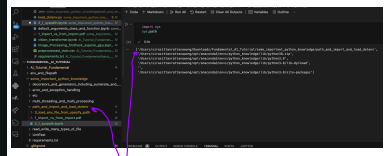
1. sys.path

sys.path in Python

Sys is a built-in Python module that contains parameters specific to the system i.e. it contains variables and methods that interact with the interpreter and are also governed by it.

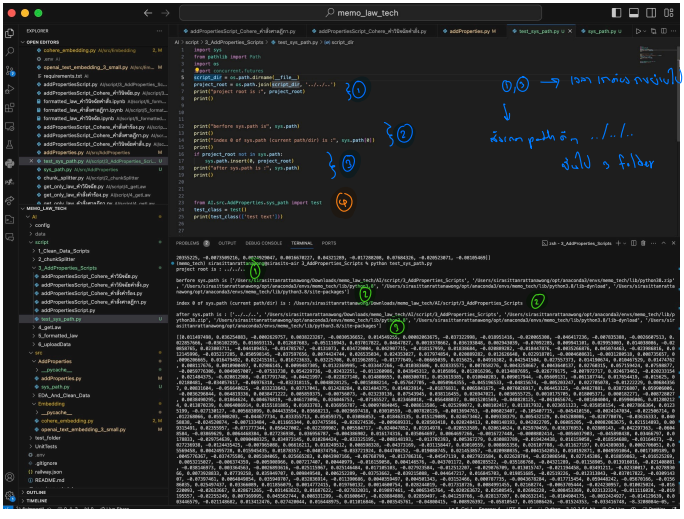
sys.path

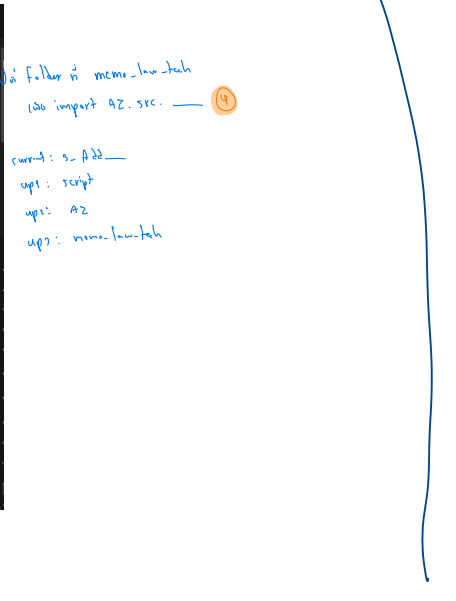
sys.path is a built-in variable within the sys module. It contains a list of directories that the interpreter will search in for the required module.



current dir

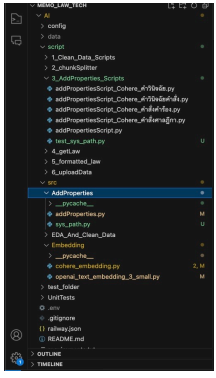
- **DEFAULT-** By default, the interpreter looks for a module within the current directory. To make the interpreter search in some other directory you just simply have to change the current directory. The following example depicts a default path taken by the interpreter:





A module is a Python file that's intended to be imported into scripts or other modules.

A package is a collection of python files. These files are specifically placed within a folder. Ex, python class files dog.py, cat.py, and rat.py would be placed under folder animal, then folder animal would be the package.



(file)
module → cohere_embedding.py

(folder)
package → AddProperties

2. How to set folder structure and how does import module work

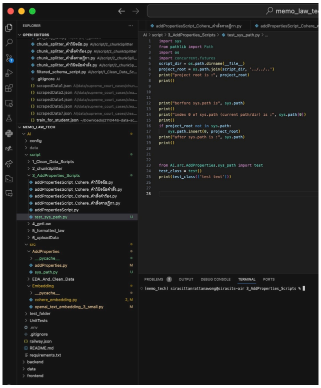
(1) การ import ไฟล์ (2) หรือการ refer path ไฟล์

** มันขึ้นกับว่าเรา run ที่ไหน

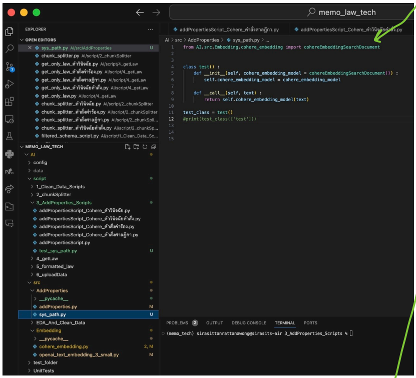
Firstly, we need to understand that every path would relate to how(where) we run the script

