Practical-7

Aim: Deployment of ML project in docker using Streamlit

Task 1: Ensure that the required libraries are installed:

- Install the Docker Command Line Interface Tool from: https://docs.docker.com/desktop/
- Install Streamlit library (https://docs.streamlit.io/library/get-started/installation)

Task 2: Create the docker file using the steps described in theory material.

Practical 7 > Dockerfile > ...

```
1   # Use an official Python runtime as a parent image
2   FROM python:3.8-slim
3
4   # Set the working directory to /app
5   WORKDIR /app
6
7   # Copy the current directory contents into the container at /app
8   COPY . /app
9
10  # Install any needed packages specified in requirements.txt
11  RUN pip install --no-cache-dir -r requirements.txt
12
13  # Expose the port that Streamlit will run on
14  EXPOSE 8501
15
16  # Run streamlit when the container launches
17  CMD ["streamlit", "run", "app.py"]
18
```

Task 3: Create the docker image using docker build command.

```
PS C:\Users\Nakul\Downloads\MLOPs\Practicals\Practical 7> docker build -t pr7 .
[+] Building 68.1s (10/10) FINISHED                                    docker:default
 => [internal] load build definition from Dockerfile                           0.0s
 => => transferring dockerfile: 506B                                           0.0s
 => [internal] load .dockerignore                                              0.0s
 => => transferring context: 2B                                                0.0s
 => [internal] load metadata for docker.io/library/python:3.8-slim             2.6s
 => [auth] library/python:pull token for registry-1.docker.io                  0.0s
 => [1/4] FROM docker.io/library/python:3.8-slim@sha256:3cb3ea0dfa00f89921c9e780618c515a7cbb5f0e0c531dc9b657cf9f155f3a66   0.0s
 => [internal] load build context                                              0.0s
 => => transferring context: 1.49kB                                            0.0s
 => CACHED [2/4] WORKDIR /app                                                  0.0s
 => [3/4] COPY . /app                                                          0.0s
 => [4/4] RUN pip install --no-cache-dir -r requirements.txt                  63.1s
 => exporting to image                                                         2.3s
 => => exporting layers                                                        2.2s
 => => writing image sha256:24a84f04ed1eae341c5b47e8b0cf1491a0899e977a1573185b7b8d3fddc8393c   0.0s
 => => naming to docker.io/library/pr7                                         0.0s

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview
```

Task 4: Run the docker container to execute the docker image and host the machine learning model using streamlit app server.

```
PS C:\Users\Nakul\Downloads\MLOPs\Practicals\Practical 7> docker images
REPOSITORY                                                        TAG       IMAGE ID       CREATED          SIZE
pr7                                                               latest    24a84f04ed1e   5 minutes ago    653MB
```

```
PS C:\Users\Nakul\Downloads\MLOPs\Practicals\Practical 7> docker run -p 8501:8501 pr7

Collecting usage statistics. To deactivate, set browser.gatherUsageStats to False.


  You can now view your Streamlit app in your browser.

  Network URL: http://172.17.0.2:8501
  External URL: http://103.85.8.34:8501
```

Task 5: Compare the performance of the model in docker container and streamlit deployment on local server