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Professional Self-Assessment

**Introduction: Growth Through the Computer Science Program**

When I began the Computer Science program at Southern New Hampshire University, I was eager but uncertain about how all the different areas of computing—programming, algorithms, databases, and security—fit together. Over time, and especially through the capstone course CS-499, I’ve come to see computer science not as a set of isolated subjects, but as an interconnected discipline built on curiosity, problem solving, and continuous learning. Developing my ePortfolio gave me the opportunity to look back on that transformation and present clear evidence of the skills and mindset I’ve gained.

Through projects such as my **Course Planner**, **Inventory App**, and **Travlr App**, I’ve grown from writing procedural code to designing full-stack systems that emphasize usability, data integrity, and secure communication between components. Each project represents a stage in my development—from mastering logic and data structures to designing user-centered mobile interfaces and finally integrating complex databases with authentication and security.

**Collaboration and Communication**

Throughout the program I learned that good software development depends as much on collaboration and communication as on code. Using Git and GitHub for version control taught me how to document commits, manage branches, and recover from failed merges—skills that directly mirror real-world teamwork. Writing detailed project READMEs, in-code comments, and formal narratives for my artifacts also strengthened my professional communication.

These experiences showed me how to explain technical concepts clearly for different audiences: classmates, instructors, and future employers. The process of producing the code-review video in this capstone further refined my ability to present code logically and confidently, skills that will carry into technical interviews and team discussions in my career.

**Algorithms and Data Structures**

The **University Course Planner** from CS-300 demonstrates my foundation in algorithmic thinking and efficient data management. Enhancing that project helped me appreciate the trade-offs between performance and readability. I chose std::unordered\_map for fast lookups and std::vector for dynamic storage, balancing speed with simplicity. I also improved CSV parsing, input validation, and error handling to ensure robust and secure processing of user data.

Working through these enhancements deepened my understanding of how algorithms and data structures influence the real-world performance of software. It also reinforced the importance of input sanitization and validation as both quality and security measures.

**Software Engineering and Databases**

My **Inventory App**, created in Android Studio, marked a major step into applied software design and user experience. Enhancements such as the account-creation screen, SharedPreferences for SMS alerts, and refined navigation demonstrated my ability to build modular, maintainable code. Debugging crashes and resolving manifest conflicts taught me patience and persistence while strengthening my understanding of Android architecture and lifecycle management.

The **Travlr App**, my full-stack MEAN project, represents the culmination of those skills. Enhancing its MongoDB integration, Express routes, and JWT-based authentication showed me how the layers of a modern web system connect. Implementing role-based access control and secure environment variables gave me hands-on experience with professional-grade database management and backend security.

**Security Mindset**

Security has been a consistent theme across my work. In the Travlr App, I implemented password hashing, JWT authentication, and environment-variable storage for sensitive keys. In the Course Planner, I added input validation to prevent crashes and improper data entry. These steps taught me to anticipate vulnerabilities early in the design process instead of treating security as an afterthought.

Developing this mindset has changed the way I approach every project. I now evaluate not just whether a feature works, but whether it is safe, maintainable, and ethically responsible in protecting user data.

**Integrating My Artifacts**

Together, my three artifacts tell a story of growth:

* **Algorithms and Data Structures (Course Planner):** foundational logic and efficiency.
* **Software Design (Inventory App):** creating reliable, user-focused mobile applications.
* **Databases and Security (Travlr App):** building complete, secure full-stack solutions.

Each enhancement builds on the last, showing a clear progression from understanding small-scale algorithmic problems to managing the architecture of complex, data-driven systems. Collectively, they demonstrate that I can design, implement, and document professional-quality software that meets both technical and user requirements.

**Professional Goals and Future Direction**

Completing this program has helped me define my long-term goal of working in **AI-driven software engineering**—an area where data structures, algorithms, and secure database management converge. My next step is to pursue certifications in Python and AI while seeking a software development role that allows me to apply full-stack and data-centric skills in a professional environment.

Beyond the technical knowledge, this journey has taught me resilience, adaptability, and self-motivation—the traits that turn a computer science graduate into a lifelong learner.

**Conclusion**

The capstone and ePortfolio process brought my entire academic experience together into a cohesive professional identity. I entered this program passionate about technology but uncertain of my place within it. I leave with the confidence, tools, and perspective to contribute meaningfully to modern software development.

My portfolio showcases not just code, but growth: from writing my first C++ loops to designing complete, secure, database-driven applications. It represents who I’ve become—a software engineer who values clarity, collaboration, and creativity, and who is ready to continue learning and innovating in a rapidly changing field.