1-4 ePortfolio Selection and Refinement Plan

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Module 1-4 ePortfolio Selection and Refinement Plan

Initially, my plan to fulfil this portion of the ePortfolio was to showcase and demonstrate my three skills in three categories within Computer Science: Software design and Engineering, Algorithm and Data Structure, and Database. I will discuss the work as well as the proposed enhancement that I have added to my original projects.

Prompt

The artifacts that I have chosen for each category will showcase my growth within the Computer Science program. These artifacts that were selected demonstrate my skills within the referenced key categories, they will also illustrate some core skills across key categories.

Category 1: Software Design and Engineering  
a. the artifact name the artifact name: 5-5 Texturing a Pyramid module in CS-330 Computational Graphics and Visualization

b. the enhancement plan. In October 2023, I developed the code with the objective of applying textures to a pyramid. For this particular project, my strategy involves incorporating supplementary code from module 5-5, dedicated to texturing a pyramid. Additionally, I plan to integrate specific libraries into module 6-5, which focuses on illuminating a pyramid, thereby enhancing the original texture of the pyramid.

c. the specific skills I aim to showcase proficiency in Testing and Debugging, complemented by expertise in Software Development, Object-Oriented Design, Software Communication, and Software Editing. I believe that I can Create, formulate, and present oral, written, and visual communications of a professional caliber that exhibit coherence, technical soundness, and suitable adaptation to particular audiences and contexts.

Category 2: Algorithm and Data Structure

a. the artifact name 1D shape from course CS330- Computational Graphics and Visualization

b. the enhancement plan: The improvement I intend to implement involves transforming a 2D object to incorporate a rotational dimension, enabling the observation of all sides of the object.

c. the specific skills crafting code amenable to testing, diagnosing, and resolving issues in existing systems, orchestrating development lifecycles, refining applications, implementing recursive algorithms, recognizing and addressing memory-related issues, breaking down intricate problems into manageable tasks, and applying algorithmic thinking for solution development.

Category 3: Databases

a. the artifact name: Creating a Student Structure database CS330- Computational Graphics and Visualization.

b. the enhancement plan: Initially, the structure aimed to establish a basic data framework, encompassing student names in a database with minimal information. My improvement involves restructuring the system to incorporate more comprehensive details about both students and the schools they attend. This modification aims to maintain information within a well-organized environment, enhancing the computer filing system.

c. the specific skills: I aim to showcase proficiency in several key areas, including Collaboration and Documentation, Database Programming, Database Administration, Indexing Strategies, Database Security, and Database Design. Specifically, I intend to highlight my working knowledge of C++ programming, a foundational understanding of database applications, familiarity with methodologies in software design, and a grasp of database administration principles.

ePortfolio Overall

In this comprehensive code review of artifacts, my objective is to demonstrate the proficiency in establishing a secure coding standard right from the outset, presenting it in a more engaging manner to mitigate security risks early in the software development cycle. It's evident that as the complexity of an application increases, the likelihood of introducing vulnerabilities also rises. Consequently, a thorough revision of all aspects of the software development processes is imperative, encompassing structure, logic, style, performance, test coverage, design, and readability, with a primary focus on maintaining functionality. While some checks can be automated using third-party tools, others necessitate human intervention for a meticulous review and evaluation of both structure and functionality. Utilizing targeted questions during code reviews proves to be a valuable approach, honing in on specific aspects of the project. By scrutinizing the code, we not only identify potential issues but also streamline the testing phase, optimizing time efficiency. The review encompasses various categories such as software design, engineering, algorithms, and data structures, showcasing the acquired skills and knowledge. This includes the adept application of suitable data structures for efficiently organizing data based on given requirements and constraints of diverse problems. Emphasis is placed on technically sound algorithms that not only accurately perform required functions but also employ fundamental algorithms that share data structures effectively.