Practical-4
Deploy the Machine Learning Model using Flask and Docker.

Task 1: Install the required libraries

```
pip install Flask
pip install gunicorn
```

Task 2: Follow the steps described in theory material to deploy the model using Flask. Run the flask application to execute the deployed model.

Flask Code :

```
from flask import Flask, jsonify, request
from your_model import predict  # Import your model's prediction function

app = Flask(__name__)

@app.route('/predict', methods=['POST'])
def prediction():     data =
request.get_json(force=True)
   result = predict(data)  # Use your model to make predictions
return jsonify(result)

if __name__ == '__main__':
   app.run(port=5000)
```

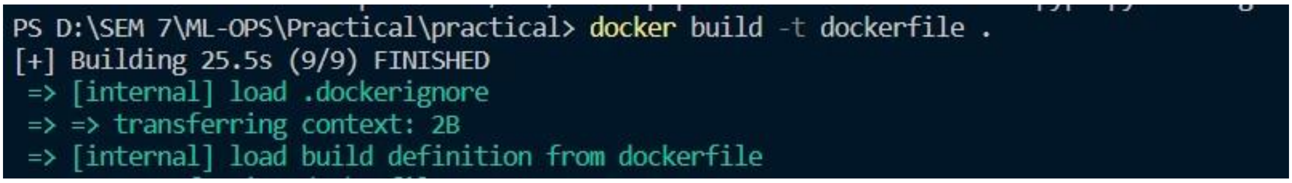
Task 3: Create the docker file using the steps described in theory material.

Docker File Code :

```
FROM python:3.8-slim
WORKDIR /app
COPY . /app
RUN pip install --trusted-host pypi.python.org -r requirements.txt
EXPOSE 80
ENV NAME World
CMD ["python", "app.py"]
```

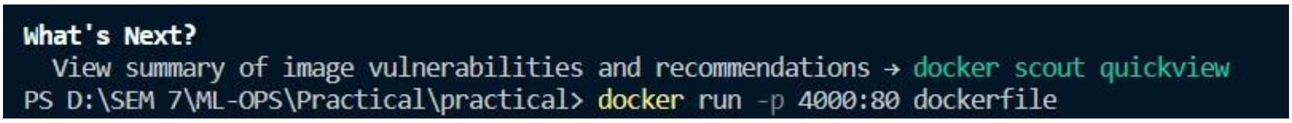
Task 4 : Create the Docker Image

docker build -t dockerfile .



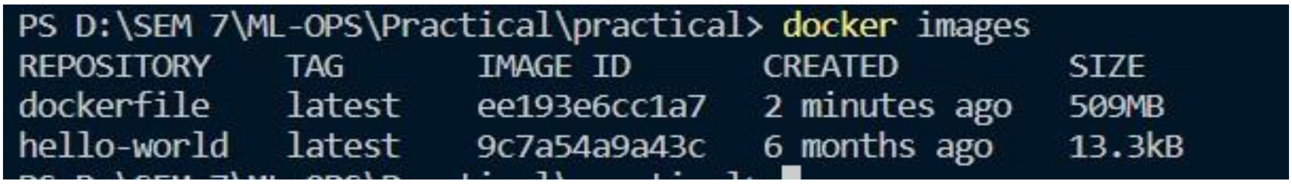
```
PS D:\SEM 7\ML-OPS\Practical\practical> docker build -t dockerfile .
[+] Building 25.5s (9/9) FINISHED
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load build definition from dockerfile
```

Task 5 : Create the Docker File

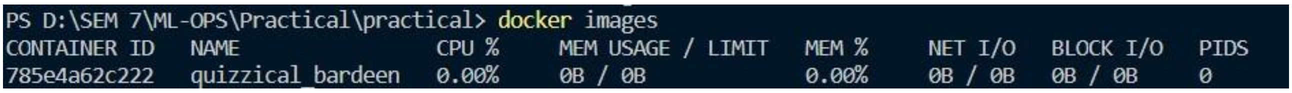


```
What's Next?
  View summary of image vulnerabilities and recommendations → docker scout quickview
PS D:\SEM 7\ML-OPS\Practical\practical> docker run -p 4000:80 dockerfile
```

Task 6 : Check Performance



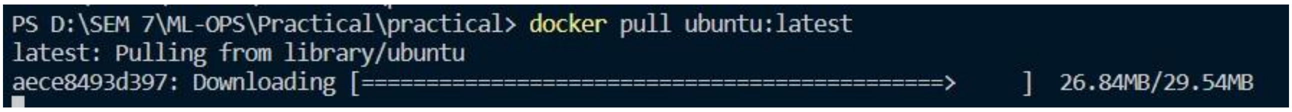
```
PS D:\SEM 7\ML-OPS\Practical\practical> docker images
REPOSITORY    TAG       IMAGE ID       CREATED          SIZE
dockerfile    latest    ee193e6cc1a7   2 minutes ago    509MB
hello-world   latest    9c7a54a9a43c   6 months ago     13.3kB
```



```
PS D:\SEM 7\ML-OPS\Practical\practical> docker images
CONTAINER ID   NAME               CPU %     MEM USAGE / LIMIT   MEM %     NET I/O   BLOCK I/O   PIDS
785e4a62c222   quizzical_bardeen  0.00%     0B / 0B             0.00%     0B / 0B   0B / 0B     0
```

