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CS 499

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Artifact 1 Narrative

The artifact I chose for this category is my grocer inventory program; a C++ console application originally created in CS 210: Programming Languages. The program reads a test file containing a grocery list, counts the frequency of each item, allows users to search for specific items, displays a histogram and saves item frequencies to a backup file. Initially, the program used a fixed input file and a basic menu, which I enhanced to better demonstrate software engineering and design competencies.

I included this artifact in my ePortfolio because it shows my ability to design and enhance real-world software solutions using C++. This project shows my growth in applying design principles, managing user input, and creating more user-friendly software. I improved the program by implementing dynamic file loading, real time interaction, more robust error handling and a more flexible menu system. These changes expanded the functionality and improved the usability and maintainability of the program.

With this enhancement, I met the course outcomes I wanted to. I demonstrated outcome two by designing a clean, structured menu interface and helpful user prompts. I addressed outcome three by restructuring the program logic and applying algorithmic thinking to process inventory data. Outcome four was met by integrating file I/O operations, data structures like maps and by using modular design with class encapsulation.

The enhancement process helped to improve my understanding of user interaction design, defensive programming, and C++ I/O. One challenge I encountered was making sure the program could handle invalid file names and missing data. I also had to make sure I identified the correct working directory for file access in Visual Studio. This experience helped improve my problem-solving abilities and taught me the significance of considering user workflows, error paths and program robustness during the design and testing phases.