CS 499 Milestone Two Assessment

The artifact I selected for Milestone Two was the Course Manager project that I originally developed in C++ for my CS 300 Data Structures and Algorithms course. The project is a console-based application that allows users to load a CSV file that contains course data like a course ID, title, and any prerequisites. It allows users to search for a specific course using the course ID and view the associated information. For this milestone, I aim to fully convert the application to Python, improving its readability, maintainability and overall software design structure.

I selected this artifact because I wanted more exposure to a conventional programming language like Python, and also I wanted to improve my experience in data structures and algorithms. While the application doesn’t seem overly complicated or as intricate as a Full-Stack application, I believe that developing a deeper understanding of the trade offs between data structures and which algorithms to select when designing an application for data manipulation is more aligned with my career goals.

Additionally, I could demonstrate the skills I’ve learned throughout this program in software design and object-oriented design, as well as how to build a secure and robust program. One key area I focused on was improving input validation and exception handling throughout the program, reflecting my ability to write software that adheres to modern design principles, like maintainability and security.

As I continue to develop the enhanced artifact I constantly develop with adherence to the following course outcomes:

* Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts
* Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals (software engineering/design/database)
* Develop a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources

My code is designed with the course outcomes in mind by ensuring that all communication is of professional quality with the inclusion of comments that clearly indicate the purpose and functionality of each aspect of the application. Additionally, I demonstrate my ability to use well-founded and innovative techniques by converting the original program’s language to Python, while adhering to modern software design principles. Moreover, I continue to focus on developing a security mindset by ensuring input validation is incorporated for user interaction, along with anticipating potential vulnerabilities and errors by utilizing try-except blocks.

The refreshing shift of using Python has helped me grow as a student as I’ve had to gain experience in understanding Python code and structure. Some of the key challenges that I faced was incorporating an object-oriented design, learning python string methods, list comprehension, file handling, adding input validation, using Dictionaries, and debugging. Overall, the software design portion of the artifact enhancement has helped me improve my programming skills as I continue building my complete artifact enhancement that meets the course outcomes.