**COSC 1104 – Assignment 2**

**Part 1: Identify the Problem**

**Problem 1:** Personal expense tracking

Many people struggle with personal money management, which is keeping track of their income and spending. People tend to forget about low purchases, and they may not have a full understanding of their spending habits. A solution to this may be to create a Personal Expense Tracker where users can enter their daily, weekly, or monthly costs and revenue. The application may offer a detailed summary of expenditure by category (for example, food, entertainment, and rent), helping users to have a better understanding of their finances. It might also create reports on whether they pay attention to their budget.

**Why it's useful**: This is a very practical topic since managing personal money is something that everyone has to deal with, and having a tool to automate and manage costs may save time, eliminate mistakes, and help users remain on track with their financial objectives.

**Python Libraries**:

* csv for loading data.
* matplotlib for visualizing spending chart.
* os for file handling.

**Problem 2:** Automatic file renaming

Frequently, files within directories lack a uniform naming convention. This might create confusion and make it difficult to identify or handle individual files. When users acquire a large number of files—whether images, documents, or other sorts of data—clear, descriptive file names are essential for easy access.   
Files with names like IMG\_1234.jpg, photo001.jpg, or doc\_2024.pdf, for example, convey little information about their contents. As a result, it might be difficult to find certain files, particularly those that are part of a larger collection. An automatic file renaming tool can aid by renaming files in bulk depending on user-defined rules, such as adding a date prefix, turning underscores to spaces, or appending a suffix.

**why it's useful**: This is a common organizational issue and automating it will save a lot of time. Many users regularly download or save files with inconsistent naming conventions, and this program will help make file management more efficient.

**Python Libraries**:

* os for file handling.
* datetime for adding timestamps.

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

The python code is attached separately as “.py” file in the same directory.

**Part 3: Reflect on the Solution**

* **Did you pick a suitably challenging problem to solve? Or was it too easy, or too hard?**

Yes, I chose a problem that balanced ease of implementation with useful functionality. The expense tracker was not overly complex, but it required me to use various Python skills such as file handling, dictionary manipulation, and data visualization.

* **What resources did you use to learn about the libraries (or any other new features) you used?**

I used the official documentation for matplotlib and csv. I also referred to StackOverflow when I encountered issues with file handling and date formatting.

* **How did you test your completed product? How confident are you that it works reliably?**

I tested the program by inputting multiple expenses and verifying that the totals and categories were being calculated and displayed correctly. I also checked the CSV file to ensure that data was being written and read correctly. I am pretty much confident that the product works.

* **Is there something you would still like to add to this, or something it makes you want to try next?**

I would like to add a feature that allows users to set a budget and get notifications when they exceed it. It would also be interesting to explore more complex data visualizations, like pie charts etc.

* **Did you enjoy the experience of working on this assignment? Why?**

Yes! It was rewarding to see a simple idea come to life and be functional. I enjoyed the process of working through the logic and learning new libraries.