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CS-499

Milestone 4 Narrative

1 December 2024

**The artifact used for Database enhancement is from CS-340, completed on 23 June 2024. The goal of this project is an interactive database for rescue animal centers. The project is written in Python/Dash and is designed to interact with MongoDB, through the use of PyMongo, to work as a backend and frontend structure to Create, Read, Update, and Delete (CRUD) animals from an animal shelter.**

The components I worked on for milestone 4 — indexing, data validation, and a polished UI—showcase several specific software development skills and significantly improve the artifact. Indexing improves query performance, showcasing my ability to analyze and enhance database operations for scalability. It also reflects my understanding of MongoDB internals and my ability to implement solutions for real-world data management challenges. Furthermore, by validating inputs at multiple layers (front-end and back-end), I exhibit a strong grasp of securing applications against common vulnerabilities like injection attacks or malformed data. This also demonstrates my commitment to maintaining data integrity and ensuring a robust user experience. Lastly, a polished and user-friendly interface shows my ability to create intuitive and aesthetically appealing applications. It highlights my skills in React, attention to usability, and responsiveness to end-user needs.

I did meet my course outcomes I planned to meet with this enhancement in Module ONe. There are not any updates to my outcome-coverage plans. I planned to meet all course outcomes with this enhancement, and I have done so.

While improving the artifact, I encountered a configuration issue that repeatedly triggered an error message. After investigating, I discovered that the problem stemmed from a version mismatch in one of the application's dependencies. The version I was using was incompatible with other components of the application. To resolve the issue, I downgraded the dependency to a compatible version and restarted my IDE to ensure the changes were fully applied. This resolved the error, allowing the application to function correctly. This experience highlights my ability to identify and resolve compatibility issues efficiently, showcasing skills in dependency management and troubleshooting complex systems. It also reflects adaptability, as I quickly adjusted my approach to meet the requirements of the development environment.