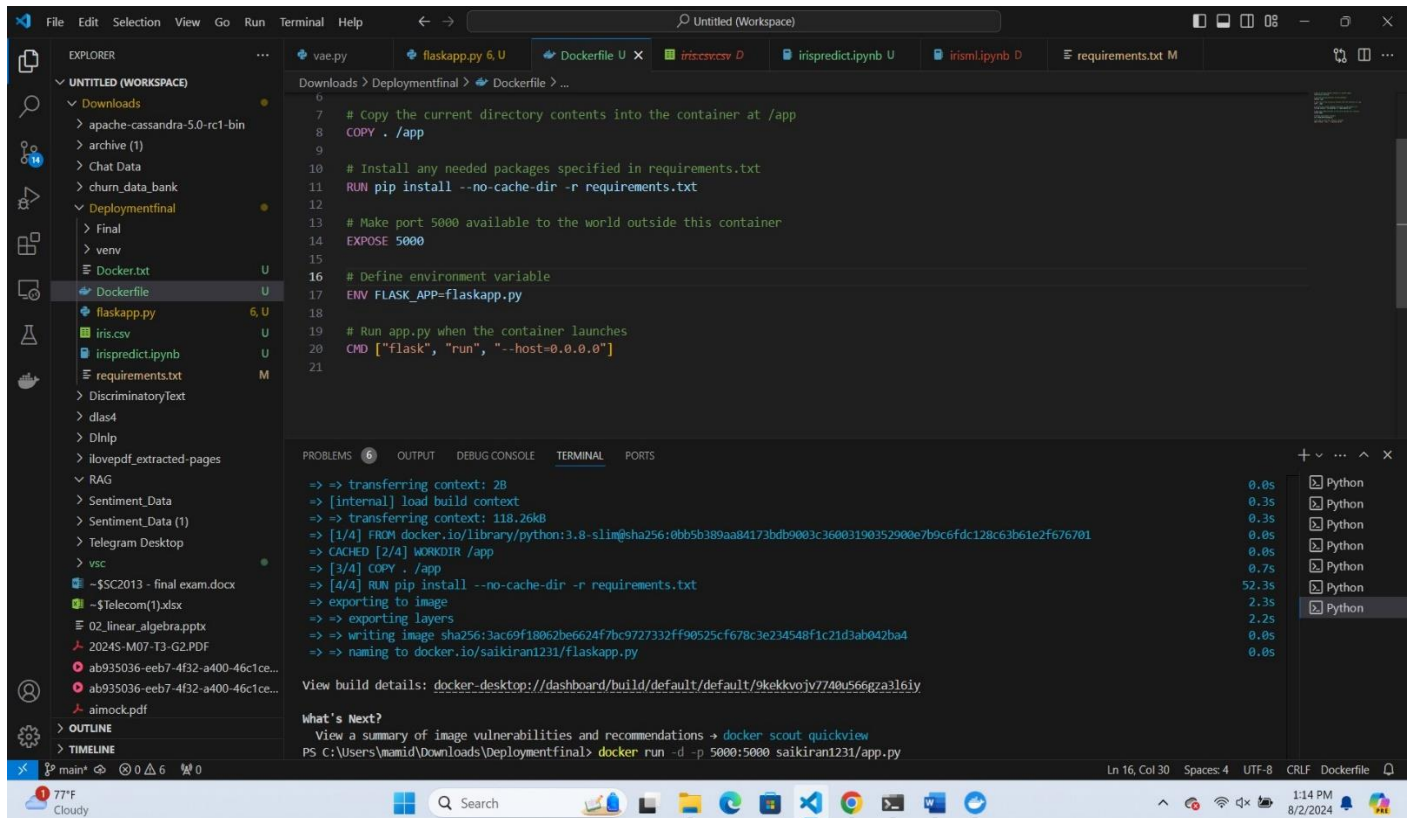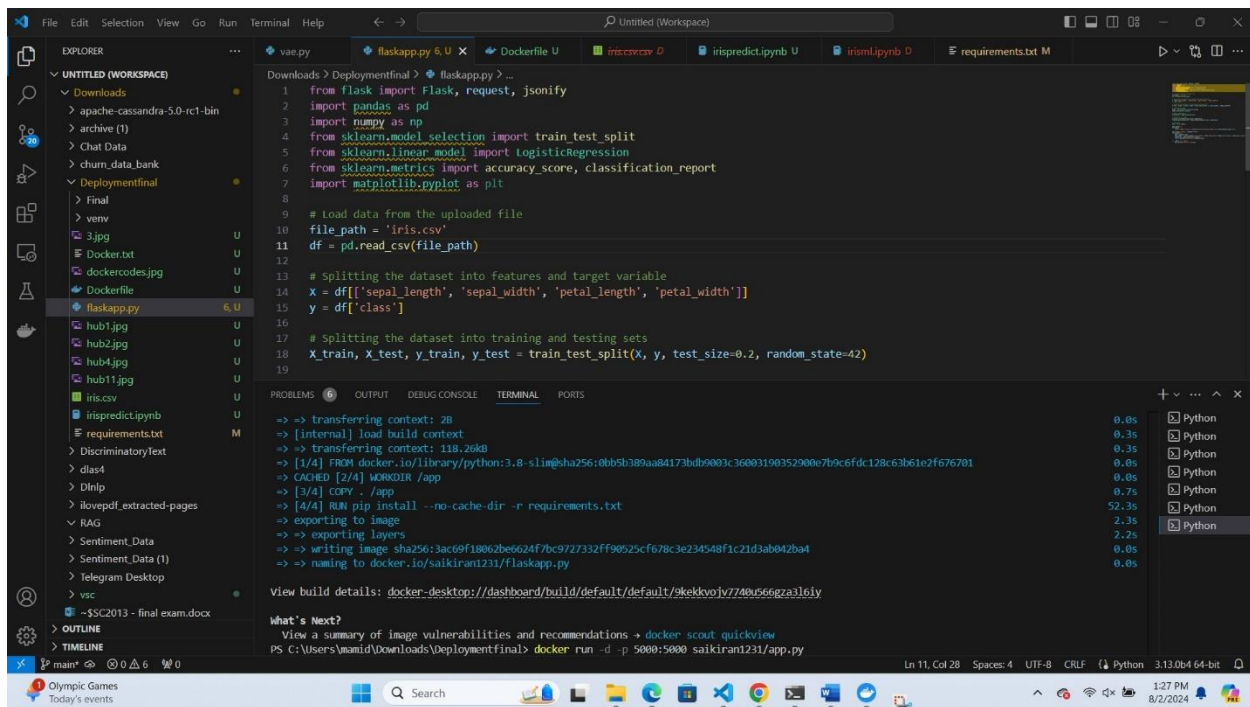Github url: https://github.com/MSK-hash/Final.git

