👨‍💻 Setting Up Your Windows Computer for Code Development (VSC + Conda + WSL Ubuntu)

This guide will help you set up a professional coding environment on **Windows** using:

- **Visual Studio Code (VSC)** as your main editor
- **Windows Subsystem for Linux (WSL)** running **Ubuntu** as your development terminal
- **Conda** for managing environments and Python packages

1️⃣ Enable Windows Subsystem for Linux (WSL)

1. Open **PowerShell** as Administrator.
2. Run the following command to install WSL with Ubuntu:

   ```
   wsl --install -d Ubuntu
   ```

3. When prompted, restart your computer.
4. After reboot, open **Ubuntu** from the Start menu and create your Linux username and password.

2️⃣ Update Ubuntu and Install Conda (From Ubuntu terminal)

1. Go to Ubuntu terminal (type Ubuntu in Windows search bar) and update your Ubuntu packages:

```
sudo apt update && sudo apt upgrade -y
```

2. Download the **Miniconda** installer for Linux:

```
wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh
```

3. Install Miniconda:

```
bash Miniconda3-latest-Linux-x86_64.sh
```

   - Accept the license terms.

3️⃣ Create a Conda Environment with Essential Libraries ((From Ubuntu terminal))

You can now create a Python environment with the most important data science libraries:

```
conda create -n dev_env python=3.10 pandas numpy scipy scikit-learn matplotlib jupyter -y
```

Activate it with:

```
conda activate dev_env
```

Verify your packages:

```
conda list
```

4️⃣ Install and Set Up Visual Studio Code (VSC) (On Windows)

1. Download **Visual Studio Code** from:
   👉 https://code.visualstudio.com/
2. During installation, **check all boxes** to:
   - Add to PATH
   - Register code as an editor
   - Add context menu entries
3. Open VSC and install the **Remote - WSL** extension:
   - Press **Ctrl + Shift + X**
   - Search for **“Remote - WSL”** and click *Install*.
4. Connect VSC to Ubuntu:

5 Install Important VSC Extensions

In VSC, open the **Extensions** tab and install the following:

Extension	Description
Python	Core support for Python development (by Microsoft)
Jupyter	Run Jupyter notebooks directly in VSC
SQLTools	Connect and query SQL databases
SQLTools Driver: SQLite	Enables SQLite database connections
Data Wrangler	Visual interface for exploring and cleaning data

After installing, reload VSC.

6️⃣ Verify Integration

Open a new VSC terminal (**Ctrl + `**) and check:

```
conda activate dev_env
python --version
```

Try creating a new Python file and importing your libraries:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
```

If no errors appear — your setup is complete! ✅

7️⃣ Optional: Enable Jupyter in VSC

To use Jupyter notebooks inside VSC:

1. Create a new file → Save it as `notebook.ipynb`.
2. Ensure the **Python: Select Interpreter** command is using your `dev_env` environment.
3. Run code cells directly from within VSC.

✅ You are ready to code!

You now have:

- Ubuntu (Linux) via WSL
- Conda for environment and package management
- VSC as your editor
- All major libraries (pandas, scipy, scikit-learn, matplotlib) pre-installed

You can now develop, test, and visualize your code seamlessly on Windows.