DATA SCIENCE COURSE TUTORIAL # 10

Chapter # 3: Python Essentials for Data Science

3.1 What is Python?

Python is a high-level, interpreted programming language known for its simplicity and readability. It was created by Guido van Rossum and released in 1991.

Key Features

- Easy to learn and write
- Interpreted (no need to compile)
- Dynamically typed (no need to declare variable types)
- Supports multiple programming paradigms (procedural, object-oriented, functional)
- Large standard library and active community

Used For

- Web development (Django, Flask)
- Data science and machine learning (Pandas, NumPy, TensorFlow)
- Automation and scripting
- Game development
- Desktop applications

3.2 Installing Python

1. **Download Python**

Go to the official Python website python.org and download the latest version for your operating system.

2. **Run the Installer**

Open the downloaded file and follow the installation instructions. Make sure to check the box that says "Add Python to PATH" before clicking "Install Now."

3. **Verify Installation**

Open a command prompt (Windows) or terminal (macOS/Linux) and type `python --version` or `python3 --version` to check if Python is installed correctly.

3.3 Setting up VS Code

1. **Download VS Code**

Go to the official Visual Studio Code website code.visualstudio.com and download the latest version for your operating system.

2. **Install VS Code**

Open the downloaded file and follow the installation instructions.

3. **Install Python Extension**

Launch VS Code, go to the Extensions view by clicking on the Extensions icon in the Activity Bar on the side, and search for "Python". Install the official Python extension by Microsoft.

4. **Select Python Interpreter**

Open the Command Palette `(Ctrl+Shift+P)` and type `Python: Select Interpreter`. Choose the Python interpreter you installed earlier.

5. **Create a New Python File**

Click on the Explorer icon in the Activity Bar, then click on the "New File" icon. Name your file with a `.py` extension (e.g., `hello.py`) to start coding in Python.

6. **Write Your First Python Program**

Open the newly created Python file and write a simple program, such as `print("Hello, World!")`. Save the file and run it using the terminal or the built-in run feature in VS Code.

7. **Install Code Runner Extension**

To run your Python code easily, you can install the Code Runner extension. Go to the Extensions view, search for `Code Runner`, and install it. This will allow you to run your code with a single click.

8. **Configure Code Runner**

After installing, you can configure Code Runner to use the Python interpreter you selected. Go to Settings (File > Preferences > Settings), search for "Code Runner Executor Map", and ensure that the Python entry points to your Python interpreter (e.g., `"python": "python3"`).

9. **Run Your Code**

Now you can run your Python code easily. Open your Python file and click the `Run Code` button in the top right corner, or right-click in the editor and select `Run Code`. The output will be displayed in the integrated terminal.