

# Python and VS Code setup

## Install Python and VS Code

1. Download and install [VS Code](https://code.visualstudio.com/)  
<https://code.visualstudio.com/>
2. Install [Python](https://www.python.org/downloads/release/python-3127/) from:  
<https://www.python.org/downloads/release/python-3127/>

**Use Python 3.12.6 or 3.12.7 only** as it is tested with the libraries we will work on  
**DO NOT INSTALL LATEST PYTHON VERSION**

**When installing make sure the “Add python to system path” checkbox is selected**

3. Verify Python installation by opening terminal/command prompt:

```
python --version
```

*If it errors finding the executable, add python.exe location to System environment variable: PATH*

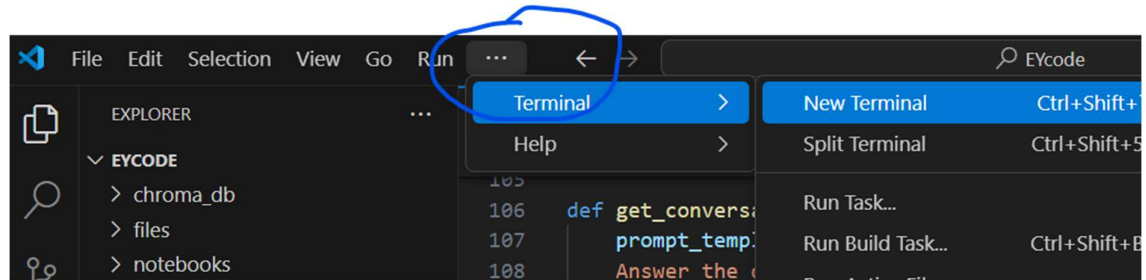
*You can find the location of python.exe by opening the windows menu, right click on Python app (open file location), copy path*

## 2. VS Code Setup

1. Open VS Code
2. Install the Python extension:
  - Click the Extensions icon in the sidebar (or press Ctrl+Shift+X)
  - Search for "Python"
  - Install the Microsoft Python extension
  - Other VS Code extensions that are needed only if you want to run the Python notebooks in VS Code (you can always run them in colab)  
Jupyter, Jupyter Notebook renderers, ipykernel

## 3. Create a Project

1. Create a new folder for your project, called **genaitraining** in your home directory or in Desktop
2. Open the folder in VS Code (File > Open Folder)
3. Start a terminal



4. In the terminal window, give the following commands:

Create a new virtual environment. Issues following commands on the terminal:

```
python -m venv venv
```

```
venv\Scripts\activate
```

You will see a popup asking you to use this virtual environment for your project.  
Click on “Yes”

## 5. Create requirements.txt

1. In VS Code, with the project root folder (genaitraining) selected, click on the +File icon to create a new file, name it “requirements.txt”
2. Put following content in requirements.txt and save the file (ctrl+s):

```
langchain-openai  
langchain-community  
langchain-text-splitters  
chromadb  
beautifulsoup4  
pypdf  
wikipedia  
plotly  
tqdm  
datasets  
python-dotenv  
openai  
streamlit  
dotted-dict  
PyPDF2
```

matplotlib  
seaborn  
torch  
transformers  
tensorflow  
tf-keras  
jupyter  
ipykernel