Saikiran_Mamidala-500209412

Provide the Docker commands used along with screenshots:

docker build -t saikiran1231/app.py .

docker run -d -p 5000:5000 saikiran1231/app.py

This Python script is a Flask web application that loads a machine learning model to classify iris flowers based on their features. The application provides two main functionalities:

1. Displaying the model's accuracy and classification report.

2. Predicting the class of an iris flower based on user-provided features.

Detailed Explanation

1. **Import Libraries**:

   o The script imports necessary libraries for data manipulation (pandas), numerical operations (numpy), machine learning (sklearn), visualization (matplotlib), and web development (flask).

2. **Load Dataset**:

   o The Iris dataset is loaded from a file named iris.csv using pandas.

3. **Data Preparation**:

   o The dataset is split into features (X) and the target variable (y).

   o The features include sepal_length, sepal_width, petal_length, and petal_width.

   o The target variable is the class of the iris flower.

4. **Split Data**:

   o The dataset is divided into training and testing sets using train_test_split from sklearn. This ensures that the model can be trained and evaluated on separate data.

5. **Train Model**:

   o A Logistic Regression model is instantiated and trained on the training data (X_train, y_train).

6. **Make Predictions**:

   o The trained model is used to make predictions on the test data (X_test).

7. **Evaluate Model**:

   o The accuracy of the model is calculated using accuracy_score.

   o A detailed classification report is generated using classification_report.

8. **Flask Web Application**:

   o The Flask app is initialized and configured to run on host 0.0.0.0 and port 80.

9. **Home Route (/)**:

   o The home route (/) returns the model's accuracy and classification report in HTML format.

10. **Prediction Route (/predict)**:

   o The prediction route (/predict) accepts POST requests with JSON data containing the features of an iris flower.

   o It extracts the features from the JSON data, reshapes them into the required format, and uses the trained model to predict the class of the iris flower.

   o The predicted class is returned as a JSON response.

Screenshots of your application running in the container:

docker desktop   Search for images, containers, volumes, extensions...   Ctrl+K

loving_rhodes

saikiran1231/flaskapp.py:latest

20bbafcbd013

STATUS
Exited (1) (16 seconds ago)

