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CS-499 Computer Science Capstone

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6/21/2025

**Professional Self-Assessment**

Over the course of my Computer Science program and through the completion of this capstone, I’ve seen clear growth—not just in technical ability, but in how I approach problems, collaborate with others, and communicate my ideas confidently. This project gave me the chance to look back on how far I’ve come, sharpen my strengths, and position myself for a career that blends technical execution with user-centered thinking.

One of my strongest skills now is **decomposition**—breaking down complex problems into manageable components that I can tackle methodically. Whether designing an API or refactoring legacy logic, I’ve learned how to structure code in a way that balances clarity and functionality. I’ve also developed a solid foundation in **working with data**, especially in the context of backend logic, data validation, storage, and retrieval. Rather than thinking of data as just something to move around, I now understand its value as a driver of features, decisions, and user trust.

In terms of soft skills, I’ve come a long way in **communicating technical requirements across different audiences**. I can now speak confidently with both developers and stakeholders, clarify needs, and explain implementation choices in a way that connects to bigger-picture goals. Whether in documentation, code review discussions, or planning meetings, I’ve become more confident in how I advocate for quality and clarity.

Throughout the program, my career goals have evolved. I initially leaned toward a purely technical backend development path—but I’ve since found myself equally drawn to **user experience**, especially the intersection between clean architecture and intuitive design. I now see myself in a hybrid role, either as a backend-focused developer who collaborates closely with UX teams, or even transitioning toward **UX strategy or design** with my technical background as a core strength.

The artifact I chose to enhance reflects all of these interests. I selected a Java-based Spring Boot secure server I originally built in CS-305. I used this artifact to demonstrate growth across all three required categories:

* **Software Design and Engineering**: I modularized the code, added structured logging, implemented SSL for secure transmission, and refined naming conventions for readability.
* **Algorithms and Data Structures**: I improved input handling logic and data parsing for security and clarity, while ensuring efficiency through Java’s utility libraries.
* **Databases**: I integrated SQLite to persist hash calculations and prepare the app for future user-authentication features, reflecting full-stack awareness and secure data practices.

Security, in particular, became a core focus for me during this process. I’ve learned how to anticipate edge cases and attack vectors, validate inputs rigorously, and write defensive code that doesn’t just “work” but holds up under scrutiny. Implementing HTTPS, adding error handling, and logging—all of this came from a **security-first mindset** that I now carry forward into every project.

Looking back, I can confidently say that this program prepared me to contribute meaningfully—whether I’m deep in a codebase or sitting in on a product design review. I’m entering the tech space with a strong foundation, practical skills, and the flexibility to move between technical execution and human-centered design. My capstone portfolio represents more than just my ability to code—it reflects my growth as a communicator, collaborator, and creator.