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Assignment

- Build an image based on Jupyter Notebook (jupyter/minimal-notebook) with Pandas installed (pip install pandas)
- Create a container from this image and use the NOTEBOOK_ARGS=--port=8889 environment variable to change the port Jupyter is exposed on
- Verify you can access it on port 8889 and that Pandas is installed (type import pandas in a notebook).

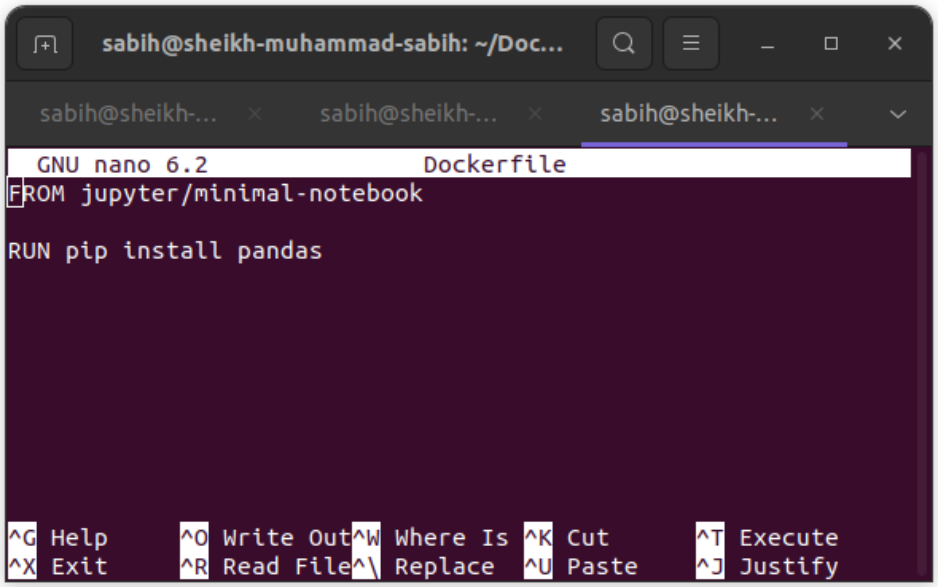
Solution

1. Create a folder for our **image.**

2. Create **Dockerfile** using **nano.**

```
sabih@sheikh-muhammad-sabih:~/Documents/emeritus/apr_6/assignments/jupyter_notebook_pandas_docker_image$ nano Dockerfile
```

3. Then write some instructions in Dockerfile to use image of **jupyter/minimal-notebook** and install **Pandas** in it.



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4. Then I **build** that docker file using **docker build** give it a tag **jupter_notebook_with_pandas**.

```
sabih@sheikh-muhammad-sabih:~/Documents/emeritus/apr_6/assignments/jupyter_notebook_pandas_docker_image$ docker build -t jupter_notebook_with_pandas:1.0 .
[+] Building 11.4s (6/6) FINISHED
 => [internal] load build definition from Dockerfile                                                                0.0s
 => => transferring dockerfile: 92B                                                                                 0.0s
 => [internal] load .dockerignore                                                                                   0.0s
 => => transferring context: 2B                                                                                     0.0s
 => [internal] load metadata for docker.io/jupyter/minimal-notebook:latest                                          0.0s
 => [1/2] FROM docker.io/jupyter/minimal-notebook                                                                   0.1s
 => [2/2] RUN pip install pandas                                                                                   10.6s
 => exporting to image                                                                                              0.7s
 => => exporting layers                                                                                             0.7s
 => => writing image sha256:a611b3dc618f5ac5ec5db5a14e2a63bc20814410175a5b093426d7bb7434db87                        0.0s
 => => naming to docker.io/library/jupter_notebook_with_pandas:1.0                                                  0.0s
```

