff6 size: 1994
```

Your Docker image will now be available on Docker Hub under your username :



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tk007079/tushar-random-app · 2 · 0
By tk007079 · Updated an hour ago
Image