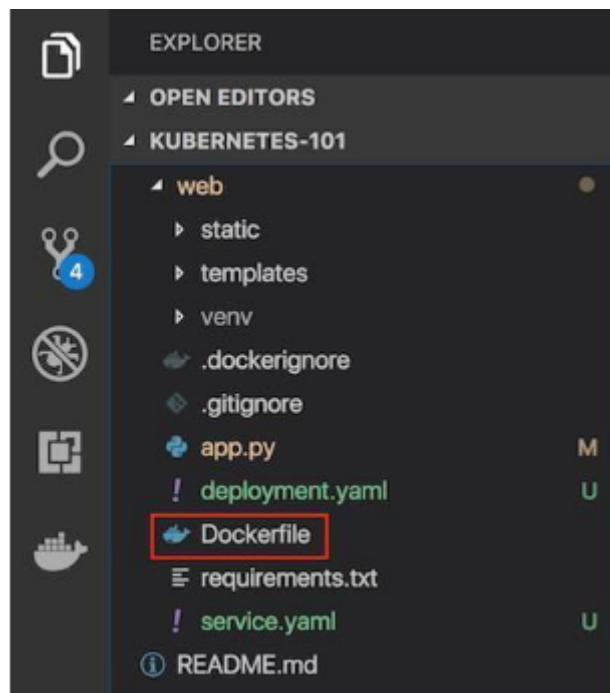


Containerize your Flask application

Date	9 November 2022
Team ID	PNT2022TMID02025
Project Name	Skill/Job Recommender Application

Steps:

1. In your project directory, create a file named **"Dockerfile."** Suggestion: Name your file exactly **"Dockerfile,"** nothing else.



2. A **"Dockerfile"** is used to indicate to Docker a base image, the Docker settings you need, and a list of commands you would like to have executed to prepare and start your new container.

3. Paste this code into that file:

- FROM python:2.7
- LABEL maintainer="Kunal Malhotra, kunal.malhotra1@ibm.com"

- RUN apt-get update
- RUN mkdir /app WORKDIR /app COPY . /app
- RUN pip install -r requirements.txt
- EXPOSE 5000
- ENTRYPOINT ["python"]
- CMD ["app.py"]

4. Explanation and breakdown of the above Dockerfile code:

- The first part of the code above is: **FROM python:2.7** . Because this Flask application uses Python 2.7, we want an environment that supports it and already has it installed. Fortunately, DockerHub has an official image that's installed on top of Ubuntu. In one line, we will have a base Ubuntu image with Python 2.7, virtual any, and pip. There Are tons of images on DockerHub, but if you would like to start off with a fresh Ubuntu image and build on top of it, you could do that.

- Let's look at the next part of the code:

LABEL maintainer="Kunal Malhotra, kunal.malhotra1@ibm.com"

RUN apt-get update

- Note the maintainer and update the Ubuntu package index. The command is RUN, which is a function that runs the command a

RUN mkdir /app

WORKDIR /app

COPY . /app

- Now it's time to add the Flask application to the image. For simplicity, copy the application under the /app directory on our Docker Image.

WORKDIR is essentially a ***cd*** in bash, and ***COPY*** copies a certain directory to the provided directory in an image. ***ADD*** is another command that does the same thing as ***COPY***, but it also allows you to add a repository from a URL. Thus, if you want to clone your git repository instead of copying it from your local repository (for staging

and production purposes), you can use that. COPY, however, should be used most of the time unless you have a URL.

- Now that we have our repository copied to the image, we will install all of our dependencies, which is defined in the *requirements.txt* part of the code.

RUN pip install --no-cache-dir -r requirements.txt

- We want to expose the port(5000) the Flask application runs on, so we use.

EXPOSE 5000

ENTRYPOINT specifies the entrypoint of your application.

