**Professional Self-Assessment**

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CS 499: Computer Science Capstone

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**What I’ve Gained**

Throughout the SNHU Computer Science Program I’ve been introduced to a range of skills and concepts necessary to be successful in the field. Coding best practices was a focus early on to ensure my work adhered to standards that would make it easy for others to maintain or incorporate into other programs. Another focus was the development cycle where I gained a holistic understanding of the process and learned how to set realistic expectations for stakeholders and organize program features to deliver the most optimal program that meats deadlines and customer requirements. I learned how systems of hardware and operating systems allocate resources and organize processes so I can code in a way that best works on the systems it’s intended to be used on.

Discrete math taught me computer concepts like how to optimize programs and structure data. I learned how to collaborate with classmates using version control tools like Bitbucket and EGit to develop a jukebox application together. Another class thoroughly focused on the value of testing at various levels like documents, units, control structures, and black box, and catching bugs before they become exponentially more expensive. A class on algorithms and data structures thoroughly explored the pros and cons of the different structures. A class on clients and servers went over different protocols and how to mitigate various security breaches. Lastly, I learned how to render images in the GPU using vertices indices and shader files in OpenGL.

The course gave me a depth of knowledge that sets me apart with the skills to

* Implement strategies for diverse audiences to collaborate and foster effective, organizational decisions in the field.
* Communicate effectively through various mediums most appropriate for specific audiences and contexts.
* Effectively solve problems with appropriate computing solutions, algorithmic principles, and best practices for specific contexts.
* Accomplish industry-specific goals using well-founded innovative techniques and industry standard tools
* Approach design, development, and testing with a security mindset to mitigate design flaws and ensure privacy and enhanced security of data and resources.

**ePortfolio**

I applied a lot of these skills again while putting together the ePortfolio in the capstone project. The projects had me focus on engineering and enhancing code, data structures and algorithms, databases, and security. I made a video reviewing three projects for errors, adherence to best practices, and security vulnerabilities. The three projects were then fixed and enhanced in various ways to demonstrate my ability to understand and implement some of the most important concepts in the computer science program. I re-engineered a project written in Java to Python where the modules can be incorporated into python projects easier.

In the second enhancement I changed the linked list to a binary tree and added a balancing algorithm so the list searches in a logarithmic amount of time relative to the size of the list as opposed to a one-to-one relationship of time and list length. For the third enhancement I added a database and an NLP feature that allows the user to search for contacts in the database by segments of the contacts first or last name. These enhancement projects were accompanied by narratives further demonstrating what I learned during the process. Together, these projects demonstrated my aptitude in developing quality programs from critical concepts accumulated throughout the computer science program.