Meeting Course Outcomes

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CS-499 Computer Science Capstone 23EW2

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Course Outcome 1:

I Employed strategies for building collaborative environments that enable diverse audiences to support organizational decision-making in the field of computer science by completing the following enhancements to my security measures. The security measures I used provide privacy and security which would help users feel confident and protected in sharing data within my application which is needed for organizational decision-making processes. I implemented the option to run the application from different machines on the same network showing the option to expand my application to be used by a greater range of users.

Course Outcome 2:

I Designed, Developed, and Delivered professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts by completing the following enhancements, my coherence in communication, providing a structured narrative that follows logical flow by first introducing the enhancement project, and discussing the rationale behind my choice of the Python application, while providing the enhancements made to the code which allows readers to follow my progression. The clear explanations of my code enhancements demonstrate my strong knowledge of technical concepts. Providing code examples explaining the purpose and impact of each enhancement, combining this with the feedback received to include inline comments and header sections add clarity to readers which demonstrates a professional approach to code documentation. I include reflective elements where I discuss my decisions and acknowledge opportunities for optimization and highlight the successful outcomes. The code examples add

visual communication to further contribute to the clarity of my communication.

Course Outcome 3:

I Designed and Evaluated 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 by completing the following enhancements, my use of regex patterns in `**create_regex_pattern**', it showcases my understanding of algorithmic principles to create efficient and flexible search algorithms. The use of the dictionary I used (`**filter_criteria**`) that manages filter criteria demonstrates my understanding of computer science practices which aligns with the concept of using data structures to manage and organize data systematically. I centralized filter criteria in a dictionary that reduces redundancy, making the core more maintainable which involves a trade-off between upfront organization and long-term maintainability, I manage the design trade-offs by consolidating logic, implementing regex patterns, and organizing filter criteria centrally, this provides a more readable, efficient, and modular solution while addressing the challenges present in my original code.

The outcome is also met by my coherence in communication, providing a structured narrative that follows logical flow by first introducing the enhancement project, and discussing the rationale behind my choice of the Python application, while providing the enhancements made to the code which allows readers to follow my progression. The clear explanations of my code enhancements demonstrate my strong knowledge of technical concepts. Providing code examples explaining the purpose and impact of each enhancement, combining this with the feedback received to include inline comments and header sections add clarity to readers which

demonstrates a professional approach to code documentation. I include reflective elements where I discuss my decisions and acknowledge opportunities for optimization and highlight the successful outcomes. The code examples add visual communication to further contribute to the clarity of my communication.

Course Outcome 4:

I demonstrated 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 by completing the following enhancements, using external tools and libraries, in my case `**passlib**`, for password hashing which exhibits my knowledge and understanding of how to utilize third-party tools. I highlight my strong abilities utilizing MongoDB by creating a collection for storing new user data. I enhanced functionality by adding button components for '**Login**' and '**Register**,' further expanding my dashboard. The logic for my new components provides a deeper understanding of application behavior and user interactions. I demonstrate good coding practices by using separate authentication-related functions in `**auth.py**`. I showcase problem-solving skills by preventing duplicate usernames during registration.

Course Outcome 5:

I developed 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 by completing the following enhancements, implementing password hashing that creates a secure password storage function

before adding it to the database, protecting user credentials. My authentication system includes checks for duplicate usernames. The passwords are validated against the stored hashed passwords in the database, stopping unauthorized access. I included a limited access feature only allowing registered users to have access to the “Add Animal” button component to prevent misuse that could overload the animal data with unrelated information. I showcase my ability to develop a security mindset in both aspects of design and implementation. I created measures to stop unauthorized access and protect user data to ensure the privacy and security of my application.