Jeffrey Karl

CS-499

22 September 2024

Milestone Two: Software Design and Engineering Narrative

The artifact I am including in my ePortfolio is an advising program created as my final project during the Data Structures and Algorithms course in Winter 2024. This project represents a significant milestone in my development as a software developer, particularly in object-oriented design and programming language translation. The program involves loading course data from a CSV file into a binary search tree, allowing users to search and print course information efficiently.

I selected this artifact because it showcases my ability to convert code between programming languages, specifically from C++ to Java, which opened the program to cross-platform compatibility within the Java ecosystem. The project demonstrates a range of technical skills, including object-oriented design principles, clean coding practices, and the ability to work with both C++ and Java syntax. Through this process, I gained a deeper understanding of language differences in formatting and style, which closely align with industry standards.

One of the key improvements made during the development of this artifact was incorporating Java classes to better implement object-oriented design principles. This change allowed me to highlight the differences between Java and C++ coding styles while enhancing the functionality of the program. The iterative process of revising, testing, and debugging the code helped me strengthen my understanding of file handling in both languages and improved my confidence in writing efficient, error-free code.

When I started this project, my goal was to meet specific course outcomes, particularly demonstrating the ability to apply well-founded techniques, skills, and tools in computing practices. By converting the code seamlessly from C++ to Java, I achieved this goal while enhancing the program’s usability and functionality. The experience helped me develop a stronger ability to refactor code and resolve bugs.

The process of refining this artifact was a transformative learning experience. I encountered challenges, such as understanding how to load a CSV file in Java from resources, which improved my problem-solving skills and taught me the value of thorough testing and error handling. One key lesson I learned was the importance of stepping back and re-evaluating my approach to debugging, which ultimately led to better solutions.

In conclusion, this artifact is a strong representation of my technical abilities and growth as a software developer. It highlights my proficiency in Java, my ability to translate code between programming languages, and my resilience in tackling complex problems. This project has been instrumental in deepening my understanding of refactoring and debugging, making it a critical piece in my journey toward becoming a more skilled and versatile software engineer.