Dylan Stirling

Professor Sandifer

CS 499

25 Jan 25

Enhancement One: Software Design/Engineering

-Artifact Overview

The selected artifact is the **ContactService** class, which serves as a foundational component in a contact management application. It was initially created during a course project in CS 320 to demonstrate my skills in software design, development, and testing. This artifact implements core functionalities such as adding, updating, and deleting contacts while managing them within a data structure.

-Justification for Inclusion

I chose this artifact for my ePortfolio because it exemplifies fundamental principles of software design and engineering, including modularity, maintainability, and scalability. The artifact highlights my ability to design and implement robust, user-focused solutions while adhering to clean coding practices. Furthermore, the enhancements align with industry standards, showcasing my growth in addressing data validation, input sanitization, and exception handling. These improvements strengthen the reliability of the artifact and illustrate my commitment to software quality.

-Improvement Summary

Enhancements to the artifact included implementing input validation for fields such as phone numbers and addresses, refining error handling mechanisms, and introducing test cases to verify functionality. These modifications address potential flaws in the original design and ensure compliance with real-world requirements. For instance, the addition of validation prevents the entry of invalid data, thereby preserving the application's functionality and improving overall reliability.

-Meeting Course

Outcomes The planned enhancements aligned with the course outcomes by reinforcing my understanding of software design principles, emphasizing clean coding practices, and implementing validation techniques. My outcome-coverage plan remains consistent, as these improvements enabled me to demonstrate proficiency in critical areas of software engineering. They showcase my ability to iteratively enhance an artifact while maintaining alignment with user and system requirements.

-Reflection on the Enhancement Process

The enhancement process provided valuable insights into refining existing software artifacts. Through this experience, I deepened my understanding of input validation, error handling, and the importance of robust test coverage. One challenge I faced was balancing complexity with usability—ensuring that the application remained user-friendly while adhering to stringent validation rules. By tackling these challenges, I gained confidence in identifying and addressing potential weaknesses in software design, which will be instrumental in my future development endeavors.