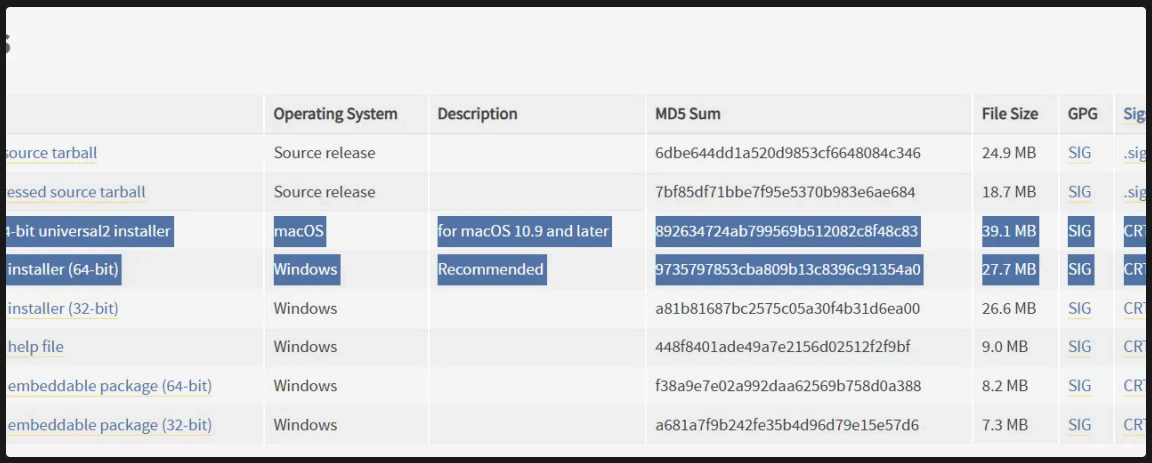
Lab 0

Set up Python, LangChain and LLM API on a local machine(Windows and Mac)

1. Install Python 3.10

- **Download Python 3.10.10**:
  - Visit the official Python website: https://www.python.org/downloads/release/python-31010/



	Operating System	Description	MD5 Sum	File Size	GPG	Sig
ource tarball	Source release		6dbe644dd1a520d9853cf6648084c346	24.9 MB	SIG	.sig
essed source tarball	Source release		7bf85df71bbe7f95e5370b983e6ae684	18.7 MB	SIG	.sig
-bit universal2 installer	macOS	for macOS 10.9 and later	892634724ab799569b512082c8f48c83	39.1 MB	SIG	CRT
installer (64-bit)	Windows	Recommended	9735797853cba809b13c8396c91354a0	27.7 MB	SIG	CRT
installer (32-bit)	Windows		a81b81687bc2575c05a30f4b31d6ea00	26.6 MB	SIG	CRT
help file	Windows		448f8401ade49a7e2156d02512f2f9bf	9.0 MB	SIG	CRT
embeddable package (64-bit)	Windows		f38a9e7e02a992daa62569b758d0a388	8.2 MB	SIG	CRT
embeddable package (32-bit)	Windows		a681a7f9b242fe35b4d96d79e15e57d6	7.3 MB	SIG	CRT

  - Download the **Windows or MacOS** installer based on your system.

- **Install Python**:
  - Run the downloaded installer.
  - **Important(Windows)**: Ensure you check the box labeled `Add Python 3.10 to PATH` before clicking "Install Now". (This will make it the default version)
  - **For Mac** just follow the Steps.

2. Verify Python Installation

- ▶ **Windows:**
- ▼ **Mac:**
  - Open your terminal and type the following command to check your default Python version.: *Note that sometimes the default Python version on macOS may not be the one you just downloaded*.

```
python --version
```

  - If it's not the desired version, **you can manually change the default version** by following these steps:
    1. **Step 1**: Run the following command in your terminal to check all versions of Python installed on your Mac. Look for Python version 3.10.

```
ls -l /usr/local/bin/python*
```

    2. **Step 2**: If you see Python version 3.10 on the list, run the following command to change the default Python version. This will prompt you to enter your password.

```
sudo ln -s -f /usr/local/bin/python3.10
/usr/local/bin/python
```

    3. **Step 3**: Restart your terminal and use the `python --version` command again to test it. It should now display Python 3.10 as the default version.

3. Install Visual Studio Code (VSCode)

- Download VSCode from: https://code.visualstudio.com/.
- Run the installer and follow the on-screen instructions.

4. Install Python Extension for VSCode

- Open VSCode.
- Navigate to the Extensions view by clicking on the square icon on the sidebar or pressing `Ctrl + Shift + X` (**Windows**) ,or **⌘+Shift + X(Mac)**
- In the search bar, type the name of each extension below and install them.

  Essential Extensions:

  1. **Python** – Official extension by Microsoft for Python development (syntax highlighting, debugging, IntelliSense, linting, etc.).
  2. **Pylance** – Provides enhanced IntelliSense, type checking, and autocomplete features for Python.
  3. **Jupyter** – Enables Jupyter Notebook support inside VSCode.
  4. **Jupyter Notebook Renderers** – Improves Jupyter notebook output visualization.
  5. **Jupyter Keymap** – Adds additional shortcuts for working with Jupyter Notebooks.
  6. **Database Client JDBC** –Work with database.

