

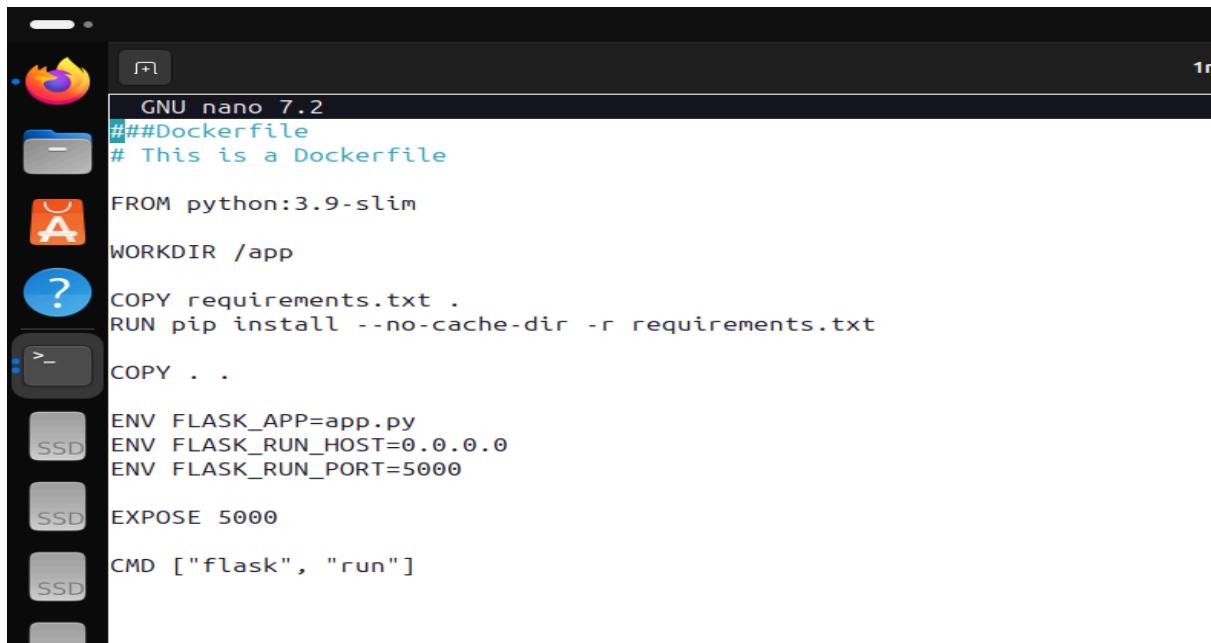
## Program 1 : Bulid a Docker container from a custom Dockerfile

Project Structure :

program-1/

- > Dockerfile
- > requirements.txt
- > app.py

Step 1: Create a Dockerfile.



```
GNU nano 7.2
##Dockerfile
# This is a Dockerfile

FROM python:3.9-slim
WORKDIR /app
COPY requirements.txt .
RUN pip install --no-cache-dir -r requirements.txt
COPY . .
ENV FLASK_APP=app.py
ENV FLASK_RUN_HOST=0.0.0.0
ENV FLASK_RUN_PORT=5000
EXPOSE 5000
CMD ["flask", "run"]
```

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

```
GNU nano 7.2
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)
```