3. Install packages from requirements.txt:

**Give the following command in the terminal:**

**pip install -r requirements.txt**

You may see error during the installation mentioning something like below:

```
running bdist_wheel
running build
running build_ext
building 'hnsplib' extension
error: Microsoft Visual C++ 14.0 or greater is required. Get it with "Microsoft C++ Build Tools": https://visualstudio.microsoft.com/visual-cpp-build-tools/
[end of output]

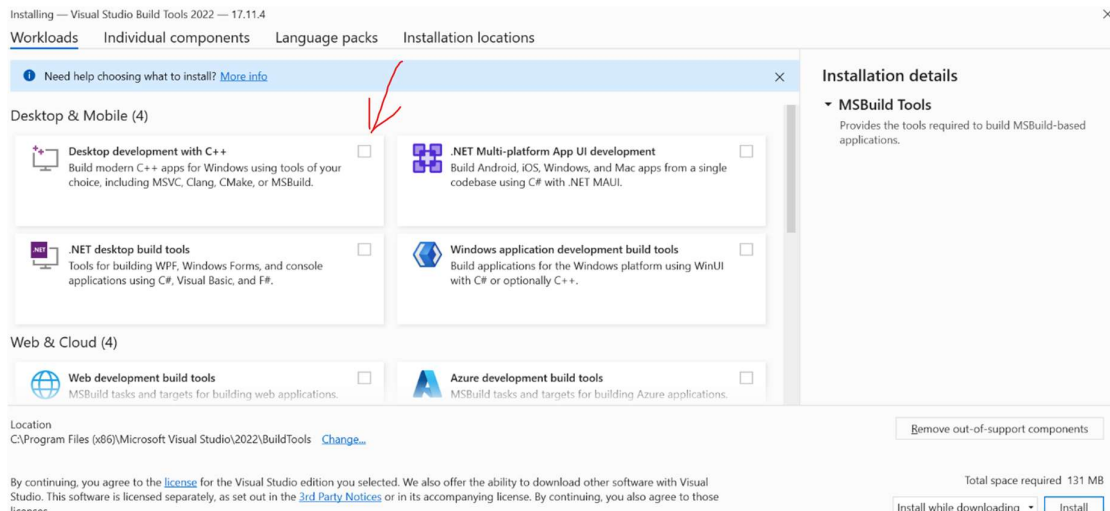
note: This error originates from a subprocess, and is likely not a problem with pip.
```

To fix it, install MS dev tools:

<https://visualstudio.microsoft.com/visual-cpp-build-tools/>

Name	Date modified	Type
Today (5)		
vs_BuildTools.exe	10-10-2024 02:32 PM	Application
tesla_db.zip	10-10-2024 12:24 PM	Compressed (zipped)
tesla-annual-reports.zip	10-10-2024 12:09 PM	Compressed (zipped)
index_tesla_documents.ipynb	10-10-2024 12:00 PM	Jupyter Source File
retrieval_tesla_documents.ipynb	10-10-2024 11:53 AM	Jupyter Source File
Yesterday (6)		

When you open the installer, select the first box below:



After installation, restart VS Code

And open the code folder.

Reactivate the virtual environment in the terminal:

In terminal, execute the following:

➤ `venv\Scripts\activate`

Install packages again:

`pip install -r requirements.txt`

After successful installation of packages you should see:

```

13 azure_config = {
14     "AZURE_OPENAI_ENDPOINT": os.getenv("AZURE_OPENAI_ENDPOINT"),
15     "AZURE_OPENAI_MODEL_DEPLOYMENT_NAME": os.getenv("AZURE_OPENAI_MODEL_DEPLOYMENT_NAME"),
16     "AZURE_OPENAI_MODEL_NAME": os.getenv("AZURE_OPENAI_MODEL_NAME"),
17     "AZURE_OPENAI_API_KEY": os.getenv("AZURE_OPENAI_API_KEY"),
18     "AZURE_OPENAI_API_VERSION": os.getenv("AZURE_OPENAI_API_VERSION")
}

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python
Downloading certifi-2024.8.30-py3-none-any.whl (167 kB)
Downloading colorama-0.4.6-py2.py3-none-any.whl (25 kB)
Downloading h11-0.14.0-py3-none-any.whl (58 kB)
Installing collected packages: typing-extensions, sniffio, jiter, idna, h11, distro, colorama, certifi, annot
ydantic-core, httpcore, anyio, pydantic, httpx, openai
Successfully installed annotated-types-0.7.0 anyio-4.6.0 certifi-2024.8.30 colorama-0.4.6 distro-1.9.0 h11-0.
httpx-0.27.2 idna-3.10 jiter-0.6.1 openai-1.51.2 pydantic-2.9.2 pydantic-core-2.23.4 sniffio-1.3.1 tqdm-4.66
s-4.12.2
PS C:\Users\BN743PF\Downloads\EYcode\EYcode> python -m venv venv
PS C:\Users\BN743PF\Downloads\EYcode\EYcode> venv\Scripts\activate
(venv) PS C:\Users\BN743PF\Downloads\EYcode\EYcode>

