**Emerging Technology and Artifact Update**

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Southern New Hampshire University

CS-499 Computer Science Capstone

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**Course Outcomes**

**Completed:**

* Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science.
  + This was completed in the first enhancement category.
  + Python is a widely known language with easy to understand syntax. Converting the program to Python broadens its accessibility and promotes an inclusive, collaborative environment. Removing unnecessary comments and adding more descriptive ones instead increases the readability of the code, making the program easier to understand, even for people with a limited experience in coding.
* Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts.
  + This was completed by completing my video code review, and will be further completed with my ePortfolio.
  + My video code review consisted of an in-depth analysis of the original artifact that was enhanced for all three categories. It also outlined all three enhancement plans. This demonstrates my ability to communicate in a coherent way that is adapted to the target audience.
* Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution, while managing the trade-offs involved in design choices.
  + This was completed in the second enhancement category.
  + Replacing the array lists with dictionaries, and incorporating unique IDs to search through the dictionary, decreased the runtime complexity from O(n) to O(1), and therefore increased the efficiency of the program using algorithmic principles. Incorporating a way for the program to ensure that the same animal can’t be added more than once increases data handling, following computer science practices. Furthermore, ensuring that the appropriate animal is reserved when multiple animals of the same animal type share the same name increases data handling.
* Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals
  + This was completed in the third enhancement category
  + Using MongoDB instead of storing animals in an array list, and completing the implementation of CRUD functionality increases the value in my application. Animal data is now persistent once the program ends, and can now be updated or deleted as needed. Utilizing a dashboard for data visualization allows the user to interact in the data in a more practical way.
* Develop a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources
  + This was completed in the third enhancement category
  + Security of the program has been enhanced by implementing role based access control. This ensures users can only access the CRUD functionality that they have access to, inhibiting certain users from altering the data within the database.

## Status Checkpoints for All Categories

| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| --- | --- | --- | --- |
| **Name of Artifact Used** | **Artifact name:**  Project Two  **Origin:**  IT145 Foundations in App Development | **Artifact name:**  Project Two  **Origin:**  IT145 Foundations in App Development | **Artifact name:**  Project Two  **Origin:**  IT145 Foundations in App Development |
| **Status of Initial Enhancement** | Enhancements completed | Enhancements completed | Enhancements completed |
| **Submission Status** | Submitted | Submitted | Submitted |
| **Status of Final Enhancement** | Completed | Completed | Not started |
| **Uploaded to ePortfolio** | Uploaded | Uploaded | Not uploaded |
| **Status of Finalized ePortfolio** | Created, not completed | Created, not completed | Created, not completed |