

# DevOps Lab

## Documentation

### Program 1:

Build a Docker Container from a Custom Dockerfile

Project Structure:

```
program_1/  
    -->Dockerfile  
    -->app.py  
    -->requirements.txt
```

Procedure:

Create a folder (ex: program\_1)



```
1RV24MC062_lubna_tabassum@Inspiron:~$ mkdir program_1  
1RV24MC062_lubna_tabassum@Inspiron:~$ cd program_1  
1RV24MC062_lubna_tabassum@Inspiron:~/program_1$ █
```

**Step 1:** Create a **Dockerfile** without any extensions and add the following content  
sudo nano Dockerfile

```
GNU nano 7.2                               1RV24MC062_lubna_tabassum@Inspiron:~/program_1
Dockerfile
#Dockerfile
#Use slim python base image
FROM python:3.9-slim

#Set working directory inside the container
WORKDIR /app

#Copy requirements file and install dependencies
COPY requirements.txt .
RUN pip install --no-cache-dir -r requirements.txt

#Copy the application code
COPY . .

#Set flask application variables
ENV FLASK_APP=app.py
ENV FLASK_RUN_HOST=0.0.0.0
ENV FLASK_RUN_PORT=5000

#Expose the port, the flask app will run on
EXPOSE 5000
CMD ["flask", "run"]

[ Wrote 24 lines ]
^G Help      ^O Write Out    ^W Where Is    ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File     ^\ Replace     ^U Paste      ^J Justify    ^/ Go To Line M-E Redo
```

## Step 2: Create a python file- [app.py](#) with following code

nano app.py

```
GNU nano 7.2                               1RV24MC062_lubna_tabassum@Inspiron:~/program_1
app.py
from flask import Flask

app=Flask(__name__)

@app.route("/")
def hello():
    return "Hello,Docker!"

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

[ Wrote 10 lines ]
^G Help      ^O Write Out    ^W Where Is    ^K Cut        ^T Execute    ^C Location   M-U Undo
^X Exit      ^R Read File     ^\ Replace     ^U Paste      ^J Justify    ^/ Go To Line M-E Redo
```

**Step 3:** Create a text file- requirements.txt with following content

## nano requirements.txt

```
GNU nano 7.2 requirements.txt
flask [ Wrote 1 line ]
^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location M-U Undo
^X Exit ^R Read File ^M Replace ^U Paste ^J Justify ^V Go To Line M-E Redo
```

#### **Step 4:** Execute the Docker Build command

```
docker build -t program 1 .
```

```
IRV24MC062_lubna_tabassum@Inspiron:~/program_1$ nano requirements.txt
IRV24MC062_lubna_tabassum@Inspiron:~/program_1$ docker build -t program_1 .
[+] Building 14.9s (10/10) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 554B
=> [internal] load metadata for docker.io/library/python:3.9-slim
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/5] FROM docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acd1 6.2s
=> => resolve docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acd1 0.0s
=> => sha256:b3ec39b36ae8c03a3e09854de4ec4aa08381dfed84a9daa075048c2e3df3881d 1.29MB / 1.29MB 0.9s
=> => sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710affa286c08 13.88MB / 13.88MB 5.5s
=> => sha256:ea56f685404adf81680322f152d2cfec62115b30dda481c2c450078315beb508 251B / 251B 1.1s
=> => sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acd1e13cf1731b1b 10.36kB / 10.36kB 0.0s
=> => sha256:dad5b29e3506c35e0fd222736f4d4ef25d21b219acdd73f7bb41d59996ca8e0d 1.74kB / 1.74kB 0.0s
=> => sha256:085da638e1b8a449514c3fd8a3f50a3bffa4418b050cadf87e5722071f497 5.40KB / 5.40KB 0.0s
=> => extracting sha256:b3ec39b36ae8c03a3e09854de4ec4aa08381dfed84a9daa075048c2e3df3881d 0.1s
=> => extracting sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710affa286c08 0.4s
=> => extracting sha256:ea56f685404adf81680322f152d2cfec62115b30dda481c2c450078315beb508 0.0s
=> [internal] load build context
=> => transferring context: 802B
=> [2/5] WORKDIR /app
=> [3/5] COPY requirements.txt .
=> [4/5] RUN pip install --no-cache-dir -r requirements.txt 4.2s
=> [5/5] COPY . .
=> => exporting to image
=> => exporting layers 0.2s
=> => writing image sha256:6fb0899435c7fb7e78d9a0fe3c8569e84504d77ffb4879af7a5830ee9fc78cc8 0.0s
=> => naming to docker.io/library/program_1 0.0s
IRV24MC062_lubna_tabassum@Inspiron:~/program_1$
```

**Step 5:** Run the docker command and specify the port number

```
docker run -d -p 5000:5000 program_1
```



A terminal window titled '1RV24MC062\_lubna\_tabassum@Inspiron:~/program\_1'. It shows the command 'docker run -d -p 5000:5000 --name flask-container program\_1' being run, followed by a long container ID.

```
1RV24MC062_lubna_tabassum@Inspiron:~/program_1$ docker run -d -p 5000:5000 --name flask-container program_1
6168ad81c7ce8c8ce1001fc66559d4ab80e330941d4510aa965b5f7319d8e9
1RV24MC062_lubna_tabassum@Inspiron:~/program_1$ █
```

**Step 6:** Verify localhost details on browser

<http://localhost:5000>