ENTRYPOINT ["python"]

CMD ["app.py"]

5. Build an image from the Dockerfile:

- Open the terminal and type this command to build an image from your Dockerfile: ***docker build -t <image_name>:<tag>*** .(note the period to indicate we're in our apps top level directory). For example: ***docker build -t app:latest***)

```
kunals-mbp:kunalnaihotra$ docker build -t app:latest .
Sending build context to Docker daemon 348.2kB
Step 1/8 : FROM python:2.7
----> 6c70e39e/cfe
Step 2/8 : LABEL maintainer="Kunal Nalhotra, kunal.nalhotra@ibm.com"
----> Using cache
----> d8057d1591c
Step 3/8 : RUN apt-get update
----> Using cache
----> 6262a134e40e
Step 4/8 : COPY . /app
----> f07f737709f
Step 5/8 : WORKDIR /app
Removing intermediate container f9010b99d2fe
----> 8bccc6af20e3d
Step 6/8 : RUN pip install -r requirements.txt
----> Running in 8153040b00b7
Collecting click==6.7 (from -r requirements.txt (line 1))
  Downloading https://files.pythonhosted.org/packages/34/c1/806f99713dd993c5366c362b2f908f18209f8d792aff1abfd700775a77/click-6.7-py2.py3-none-any.whl (71kB)
Collecting Flask==1.0.2 (from -r requirements.txt (line 2))
  Downloading https://files.pythonhosted.org/packages/7f/47/88578774ed45364324b14dcb4696386634607ef824ea997202cd8ed9b/Flask-1.0.2-py2.py3-none-any.whl (91kB)
Collecting itsdangerous==0.24 (from -r requirements.txt (line 3))
  Downloading https://files.pythonhosted.org/packages/dc/b4/a60bcb0945c00f6d608d8375131ab3f25b22f2bcbfcdab221165194b2d4/itsdangerous-0.24.tar.gz (46kB)
Collecting Jinja2==2.10 (from -r requirements.txt (line 4))
  Downloading https://files.pythonhosted.org/packages/7f/ff/0e4b0acdfc9f270b1607eed8e8686763ba4d277078ca76f3269220a731/Jinja2-2.10-py2.py3-none-any.whl (126kB)
Collecting MarkupSafe==1.0 (from -r requirements.txt (line 5))
  Downloading https://files.pythonhosted.org/packages/4d/de/32d741d8316d8f4b768822d437001ef7a448255de9693b4b4fcd4f4172b/MarkupSafe-1.0.tar.gz
Collecting Werkzeug==0.14.1 (from -r requirements.txt (line 6))
  Downloading https://files.pythonhosted.org/packages/28/c4/12e3e56473e52375aa29c4764e70d1b8f3ef66682be18d8aa04fe335243/Werkzeug-0.14.1-py2.py3-none-any.whl (322kB)
Building wheels for collected packages: itsdangerous, MarkupSafe
Running setup.py bdist_wheel for itsdangerous: started
Running setup.py bdist_wheel for itsdangerous: finished with status 'done'
Stored in directory: /root/.cache/pip/wheels/2c/4a/61/5599631c1554768c629b08c82c72d7317910374ca682ff1e5
Running setup.py bdist_wheel for MarkupSafe: started
Running setup.py bdist_wheel for MarkupSafe: finished with status 'done'
Stored in directory: /root/.cache/pip/wheels/33/56/28/eb09a5c612fffe1c5a632146b16596f9e64676768661e4e6
Successfully built itsdangerous MarkupSafe
Installing collected packages: click, itsdangerous, MarkupSafe, Jinja2, Werkzeug, Flask
Successfully installed Flask-1.0.2 Jinja2-2.10 MarkupSafe-1.0 Werkzeug-0.14.1 click-6.7 itsdangerous-0.24
Removing intermediate container 8153040b00b7
----> 66d26360970c
Step 7/8 : ENTRYPOINT [ "python" ]
----> Running in bdc1c83815e1
Removing intermediate container bdc1c83815e1
----> 72c0fc280a1c
Step 8/8 : CMD [ "app.py" ]
----> Running in a784d430dd6f
Removing intermediate container a784d430dd6f
----> d8b0b8376305
Successfully built d8b0b8376305
Successfully tagged app:latest
kunals-mbp:kunalnaihotra$
```

6. Run your container locally and test:

- After you build your image successfully, type: ***docker run -d -p 5000:5000 app*** This command will create a container that contains all the application code and dependencies from the image and runs it locally.

