**Milestone Three - Enhancement Two: Data Structures & Algorithms**

1. Briefly describe the artifact. What is it? When was it created?

For the Data Structures & Algorithms category, I chose to provide enhancements on my Advisor Assistance Program, originally developed for CS300: Data Structures & Algorithms. The project included a simple advisory system where the user could load course information from a CSV file, print the course list, and print course information.

1. Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in algorithms and data structure? How was the artifact improved?

I chose to enhance this artifact because I thought it showed a lot of potential for a proper enhancement, specifically within data structures and algorithms. The original program was very basic, giving minimal interactivity. I felt it would be a great showcase of knowledge for my ePortfolio. In enhancing the project, I first refined the entry way into the program, specifically focusing on loading the courses from the CSV file in the background. I also implemented the functionality for scheduling. Before, users were only able to view courses, but with the scheduling enhancement, I implemented a direct graph, which was used for representing the prerequisites. I also used a queue in the sorting mechanics for topological sorting to ensure courses are taken in the order they should. There are also recommended courses that the system provides based on their current schedule and prerequisites. In the finished version of the project, users can browse the course catalog, select courses, add them to their schedule (based on prerequisites) or compare the selected course to their current schedule. They are also allowed different sorting options when browsing courses, such as sorting topologically, by department, or by course level.

1. Did you meet the course outcomes you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

For this enhancement, I chose course outcome requirements #2 and #3. Course outcome #2 focuses on designing, developing, and delivering professional oral, written, or visual communication that is both coherent and technically sound. In my enhancement, I focused on ensuring that the communication coming from the program was informational and instructive on what the user requirements were. The verbiage and selection system in the program was aimed to be easy to understand and navigate for ease of use by the user. For the coding side of course outcome #2, I focused on providing comments that were easy to follow and described the functionalities of the code properly. Course outcome requirement #3 focuses on the design and evaluation of computing solutions that aim to solve a problem using algorithmic principles, best practices, and following standards that are appropriate. The enhancements geared toward this course outcome requirement are the implemented directed graph and queue. The directed graph was used for representing the prerequisites of the courses, while the queue allows topological sorting for proper course order.

1. Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?

In reflection of this artifact’s enhancements, I found myself becoming more comfortable with advanced data structures and algorithms. While working through the enhancements, I ran into some issues with the different menus as well as the sorting mechanics, but after working with it for a while, I was able to achieve what I aimed for.

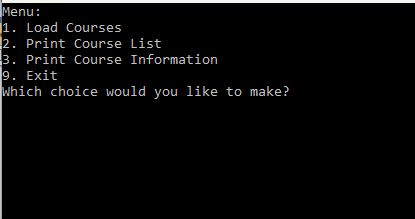
**Artifact Images:**

Before Enhancements:

A computer screen shot of a course list

AI-generated content may be incorrect.A computer screen shot of a black screen

AI-generated content may be incorrect.A computer screen with white text

AI-generated content may be incorrect.

After Enhancements:

Note: These screenshots do not showcase the entire functionality of the program. Rather, they showcase the program entry, viewing the course catalog, and adding courses to a schedule.A screenshot of a computer program

AI-generated content may be incorrect.A screen shot of a computer

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