  Optional but Recommended Extensions:

  - **Rainbow CSV** – Highlights CSV files with color coding for better readability.
  - **Excalidraw** – A lightweight drawing tool inside VSCode for sketching ideas, workflows, or architecture designs.

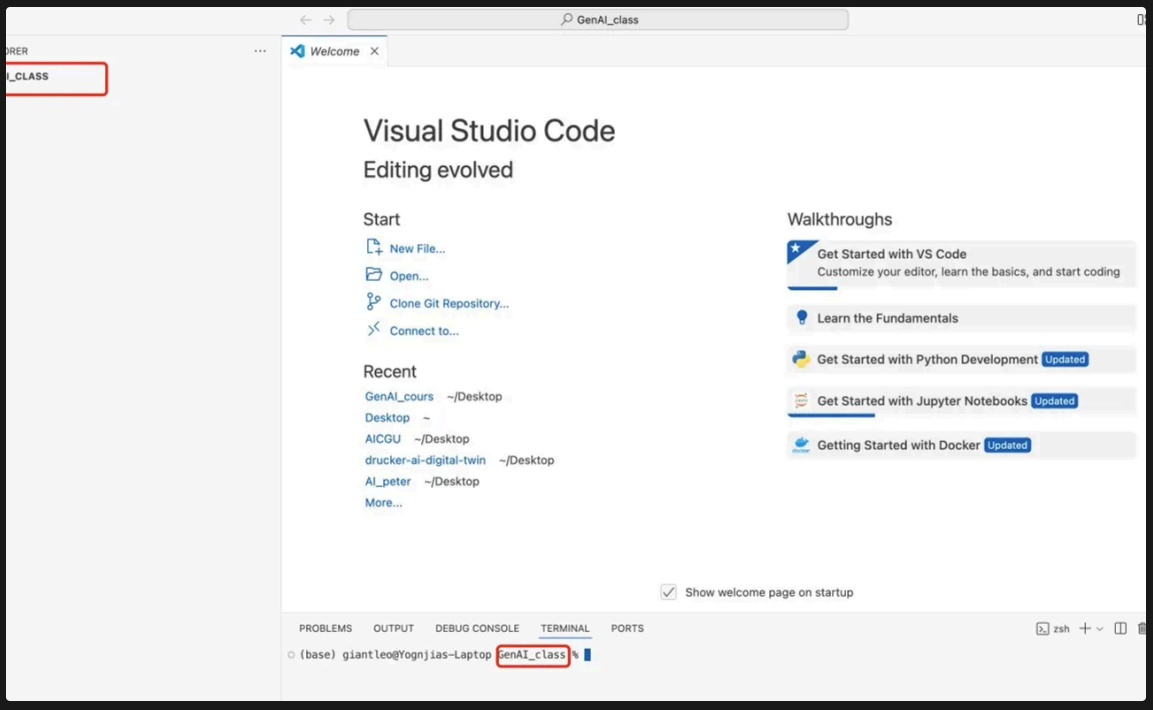
5. Set Up a Virtual Environment

- **Create a Project Directory**:
  - Open VSCode.
    - Click on `File` > `Open Folder...` and select or create a new folder for your project.
  - **Open Terminal in VSCode**:
    - Navigate to `Terminal` > `New Terminal` or press `Ctrl + ` ` (windows)or `⌘ + J` (Mac)
    - The `Terminal` should shows the current project folder.
- ▶ **Windows:**

Mac

Create VM from terminal

- **Step 1**: Open your folder in VS Code and click the third icon at the top to open the terminal, or use (⌘+J) to directly open the terminal within the current folder.



- **Step 2**: Create a Virtual Environment (VM)

  To create a virtual environment, type the following command in the terminal *with your default python version*) :

  ```
  python -m venv GenAI
  ```

  Note: You can replace `GenAI` with a name of your choice for the virtual environment.

  Or, If you are targeting a specific Python version, use the following command:

  ```
  python3.10 -m venv GenAI
  ```

  Note: Replace `python3.10` with the desired Python version installed on your machine.

- **Step 3**: Activate your VM:

  ```
  source GenAI/bin/activate
  ```

6. Set Up API Keys & Install LangChain Basic Packages

Before installing LangChain, you **must set up an API key** for services like OpenAI.

- **Get an OpenAI API Key**
  - Go to OpenAI API Keys
  - Click **"Create new secret key"** and copy it. (You may need to register for an account)
  - **Store this key securely**—you'll need it in the next step.

- **Create a `.env` File to Store API Keys**
  - Inside your project folder, create a new file named `.env`
  - Open the `.env` file in VScode and add your OpenAI API key like this:

```
OPENAI_API_KEY="your-api-key-here" # Replace your-api-key-here with your actual API key within the quotation marks.
```

  - Save the file.