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CS-499: Computer Science Capstone

7-1 Final Project Professional Self-Assessment

June 29, 2025

Professional Self-Assessment

Completing the Computer Science program at Southern New Hampshire University and developing my professional ePortfolio have been transformative experiences that have not only sharpened my technical skills but also shaped my professional identity. Throughout the coursework, I was exposed to a variety of real-world problems that required deep analytical thinking, structured problem-solving, and practical implementation. As a result, I have grown into a more confident and capable software developer, with a strong foundation in full-stack development, data management, and algorithmic thinking.

The process of curating and enhancing artifacts for this capstone project helped me reflect on my academic and professional growth. One of the most valuable outcomes of this experience was the opportunity to revisit past work and apply more advanced skills to improve design, efficiency, and functionality. Through this iterative process, I was able to showcase not only what I learned but also how I learned, demonstrating a mindset of continuous improvement that is vital in the ever-evolving field of computer science.

Collaboration has been a key component of my academic and professional experience. In group projects and real-world work scenarios, I have collaborated with developers, analysts, and project managers to deliver software solutions under tight deadlines. These team experiences helped me refine my communication skills, especially when translating technical concepts for non-technical stakeholders. For instance, while working on patient information systems in my current role as a junior data engineer, I’ve learned to communicate schema designs and data migration plans to both technical peers and business users. This has made me more effective at bridging the gap between users' needs and the technology that supports them.

In terms of technical competencies, I’ve developed a strong grasp of data structures and algorithms through courses such as CS 370, which emphasized the importance of efficiency, recursion, and trade-offs in solution design. These principles carried over into my artifact enhancements, where I optimized search and update functions to perform better on large datasets. Similarly, my coursework and experience in software engineering allowed me to practice modular design, version control with Git, unit testing, and agile methodologies, skills I applied directly to projects in both academic and professional settings.

My work with databases became a major focus area during the capstone. I enhanced one of my previous projects by replacing hardcoded data models with a fully normalized MongoDB schema and integrated the system with an external API. This demonstrated not only my database design and query optimization skills but also my ability to engineer scalable backend systems, a key requirement in many industry roles today.

Security was another area of emphasis throughout the program. In courses like CS 405 (Secure Coding), I learned how to identify and mitigate vulnerabilities such as injection attacks and improper input validation. These lessons were implemented in my artifact enhancements, where I applied input sanitization, secure authentication patterns, and ensured sensitive data was handled responsibly.

The artifacts included in my portfolio, a scheduling application, an intelligent decision-making model, and a database-integrated animal shelter management system, represent a comprehensive view of my capabilities. They align with the three pillars of this capstone: software design and engineering, algorithms and data structures, and databases. Together, they show a cohesive narrative of my ability to design complete solutions, from user interface to backend logic, while applying sound engineering principles.

In conclusion, this program has equipped me with the skills, mindset, and confidence to succeed in a wide range of roles within the tech industry. My portfolio not only reflects my academic achievements but also serves as a launchpad for my next steps as a professional. I am eager to continue learning, to take on new technical challenges, and to contribute meaningfully to organizations that value innovation, collaboration, and quality engineering.