**Assignment 2**

**Name: Girisha Daggula**

**Student ID: 100974333**

Description of the identified Problem and Solution:

**Part 1: Identified Problem**

1. Automated Email Remainder System:

* Description: A lot of people overlook crucial activities or occasions, like deadlines, appointments, or bill payments. Users could enter events and set reminders using an automated email reminder system. Using SMTP, the program would send out email notifications at predetermined intervals. Example: One day or one week prior.
* Usefulness: By ensuring that crucial dates are not missed, this tool can increase productivity. Professionals, students, and anyone else who wishes to maintain organization may find it useful.
* Difficulty: The integration of email functionality would make this project somewhat difficult, but I have experience with SMTP libraries. I anticipate sending emails using the smtplib library and perhaps scheduling the reminders.

1. Personal Finance Tracker:

* Description: A lot of people have trouble handling their personal money, which results in excessive spending and insufficient savings. Users can enter their income and expenses, classify them, and see how much they spend over time with the aid of a personal finance tracker. Users would be able to track their progress and set budgets for various categories such as groceries and entertainment with this tool.
* Usefulness: By encouraging better financial practices, assisting users in saving money, and empowering them to make well-informed spending decisions, the coding of this solution could have a substantial positive impact on users.
* Difficulty: This project seems like it would be moderately difficult. It calls for user input, data processing, and possibly visualization. I anticipate using matplotlib or seaborn for visualizations and Python libraries like pandas for data management.

**Part 3: Reflection on the Solution:**

1. Challenge Level: The problem was appropriately difficult for me. Although I am familiar with data handling and basic Python, I had never implemented the visual representation of data before.
2. Difficult Aspects: Determining how efficiently organize and display the data was the most difficult aspect. It took some time, but it was worthwhile to learn how to use matplotlib for plotting and pandas for data manipulation.
3. Resources Used: I consulted the official matplotlib and pandas documentation, which offered concise use cases and examples. I also searched Stack Overflow discussions and online tutorials for specific problems I ran into.
4. Important Lessons: The most important lesson was realizing how crucial data visualization is to efficient data interpretation. It reaffirmed the notion that clearer data presentation can result in more insightful conclusions.
5. Product Testing: To verify the program's accuracy, I added multiple transactions and examined the monthly summary and visualization output. Although more testing with different edge cases would further improve robustness, I am confident in its dependability.
6. Future Improvements: I would like to incorporate a budgeting function that enables users to set limits and receive alerts, as well as a feature that exports the transaction data to a CSV file for convenient access.
7. Pleasure: I had a great time working on this task. I was able to use my programming knowledge to solve a real-world issue, which made the experience entertaining and instructive.