I would use these 3 files as an example

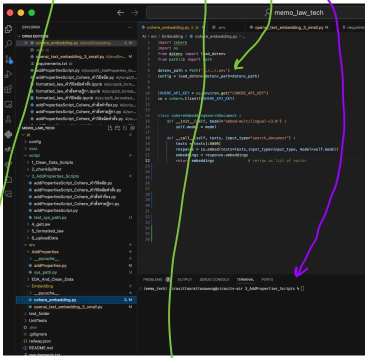
module 1 (as a script)



module2 (in src) (call module3)



module 3

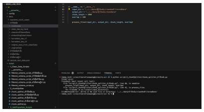


When we run we would run at directory of module1 (scripts)

```
(memo_tech) sirasittanrattanawong@sirasits-air 3_AddProperties_Scripts % python test_sys_path.py
project root is : ../../.

before sys.path is ['/Users/sirasittanrattanawong/Downloads/memo_law_tech/AI/script/3_AddProperties_Scripts', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python38.zip', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python3.8', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python3.8/lib-dynload', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python3.8/site-packages']

index 0 of sys.path (current path/dir) is : /Users/sirasittanrattanawong/Downloads/memo_law_tech/AI/script/3_AddProperties_Scripts

after sys.path is : ['../../.', '/Users/sirasittanrattanawong/Downloads/memo_law_tech/AI/script/3_AddProperties_Scripts', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python38.zip', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python3.8', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python3.8/lib-dynload', '/Users/sirasittanrattanawong/opt/anaconda3/envs/memo_tech/lib/python3.8/site-packages']
[[0.011497498, 0.036254883, -0.0002629757, 0.0038223267, -0.0030536652, 0.014549255, 0.00082063675, -0.037322998, -0.018951416, -0.020065308, -0.046417236, -0.037835388, -0.0026607513, 0.
```

ตัวอย่าง

ตัวอย่าง



ถ้าเรา run ที่ folder AI มันจะ error
เพราะ path มันเริ่มจาก
when we run the script
not path from that module.

เราต้อง run ที่ 3_Add___
ถึงจะสัมพันธ์กับ path ใน code

มี 3 เรื่องที่ต้องการจะให้สังเกต

1. จาก code ใน module 1 เวลา run เราจะ run ที่ folder 3_Add___

แต่จากการใช้ sys.path.insert มันจะ search ที่ memo_law_tech ด้วย

2. ∴ ใน module2 การ import module 3 เข้ามา

from AI.src.Embedding.cohere_embedding

เราหามันเจอเพราะว่า เพราะมัน search จากที่เราอยู่

memo_law_tech * แต่ที่อยู่ของการ run script

ก็ยังเป็น 3_Add___ นะ

ดูได้จากตัวอย่างเรื่อง

path ในข้อ 3

3. ใน module3

```
dotenv_path = Path('../../.env')
config = load_dotenv(dotenv_path=dotenv_path)
```

ส่วนนี้ของ_ นับจากที่เรา run script ก็คือ

ที่ folder 3_Add___

ไม่ใช่ตาม path ของ module3 แต่บังเอิญว่ามันตรงกัน

* อย่างไรก็ตาม ใน module เป็น bad practice
เราไม่ควรใช้ sys.path.insert เวลา deploy

