**COSC 1104 – Assignment 2**

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**Part 1: Identify the Problem**

**Problem 1: Expense Splitter**

When friends go out together, whether for a meal, a trip, or any shared activity, splitting the bill can often lead to confusion and disagreements. Each person may have ordered different items, and calculating who owes what can become a tedious task. This problem is particularly prevalent in social settings where multiple expenses are incurred, and it can lead to awkwardness among friends if not handled properly.

A Python program that functions as an expense splitter can significantly simplify this process. The program would allow users to input the total amount of the bill, the number of people sharing the expense, and any individual contributions. It would then calculate how much each person owes or how much they should receive back. Additionally, the program could allow users to input individual expenses, making it easier to track who paid for what.

Creating this coding solution would not only streamline the process of splitting bills but also enhance social interactions by reducing potential conflicts over money. It would be particularly beneficial for groups of friends who frequently dine out or travel together. The program could also serve as a learning tool for users to understand basic financial management and budgeting.

I anticipate that this project will be moderately challenging. It will require a good understanding of control structures to handle user inputs and calculations accurately. Additionally, implementing features that allow for individual expense tracking may add complexity to the program.

**Problem 2: Task Management with a To-Do List Application**

In today’s fast-paced world, many people struggle to keep track of their tasks and deadlines. With numerous responsibilities—ranging from work assignments to personal errands—it's easy to feel overwhelmed and forget important tasks. A simple to-do list application can serve as a practical solution, helping users manage their daily tasks, prioritize them, and mark them as completed.

Creating a coding solution for this problem could be highly beneficial. A well-designed to-do list application will allow users to take control of their schedules, set reminders for deadlines, and visualize their progress. This not only helps in managing time effectively but also fosters a sense of accomplishment as users check off completed tasks.

Developing this application is expected to be relatively straightforward, especially for someone with a basic understanding of Python. The core functionalities—adding, viewing, and deleting tasks—are simple to implement. However, challenges may arise in ensuring data persistence, especially if the application needs to store tasks between sessions. For this, I plan to use a lightweight database like SQLite, which is easy to set up and manage. Additionally, I will utilize the **datetime** library to handle deadlines, allowing users to set and view due dates for their tasks. For data storage, I can use either the **pickle** or **json** libraries, both of which are effective for serializing Python objects and storing them in a readable format.

**Part 2: Solve the Problem Using Python**

**Solution: A simple split wise calculator**

A screenshot of a computer program

Description automatically generated

**Part 3: Reflect on the Solution**

1. Did you choose a problem that felt just right in terms of difficulty, or was it too easy or too hard?

I found working on the bill splitter application to be a really fulfilling experience. It provided me with the opportunity to test my programming abilities in a practical setting. I choose this assignment because it was just the right amount of challenging. It was difficult enough to force me to step outside of my comfort zone, but not so difficult that I felt totally lost. I discovered that I was delving deeply into the complexities of user input, computations, and the clear presentation of the results—skills that are essential for any programmer.

1. Is there something more you'd like to add or try?

Adding the capability to manage many currencies is one concept that excites me. This would increase the application's adaptability and make it available to more people. I also considered developing a graphical user interface (GUI) to improve the app's usability and aesthetic appeal. A well-designed interface, in my opinion, may greatly improve the user experience.

1. Did you enjoy working on this? Why or why not?

Overall, I can honestly say that I had a great time creating the split wise application. Witnessing my code come to life and fulfill a useful function was very fulfilling. I remained interested and involved because of the obstacles I encountered, and I enjoyed the rush of overcoming problems and picking up new ideas. My programming abilities were strengthened by this project, which also gave me insightful knowledge about the value of error-handling and user experience in software development.