CS499 Professional Self-Assessment – Kyle Henning

Completing my Computer Science degree and final capstone project has been one of the most meaningful experiences of my academic and personal development. Through this program, I’ve built a solid foundation in software engineering principles, data structures and algorithms, and practical systems like databases and security-minded architecture. This journey hasn’t just taught me how to write clean code, it’s shaped how I think, solve problems, and approach challenges in a logical, modular, and scalable way. Creating this ePortfolio has been a chance to reflect on that growth, showcase my strengths, and put together a complete, working application that I can stand behind.

My capstone project, a rescue animal tracking system, evolved from a simple Java assignment into a fully functional Python application. I redesigned it using dictionaries for faster data access, added search and sorting logic, and eventually implemented an SQLite database with full CRUD functionality and SQL injection protection. Each step forced me to think more like an engineer by considering how I design something that’s efficient, extensible, and user-friendly? Along the way, I kept logs, documented edge cases, and tested features to ensure robustness. These are the skills I plan to carry into my professional career, both the technical competencies and the mindset of continuous improvement.

Beyond the artifacts, the program taught me how to work collaboratively and communicate effectively with others. Even though much of this degree was online, I had to clearly present my work, respond to feedback, and make technical decisions with users in mind. My instructors became stakeholders in that sense, I learned to explain design choices, justify changes, and consider long-term maintainability. In a team setting, I know how to contribute clean, understandable code and engage respectfully in problem-solving discussions.

When it comes to core topics like data structures and algorithms, I’m confident in my ability to apply them in real-world contexts. I used sorting, searching, and optimized data handling throughout my enhancements. I’ve also become very comfortable designing secure, scalable systems using techniques like parameterized queries and modular class design. This foundation in software engineering and database management is what I believe sets me apart, I understand not only how to build an application but how to protect it and maintain it responsibly.

This portfolio showcases three main artifacts that reflect different stages of my growth:

**Software Engineering**: The conversion of the Java application to Python with enhanced structure, logging, and input validation.

**Algorithms & Data Structures**: The replacement of linear data storage with dictionary-based lookups, along with integrated sort and search functionality.

**Database Management**: The full implementation of an SQLite database with persistent storage, secure query handling, and CRUD operations.

Together, these enhancements form a complete picture of what I’ve learned, and more importantly, what I can do. This portfolio isn’t just a capstone but proof that I can take a real-world problem and build a thoughtful, working solution from the ground up. As I now transition into the professional world, I carry with me the confidence, discipline, and problem-solving abilities that this degree has instilled. I’m excited to take the next step!