```

## 5. Test with simple python programs

Create a folder where you will keep all your code.

Recommended: C:\Users\<username>\code\genaitraining

Unzip the genaibasics.zip file available at:

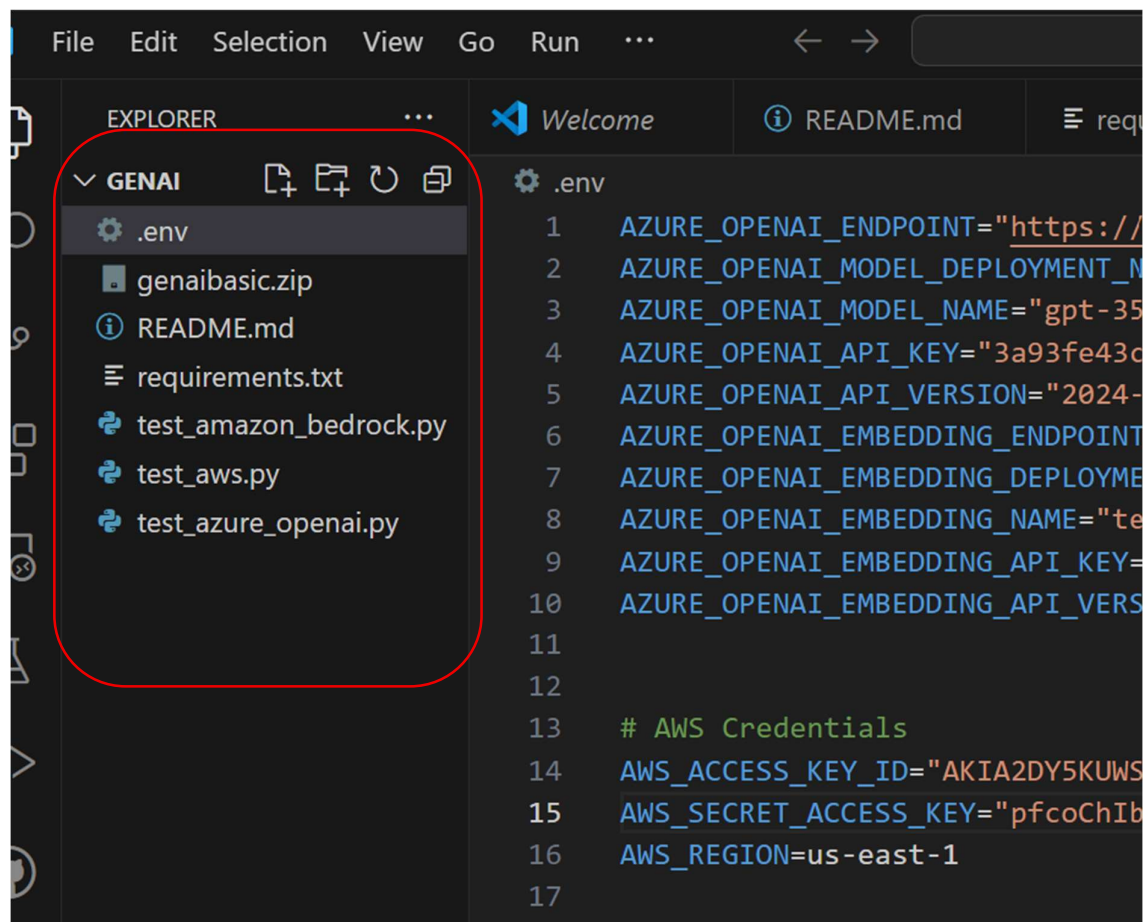
<https://github.com/vijay-agrawal/genaitraining/blob/main/genaibasic.zip>

