**Professional Self-Assessment**

As I complete my Bachelor of Science in Computer Science at Southern New Hampshire University, I’ve taken time to reflect on the technical skills, experiences, and challenges that shaped me into a confident and capable computer science professional. My portfolio represents both my growth and readiness to enter the workforce with a strong foundation in software engineering, data structures and algorithms, database systems, and security practices.

## **Collaboration**

Throughout the capstone process, I practiced collaboration through instructor feedback. Although the project was individual, I used guidance from my instructor to improve both the functionality and security of my code. I integrated feedback on structure, naming conventions, and error handling. In a real-world setting, I would participate in team-based code reviews to ensure shared understanding and improved quality. The review process helps catch bugs, clarify logic, and strengthen teamwork, which I now recognize as essential to professional software development.

## **Communication**

Technical communication has been central to nearly every course. I’ve learned to write clean, well-commented code, document projects thoroughly, and present ideas to both technical and non-technical audiences. The code review video in this portfolio demonstrates how I walk through functionality and planned enhancements clearly and professionally, skills that will help me collaborate with stakeholders in real-world environments.

## **Algorithms and Data Structures**

My experience with data structures and algorithmic thinking is showcased in my enhancement for the Algorithms and Data Structures category. In this artifact, I optimized search and sort operations and implemented custom data structures that improved program efficiency. This process deepened my understanding of time complexity, recursion, and algorithm trade-offs, which are now part of how I approach problem-solving.

## **Software Design and Engineering**

In the Software Design and Engineering category, I focused on enhancing a Java-based application originally built in IT-145 and later expanded into CS-320. My work included reorganizing classes for better cohesion, improving exception handling, and applying object-oriented principles like inheritance and encapsulation. This experience taught me how to design maintainable, scalable, and readable code, while also preparing me for future work in team-based development using best practices like SOLID design principles.

## **Databases**

For my database enhancement, I integrated a MySQL backend into the contact management system. I resolved driver errors, handled SQL exceptions, and connected front-end forms to real-time persistent storage. This task significantly improved my SQL skills and my ability to troubleshoot connectivity issues. It also demonstrated the real-world challenge of managing external dependencies like JDBC drivers, and how to securely manage database interactions to prevent issues like SQL injection.

## **Security Mindset**

Security was emphasized in courses like CS-405: Secure Coding and CS-410: Reverse Software Engineering. I developed an appreciation for validating user inputs, using prepared statements, avoiding hardcoded credentials, and performing static code analysis. These skills helped me ensure that the artifacts in my portfolio are not only functional but also mindful of security best practices.

In my enhanced application, I used input validation to prevent empty fields or invalid data and included exception handling using try/catch blocks and e.getMessage() to ensure user-friendly error reporting. For example, in areas dealing with file operations or data loading, I wrapped logic in exception-safe blocks to prevent runtime crashes. If this were a production-level application, I would implement additional security measures like input sanitization, role-based access controls, and logging of unauthorized access attempts. I now approach every coding task with a mindset of anticipating vulnerabilities and designing resilient solutions.

## **How My Artifacts Fit Together**

Each artifact in this portfolio highlights a different facet of my learning:

* Software Design & Engineering demonstrates my understanding of program architecture and object-oriented design.
* Algorithms & Data Structures shows my problem-solving skills and efficiency improvements.
* Databases reflects my ability to create robust, secure, and persistent data systems.

Together, these enhancements tell a cohesive story of my technical growth, project experience, and readiness to contribute to professional software development teams.

## **Final Thoughts**

Developing this portfolio gave me a renewed appreciation for how far I’ve come, from writing basic loops and conditionals, to integrating full-stack applications with attention to performance, security, and user experience. I am excited to bring this knowledge and determination into the field and contribute meaningfully to any organization I join.