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

This artifact is a Course Planner application that I originally created in *CS 260: Data Structures and Algorithms*. The original version used a binary search tree to allow users to load course data, search for courses, and view course sequences. I enhanced it by building an AVL Tree for more efficient course storage and faster searching, along with a DAG (Directed Acyclic Graph)-based planner that uses topological sorting to help organize course prerequisites in the right order.

**2. Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components showcase your skills and abilities in software development? How was the artifact improved?**

I included this project in my ePortfolio because it highlights my ability to apply and enhance advanced data structures to solve practical problems. Adding the AVL Tree shows my understanding of how to improve performance using self-balancing trees. The DAG planner demonstrates my ability to work with graph algorithms like depth-first search, topological sorting, and cycle detection. These updates made the program more scalable, maintainable, and easier to use, which reflects my skills in writing clean, modular code and thinking about the end user.

**3. 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?**

Yes, I met the course outcomes I set out to cover. Specifically, this enhancement demonstrates:

* Outcome 2: I developed technically sound and well-structured code that could be adapted and improved for different audiences.
* Outcome 3: I designed and implemented computing solutions (AVL Tree and DAG planner) using algorithmic principles to solve real problems while balancing complexity and performance.
* Outcome 4: I applied effective programming techniques and tools to enhance an existing solution, showing that I can build software that meets industry-level expectations.

At this time, I don’t have any updates to my outcome-coverage plans.

**4. Reflect on the process of enhancing and modifying the artifact. What did you learn? What challenges did you face?**

During the enhancement process, I learned how valuable it is to write modular code, which made it easier to add new features like the AVL Tree and the DAG planner without rewriting everything. Working with AVL Trees helped me understand how to balance trees through rotations and manage node heights. Building the DAG planner improved my grasp of graph algorithms and how to handle course prerequisites logically.

One challenge I faced was figuring out what kind of enhancement would be meaningful, I didn’t want it to be too simple or too overwhelming. I also had to be careful not to break any of the existing features while adding new ones, so I did a lot of testing and refactoring. Overall, the project taught me how to improve an existing application in a thoughtful and effective way.