Docker Setup

Step1:
Pull the Jupyter Docker Image: Open a terminal or command prompt and run the following command to pull the Official Jupyter Docker image:

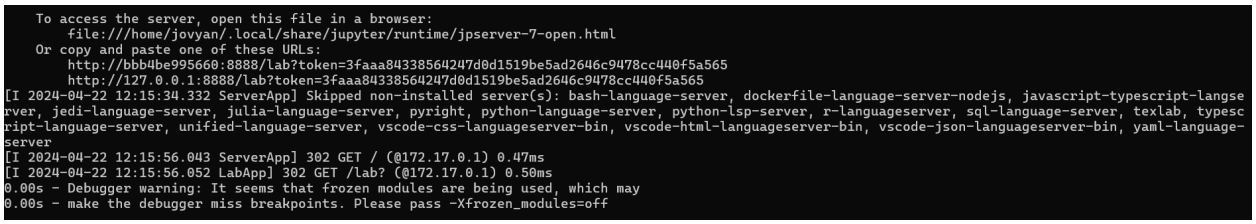
```
PS C:\Users\rawan> docker pull jupyter/base-notebook
Using default tag: latest
latest: Pulling from jupyter/base-notebook
aece8493d397: Pull complete
fd92c719666c: Pull complete
088f11eb1e74: Pull complete
4f4fb700ef54: Pull complete
ef8373d600b0: Pull complete
77e45ee945dc: Pull complete
a30f89a0af6c: Pull complete
dc42adc7eb73: Pull complete
abaa8376a650: Pull complete
aa099bb9e49a: Pull complete
822c4cbcf6a6: Pull complete
d25166dcdc7b: Pull complete
964fc3e4ff9f: Pull complete
2c4c69587ee4: Pull complete
de2cdd875fa8: Pull complete
75d33599f5f2: Pull complete
Digest: sha256:8c903974902b0e9d45d9823c2234411de0614c5c98c4bb782b3d4f55b3e435e6
Status: Downloaded newer image for jupyter/base-notebook:latest
docker.io/jupyter/base-notebook:latest

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview jupyter/base-notebook
```