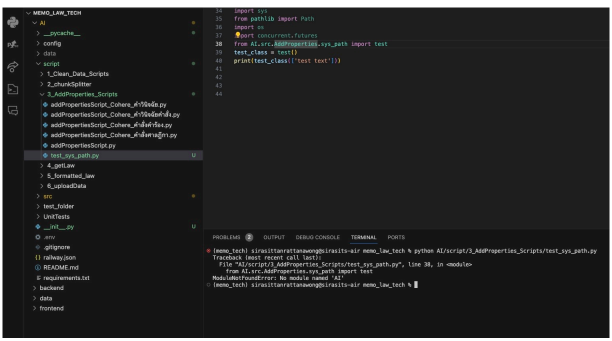
3. Questions

1. ใน module1

เราไม่ใช้ sys.path.insert แล้ว เราไป run

ที่ memo_law_tech แทน

ทำไม มันยังหาไม่เจอ



2. แล้ว structure ของ มันควรเป็นยังไงกันแน่

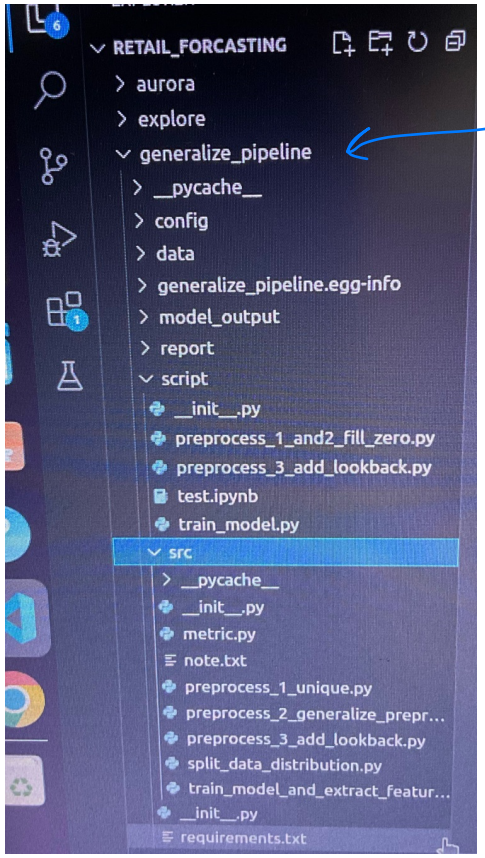
3. อะไรคือ setup.py file

4. ถ้ามีหลายๆ script ควรแบ่งไปในจุด แล้ว run

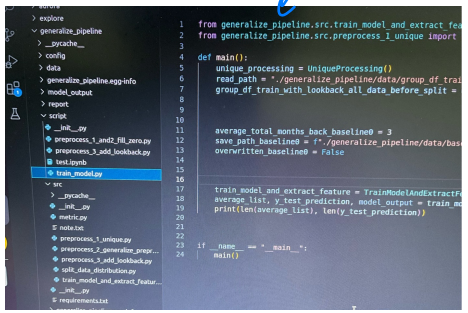
บอกว่า run ที่นอกสุดคือ ควรเขียน code ให้เป็นแบบไหน

จุดที่เริ่มของ script ควรอยู่นอกสุด เพราะเวลา import มันก็จะ import ได้นั้นทั้งหมด

ปัญหาที่เจอตอนทำ project ตอนแรก เข้าใจดีในระดับนึงตอน
ทำ internship ในโลก เข้าใจแล้วว่าทำไมก่อนหน้านี้
ถึง import ไม่ได้



folder นี้
ตอนแรกก็
import src
ไม่ได้!!



Solve1. Set python anaconda path (from chatgpt first)

How Python search for imported module/package

https://medium.com/@sachinsoni600517/how-python-search-for-imported-module-package-76cf0da5f690

set anaconda python path

https://www.geeksforgeeks.org/how-to-setup-anaconda-path-to-environment-variable/

How to set environment variables in a conda virtual environment

https://guillaume-martin.github.io/saving-environment-variables-in-conda.html

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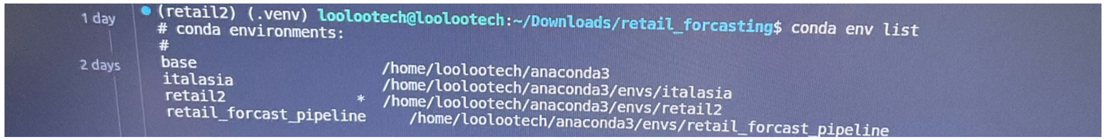
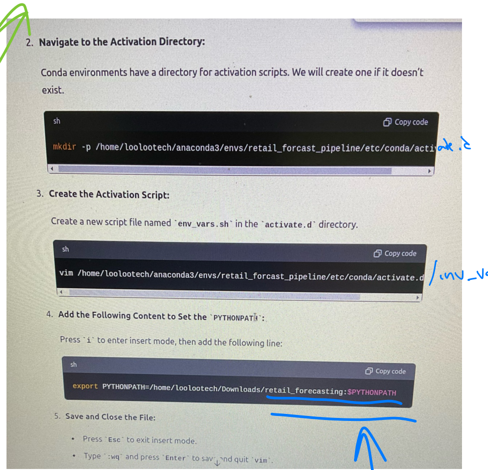
1. Create conda env like before.
2. Conda env list to find path of conda env



```
(retail2) (.venv) loolootech@loolootech:~/Downloads/retail_forcasting$ conda env list
# conda environments:
#
base                     /home/loolootech/anaconda3
italasia                 /home/loolootech/anaconda3/envs/italasia
retail2               *  /home/loolootech/anaconda3/envs/retail2
retail_forcast_pipeline  /home/loolootech/anaconda3/envs/retail_forcast_pipeline
```

3. set path → … reference …



2. **Navigate to the Activation Directory:**

Conda environments have a directory for activation scripts. We will create one if it doesn't exist.

```sh
mkdir -p /home/loolootech/anaconda3/envs/retail_forcast_pipeline/etc/conda/activate.d
```

3. **Create the Activation Script:**

Create a new script file named `env_vars.sh` in the `activate.d` directory.

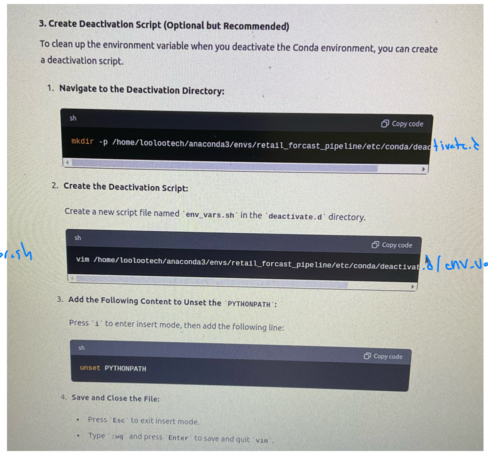
```sh
vim /home/loolootech/anaconda3/envs/retail_forcast_pipeline/etc/conda/activate.d/env_vars.sh
```

4. **Add the Following Content to Set the `PYTHONPATH`:**

Press `i` to enter insert mode, then add the following line:

```sh
export PYTHONPATH=/home/loolootech/Downloads/retail_forecasting:$PYTHONPATH
```

5. **Save and Close the File:**
- Press `Esc` to exit insert mode.
- Type `:wq` and press `Enter` to save and quit `vim`.



