Local Environment

Data is already downloaded and put in right folder

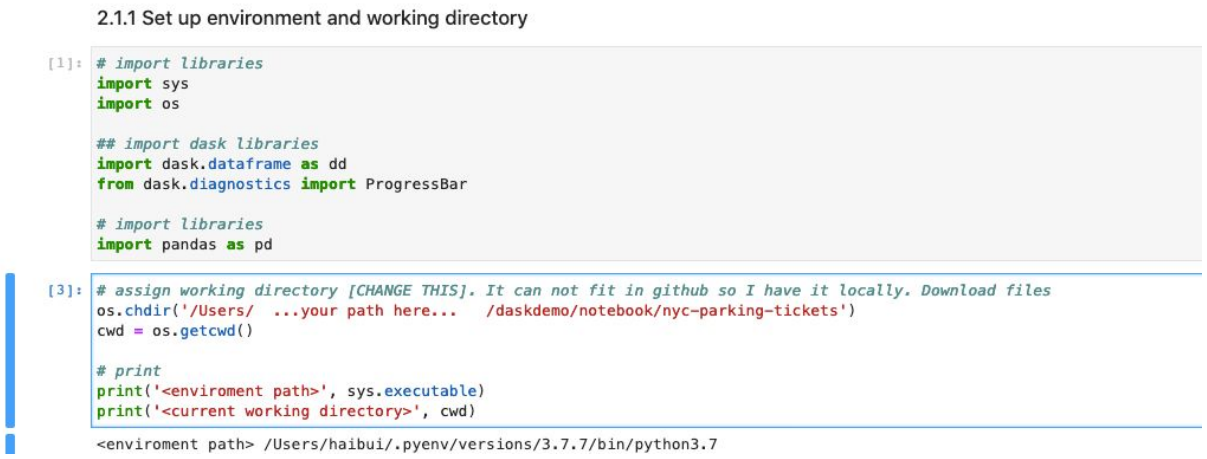
1. **Download the folder “notebook” and cd into it**

2. **Install dask: Tutorial**
   conda install dask
   or
   python -m pip install "dask[complete]"

3. **Install graphviz** (you probably have it already)
   a. brew install graphviz (for Mac users)
   b. pip install graphviz
      (both commands have to be run)

4. **Download the data**
   https://www.kaggle.com/new-york-city/nyc-parking-tickets

5. **Provide the path to the data in the notebook**



2.1.1 Set up environment and working directory

[1]:
```
# import libraries
import sys
import os

## import dask libraries
import dask.dataframe as dd
from dask.diagnostics import ProgressBar

# import libraries
import pandas as pd
```

[3]:
```
# assign working directory [CHANGE THIS]. It can not fit in github so I have it locally. Download files
os.chdir('/Users/  ...your path here...   /daskdemo/notebook/nyc-parking-tickets')
cwd = os.getcwd()

# print
print('<enviroment path>', sys.executable)
print('<current working directory>', cwd)
```

```
<enviroment path> /Users/haibui/.pyenv/versions/3.7.7/bin/python3.7
```

6. **Run the notebook**

Dockerize it

Data is already downloaded and put in right folder (can ignore step 2 & 3)

1. Download the “notebook” folder and cd inside it
2. Download the data https://www.kaggle.com/new-york-city/nyc-parking-tickets
3. Put the data inside the notebook folder
    a. If you want to save time delete everything except “Parking_Violations_Issued_-_Fiscal_Year_2017.csv” in the data folder

In Terminal (on your host OS)

4. docker build -t daskdemo .

```
✘ haibui@Hais-MBP ~/00_MIT_Harvard_CS_DS/harvard_data_science/daskdemo/notebook  master docker build -t daskdemo .
Sending build context to Docker daemon  5.861MB
Step 1/9 : FROM ubuntu:latest
 ---> 4e2eef94cd6b
Step 2/9 : RUN apt update -y
 ---> Using cache
 ---> d2142ba4d60b
Step 3/9 : RUN apt install -y python3-pip
 ---> Using cache
 ---> 6e17b0d1bac2
Step 4/9 : RUN python3 -m pip install jupyterlab
 ---> Using cache
 ---> 8d2d8f583fc4
Step 5/9 : RUN python3 -m pip install "dask[complete]"
 ---> Using cache
 ---> deeebe8cd6e3
Step 6/9 : RUN python3 -m pip install graphviz
 ---> Using cache
 ---> b42c36779b3a
Step 7/9 : COPY . .
 ---> 749044fdd40b
Step 8/9 : EXPOSE 9999
 ---> Running in 7c33b7730c23
Removing intermediate container 7c33b7730c23
 ---> 7aad8521abb4
Step 9/9 : CMD ["/bin/sh"]
 ---> Running in b0cdbd12021d
Removing intermediate container b0cdbd12021d
 ---> d13e1de1015b
Successfully built d13e1de1015b
Successfully tagged daskdemo:latest
```

5. sudo docker run -p 9999:9999 -ti daskdemo
    a. input password (of your mac)

```
haibui@Hais-MBP ~/00_MIT_Harvard_CS_DS/harvard_data_science/daskdemo/notebook  master sudo docker run -p 9999:9999 -ti daskdemo
# ls
Dockerfile  IMG  bin  boot  dask_demo.ipynb  dask_demo.ipynb-meta  dev  etc  home  lib  lib32  lib64  libx32  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
# apt-get install graphviz
Reading package lists... Done
Building dependency tree
```

Inside the container

6. apt-get install graphviz
    a. insert: y, 2 and 31

```
# apt-get install graphviz
Reading package lists... Done
Building dependency tree
Reading state information... Done
```

7. jupyter lab --ip='0.0.0.0' --port=9999 --no-browser --allow-root
    a. Copy the link provided in the terminal to browser

```
# jupyter lab --ip='0.0.0.0' --port=9999 --no-browser --allow-root
[I 06:16:12.734 LabApp] Writing notebook server cookie secret to /root/.local/share/jupyter/runtime/notebook_cookie_secret
[I 06:16:12.948 LabApp] JupyterLab extension loaded from /usr/local/lib/python3.8/dist-packages/jupyterlab
[I 06:16:12.949 LabApp] JupyterLab application directory is /usr/local/share/jupyter/lab
[I 06:16:12.954 LabApp] Serving notebooks from local directory: /
[I 06:16:12.954 LabApp] Jupyter Notebook 6.1.4 is running at:
[I 06:16:12.955 LabApp] http://d9b5b7f81d73:9999/?token=c3a64b4e389a6d368c3024858c1a13fa34ff1e79926dda77
[I 06:16:12.956 LabApp]  or http://127.0.0.1:9999/?token=c3a64b4e389a6d368c3024858c1a13fa34ff1e79926dda77
[I 06:16:12.956 LabApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[C 06:16:12.960 LabApp]

    To access the notebook, open this file in a browser:
        file:///root/.local/share/jupyter/runtime/nbserver-663-open.html
    Or copy and paste one of these URLs:
        http://d9b5b7f81d73:9999/?token=c3a64b4e389a6d368c3024858c1a13fa34ff1e79926dda77
     or http://127.0.0.1:9999/?token=c3a64b4e389a6d368c3024858c1a13fa34ff1e79926dda77
```

8. Run notebook