Professional Self-Assessment

Throughout my journey in the Computer Science program at Southern New Hampshire University, I’ve developed a strong foundation across multiple areas of computer science, including software design, software security, embedded systems, machine learning, full-stack development, and reverse software engineering. These experiences have helped shape me into a confident developer with a versatile skill set, sharpened my problem-solving abilities, and reinforced the professional values essential for success in the field.

This program has played an important role in shaping my career goals by reinforcing the values that matter to me professionally, for instance, writing professional quality code that is maintainable and secure, as well as succeeding in a collaborative environment that reinforces team building and problem solving.

The artifacts in this ePortfolio reflect the journey I’ve taken, but I’ve also worked on many other projects that have pushed me to apply what I’ve learned in meaningful ways. For example, in my Full-Stack Development course, I built a web application called Travlr Getaways using the MEAN stack-MongoDB, Express, Angular, and Node.js. This gave me valuable experience with APIs, routing, and persistent and secure data storage by allowing me to build a fully dynamic web application with both front-end and back-end components.

Another project that was indicative of the computer science journey here at SNHU was my project in building a 3D graphic application created using OpenGL. This project involved rendering real-world objects using vector math and taught me how to think spatially and apply problem-solving to build a visual complex system.

A valuable aspect of this program was the opportunity to collaborate with fellow students, fostering an environment of teamwork and problem-solving. I regularly contributed by offering troubleshooting support, sharing design strategies, and assisting with application challenges, and helping others communicate technical ideas more clearly and effectively.

Throughout the program, there were three main areas that were emphasized- data structures and algorithms, software engineering, and databases. Gaining experience in each of these areas I am better able to understand and evaluate the trade-offs between different data structures and identify the right one for the problem at hand. For instance, I used binary search trees for organizing course data and implemented in-order traversal to keep everything sorted and easily accessible. This was part of the enhancement in my artifact, which originally utilized a Hash Table to compute a hash that would store courses in the course manager application.

For software engineering, I gained hands-on experience with the full software development-lifecycle, including planning, designing, writing pseudocode, building, testing, and refining. Moreover, I created UML diagrams, wrote unit tests, and implemented defensive secure coding techniques like utilizing an Advanced Encryption Standard-256 and common vulnerability analysis. This helped me to start prioritizing security earlier in development, emphasizing the importance of secure software development across the domain of software engineering.

For databases, I’ve worked with both structured and unstructured data. For example, I used MySQL and PostgreSQL in projects that required relational data models and MongoDB when needing to work with more flexible unstructured data models. This allowed me to practice implementing parameterized queries to avoid SQL injection attacks, reinforcing the importance of data security across applications.

In this ePortfolio, I present multiple artifacts that demonstrate the culmination of my skills gained in the computer science program. The first artifact I constructed was the Course Manager application originally developed in C++, rewriting it in Python to improve readability, structure, maintainability, and apply more object-oriented principles. The second artifact is from the Data Structures and Algorithms section, where I developed a fully functional binary search tree that stores and organizes course data, while utilizing in-order traversal, insertion, searching, and deletion. Lastly, I used PostgreSQL to integrate a database for persistent data storage with the Course Manager project, providing real-time updates of course information, and allowing users to perform full CRUD operations using Python and the psycopg2 library.

These artifacts showcase the culmination of skills and techniques I’ve gained while attending the computer science program here at SNHU. By designing and building real-world applications and also solving complex, practical problems with modern computer science principles, I’ve grown into a confident and capable motivated individual, intent on transitioning into software development. I look forward to applying these skills in a professional setting and continuing to contribute to innovative and impactful technology solutions.