LAB PROGRAM 1: Build a Docker Container from a Custom Dockerfile

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Project Structure:

Program-1/

-------> Dockerfile

-------> requirements.txt

-------> app.py

Create a Dockerfile, requirements.txt and app.py files with the following content

```
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ ls
app.py  Dockerfile  requirements.txt
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ cat app.py
from flask import Flask

app = Flask(__name__)

@app.route('/')
def hello():
        return "Hello, from docker!"

if __name__ == "__main__":
        app.run(host='0.0.0.0', port='5000')
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ cat requirements.txt
flask
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ cat 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

CMD ["flask", "run"]
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$
```

Execute the Docker Build command on the Terminal to build the Docker image

```
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ sudo docker build -t program-1 .
[sudo] password for 1rv24mc017_ananya_ganapati_hegde:
[+] Building 22.5s (10/10) FINISHED                                                    docker:default
 => [internal] load build definition from Dockerfile                                             0.0s
 => => transferring dockerfile: 255B                                                             0.0s
 => [internal] load metadata for docker.io/library/python:3.9-slim                               7.7s
 => [internal] load .dockerignore                                                                0.0s
 => => transferring context: 2B                                                                  0.0s
 => [1/5] FROM docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acda1e13cf1731b1b  4.2s
 => => resolve docker.io/library/python:3.9-slim@sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acda1e13cf1731b1b  0.0s
 => => sha256:dad5b29e3506c35e0fd222736f4d4ef25d21b219acdd73f7bb41d59996ca8e0d 1.74kB / 1.74kB   0.0s
 => => sha256:085da638e1b8a449514c3fda83ff50a3bffae4418b050cfacd87e5722071f497 5.40kB / 5.40kB   0.0s
 => => sha256:b3ec39b36ae8c03a3e09854de4ec4aa08381dfed84a9daa075048c2e3df3881d 1.29MB / 1.29MB   1.0s
 => => sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710affa286c08 13.88MB / 13.88MB 2.8s
 => => sha256:ea56f685404adf81680322f152d2cfec62115b30dda481c2c450078315beb508 251B / 251B       1.5s
 => => sha256:2d97f6910b16bd338d3060f261f53f144965f755599aab1acda1e13cf1731b1b 10.36kB / 10.36kB 0.0s
 => => extracting sha256:b3ec39b36ae8c03a3e09854de4ec4aa08381dfed84a9daa075048c2e3df3881d        0.2s
 => => extracting sha256:fc74430849022d13b0d44b8969a953f842f59c6e9d1a0c2c83d710affa286c08        1.2s
 => => extracting sha256:ea56f685404adf81680322f152d2cfec62115b30dda481c2c450078315beb508        0.0s
 => [internal] load build context                                                                0.0s
 => => transferring context: 516B                                                                0.0s
 => [2/5] WORKDIR app/                                                                           0.1s
 => [3/5] COPY requirements.txt .                                                                0.0s
 => [4/5] RUN pip install --no-cache-dir -r requirements.txt                                    10.1s
 => [5/5] COPY . .                                                                               0.0s
 => exporting to image                                                                           0.3s
 => => exporting layers                                                                          0.2s
 => => writing image sha256:1a1bd693803359adbfbe479558a514730a42824a9281ec065da3bb3aa8a42f39     0.0s
 => => naming to docker.io/library/program-1                                                     0.0s

 1 warning found (use docker --debug to expand):
 - WorkdirRelativePath: Relative workdir "app/" can have unexpected results if the base image changes (line 3)
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$
```

Execute the Docker run command specifying the Port Number for the container.

```
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ sudo docker images
REPOSITORY   TAG       IMAGE ID       CREATED          SIZE
program-1    latest    1a1bd6938033   20 seconds ago   133MB
teqnique_7   latest    961eec47e341   8 hours ago      17.8MB
1rv24mc017_ananya_ganapati_hegde@ayla-victus:~/DevOps/lab/p1$ sudo docker run program-1
 * Serving Flask app 'app.py'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.18.0.2:5000
Press CTRL+C to quit
172.18.0.1 - - [02/Nov/2025 14:40:30] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [02/Nov/2025 14:40:30] "GET /favicon.ico HTTP/1.1" 404 -
```

Test the Container by verifying the localhost details on web browser, the text → Hello Docker! Will be displayed.