Cody VanGosen

Southern New Hampshire University

CS-499 Computer Science Capstone

Professor Kraya

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**Module Four Journal**

Since entering the Computer Science program, my career plans have significantly shifted. Initially, I intended to pursue medical school and become a radiation oncologist, driven by a powerful desire to help others through science. However, over time, I realized that my passion for innovation, engineering, and design was better aligned with a career in technology. This prompted me to change course and focus on software engineering and development. This shift was not taken lightly, but it was the result of deep self-reflection and a growing excitement for the opportunities in computing and system design.

My career thinking has evolved from envisioning one-on-one clinical interactions to imagining large-scale impact through software solutions. I now see my future in developing systems that can empower users, streamline processes, and drive innovation. Working in tech enables the kind of problem-solving and iterative design that I find highly motivating. I have also come to understand the value of lifelong learning and skill acquisition in this field, which has encouraged me to remain adaptable and open to continuous improvement. In today’s digital economy, technology professionals must remain flexible and curious, embracing a mindset of ongoing growth (Zhao, 2020).

I have conducted significant research into the career paths available within software engineering, particularly those connected to Amazon’s AWS business line and local tech companies in the Kansas City area. This research helped me better understand industry expectations, including the importance of cloud architecture, systems optimization, and collaborative development workflows. The AWS ecosystem presents an exciting opportunity for me to leverage my existing tenure at Amazon and pivot into a more technical role. According to Glassdoor (2023), cloud roles within AWS are among the fastest growing in the company, offering pathways for internal mobility. In preparation, I have considered pursuing the AWS Certified Solutions Architect credential after graduation to bolster my technical credibility. While a master’s degree remains a possibility for the future, my current priority is gaining firsthand experience through projects and certifications that demonstrate practical skill.

As of this point in the capstone, I have successfully achieved several program outcomes. These include designing computing solutions using sound algorithmic principles, implementing best practices in software development, and integrating collaborative, well-documented code. I am continuing to work toward outcomes related to database integration and security considerations. These remaining objectives will be completed through my final ePortfolio enhancements.

In terms of artifact progress, my Software Design and Engineering enhancement is complete. I used the OpenGL 3D Scene Project (Charcuterie Board) from CS-330 and implemented dynamic lighting, realistic shading, and increased geometric complexity. The updated project has been documented and uploaded to my ePortfolio. For Algorithms and Data Structures, I am using the same artifact and am currently focused on refactoring code to use structs and vectors in C++ to reduce redundancy in transformation logic. The testing is ongoing, and I plan to upload the final version soon. The Databases enhancement, which will use the OpenGL Breakout Game project featuring high score tracking and multiplayer features, is scheduled to begin once the algorithms portion is finalized.

Overall, the structure of my ePortfolio is well underway. I have created a clean layout using GitHub Pages and am gradually populating each section with enhanced artifacts and reflections. The process has highlighted the importance of presenting both technical capability and reflective growth to potential employers. As Cambridge (2010) notes, an ePortfolio should not only highlight what you have built, but also how you have evolved as a thinker and professional. I am proud of the progress I have made and am excited to finish strongly with the final category enhancements.

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| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | OpenGL 3D Scene Project – Charcuterie Board (from CS-330) | OpenGL 3D Scene Project – Same artifact planned | OpenGL Breakout Game – High Scores/Multiplayer |
| **Status of Initial Enhancement** | Completed. Lighting, shading, and scene complexity were implemented, including directional and point light sources. | Currently in progress. Focused on optimizing transformation logic and reducing redundancy using arrays and loops. | Not yet started. Planned for after Algorithms category. |
| **Submission Status** | |  | | --- | | Submitted. |  |  | | --- | |  | | Enhancement plan submitted. Artifact updates and improvements are underway with a goal to finish and submit within the next 24–48 hours. | Not yet submitted. |
| **Status of Final Enhancement** | |  | | --- | | Completed and reviewed. Documentation and README updated for GitHub. |  |  | | --- | |  | | |  |  |  | | --- | --- | --- | | |  | | --- | | Currently testing and validating enhanced code functionality. |  |  | | --- | |  | |  |  | | --- | |  | | Not started. |
| **Uploaded to ePortfolio** | Not yet uploaded. GitHub Pages repository is set up and will be used to host the enhanced artifact. | |  |  |  | | --- | --- | --- | | |  | | --- | | In progress. Will be added upon final code verification. |  |  | | --- | |  | |  |  | | --- | |  | | Not applicable at this stage. |
| **Status of Finalized ePortfolio** | ePortfolio structure is in place. Software Design and Engineering section is being drafted. Full updates will follow after enhancement completion. | |  | | --- | | Pending—will finalize after upload. |  |  | | --- | |  | | Pending. |

**References**

Cambridge, D. (2010). *Eportfolios for lifelong learning and assessment*. Jossey-Bass.

Glassdoor. (2023). *Amazon Web Services careers: Salaries, job outlook, and pathways*. <https://www.glassdoor.com>

Zhao, F. (2020). Developing employability skills: Career development and lifelong learning in a digital world. *Education + Training*, 62(3), 333–347. https://doi.org/10.1108/ET-01-2020-0011