Advanced Software Engineering (LAB)

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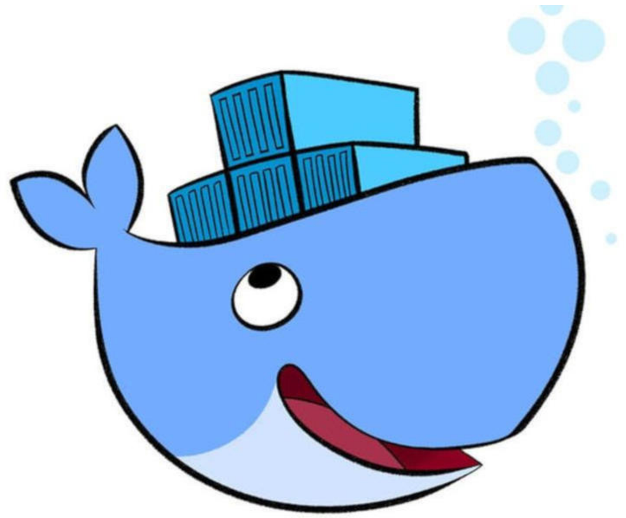
What will I do?

- Complete a multi-service application.
- Write `Dockerfile`s to create images to deploy your services.
- Use Docker Compose to run your multi-service application.



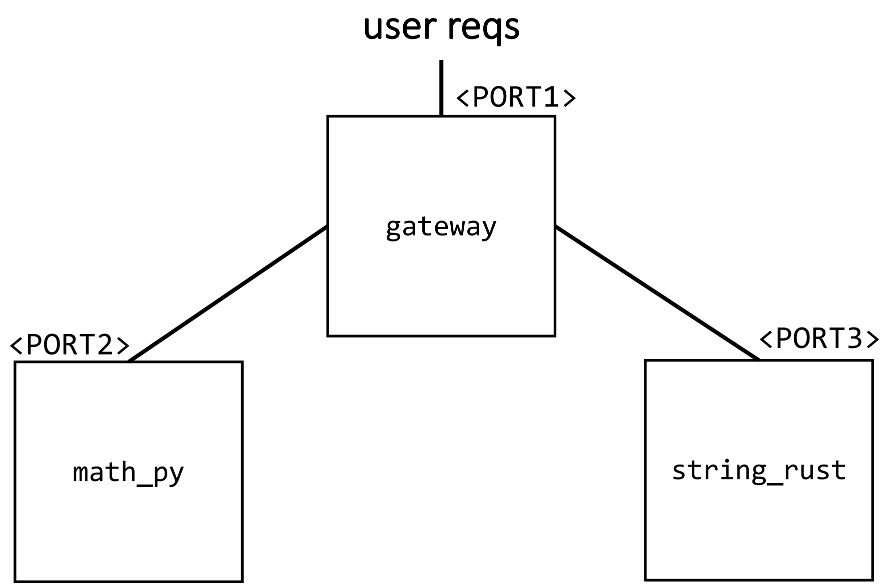
Instructions

PART ONE

1. Download the code of the `microase` app from the Moodle.
2. Complete the `math` service code to feature the requested operations and set a port in the `.flaskenv` file.
3. Run the `math` service through the provided `Dockerfile` (instructions follow), after completing it with a suitable port.
4. Complete the `gateway/urls.py` file with suitable service name and ports.
5. Write `Dockerfile` for the `gateway` and `string_rust` services.