5. Then I **run** that image in docker container on **host port 8889** by using **docker run -p8889:8888 jupter_notebook_with_pandas:1.0** and check the status of **process status**.

```
sabih@sheikh-muhammad-sabih:~/Documents/emeritus/apr_6/assignments/jupyter_notebook_pandas_docker_image$ docker run -p8889:8888 jupter_notebook_with_pandas:1.0
Entered start.sh with args: jupyter lab
Executing the command: jupyter lab
[I 2023-04-08 19:49:12.057 ServerApp] jupyterlab | extension was successfully linked.
[W 2023-04-08 19:49:12.060 NotebookApp] 'ip' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2023-04-08 19:49:12.060 NotebookApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[W 2023-04-08 19:49:12.060 NotebookApp] 'port' has moved from NotebookApp to ServerApp. This config will be passed to ServerApp. Be sure to update your config before our next release.
[I 2023-04-08 19:49:12.065 ServerApp] nbclassic | extension was successfully linked.
[I 2023-04-08 19:49:12.065 ServerApp] Writing Jupyter server cookie secret to /home/jovyan/.local/share/jupyter/runtime/jupyter_cookie_secret
[I 2023-04-08 19:49:12.206 ServerApp] notebook_shim | extension was successfully linked.
[I 2023-04-08 19:49:12.216 ServerApp] notebook_shim | extension was successfully loaded.
[I 2023-04-08 19:49:12.217 LabApp] JupyterLab extension loaded from /opt/conda/lib/python3.10/site-packages/jupyterlab
[I 2023-04-08 19:49:12.217 LabApp] JupyterLab application directory is /opt/conda/share/jupyter/lab
[I 2023-04-08 19:49:12.219 ServerApp] jupyterlab | extension was successfully loaded.
[I 2023-04-08 19:49:12.222 ServerApp] nbclassic | extension was successfully loaded.
[I 2023-04-08 19:49:12.222 ServerApp] Serving notebooks from local directory: /home/jovyan
[I 2023-04-08 19:49:12.222 ServerApp] Jupyter Server 1.23.3 is running at:
[I 2023-04-08 19:49:12.222 ServerApp] http://13ac4d101429:8888/lab?token=bc271c8140238a03287c7a47b84490caa6d6d5ae80024716
[I 2023-04-08 19:49:12.222 ServerApp]  or http://127.0.0.1:8888/lab?token=bc271c8140238a03287c7a47b84490caa6d6d5ae80024716
[I 2023-04-08 19:49:12.222 ServerApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 2023-04-08 19:49:12.224 ServerApp]

    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://13ac4d101429:8888/lab?token=bc271c8140238a03287c7a47b84490caa6d6d5ae80024716
     or http://127.0.0.1:8888/lab?token=bc271c8140238a03287c7a47b84490caa6d6d5ae80024716
[I 2023-04-08 19:49:37.373 LabApp] Build is up to date
[I 2023-04-08 19:50:49.584 ServerApp] Creating new notebook in
[I 2023-04-08 19:50:49.624 ServerApp] Writing notebook-signing key to /home/jovyan/.local/share/jupyter/notebook_secret
[I 2023-04-08 19:50:49.868 ServerApp] Kernel started: 8ab64092-d271-4497-abda-addd616a9282
[I 2023-04-08 19:50:50.307 ServerApp] Starting buffering for 8ab64092-d271-4497-abda-addd616a9282:0e02c9cf-abbb-4243-b3e6-620c0bd7babb
[I 2023-04-08 19:52:49.771 ServerApp] Saving file at /Untitled.ipynb
[W 2023-04-08 19:53:03.602 ServerApp] delete /work
```

```
sabih@sheikh-muhammad-sabih:~/Documents/emeritus/apr_6/assignments/jupyter_notebook_pandas_docker_image$ docker ps
CONTAINER ID   IMAGE                          COMMAND                  CREATED        STATUS                  PORTS                                       NAMES
13ac4d101429   jupter_notebook_with_pandas:1.0   "tini -g -- start-no…"   15 hours ago   Up 15 hours (healthy)   0.0.0.0:8889->8888/tcp, :::8889->8888/tcp   tender_bhabha
```

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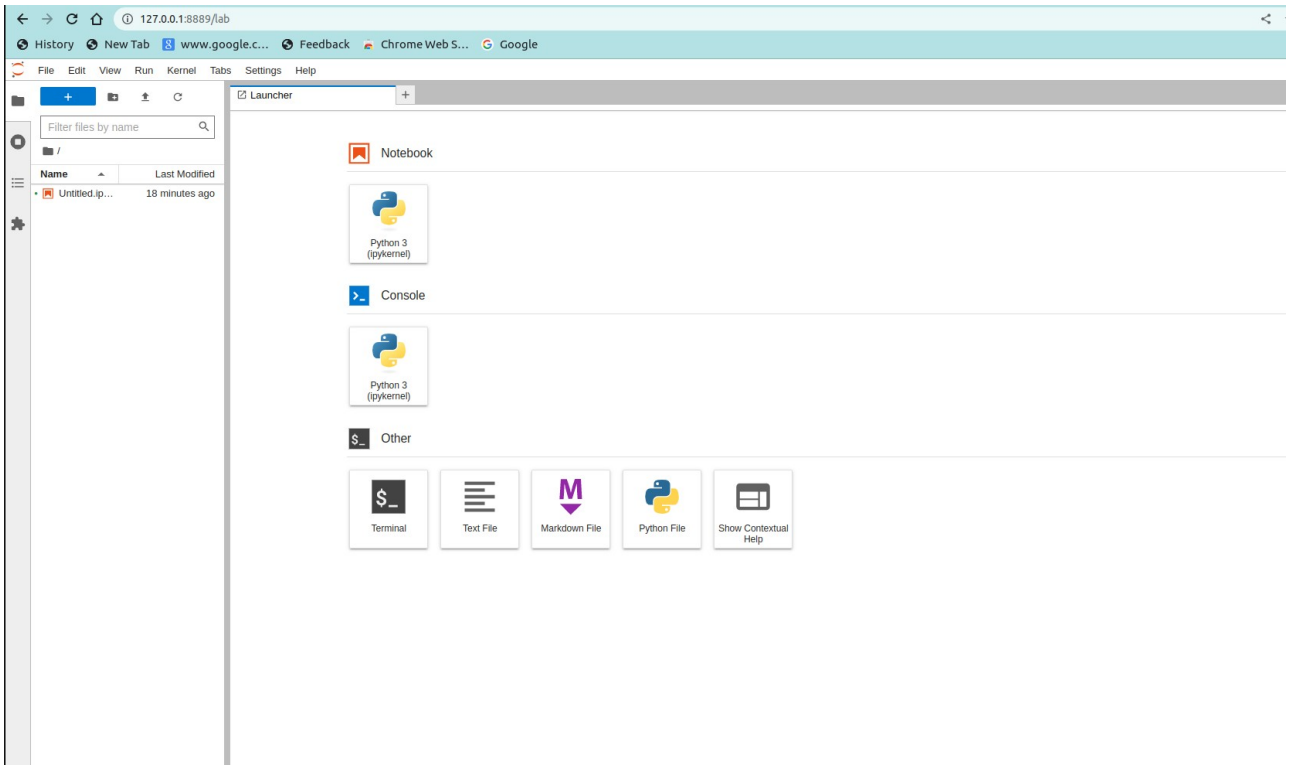
6. To ensure that everything is working fine I run the given **localhost** url (**http://127.0.0.1:8889/lab**) with port 8889.



7. To check pandas is install or not I write **import pandas** and **pandas.__version__**.