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SNHU

CS-499 Computer Science Capstone

### Enhancement One: Software Design and Engineering

The artifact I selected for my ePortfolio is my **CS 465 Full Stack project**, which is a web application built using Node.js, Express, and Handlebars. This project was originally created during my Full Stack Development course and served as an introduction to building a server-side application with routing, views, and basic functionality. At the time, the project focused more on getting the application running than on strong software design practices. For this course, I used that same project as a starting point and enhanced it to better reflect professional development standards and the skills I have gained since completing the original assignment.

I chose this artifact because it clearly demonstrates my growth in software design and engineering. The application structure allowed me to improve the organization of the code by separating responsibilities into different layers. For example, I added service files to handle business logic instead of placing everything inside the route files. This shows my understanding of separation of concerns and modular design. I also began adding database support using MongoDB and Mongoose, which introduced structured data handling, validation, and more realistic application architecture. These enhancements improved the overall design of the project and made it closer to how real-world full stack applications are built. Instead of just focusing on getting the app to work, I focused on why certain design decisions matter, like keeping logic out of routes and preparing the app for persistent data storage.

Through these enhancements, I did meet the course outcomes I originally planned to target. I strengthened my ability to design and evaluate computing solutions by improving the structure and maintainability of the application. I also demonstrated the use of industry-relevant tools and techniques, such as Express services, environment variables, and database modeling with Mongoose. Additionally, I began incorporating a stronger security mindset by using an environment file for configuration and adding validation rules in the database schema. At this point, I feel confident that I am making solid progress toward the software engineering and design outcomes, and I plan to continue building on this by adding more structured data operations and refining how the application handles user input.

Enhancing this artifact helped me better understand the difference between simply writing code that works and writing code that is designed well. I learned how important organization, readability, and structure are, especially when projects grow in size. One challenge I faced was making sure I did not over-engineer the project by adding unnecessary complexity. Based on instructor feedback, I focused on adding purposeful improvements rather than just adding features. Another challenge was troubleshooting errors when integrating new files and services, but working through those issues helped me become more comfortable debugging and understanding how different parts of an application connect. Overall, this process helped me think more like a software engineer and less like a student just trying to complete an assignment.