Logs   Inspect   Bind mounts   Exec   Files   Stats

Raw JSON

Platform   Cmd   State   Image   PortBindings   Runtime   Mounts   Volumes   Env   Labels   Networks

```
1    {
2        "Id": "20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0",
3        "Created": "2024-08-02T17:17:36.588734274Z",
4        "Path": "flask",
5        "Args": [
6            "run",
7            "--host=0.0.0.0"
8        ],
9        "State": {
10           "Status": "exited",
11           "Running": false,
12           "Paused": false,
13           "Restarting": false,
14           "OOMKilled": false,
15           "Dead": false,
16           "Pid": 0,
17           "ExitCode": 1,
18           "Error": "",
19           "StartedAt": "2024-08-02T17:17:47.972114543Z",
20           "FinishedAt": "2024-08-02T17:17:53.060702068Z"
21       },
22       "Image": "sha256:3ac69f18062be6624f7bc9727332ff90525cf678c3e234548f1c21d3ab042ba4",
23       "ResolvConfPath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/resolv.conf",
24       "HostnamePath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/hostname",
25       "HostsPath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/hosts",
26       "LogPath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/20bbafcbd0138abd0f858e6e58522ba536d
27       "Name": "/loving_rhodes",
28       "RestartCount": 0,
29       "Driver": "overlay2",
```

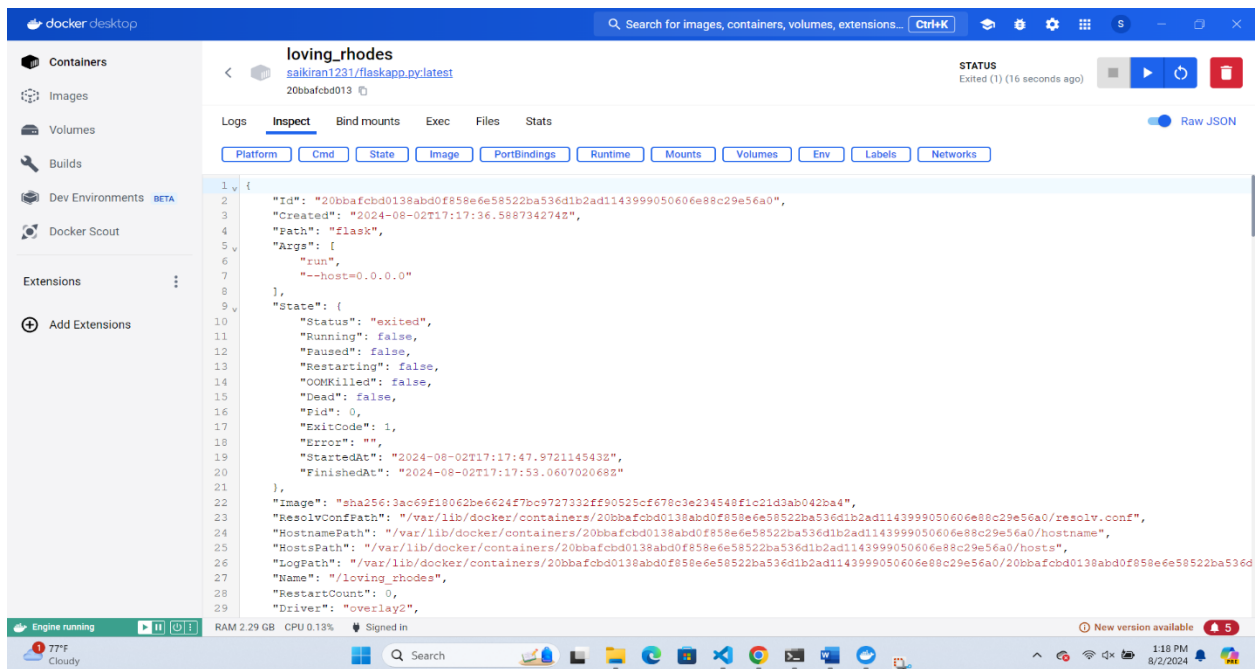Engine running   RAM 2.29 GB   CPU 0.13%   Signed in   New version available   5

77°F Cloudy   Q Search   1:18 PM 8/2/2024

Docker in Hub:

Pull the Docker Image from Docker Hub

First, ensure that you have Docker installed on your machine. Then, pull your Docker image from Docker Hub