3. Create Deactivation Script (Optional but Recommended)

To clean up the environment variable when you deactivate the Conda environment, you can create a deactivation script.

1. **Navigate to the Deactivation Directory:**

```sh
mkdir -p /home/loolootech/anaconda3/envs/retail_forcast_pipeline/etc/conda/deactivate.d
```

2. **Create the Deactivation Script:**

Create a new script file named `env_vars.sh` in the `deactivate.d` directory.

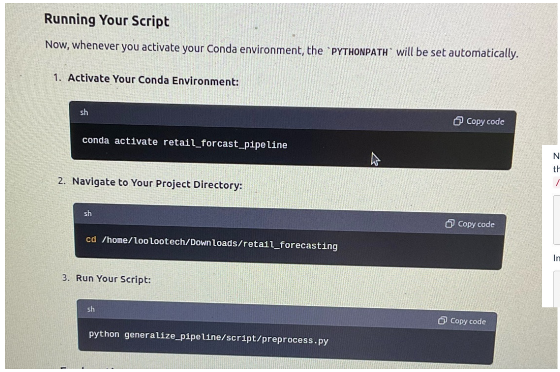
```sh
vim /home/loolootech/anaconda3/envs/retail_forcast_pipeline/etc/conda/deactivate.d/env_vars.sh
```

3. **Add the Following Content to Unset the `PYTHONPATH`:**

Press `i` to enter insert mode, then add the following line:

```sh
unset PYTHONPATH
```

4. **Save and Close the File:**
- Press `Esc` to exit insert mode.
- Type `:wq` and press `Enter` to save and quit `vim`.



Running Your Script

Now, whenever you activate your Conda environment, the `PYTHONPATH` will be set automatically.

1. **Activate Your Conda Environment:**

```sh
conda activate retail_forcast_pipeline
```

2. **Navigate to Your Project Directory:**

```sh
cd /home/loolootech/Downloads/retail_forecasting
```

3. **Run Your Script:**

```sh
python generalize_pipeline/script/preprocess.py
```

ex.reference

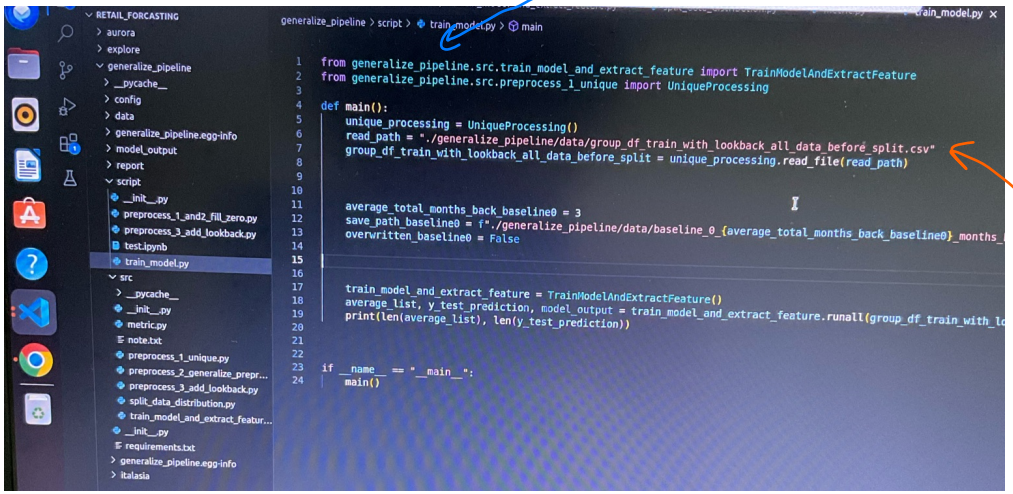
Now, we need to create scripts that will set our environment variables whenever we activate our virtual environment and unset them when we deactivate. The path to our environment directory is set as `$CONDA_PREFIX`. We `cd` to that directory and create a `/etc/conda/activate.d` and a `/etc/conda/deactivate.d` directory:

```
(my_environment)$ cd $CONDA_PREFIX
(my_environment)$ mkdir -p ./etc/conda/activate.d
(my_environment)$ mkdir -p ./etc/conda/deactivate.d
```