Step2:
Pull the Jupyter Docker Image: Open a terminal or command prompt and run the following command to pull the Official Jupyter Docker image:

```
PS C:\Users\rawan> docker run -p 8888:8888 jupyter/base-notebook
Entered start.sh with args: jupyter lab
Running hooks in: /usr/local/bin/start-notebook.d as uid: 1000 gid: 100
Done running hooks in: /usr/local/bin/start-notebook.d
Running hooks in: /usr/local/bin/before-notebook.d as uid: 1000 gid: 100
Done running hooks in: /usr/local/bin/before-notebook.d
Executing the command: jupyter lab
[I 2024-04-22 12:15:33.248 ServerApp] Package jupyterlab took 0.0000s to import
[I 2024-04-22 12:15:33.270 ServerApp] Package jupyter_lsp took 0.0210s to import
[W 2024-04-22 12:15:33.270 ServerApp] A `_jupyter_server_extension_points` function was not found in jupyter_lsp. Instead, a `_jupyter_server_extension_path
s` function was found and will be used for now. This function name will be deprecated in future releases of Jupyter Server.
[I 2024-04-22 12:15:33.283 ServerApp] Package jupyter_server_terminals took 0.0122s to import
[I 2024-04-22 12:15:33.289 ServerApp] Package nbclassic took 0.0059s to import
[W 2024-04-22 12:15:33.293 ServerApp] A `_jupyter_server_extension_points` function was not found in nbclassic. Instead, a `_jupyter_server_extension_paths`
 function was found and will be used for now. This function name will be deprecated in future releases of Jupyter Server.
[I 2024-04-22 12:15:33.293 ServerApp] Package notebook took 0.0000s to import
[I 2024-04-22 12:15:33.297 ServerApp] Package notebook_shim took 0.0000s to import
[W 2024-04-22 12:15:33.298 ServerApp] A `_jupyter_server_extension_points` function was not found in notebook_shim. Instead, a `_jupyter_server_extension_pa
ths` function was found and will be used for now. This function name will be deprecated in future releases of Jupyter Server.
[I 2024-04-22 12:15:33.299 ServerApp] jupyter_lsp | extension was successfully linked.
[I 2024-04-22 12:15:33.303 ServerApp] jupyter_server_terminals | extension was successfully linked.
[I 2024-04-22 12:15:33.308 ServerApp] jupyterlab | extension was successfully linked.
[I 2024-04-22 12:15:33.312 ServerApp] nbclassic | extension was successfully linked.
[I 2024-04-22 12:15:33.315 ServerApp] notebook | extension was successfully linked.
[I 2024-04-22 12:15:33.318 ServerApp] Writing Jupyter server cookie secret to /home/jovyan/.local/share/jupyter/runtime/jupyter_cookie_secret
[I 2024-04-22 12:15:33.662 ServerApp] notebook_shim | extension was successfully linked.
[I 2024-04-22 12:15:33.685 ServerApp] notebook_shim | extension was successfully loaded.
[I 2024-04-22 12:15:33.687 ServerApp] jupyter_lsp | extension was successfully loaded.
[I 2024-04-22 12:15:33.689 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2024-04-22 12:15:33.696 LabApp] JupyterLab extension loaded from /opt/conda/lib/python3.11/site-packages/jupyterlab
[I 2024-04-22 12:15:33.696 LabApp] JupyterLab application directory is /opt/conda/share/jupyter/lab
[I 2024-04-22 12:15:33.697 LabApp] Extension Manager is 'pypi'.
[I 2024-04-22 12:15:33.700 ServerApp] jupyterlab | extension was successfully loaded.
[I 2024-04-22 12:15:33.706 ServerApp] nbclassic | extension was successfully loaded.
[I 2024-04-22 12:15:33.708 ServerApp] notebook | extension was successfully loaded.
[I 2024-04-22 12:15:33.709 ServerApp] Serving notebooks from local directory: /home/jovyan
[I 2024-04-22 12:15:33.709 ServerApp] Jupyter Server 2.8.0 is running at:
[I 2024-04-22 12:15:33.709 ServerApp] http://bbb4be995660:8888/lab?token=3faaa84338564247d0d1519be5ad2646c9478cc440f5a565
[I 2024-04-22 12:15:33.709 ServerApp]     http://127.0.0.1:8888/lab?token=3faaa84338564247d0d1519be5ad2646c9478cc440f5a565
[I 2024-04-22 12:15:33.709 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
```

step3

Accessing the Jupyter Notebook Interface



step4

Stopping the Docker Container: To stop the Docker container, you can press `Ctrl + C` in the terminal where the container is running

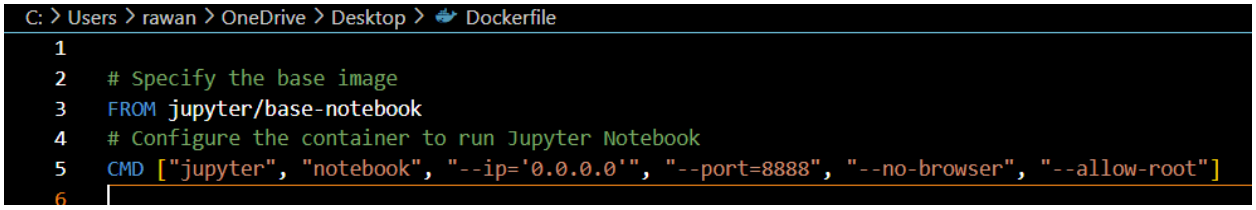
Dockerfile

Step1

Specify the Base Image: In the Dockerfile, specify the base image you want to use. Since you want to run Jupyter Notebook, you can use the Official Jupyter Docker image as the base.

Step2

Configure the Container: You can then configure the Docker container to run Jupyter Notebook when it launches by using the `CMD` instruction.



