Miniconda and VS Code Setup for Exploratory Data Analysis (EDA)

This guide will help you install Miniconda, install VS Code, create a Python environment, and connect Miniconda with VS Code for Exploratory Data Analysis.

Everything is explained step by step in simple English.

1. **What is Miniconda?**

Miniconda is a lightweight version of Anaconda.

It helps you:

- Install Python easily.
- Create separate environments for different projects.
- Manage libraries like pandas, numpy, matplotlib, seaborn, scikit-learn.

For Data Science and EDA, Miniconda is very useful because it keeps projects clean and organized.

2. **Download and Install Miniconda**

Step 1: Go to the official website

https://docs.conda.io/en/latest/miniconda.html

Step 2: Download the version for your system:

- Windows 64-bit (most common)
- macOS
- Linux

Step 3: Run the installer

For Windows:

- Double click the downloaded file.
- Click Next.
- Agree to the license.
- Select "Just Me".
- Keep the default installation path.
- Select the option "Add Miniconda to my PATH environment variable".
- Click Install.

Step 4: Finish installation

After installation, open Command Prompt and type:

```
conda --version
```

If you see a version number, Miniconda is installed correctly.

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3. **Install Visual Studio Code (VS Code)**

Step 1: Go to the official website

https://code.visualstudio.com

Step 2: Download VS Code for your system.

Step 3: Run the installer and install it.

Step 4: Open VS Code after installation.

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4. **Install Python Extension in VS Code**

Step 1: Open VS Code.

Step 2: Click on Extensions icon on the left side.

Step 3: Search for "Python".

Step 4: Install the extension made by Microsoft.

This extension allows VS Code to work with Python and Conda environments.

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5. **Create a New Conda Environment for EDA**

It is very important to create a separate environment for each project.

Step 1: Open Command Prompt.

Step 2: Create a new environment.

Example:

```
conda create -n eda_env python=3.11
```

Here:

- eda_env is the environment name.
- python=3.11 is the Python version.

Step 3: Activate the environment.

```
conda activate eda_env
```

If activated successfully, you will see (eda_env) at the beginning of the command line.

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6. **Install Required Libraries for EDA**

After activating the environment, install required libraries.

```
conda install pandas numpy matplotlib seaborn scikit-learn jupyter
```

Or you can use pip:

```
pip install pandas numpy matplotlib seaborn scikit-learn jupyter
```

Now your environment is ready for Exploratory Data Analysis.

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7. **Connect Miniconda Environment with VS Code**

Step 1: Open VS Code.

Step 2: Open your project folder:

- Click File.
- Click Open Folder.
- Select your project folder.

Step 3: Select Python Interpreter.

- Press Ctrl + Shift + P.

- Type "Python: Select Interpreter".

- Choose the interpreter that shows:

  Python 3.11 (eda_env)

If you do not see it, click "Enter interpreter path" and browse to:

Miniconda3 > envs > eda_env > python.exe

Now VS Code is connected with your Miniconda environment.

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8. **Test the Setup**

Create a new file named:

```
test.py
```

Add this code:

```
import pandas as pd
import numpy as np

print("Miniconda and VS Code are working correctly.")
```

Run the file.

If there is no error, everything is set correctly.

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9. **Using Jupyter Notebook in VS Code**

For EDA, Jupyter Notebook is very useful.

Step 1: Install Jupyter extension in VS Code.

Step 2: Create a new file with extension:

```
example.ipynb
```

Step 3: Select the kernel as:

eda_env

Now you can write EDA code in notebook format.

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10. **Important Best Practices**

1. Always activate your environment before installing libraries.
2. Use one environment per project.

3. Do not install all libraries in base environment.

4. Keep Python version consistent.

5. Regularly update conda:

```
conda update conda                              5 / 5
```

Final Result

After completing all steps:

- Miniconda is installed.
- VS Code is installed.
- A dedicated EDA environment is created.
- Required libraries are installed.
- VS Code is connected to Miniconda.
- You are ready to start Exploratory Data Analysis projects.

Your system is now fully prepared for Data Science and EDA work.