In each of those directories, we create a `env_var.sh` script where we'll write the commands to set and unset our variables:

```
(my_environment)$ touch ./etc/conda/activate.d/env_vars.sh
(my_environment)$ touch ./etc/conda/deactivate.d/env_vars.sh
```

* ตรงนี้เวลาจะ import อะไรมันก็เลยมองว่าอยู่ใน conda env อยู่ที่ folder นี้

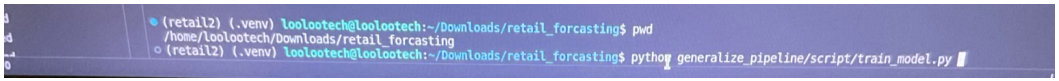


∴ ตรงนี้ก็จะนำเข้าได้เลยแล้ว

อันนี้ก็เหมือนเดิม ยังอยู่กับ

เรา run script ที่ไหน

* เวลา run อะไรก็ต้องดู path นี้



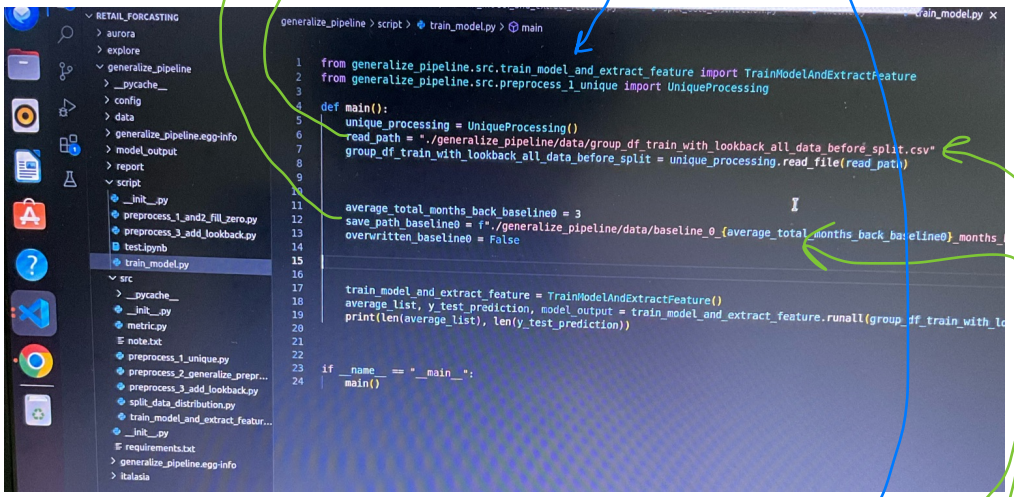
Important key

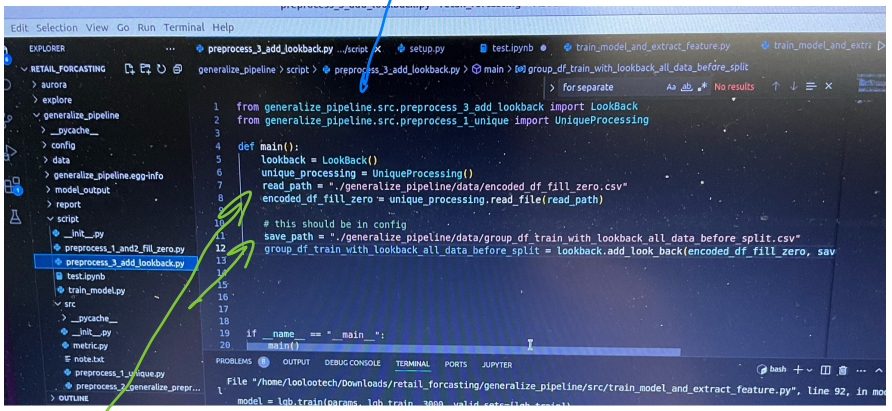
1. Set anaconda python path to retail_store

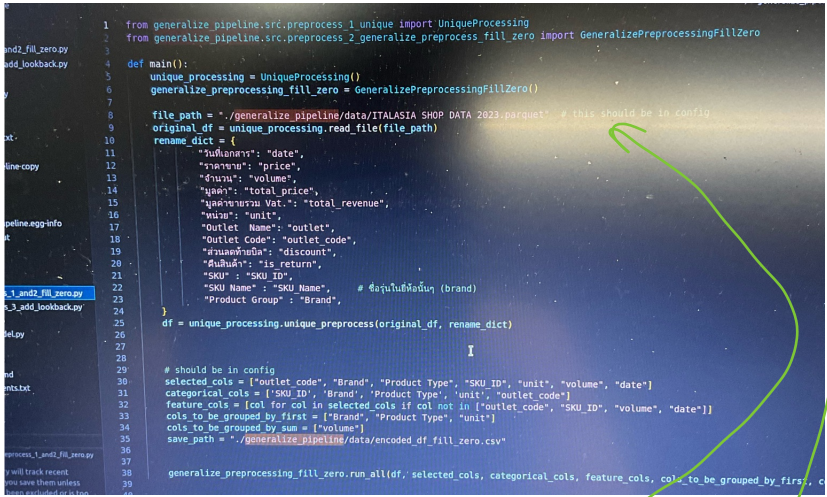
2.1 when we want to run anything we would run at retail_store folder ex. python generalize_pipeline/script/train_model.py

