

# 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-3-15AMNB:~/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)
```

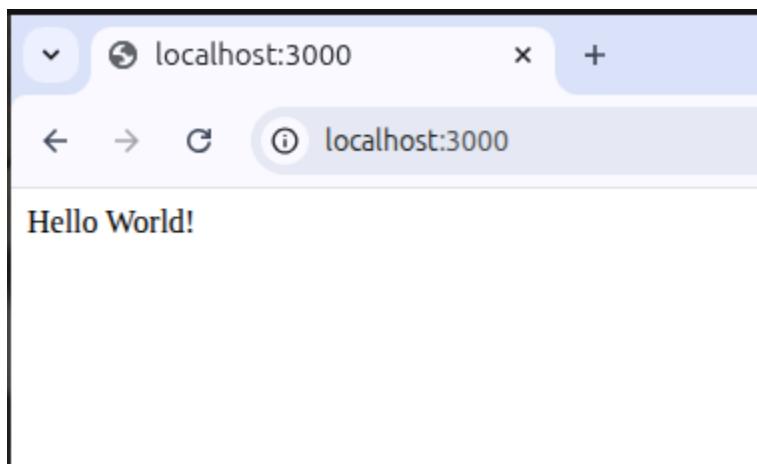
### Step 4: Execute the Docker build command

```
jeevanc@jeevanc-IdeaPad-Slim-3-15AMNB:~/Devopslab/program1$ docker build -t program1 .
[+] Building 46.7s (11/11) FINISHED
--> [internal] load build definition from Dockerfile
--> transferring dockerfile: 60B
--> [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@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acdade13cf1731b1b
--> resolve docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acdade13cf1731b1b
--> sha256:fc74430849022d1b0d44b969a953fb42f59c6e9d1a0c2c83d710fa286c08 13.88MB / 13.88MB
--> sha256:ea56f685404adff01680322f152d2cfecc2115b30ddaa81c2c450678315beb508 251B / 251B
--> sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acdade13cf1731b1b 10.36kB / 10.36kB
--> sha256:dad5b29e35b6c35e0fd222736f4d4ef25d21b219acd73f7bb41d59996ca8ed 1.74kB / 1.74kB
--> sha256:085da638e1b8a449514c3fd8a3ff50a03bffffe441b80530facd87e5722871f497 5.40kB / 5.40kB
--> sha256:b3ec39b36aae8c03a3e98b54ade4e4a08381dfed84a9da075048c2e3df3881d 1.29MB / 1.29MB
--> extract sha256:b3ec39b36aae8c03a3e98b54ade4e4a08381dfed84a9da075048c2e3df3881d
--> extract sha256:fc74430849022d13b0d44b969a953f842f59c6e9d1a0c2c83d710fa286c08
--> extract sha256:ea56f685404adff01680322f152d2cfecc2115b30ddaa81c2c450678315beb508
--> [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 sha256:1ae6bf8f9cb2cbea7d5a392a96972d6307f02497d7b694db1efd819e4044cf8
--> 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-3-15AMNB:~/Devopslab/program1$ docker run -d -p 3000:3000 --name flask-container program1
b105920e940267657bd25a91cb23f64c7c3c4e1bc47ed1ade0a824a4f078c0
```

### 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-3-1SAMN8:~/Devopslab/program$ docker container stop b10
b10
jeevanc@jeevanc-IdeaPad-Slim-3-1SAMN8:~/Devopslab/program$ docker container rm b10
b10
jeevanc@jeevanc-IdeaPad-Slim-3-1SAMN8:~/Devopslab/program$ 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-3-1SAMN8:~/Devopslab/program$
```