And unzip its contents into the genaitraining folder

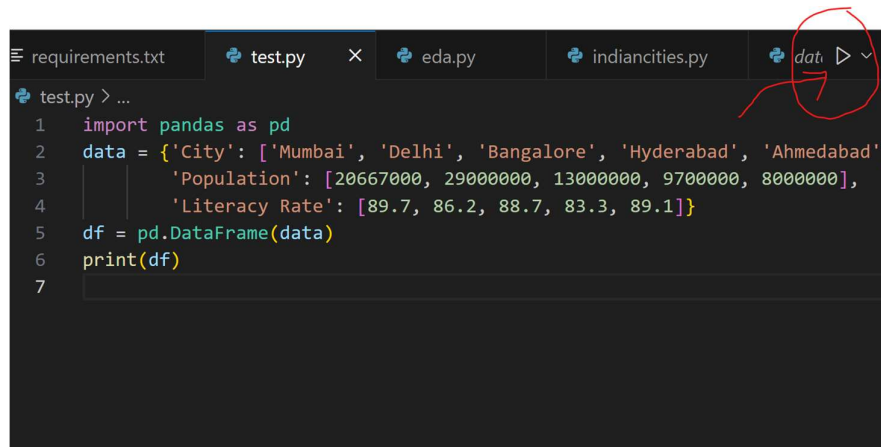
6. Save the .env file shared separately in the project root folder.

**Note: .env file contains sensitive access keys – do not circulate, to be used by the training participants only**

7. Your folder structure should look like this:



8. Run all of the test\* python test files one by one by selecting them in the left pane and clicking on the **Play button** or by giving the command in terminal



```
test.py > ...
1 import pandas as pd
2 data = {'City': ['Mumbai', 'Delhi', 'Bangalore', 'Hyderabad', 'Ahmedabad'],
3         'Population': [20667000, 29000000, 13000000, 9700000, 8000000],
4         'Literacy Rate': [89.7, 86.2, 88.7, 83.3, 89.1]}
5 df = pd.DataFrame(data)
6 print(df)
7
```

If unable to run, you may need to select Python Interpreter:

- Press Ctrl+Shift+P (Cmd+Shift+P on macOS)
- Type "Python: Select Interpreter"
- Choose the interpreter from your virtual environment

9. You should see the output properly

## Troubleshooting

- If terminal says scripts are disabled (PowerShell):  
Set-ExecutionPolicy -ExecutionPolicy RemoteSigned -Scope CurrentUser
- If Python is not recognized, verify it's added to PATH
- Make sure to always activate virtual environment before installing packages. The active environment is shown in green as below:

Give command:

venv\Scripts\activate

```
45 # Create a twin axes for population and literacy rate
46 fig, ax1 = plt.subplots(figsize=(15, 8))
```

	PROBLEMS	OUTPUT	DEBUG CONSOLE	TERMINAL	PORTS	AZURE
1	Delhi	29000000		86.2		
2	Bangalore	13000000		88.7		
3	Hyderabad	9700000		83.3		
4	Ahmedabad	8000000		89.1		

```
PS D:\code\EYcode>
* History restored

PS D:\code\EYcode>
* History restored

PS D:\code\EYcode> venv\Scripts\activate
(venv) PS D:\code\EYcode>
```

- If still facing errors, try following and then run *pip install -r requirements.txt*:  
pip install --upgrade  
pip setuptools wheel  
pip cache purge  
pip install --upgrade --force-reinstall setuptools

Thatsit!!

**You are now ready to build your GenAI Python apps with VS code**