### Step 3 : Create Requirements.txt file and add the following

```
flask
```

### Step 4: Execute the Docker Build command on the terminal.

The screenshot shows a macOS terminal window titled "1rv24mc013\_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1\$". The terminal output details the Docker build process for a Flask application named "program-1". The build starts with "Building 48.4s (10/10) FINISHED" and involves several layers of the Docker image, including Python 3.9-slim, a Dockerfile, and various environment variables and dependencies. The process includes steps like "load build definition from Dockerfile", "transferring dockerfile", "load metadata for docker.io/library/python:3.9-slim", and "extracting layers". The final step shows the creation of a Docker container named "flask-container" with port mapping 5000:5000. The terminal also shows the user navigating through files like Dockerfile, requirements.txt, and nano editor.

```
Nov2 22:55
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ cd program-1
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ ls
app.py Dockerfile requirements.txt
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker build -t program-1 .
[sudo] password for 1rv24mc013.akashj:
[+] Building 48.4s (10/10) FINISHED
--> [internal] load build definition from Dockerfile
--> => transferring dockerfile: 306B
--> [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@sha256:2d97f691b16bd338d3060f261f53f144965f755599aab1acda1e13cf1731b1b
--> => resolve docker.io/library/python:3.9-slim@sha256:2d97f691b16bd338d3060f261f53f144965f755599aab1acda1e13cf1731b1b
--> sha256:2d97f691b16bd338d3060f261f53f144965f755599aab1acda1e13cf1731b1b 10.36kB / 10.36kB
--> sha256:dad5b29e506c35eef222736fd4de4f25d2b1b219acdd73f7bb41d59996ca8e0d 1.74kB / 1.74kB
--> sha256:085da638e1b8a449514c3fda83ff50a3b7fae4418b05cfacd87e5722071f497 5.40kB / 5.40kB
--> sha256:b3ec39b36ae8c03a3e09854d4c4aa0e3810dfed84a9da075048c2e3df3881d 1.29MB / 1.29MB
--> sha256:fc74430849622d1b0d44b969a953f842f59c6e9d1a0c2c83d710ffa286c08 13.88MB / 13.88MB
--> sha256:ea56f685404adff81680322f152d2cfec62115b30dda481c2c450078315beb508 251B / 251B
--> => extracting sha256:b3ec39b36ae8c03a3e09854d4e4c4aa0e3810dfed84a9da075048c2e3df3881d 0.1s
--> => extracting sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710ffa286c08 0.3s
--> => extracting sha256:ea56f685404adff81680322f152d2cfec62115b30dda481c2c450078315beb508 0.0s
--> [internal] load build context
--> => transferring context: 93B
--> [2/5] WORKDIR /app
--> [3/5] COPY requirements.txt .
--> [4/5] RUN pip install --no-cache-dir -r requirements.txt
--> [5/5] COPY . .
--> => exporting to image
--> => exporting layers
--> => writing image sha256:88875dee5447459b9550ee3d56d970a45d65e15bb463a5095d6eb9b5c5724045
--> => naming to docker.io/library/program-1
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ nano docker images
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
program-1 latest 88875dee5447 33 seconds ago 133MB
program-2 latest 2e4d257bd992 2 days ago 137MB
ubuntu latest 2e4d257bd902 2 days ago 137MB
<none> <none> 71e4b1564732 2 days ago 137MB
program_1 latest 557b2bd68360 2 days ago 132MB
<none> <none> 3c18222800af 3 days ago 132MB
secondfile latest 3d28727ea299 6 days ago 17.8MB
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker run -d -p 5000:5000 --name flask-container program-1
06b9075e252974ae4a0cedea9781af296932ac045b087e6ffb3167158967948
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
06b9075e2529 program-1 "flask run" 19 seconds ago Up 18 seconds 0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp flask-container
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker container stop 06b9075e2529
06b9075e2529
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker container rm 06b9075e2529
06b9075e2529
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$
```

```
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker run -d -p 5000:5000 --name flask-container program-1
06b9075e252974ae4a0cedea9781af296932ac045b087e6ffb3167158967948
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
06b9075e2529 program-1 "flask run" 19 seconds ago Up 18 seconds 0.0.0.0:5000->5000/tcp, [::]:5000->5000/tcp flask-container
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker container stop 06b9075e2529
06b9075e2529
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$ sudo docker container rm 06b9075e2529
06b9075e2529
1rv24mc013_akashj@akash-HP-Laptop-15s-fq5xxx:~/program-1$
```

Step 5 : Test the container by verifying the localhost

Http ://localhost:5000