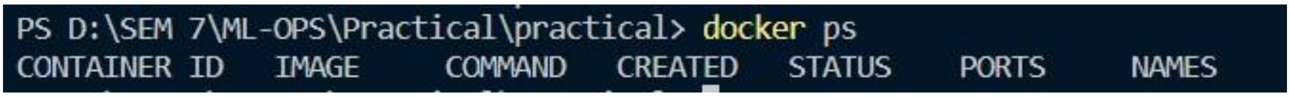
Task 7 : Hands-on on docker commands:

1. docker pull ubuntu:latest



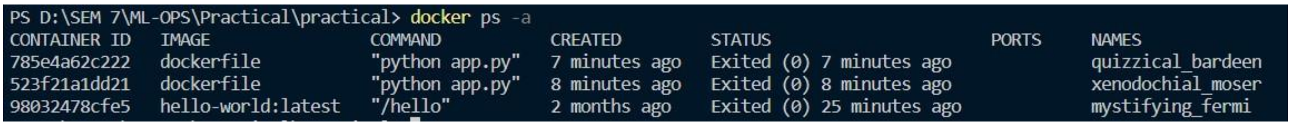
```
PS D:\SEM 7\ML-OPS\Practical\practical> docker pull ubuntu:latest
latest: Pulling from library/ubuntu
aece8493d397: Downloading [=============================================>     ]  26.84MB/29.54MB
```

2. docker ps



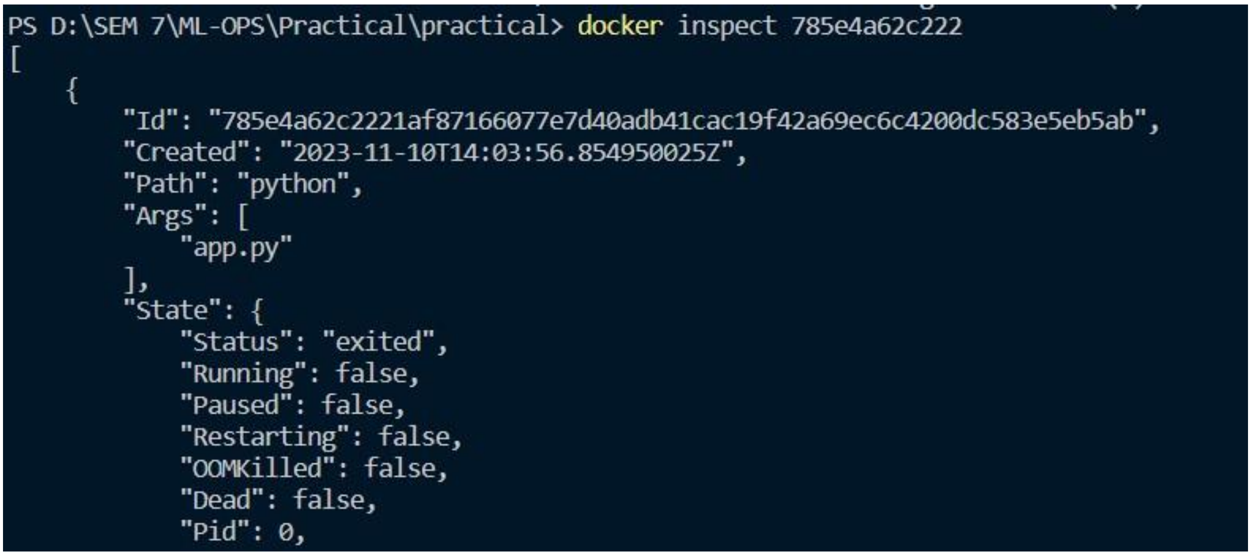
```
PS D:\SEM 7\ML-OPS\Practical\practical> docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
```

3. docker ps -a



```
PS D:\SEM 7\ML-OPS\Practical\practical> docker ps -a
CONTAINER ID   IMAGE                COMMAND           CREATED         STATUS                      PORTS     NAMES
785e4a62c222   dockerfile           "python app.py"   7 minutes ago   Exited (0) 7 minutes ago              quizzical_bardeen
523f21a1dd21   dockerfile           "python app.py"   8 minutes ago   Exited (0) 8 minutes ago              xenodochial_moser
98032478cfe5   hello-world:latest   "/hello"          2 months ago    Exited (0) 25 minutes ago             mystifying_fermi
```

4. docker inspect container_name or id



```
PS D:\SEM 7\ML-OPS\Practical\practical> docker inspect 785e4a62c222
[
    {
        "Id": "785e4a62c2221af87166077e7d40adb41cac19f42a69ec6c4200dc583e5eb5ab",
        "Created": "2023-11-10T14:03:56.854950025Z",
        "Path": "python",
        "Args": [
            "app.py"
        ],
        "State": {
            "Status": "exited",
            "Running": false,
            "Paused": false,
            "Restarting": false,
            "OOMKilled": false,
            "Dead": false,
            "Pid": 0,
```