Guide for Installation of Python, VSCode and Creating Virtual Environment

Step 1: Install Python and VSCode on MacOS (In Lab computers its preinstalled – so skip this step)

1. **Install Python**
   2. **Download Python:**
      - Go to the official Python website.
      - Download the latest version of Python for your operating system (Windows, macOS, or Linux).
   3. **Install Python:**
      - **Windows:** Run the installer and ensure you check the box that says "Add Python to PATH." Follow the prompts to complete the installation.
      - **macOS:** Open the downloaded .pkg file and follow the installation instructions.
      - **Linux:** Use your package manager to install Python. For example, on Ubuntu, you can use:

        ```
        sudo apt update
        sudo apt install python3
        ```

   4. **Verify Installation:**
      - Open a terminal or command prompt and type:

        ```
        python3 –version
        ```

      - You should see the Python version number if it's installed correctly.
5. **Install VSCode:**
   - Download and install VSCode from the official VSCode website.

Step 2: Install Python Extension in VSCode

1. **Open VSCode:**
   - Launch VSCode application
2. **Install Python Extension:**
   - Click on the Extensions icon in the Activity Bar on the side of the window
   - Search for "Python" and install the extension provided by Microsoft.

Step 3: Set Up a Virtual Environment Named MAD102

1. **Open the Integrated Terminal in VSCode:**
   - Open the terminal in VSCode by selecting Terminal > New Terminal or pressing Cmd+`.

2. **Create a New Directory for Your Project:**
    - Navigate to the directory where you want to create the MAD102 folder:

      cd path/to/your/desired/location

    - Create the MAD102 folder and navigate into it:

      mkdir MAD102
      cd MAD102

3. **Create a Virtual Environment named MAD102:**
    - Use the venv module to create a virtual environment named mad102_env:

      python3 -m venv mad102_env

    - This will create a mad102_env directory inside MAD102 with a separate Python installation.
4. **Activate the Virtual Environment:**
    - Activate the virtual environment by running:

      source mad102_env/bin/activate

    - You should see (mad102_env) at the beginning of your terminal prompt, indicating the virtual environment is active.

Step 4: Configure VSCode to Use the Virtual Environment

1. **Select the Python Interpreter:**
    - Open the Command Palette by pressing Cmd+Shift+P.
    - Type Python: Select Interpreter and select it.
    - Choose the interpreter from the virtual environment. It should be listed with a path similar to ./mad102_env/bin/python.

Step 5: Create and Run a Python Script

1. **Create a New Python File:**
    - In VSCode, create a new file by selecting File > New File or pressing Cmd+N.
    - Enter your Python code. For example, you can use the following simple script to add and print numbers:

```
# Create 2 variables and assign a value
num1 = 5
num2 = 7

# Print the result
```

```
print(f"The sum of {num1} and {num2} is {num1+num2}")
```

- Save the file as add_numbers.py in the MAD102 folder.

2. **Run the Python Script:**
   - Ensure the virtual environment is activated.
   - Run the script by executing: python3 add_numbers.py