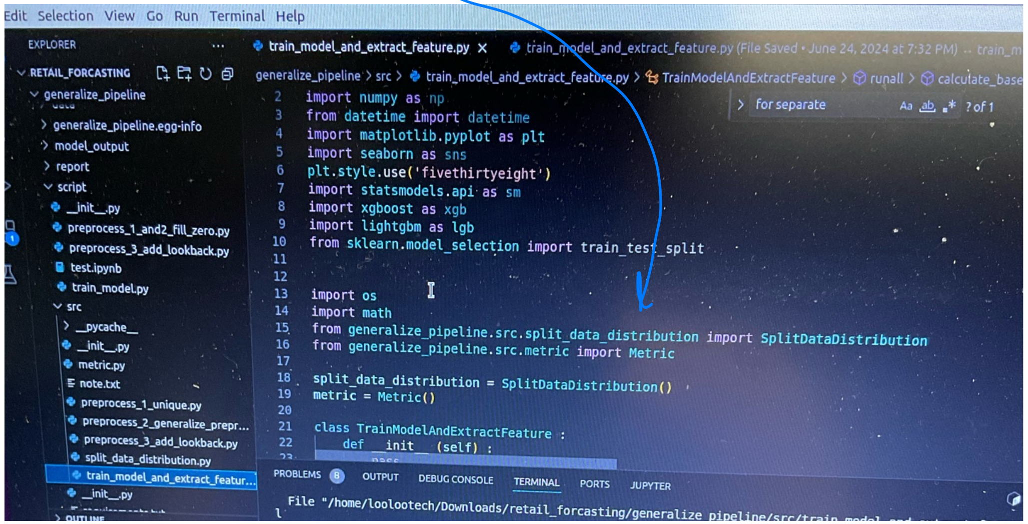
2.2 same as before path would relate to where we run the script.

2.3 we set anaconda python path and run the script at retail_store folder when we import we would think that that is our folder path ex. from generalize_pipeline.src.train_model_and_extract_feature import TrainModelAndExtractFeature





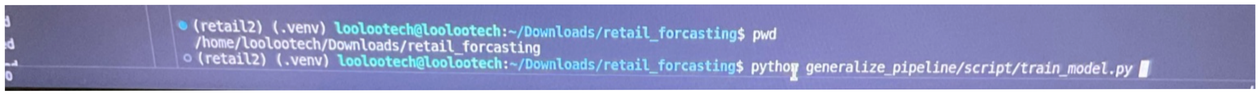




file path

เส้นน้ำเงิน → import path

เส้นเขียว → file path



run at

Solve2 setup.py

setup.py file python tutorial

https://xebia.com/blog/a-practical-guide-to-using-setup-py/

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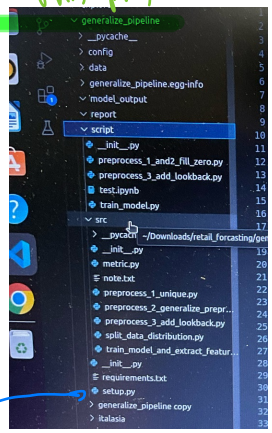
this project



Folder structure

setup.py

```python
from setuptools import setup, find_packages

setup(
    name='generalize_pipeline',
    version='0.1',
    packages=find_packages(),  # Finds all packages under the current directory
    python_requires='>=3.10',  # Specify the required Python version
    install_requires=[
        'pandas==2.2.2',
        'pyarrow==16.1.0',
        'fastparquet==2024.5.0',
        'matplotlib==3.9.0',
        'plotly==5.22.0',
        'nbformat==5.10.4',
        'seaborn==0.13.2',
        'statsmodels==0.14.2',
        'xgboost==2.0.3',
        'lightgbm==4.3.0',
        'pyproject==1.3.1',
        'pyproject-toml==0.0.10',
        'scikit-learn==1.5.0',
    ],
)
```

0. crack conda env.

