**Narrative for Grocery Tracker Application**

**Description of the Artifact**

The Grocery Tracker Application is a software project that I developed as part of the Computer Science program, specifically during my CS-210 course. The primary purpose of this application is to manage a grocery store's inventory by tracking items, quantities, and other relevant data. The application was originally created to function as a simple console program that stored inventory data in a text file, allowing users to perform basic operations such as adding, removing, and viewing items.

In a subsequent enhancement, I incorporated an SQL database to manage user credentials and grocery inventory, replacing the original text file system. This enhancement was part of my work in the later stages of the program, specifically during the capstone project. The addition of a login system and the transition to a database-driven backend significantly improved the application’s functionality and security.

**Justification for Inclusion**

I selected the Grocery Tracker Application for my ePortfolio because it showcases my ability to integrate various computer science concepts, such as database management, software development, and security. The initial version of the application demonstrated my skills in C++ programming, file I/O operations, and data structures. However, the enhancements I made later on—specifically, the integration of an SQL database and a login screen—highlight my growth in software engineering and my ability to adapt and improve existing systems.

The inclusion of this artifact is particularly significant because it illustrates my journey from creating a simple console application to developing a more robust, secure, and scalable software solution. The enhancement demonstrates my skills in SQL, my understanding of security practices, and my ability to link databases with C++ applications. These improvements not only made the application more efficient but also more aligned with real-world software development standards.

**Reflection on the Enhancement Process**

Enhancing the Grocery Tracker Application was both challenging and rewarding. One of the biggest challenges I faced was integrating an SQL database with the existing C++ code. This required me to revisit and strengthen my understanding of SQL, a skill I hadn’t used extensively for about two years. The process of setting up the SQLite database, creating the necessary tables, and linking it with the C++ application was complex and required careful attention to detail.

During the enhancement process, I also focused on security improvements, specifically by adding a login system. This involved creating a users table in the SQL database, which stores usernames and passwords securely. This was my first experience implementing a security feature in a software application, and it was an invaluable learning opportunity. I learned about the importance of data protection and how to implement basic security measures, such as password storage and user authentication, within an application.

Another significant learning experience was the feedback I received during the enhancement process. Initially, my plan was to integrate the SQL database into a different project, the Weekly Pay Calculator. However, after receiving feedback and reflecting on the strengths of the Grocery Tracker Application, I decided to apply the enhancements here instead. This decision was based on the potential impact of the database integration on the application's functionality and the opportunity to demonstrate my ability to work with both file-based and database-driven storage systems.

Overall, the enhancements to the Grocery Tracker Application allowed me to fully meet several course outcomes, including those related to software development, database management, and security practices. The project also provided a platform to demonstrate my ability to improve an existing system and adapt to new challenges. However, there is always room for growth, and I recognize that there are additional outcomes, particularly in advanced security practices, that I have yet to fully explore. Future work could include further strengthening the application’s security and expanding its functionality to meet more complex real-world requirements.

This project not only demonstrates my technical skills but also my ability to critically reflect on my work, incorporate feedback, and make decisions that enhance the quality and security of software applications. The Grocery Tracker Application is a testament to my journey through the Computer Science program and my readiness to contribute to the field as a skilled software developer