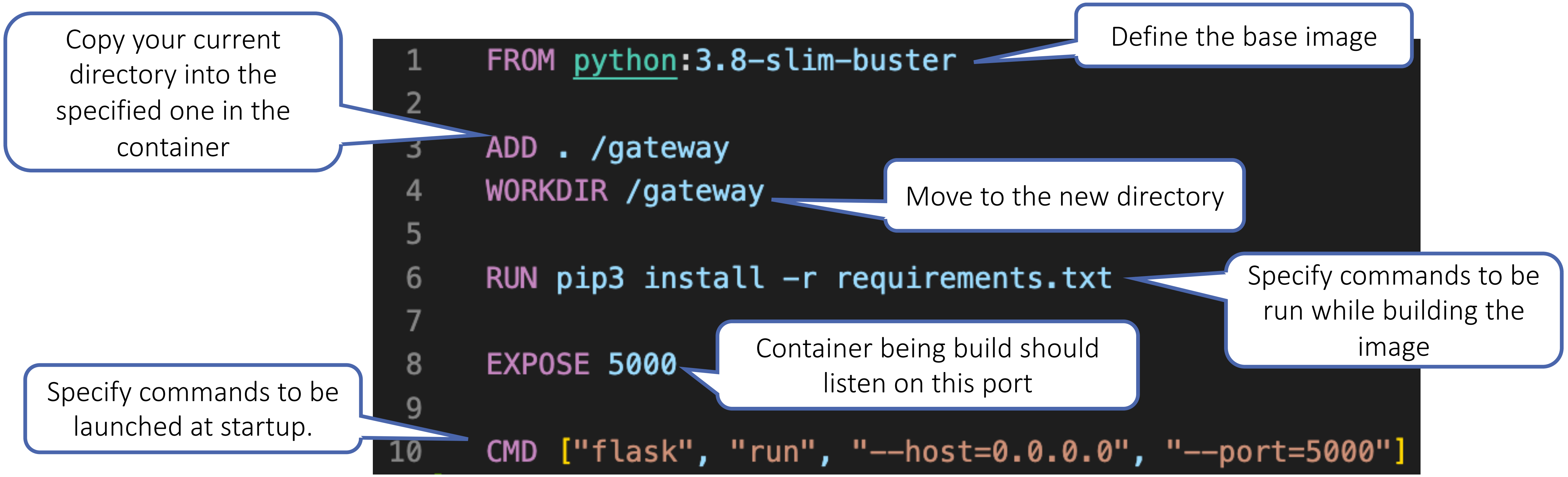
PART TWO

1. Write a `docker-compose.yml` file to run all three services.
2. Run the whole application through Docker Compose.



Dockerfile

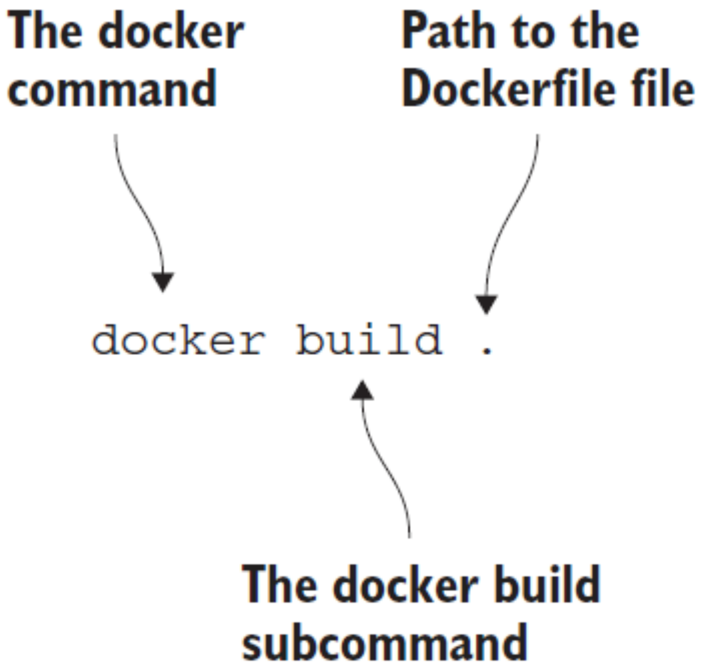
A `Dockerfile` is a text-file that contains a set of steps that can be used to create a Docker image.

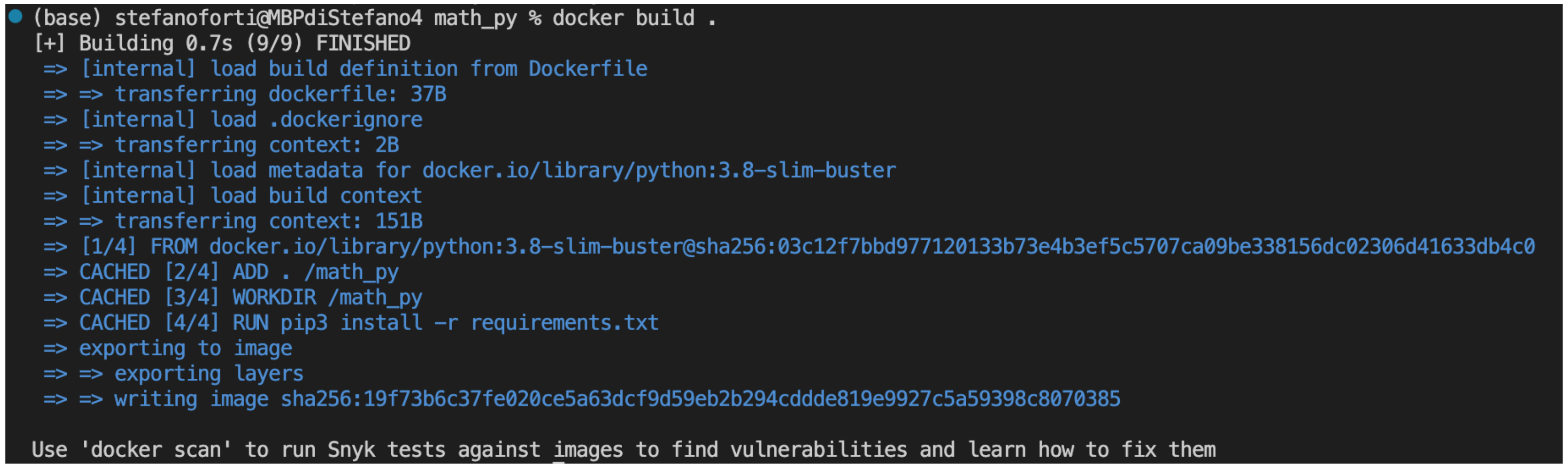


```
FROM python:3.8-slim-buster

ADD . /gateway
WORKDIR /gateway

RUN pip3 install -r requirements.txt

EXPOSE 5000

CMD ["flask", "run", "--host=0.0.0.0", "--port=5000"]
```

Copy your current directory into the specified one in the container
Define the base image
Move to the new directory
Specify commands to be run while building the image
Container being build should listen on this port
Specify commands to be launched at startup.

