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Task:

Peter is a developer and currently he requires a containerised environment. He needs a python environment in which pandas, numpy, seaborn and sklearn are installed for specified versions and he also requires a conformation message to be displayed on the console showing that specified versions of the dependencies have been sucessfully installed. The containerized environment should be running in the background. Another constraint is that the only port available on the host side is "7059".

following are the specified version for libraries.
1. Pandas:
Version 1.2.2
2. NumPy:
Version 1.18.5
3. Seaborn:
Version 0.9.0
4. Scikit-learn:
Version 0.23.2PS : Ensure best practices are followed and containerized environment should be persistent

Answer:

Dockerfile

Dockerfile × app.py Question.txt

Dockerfile

```
# Use an official Python runtime as a parent image
FROM python:3.7-slim-buster


# Copy the current directory contents into the container at /app
# ADD . /app.py

COPY app.py ./

# Install any needed packages specified in requirements.txt
RUN pip install pandas==0.24.2 numpy==1.18.5 seaborn==0.9.0 scikit-learn==0.23.2 && \
    echo "Dependencies installed successfully"

# Make port 7059 available to the world outside this container
EXPOSE 7059


# Run app.py when the container launches
CMD ["python","app.py"]

```

python file

Dockerfile | app.py | Question.txt

app.py

```python
import pandas as pd
import numpy as np
import seaborn as sns
import sklearn

print("Pandas version:", pd.__version__)
print("NumPy version:", np.__version__)
print("Seaborn version:", sns.__version__)
print("Scikit-learn version:", sklearn.__version__)
```

Image Build : docker build -t docker_task .

```
qadeerhussain@all-MS-7D35:~/Qadeer/Training/Docker_Activity$ docker build -t docker_task .
[+] Building 50.1s (8/8) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 557B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/python:3.7-slim-buster
 => [internal] load build context
 => => transferring context: 28B
 => CACHED [1/3] FROM docker.io/library/python:3.7-slim-buster@sha256:aed9bdffa194f5c3c3fb50a4636277f08fbcf8a878a022c5f80579b071c2c137
 => [2/3] COPY app.py ./
 => [3/3] RUN pip install pandas==0.24.2 numpy==1.18.5 seaborn==0.9.0 scikit-learn==0.23.2 &&     echo "Dependencies installed successfully"
 => exporting to image
 => => exporting layers
 => => writing image sha256:37c8da7b4cf959d8ef9ebe2ad44c7b52457db893d6e90a8a5c739d1682b5dc7f
 => => naming to docker.io/library/docker_task
```

Run Image : docker run -p 7059:7059 docker_task

```
qadeerhussain@all-MS-7D35:~/Qadeer/Training/Docker_Activity$ docker run  -p 7059:7059 docker_task
Pandas version: 0.24.2
NumPy version: 1.18.5
Seaborn version: 0.9.0
Scikit-learn version: 0.23.2
```

Run image use docker logs : docker logs 4e71118d886f

```
qadeerhussain@all-MS-7D35:~/Qadeer/Training/Docker_Activity$ docker logs 4e71118d886f
Pandas version: 0.24.2
NumPy version: 1.18.5
Seaborn version: 0.9.0
Scikit-learn version: 0.23.2
```