Run the Docker Container

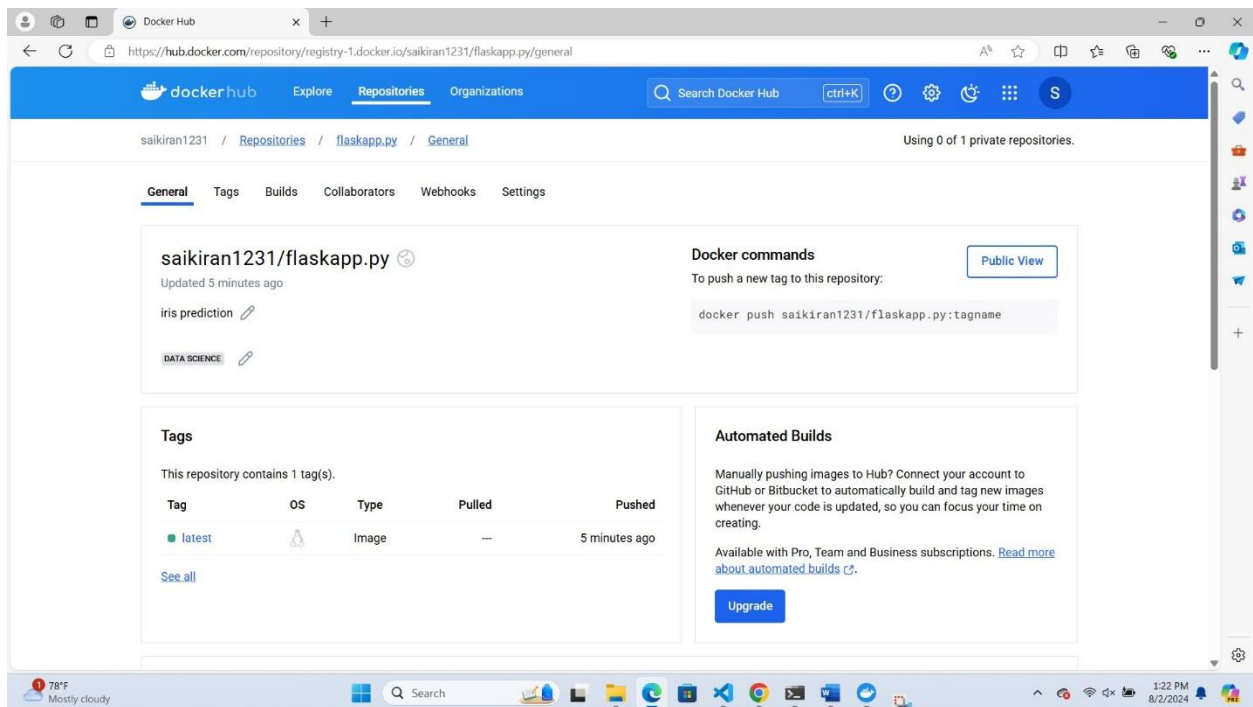Run a container from the pulled Docker image

dockerhub   Explore   **Repositories**   Organizations   🔍 Search Docker Hub   ctrl+K   ⑦ ⚙ ☾ ⠿ S

saikiran1231 / Repositories / flaskapp.py / Tags   Using 0 of 1 private repositories.

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TAG

🟢 latest   docker pull saikiran1231/flaskapp.py:latest   Copy

☐   Last pushed 5 minutes ago by saikiran1231

Digest   OS/ARCH   Last pull   Compressed Size ⓘ

1fd465a8e3e0   linux/amd64   ---   164.6 MB

https://hub.docker.com/repository/registry-1.docker.io/saikiran1231/flaskapp.py/tags

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🗄 Volumes   Local   **Hub**

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📦 Dev Environments BETA   Tags   OS   Vulnerabilities   Last pushed   Size

📍 Docker Scout   🌐 **saikiran1231/flaskapp.py**   latest   △   🚫 Inactive   4 minutes ago   172.59 MB

Extensions ⋮   Repositories per page   5 ▾   1–1 of 1   ‹   ›

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Dev Environments BETA

Docker Scout

Extensions

Add Extensions

loving_rhodes

< saikiran1231/flaskapp.py:latest

20bbafcbd013

STATUS
Exited (1) (16 seconds ago)

Logs   **Inspect**   Bind mounts   Exec   Files   Stats

Raw JSON

Platform | Cmd | State | Image | PortBindings | Runtime | Mounts | Volumes | Env | Labels | Networks

```
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3      "Created": "2024-08-02T17:17:36.588734274Z",
4      "Path": "flask",
5      "Args": [
6          "run",
7          "--host=0.0.0.0"
8      ],
9      "State": {
10         "Status": "exited",
11         "Running": false,
12         "Paused": false,
13         "Restarting": false,
14         "OOMKilled": false,
15         "Dead": false,
16         "Pid": 0,
17         "ExitCode": 1,
18         "Error": "",
19         "StartedAt": "2024-08-02T17:17:47.972114543Z",
20         "FinishedAt": "2024-08-02T17:17:53.060702068Z"
21     },
22     "Image": "sha256:3ac69f18062be6624f7bc9727332ff90525cf678c3e234548f1c21d3ab042ba4",
23     "ResolvConfPath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/resolv.conf",
24     "HostnamePath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/hostname",
25     "HostsPath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/hosts",
26     "LogPath": "/var/lib/docker/containers/20bbafcbd0138abd0f858e6e58522ba536d1b2ad1143999050606e88c29e56a0/20bbafcbd0138abd0f858e6e58522ba536d
27     "Name": "/loving_rhodes",
28     "RestartCount": 0,
29     "Driver": "overlay2",
```

Engine running   RAM 2.29 GB   CPU 0.13%   Signed in   New version available   5

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1:18 PM
8/2/2024