Final Reflection for CS5001

Hao Wu

The topic I selected for my final project in CS5001 is a Daily Spending Tracking Program. The concept behind this program is straightforward: users establish a target spending amount for the month and input their daily expenditures for each day of the month. The program then generates a plot and messages to indicate whether users have successfully adhered to their spending limits. Initially, I was dissatisfied with the topic because I had envisioned my first project in computer science to be more advanced, incorporating sophisticated features like automated Bitcoin price analysis and global stock recommendations. However, upon discussing with my tutor, she strongly advised that I concentrate on a simpler project to ensure its completion. This decision proved to be one of my best during the final.

As I began my project, I quickly discovered that even a seemingly "simple" idea demanded significant effort to comprehend the program structure and implement it through code. While working on my project, I learned several key points:

1. **The importance of structure design:** investing time in planning is crucial. Initially, I sketched a rough program structure and provided brief descriptions of each function before diving into coding. However, I later found that inadequate design hindered my coding progress, forcing me to restructure my code multiple times as I discovered previously overlooked methods. Ultimately, I realized the value of solidifying my initial design to save time.
2. **Prompt code testing:** it is advisable to test each function immediately after coding using unittest or other techniques. Delaying testing may allow errors to accumulate, complicating future code modification and testing.
3. **Coding as a data visualization process:** I devoted the majority of my time to developing two class objects responsible for storing users' daily and monthly spending. The essence of my program is to accept data incrementally and output different data types through arithmetic calculations performed by the computer. Thus, I believe that programming fundamentally revolves around data, including data storage, processing, transmission, and visualization.

Currently, this project focuses solely on daily spending tracking and is limited to a monthly scope. Consequently, future enhancements could enable users to track their spending annually.

Additionally, incorporating income-related features, such as income tracking and tax calculation, could further improve the program.

As for the program's user interface, it currently lacks refinement, relying on text and plots displayed in the terminal. Enhancements could include graphical menus and the integration of icons or images to create a more user-friendly interface.

My ultimate goal as a programmer is to utilize programming to solve problems in the finance industry. This project has demonstrated the challenges and complexities of coding in real-world scenarios while also showcasing the power of programming in automating data processing. To harness this power effectively, a strong foundation in mathematics and proficiency in programming languages are essential, and these areas will be my primary focus moving forward.