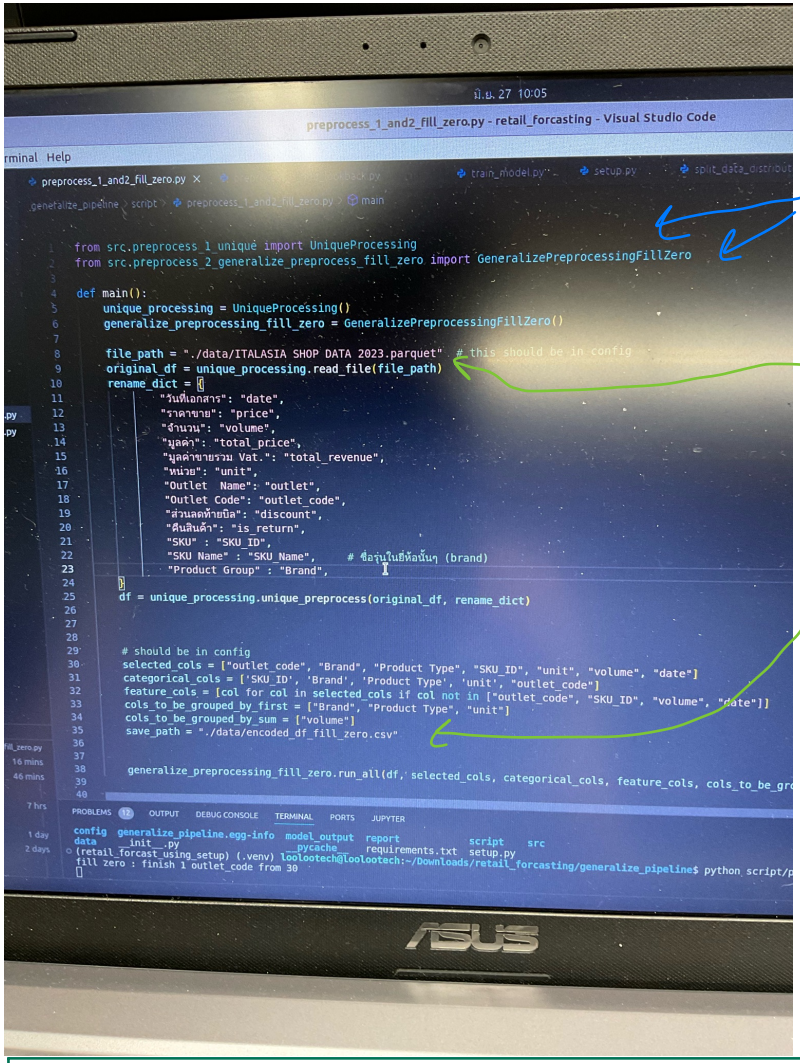
1. Create setup.py file at root of the project (in generalize_pipeline) (1 step inside compared to before)

2. pip install -e . at the folder that consists of setup.py

3. Now path would be generalize_pipeline not retail _store so you need to change import code and path compared to above

In scripts folder example (one step inside compare to solve)

preprocess_1_and2_fill_zero.py




```
che__    requirements.txt  setup.py
ech@loolootech:~/Downloads/retail_forcasting/generalize_pipeline$ python script/preprocess_1_and2_fill_zero.py
```

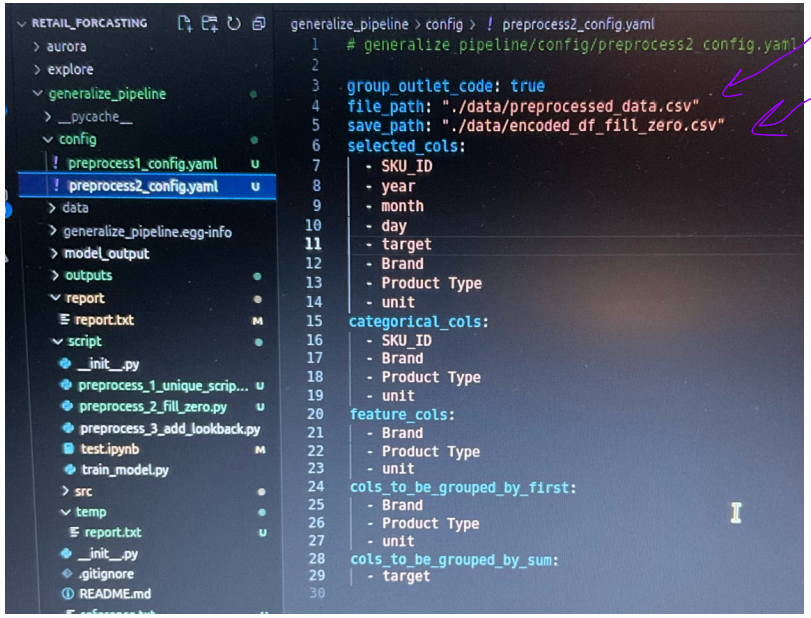
run at

Config file

Method1

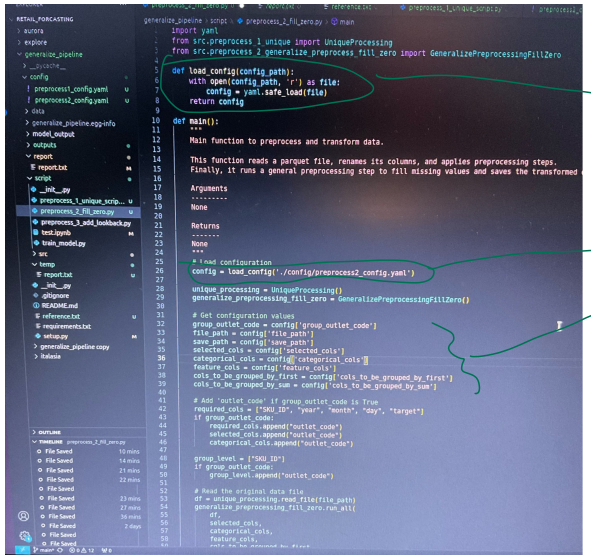
1. Write yaml file and load

relative to where you run (from setup.py file)



