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CS-499 Computer Science Capstone

9/26/2024

Category Two – Algorithms and Data Structures Narrative.

**Artifact Description**

The artifact is my CS-260 Project 2, created in June 2023. This project involved developing a data structure to manage course information using a basic binary tree. The implementation allows for the insertion of course data, including course IDs, names, and prerequisites, and supports in-order traversal for displaying the course list. This project demonstrates my foundational skills in programming with C++, particularly in working with data structures and file handling. It served as a practical application of concepts learned throughout the course, showcasing my ability to build and manipulate data structures in a meaningful way.

**Justification for Inclusion**

I included this artifact in my ePortfolio because it shows my foundational skills in algorithms and data structures, especially through the implementation of a binary tree for managing course information. The project was improved by enhancing its functionality to support AVL tree properties, adding error handling, and implementing multiple traversal methods, showcasing my growth in understanding complex data structures.

**Course Outcomes**

I did meet the course outcomes I planned to achieve with this enhancement in Module One, including demonstrating proficiency in implementing data structures and understanding their operational complexities. My enhancement focused on refining my skills in creating balanced trees and ensuring code robustness, which aligns with the outcomes; I do not have any updates to my outcome-coverage plans as I believe my enhancements adequately address the learning objectives.

**Reflection on the Enhancement Process**

Enhancing and modifying the artifact allowed me to deepen my understanding of algorithms and data structures, especially in implementing balanced trees like AVL trees. I faced challenges related to ensuring correct node insertion and maintaining balance, but overcoming these obstacles improved my problem-solving skills and reinforced the importance of efficient data organization.