

Program - 1

Build a Docker container from a Custom Dockerfile

Description

The objective of this problem is to build a Docker container from a custom Dockerfile. The container should package the application and its dependencies to run consistently across environments.

Project Structure

```
program1/  
→ Dockerfile  
→ requirements.txt  
→ app.py
```

Step 1: Create a Dockerfile

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ cat Dockerfile  
# Use slim Python version  
FROM python:3.9-slim  
  
# Create a working directory in the container  
WORKDIR /app  
  
# Install dependencies  
RUN apt-get update && apt-get install -y build-essential && \  
    pip install --upgrade pip setuptools  
  
# Copy requirements and install  
COPY requirements.txt .  
RUN pip install --no-cache-dir -r requirements.txt  
  
# Copy source code  
COPY . .  
  
# Set up Flask environment (no spaces around '=')  
ENV FLASK_APP=app.py  
ENV FLASK_RUN_HOST=0.0.0.0  
ENV FLASK_RUN_PORT=3000  
  
# Expose the correct port  
EXPOSE 3000  
  
# Run Flask  
CMD ["flask", "run"]
```

Step 2: Create a simple text file - requirements.txt

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ cat requirements.txt  
flask
```

Step 3: Create a Python file - [app.py](#)

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ cat app.py
from flask import Flask

app = Flask(__name__)

@app.route('/')

def hello():
    return "Hello World!"

if __name__ == "__main__":
    app.run(host='localhost', port=3000)
```

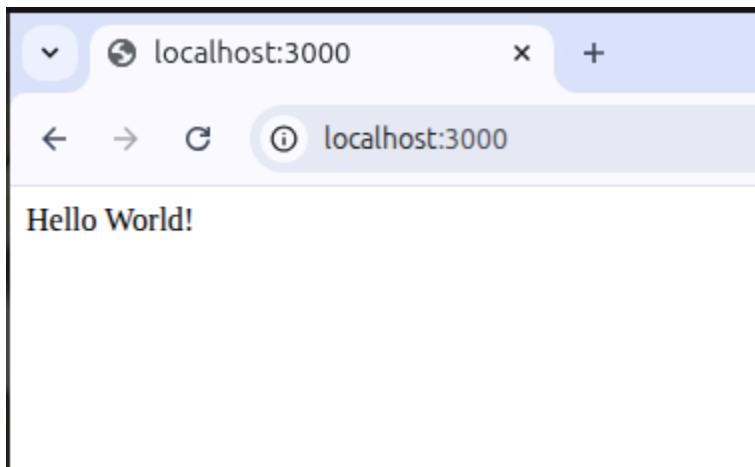
Step 4: Execute the Docker build command

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ docker build -t program1 .
[+] Building 46.7s (11/11) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 607B
=> [internal] load metadata for docker.io/library/python:3.9-slim
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/6] FROM docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aabc1acda1e13cf1731b1b
=> => resolve docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aabc1acda1e13cf1731b1b
=> => sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710affa286c08 13.88MB / 13.88MB
=> => sha256:ea56f685404adf81680322f152d2cfe62115b38dda481c2c450078315beb508 251B / 251B
=> => sha256:2d97f6910b16bd338d3060f261f53f144965f755599aabc1acda1e13cf1731b1b 10.36kB / 10.36kB
=> => sha256:dad5b29e3586c35e0fd22736f4d4ef25d21b219acdd73f7bb41d59996ca8e0d 1.74kB / 1.74kB
=> => sha256:085da638e1b8a449514c3fda83ff50a3bffa4418b050cfacd87e5722071f497 5.40kB / 5.40kB
=> => sha256:b3ec39b36ae8c03a3e09854de4ec4aa08381dfed84a9daa075048c2e3df3881d 1.29MB / 1.29MB
=> => extracting sha256:b3ec39b36ae8c03a3e09854de4ec4aa08381dfed84a9daa075048c2e3df3881d
=> => extracting sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710affa286c08
=> => extracting sha256:ea56f685404adf81680322f152d2cfe62115b38dda481c2c450078315beb508
=> [internal] load build context
=> => transferring context: 862B
=> [2/6] WORKDIR /app
=> [3/6] RUN apt-get update && apt-get install -y build-essential && pip install --upgrade pip setuptools
=> [4/6] COPY requirements.txt .
=> [5/6] RUN pip install --no-cache-dir -r requirements.txt
=> [6/6] COPY . .
=> exporting to image
=> exporting layers
=> writing image sha256:1ae6fbf8f9cb2cbea7d5a392a96972d6307f02497d7b694db1ef819e4044cf8
=> naming to docker.io/library/program1
```

Step 5: Run the Docker run command specifying the port number and name of the container

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ docker run -d -p 3000:3000 --name flask-container program1
b105920e940267657b9d25a941cb23f64c7c3c4e1bc47ed1a4e0a824a4f070c0
```

Step 6: Test the container by verifying the localhost details on web browser



Step 7: Stop the Container with the Container Number

docker container stop <container-number>

Step 8: Remove the container with the container number

docker rm <container-number>

Step 9: Delete the Docker image with the name

docker rmi <image-id>

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ docker container stop b10
b10
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ docker container rm b10
b10
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$ docker container ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
ffb629c6e9b6   registry:2    "/entrypoint.sh /etc..." 47 minutes ago Up 47 minutes 0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp trusting_wilson
jeevanc@jeevanc-IdeaPad-Slim-3-15AMN8:~/Devopslab/program1$
```