search command : yaml file tutorial medium
link : https://medium.com/buildpiper/all-you-need-to-know-about-yaml-files-8fa319b1f26f'

search command : how to load yaml file in python
link : https://python.land/data-processing/python-yaml

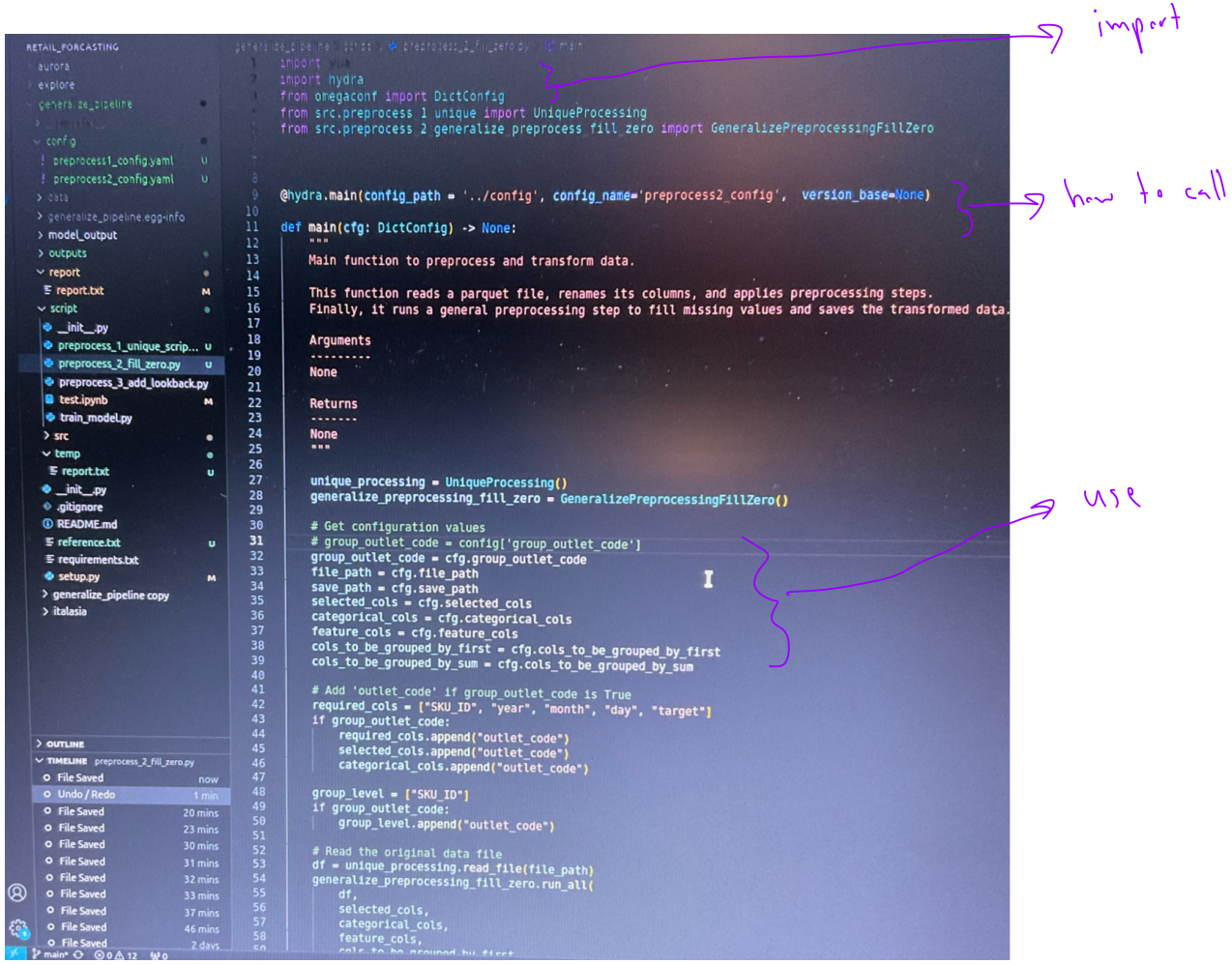


how to load

load and use

Method2 hydra (a little different from openthaigpt)

Link : https://medium.com/@jh.baek.sd/mastering-configuration-management-in-python-with-hydra-with-omegaconf-a-comprehensive-guide-5cf1d38e01f7



*** So, generally, path should always be used relate to where we run the scripts