

# MODULE 7-1 FINAL PROJECT SUBMISSION: REFLECTION

Arturo Santiago-Rivera

Prof. Brooke Goggin, M.S., M.S., M.S., Ed.D (ABD)

CS-499 Computer Science Capstone 22EW4

Southern New Hampshire University

April 17, 2022

## Module 7-1 Final Project Submission: Reflection

This paper is a course submission reflection of my journey through the CS499 Computer Science Capstone course assignments. I discuss how I reached the five-course outcomes by enhancing the included artifacts in my ePortfolio, and the accomplishment of creating a professional ePortfolio that showcases my knowledge, skills, and abilities from the Computer Science program.

### Prompt

Creating a professional portfolio that showcases my unique abilities and talents is one of the best visual communication tools to demonstrate our value to potential employers. The content of the ePortfolio is a solid starting point to clear ideas that showcase my skills across the key fields of Computer Science. The included artifacts of some of the courses in the Computer Science Program represent my growth in the key categories of software design/engineering, algorithms and data structures, and databases.

My ePortfolio integrates the knowledge and skills gained and developed throughout the years of studying a Computer Science program at SNHU. It represents my program growth and gained honor rolls from high-quality outcomes. Through my ePortfolio, I designed, developed, and delivered a professional-quality written and visual communication demonstration of my capacities and abilities that are coherent, technically sound, and appropriately adapted to a specific audience and context.

Through the computer science program and the assignments of CS499, I increased my capacity to learn new skills in a short time. Bring solutions to problems with intellectual humility and a leadership attitude to excel in computer science based on hard skills and abilities acknowledged from exercising computer and technology skills, data analysis, software

development, and technical writing, demonstrated and exemplified in the accompanying artifacts of the ePortfolio. Each of the courses throughout the Computer Science program has impacted and helped to acquire the skills and knowledge necessary to position me in a job in the disciplines attached to Computer Science.

Code reviews catch errors when they're cheap to fix, strengthen the team's abilities, and add a certain amount of fault tolerance to the organization or individuals to better recover from disruptive changes. It results in better code, which is more easily maintained. Exercising a code review of the selected artifacts for software design and engineering, algorithms and data structure, and databases helped me to capacitate and employ strategies that help in the building of collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science based on the critical elements of existing functionality code analysis, and enhancements. In code review videos, I analyze the three artifacts code for weaknesses, limitations, and vulnerabilities and explain my plan for enhancements. The code review was a walk-through of the existing source code and planned improvements to the artifacts. Through the developed videos, I continue improving my abilities to deliver professional-quality oral, written, and visual communication techniques to effectively explain a code review through collaborative environments that are coherent, technically sound, and appropriately adapted to specific audiences and contexts.

With the selected artifact of the CS360 Mobile Architecture and Programming course for the software design and engineering category, I demonstrated my ability to use well-founded and innovative techniques, skills, and tools in computing practices to implement computer solutions that deliver value based on industry-specific goals. The artifact involved an entire software design and engineering process consisting of design considerations of user experience and user

interaction with different screens and actions that the application includes. Ensure an intuitive use of the application and its features through industry-standard icons and symbols and a relational database to store the data created, read, updated, and deleted by users through the operation and use of the application. I designed and evaluated computing solutions that can solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution while managing the trade-offs involved in design choices considering the relationship and functionality of the algorithms and data structure between the different classes and methods, and the structure of their layouts and source code. I developed a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy. I enhanced the security of data and resources by implementing engineering practices and techniques for validating input data architecture designed with a security mindset and default denial.

The artifact of the IT145 Foundation in Application Development course, selected for the algorithms and data structure category, showcases my design approach and evaluation of computer solutions that solve a given problem using algorithmic principles and computer science practices and standards. I demonstrated my understanding of a program algorithm that manages the trade-offs involved in the design choices of a system composed of an authentication and authorization module and a monitoring system module with various features and functionalities. I showcase engineering considerations of relationship and functionality between the different classes and methods by using arguments, parameters, and variables in scope that demonstrate my ability to use well-founded and innovative techniques, skills, and tools of computing practices to implement computer solutions that deliver value and accomplish industry-specific goals. Like my software design and engineering, these artifact enhancements were approached with a

security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced data security and resources by implementing engineering practices for validating input data and architect and design with default denial. I worked with a simple linear data structure of string array to implement all the methods in the program classes to design and evaluate computing solutions with algorithmic principles and computer science practices and standards appropriate to the data structure implemented while managing the trade-offs involved in the design choices.

CS340 Client/Server Development course artifact was selected for the databases category. In this artifact, I employed strategies for building collaborative environments that enable diverse audiences to support organizational decision-making in computer science by designing and developing a multi-tier application with a Model View Controller (MVC) and RESTful protocol design to extend the HTTP protocol to provide an application programming interface (API). The most attractive concept of the MVC pattern is a separation of concerns. I demonstrated my ability to use well-founded and innovative techniques, skills, and tools in computing practices to implement computer solutions that deliver value and accomplish industry-specific goals through a programmatic data structure, where the stored variable values can be used efficiently in different functions and callbacks through the web application. With this designed approach, I evaluated computing solutions that solve a problem using algorithmic principles and computer science practices and standards appropriate to the web application while managing the trade-offs involved in design choices. As well my previous two artifacts, these artifact enhancements were approached with a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design

flaws, and ensure privacy and enhanced data security and resources by implementing engineering practices for validating input data and architect and design with default denial.

I contend that my ePortfolio demonstrated my abilities to use well-founded and innovative techniques. I implemented computer solutions that deliver value and accomplish industry-specific goals exemplified through the development of functionalities that involves CSV data files being imported into MongoDB, the import of dependencies such as Python PyMongo driver, Python libraries, Dash framework, and a Python source code, and CRUD module to manipulate the data imported into MongoDB. I designed and evaluated computing solutions that solve given problems using algorithmic principles and computer science practices and standards appropriate to its solution while managing the trade-offs involved in design choices through the engineering considerations of relationship and functionality between the different classes and methods by using arguments, parameters, and variables in scope in JAVA programming. All the enhanced artists demonstrate my emphasis on applying a security mindset during the development process to anticipate adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources.

## References

- Southern New Hampshire University. (2022, April 14). *CS499 Final Project Guidelines and Rubric*. Retrieved from 7-1 Final Project Submission: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Flearn.snhu.edu%2Fcontent%2Fenforced%2F1014915-CS-499-T4547-OL-TRAD-UG.22EW4%2FCourse%2520Documents%2FCS%2520499%2520Final%2520Project%2520Guidelines%2520and%2520Rubric.pdf
- Southern New Hampshire University. (2022, April 14). *Module 7-1 Final Project Submission*. Retrieved from Module Seven: Professionalization: <https://learn.snhu.edu/d2l/le/content/1014915/viewContent/17247441/View>