

Reflective Journal

From this lab exercise, I learned the following:

1) **The Difference Between NumPy and Pandas**

Although I took a course on *Data Analysis Using Python* last semester, I did not clearly understand the differences between these two tools. Through this lab, I followed the case study step by step, compared their results, and also clarified my questions with ChatGPT. Now I feel more confident in distinguishing their functions. NumPy is mainly focused on numerical computing with arrays and matrices, while Pandas is designed for working with structured data, similar to a more powerful version of Excel.

2) **The Difference Between Google Colab, Local Jupyter Notebook, VS Code, Git, and GitHub.**

From this lab, I also developed a clearer understanding of the roles and differences among these tools, which I used to find confusing. Google Colab is a cloud-based platform that allows users to run Python code without local installation, making it convenient for collaboration and resource sharing. In contrast, a local Jupyter Notebook runs directly on my own computer, providing more control but requiring setup and local resources. VS Code is a versatile integrated development environment (IDE) that supports multiple programming languages and extensions, including Jupyter, which makes it a more comprehensive coding environment. Git is a version control system used to track and manage changes in code, while GitHub is an online hosting service built on Git that enables repository storage, project sharing, and collaboration.

3) The goal is learning, not just completion.

The professor's reminder impressed me deeply. I realized that the reason I did not fully grasp these concepts last semester was that I fell into the pitfall of focusing only on completing assignments and earning high scores. During this lab, however, I worked through each step carefully and paid attention to the details of every instruction. This approach gave me more confidence, and I hope to continue studying in this way for the rest of my learning journey.