Step3

Build the Docker Image: Once you've created the Dockerfile, you can build the Docker image using the `docker build` command

```
PS C:\Users\rawan> cd C:\Users\rawan\OneDrive\Desktop
PS C:\Users\rawan\OneDrive\Desktop> docker build -t my-jupyter-image .
[+] Building 0.9s (5/5) FINISHED
                                 docker:default
 => [internal] load build definition from Dockerfile
                                                 0.0s
 => => transferring dockerfile: 240B
                                                 0.0s
 => [internal] load metadata for docker.io/jupyter/base-notebook:latest
                                                 0.0s
 => [internal] load .dockerignore
                                                 0.0s
 => => transferring context: 2B
                                                 0.0s
 => [1/1] FROM docker.io/jupyter/base-notebook:latest
                                                 0.6s
 => exporting to image
                                                 0.0s
 => => exporting layers
                                                 0.0s
 => => writing image sha256:d85dd1010be7d9d3e0f7ef800c08d93222c9a137dbebb692
df7ef68ca30ff93d                                 0.0s
 => => naming to docker.io/library/my-jupyter-image
                                                 0.0s

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

Step4

Run the Docker Container: After the Docker image is built, you can run a container using the following command:

```
PS C:\Users\rawan\OneDrive\Desktop> docker run -p 8888:8888 my-jupyter-image

[I 2024-04-22 12:45:30.920 ServerApp] Package notebook took 0.0000s to import
[I 2024-04-22 12:45:30.941 ServerApp] Package jupyter_lsp took 0.0204s to import
[W 2024-04-22 12:45:30.941 ServerApp] A `_jupyter_server_extension_points` function was not found in jupyter_lsp. Instead, a `_jupyter_server_extension_path
s` function was found and will be used for now. This function name will be deprecated in future releases of Jupyter Server.
[I 2024-04-22 12:45:30.953 ServerApp] Package jupyter_server_terminals took 0.0117s to import
[I 2024-04-22 12:45:30.953 ServerApp] Package jupyterlab took 0.0000s to import
[I 2024-04-22 12:45:32.101 ServerApp] Package nbclassic took 0.0055s to import
[W 2024-04-22 12:45:32.104 ServerApp] A `_jupyter_server_extension_points` function was not found in nbclassic. Instead, a `_jupyter_server_extension_paths`
 function was found and will be used for now. This function name will be deprecated in future releases of Jupyter Server.
[I 2024-04-22 12:45:32.105 ServerApp] Package notebook_shim took 0.0000s to import
[W 2024-04-22 12:45:32.105 ServerApp] A `_jupyter_server_extension_points` function was not found in notebook_shim. Instead, a `_jupyter_server_extension_pa
ths` function was found and will be used for now. This function name will be deprecated in future releases of Jupyter Server.
[I 2024-04-22 12:45:32.105 ServerApp] jupyter_lsp | extension was successfully linked.
[I 2024-04-22 12:45:32.109 ServerApp] jupyter_server_terminals | extension was successfully linked.
[I 2024-04-22 12:45:32.114 ServerApp] jupyterlab | extension was successfully linked.
[I 2024-04-22 12:45:32.117 ServerApp] nbclassic | extension was successfully linked.
[I 2024-04-22 12:45:32.121 ServerApp] notebook | extension was successfully linked.
[I 2024-04-22 12:45:32.124 ServerApp] Writing Jupyter server cookie secret to /home/jovyan/.local/share/jupyter/runtime/jupyter_cookie_secret
[I 2024-04-22 12:45:32.498 ServerApp] notebook_shim | extension was successfully linked.
[I 2024-04-22 12:45:32.518 ServerApp] notebook_shim | extension was successfully loaded.
[I 2024-04-22 12:45:32.521 ServerApp] jupyter_lsp | extension was successfully loaded.
[I 2024-04-22 12:45:32.522 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I 2024-04-22 12:45:32.525 LabApp] JupyterLab extension loaded from /opt/conda/lib/python3.11/site-packages/jupyterlab
[I 2024-04-22 12:45:32.525 LabApp] JupyterLab application directory is /opt/conda/share/jupyter/lab
[I 2024-04-22 12:45:32.525 LabApp] Extension Manager is 'pypi'.
[I 2024-04-22 12:45:32.528 ServerApp] jupyterlab | extension was successfully loaded.
[I 2024-04-22 12:45:32.533 ServerApp] nbclassic | extension was successfully loaded.
[I 2024-04-22 12:45:32.535 ServerApp] notebook | extension was successfully loaded.
[I 2024-04-22 12:45:32.536 ServerApp] Serving notebooks from local directory: /home/jovyan
[I 2024-04-22 12:45:32.536 ServerApp] Jupyter Server 2.8.0 is running at:
[I 2024-04-22 12:45:32.536 ServerApp] http://c51496e9141b:8888/tree?token=4f6409513cfab1f938bf64663c0caa8f5bddeef9cd42440d
[I 2024-04-22 12:45:32.536 ServerApp]     http://127.0.0.1:8888/tree?token=4f6409513cfab1f938bf64663c0caa8f5bddeef9cd42440d
[I 2024-04-22 12:45:32.536 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 2024-04-22 12:45:32.539 ServerApp]

