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Professional Self-assessment

Completing a computer science program and developing an ePortfolio is a critical part of showcasing my technical skills and preparing for a career in the field. I am already employed in the field, however the course work provided foundational knowledge and the ePortfolio has some practical demonstrations of that knowledge being applied in real applications.

My work on the Course Advising Application demonstrated my expertise in Data Structures and Algorithms by moving from a Binary Search Tree (BST), with O(Log n) complexity, to a hash table, which offers much faster O(1) time complexity for search and retrieval operations. This highlights my ability to design and evaluate computing solutions using algorithmic principles. Additionally, I enhanced the Breakout Game using the PyGame framework and implemented a game state manager class to make it more modular and scalable which demonstrated my skills in Software Engineering and Design. In the full-stack web application, I demonstrated my proficiency in Database integration by migrating the application from a NoSQL database (MongoDB) to a SQL database (Postgres), which required me to stand up the new server and refactor the API logic.

The projects helped solidify my professional values. I learned the importance of Security by transitioning the course advising application to C#, a managed language, to eliminate potential vulnerabilities like memory leaks and overflows, and by implementing better error handling and input validation. This demonstrated the value of developing with a security mindset. Utilizing a GIT repository demonstrated my ability to use tools for collaboration and working in a team environment. The entire enhancement process, where I had to justify my technical choices and document improvements, taught me how to effectively communicate with stakeholders by translating technical into clear narratives.

The three enhanced artifacts, the Breakout Game, the Course Advising Application, and the Full-Stack Web Application, demonstrate a wide range of my computer science talents and abilities. The game shows my ability in software engineering and design. The course advising application focuses on my expertise in algorithms and data Structures. The web application highlights my skills in database management and integration. Together, these projects present a comprehensive picture of my competence, spanning low-level logic, data structure optimization, high-level framework adoption, and full-stack development.