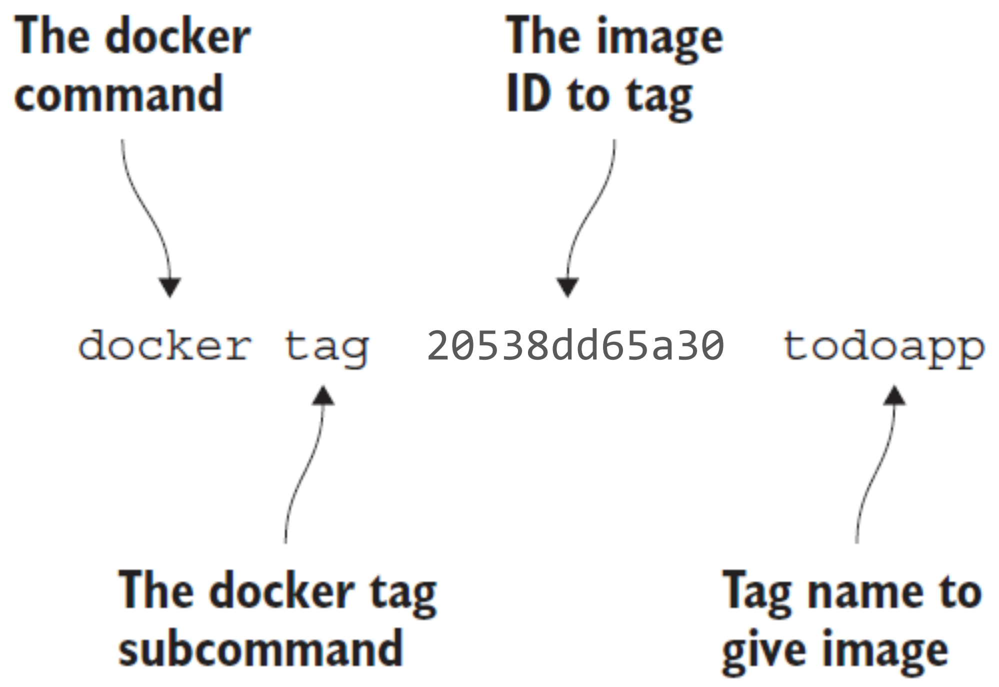
As easy as `docker build .`





```
(base) stefanoforti@MBPdiStefano4 math_py % docker build .
[+] Building 0.7s (9/9) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 37B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/python:3.8-slim-buster
 => [internal] load build context
 => => transferring context: 151B
 => [1/4] FROM docker.io/library/python:3.8-slim-buster@sha256:03c12f7bbd977120133b73e4b3ef5c5707ca09be338156dc02306d41633db4c0
 => CACHED [2/4] ADD . /math_py
 => CACHED [3/4] WORKDIR /math_py
 => CACHED [4/4] RUN pip3 install -r requirements.txt
 => exporting to image
 => => exporting layers
 => => writing image sha256:19f73b6c37fe020ce5a63dcf9d59eb2b294cddde819e9927c5a59398c8070385

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them
```

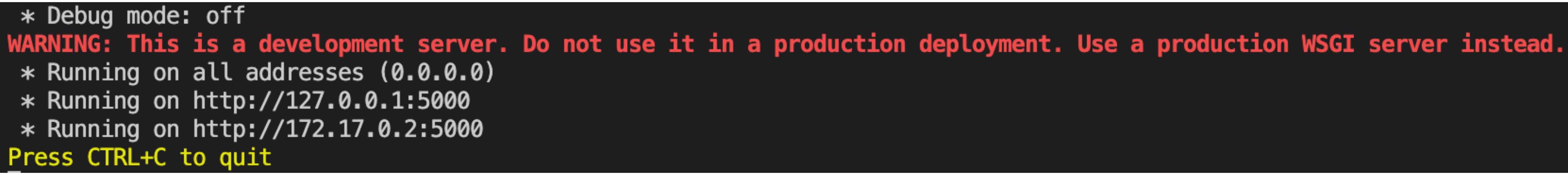
Tag an image


```
docker tag 20538dd65a30 todoapp
```

Run it!

Run del docker fiile e linka la porta 5001 alla porta 5000 del docker, abbiamo aperto la porta 5000 del docker tramite il comando "EXPOSE 5000" nel dockerfile.

```
docker run -p 5001:5000 <img_tag>
```



```
 * 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
```

Try it:

```
http://127.0.0.1:5001/add?a=2&b=1
```