    To access the server, open this file in a browser:
```

Step5

Accessing Jupyter Notebook: Access Jupyter Notebook by opening a web browser and navigating to `http://localhost:8888`.

```
    To access the server, open this file in a browser:
        file:///home/jovyan/.local/share/jupyter/runtime/jpserver-7-open.html
    Or copy and paste one of these URLs:
        http://c51496e9141b:8888/tree?token=4f6409513cfab1f938bf64663c0caa8f5bddeef9cd42440d
        http://127.0.0.1:8888/tree?token=4f6409513cfab1f938bf64663c0caa8f5bddeef9cd42440d
[I 2024-04-22 12:45:33.192 ServerApp] Skipped non-installed server(s): bash-language-server, dockerfile-language-server-nodejs, javascript-typescript-langse
rver, jedi-language-server, julia-language-server, pyright, python-language-server, python-lsp-server, r-languageserver, sql-language-server, texlab, typesc
ript-language-server, unified-language-server, vscode-css-languageserver-bin, vscode-html-languageserver-bin, vscode-json-languageserver-bin, yaml-language-
server
```

Step6

Result of jupyter notebook

```
[ ]: #import libraries
     import pandas as pd
```

```
[14]: ## Load the dataset
      df = pd.read_csv('books.csv')
```

```
[8]: print(df.columns)
```

```
Index(['book_id', 'goodreads_book_id', 'best_book_id', 'work_id',
       'books_count', 'isbn', 'isbn13', 'authors', 'original_publication_year',
       'original_title', 'title', 'language_code', 'average_rating',
       'ratings_count', 'work_ratings_count', 'work_text_reviews_count',
       'ratings_1', 'ratings_2', 'ratings_3', 'ratings_4', 'ratings_5',
       'image_url', 'small_image_url'],
      dtype='object')
```

```
[9]: # Filter the dataset for Harry Potter books
     harry_potter_books = df[df['title'].str.contains('Harry Potter', case=False)]
```

```
[10]: # Find the most selling books within the Harry Potter series
      most_selling_books = harry_potter_books.sort_values(by='ratings_count', ascending=False).head(1)
```

```
[11]:
# Calculate the average rating of the Harry Potter books
average_rating = harry_potter_books['average_rating'].mean()
```

```
# Calculate the average rating of the Harry Potter books
average_rating = harry_potter_books['average_rating'].mean()
```

```
# Print the most selling book and average rating
print("Most Selling Book within Harry Potter series:")
print(most_selling_books[['title', 'ratings_count']])
print("\nAverage Rating of Harry Potter Books:", average_rating)
```

```
Most Selling Book within Harry Potter series:
                                          title  ratings_count
1  Harry Potter and the Sorcerer's Stone (Harry P...        4602479

Average Rating of Harry Potter Books: 4.482727272727273
```