Tyler Dickesron

5-2 Milestone Four: Enhancement Three: Databases

Overview

This milestone aims to enhance the CRUD operations in my AnimalShelter application, showcasing your skills in algorithms and data structures. The enhancements and the accompanying narrative will demonstrate my proficiency and progress in the Computer Science program outcomes.

Enhancements to Perform

Optimize Read Operations: Implement indexing in MongoDB to speed up query performance.

Implement Data Validation: Use a schema validation library to ensure data consistency.

Improve Error Handling: Enhance error handling to provide more detailed feedback and logging.

Security Improvements: Implement authentication and authorization mechanisms.

Narrative

1. Briefly Describe the Artifact

The artifact is a CRUD application implemented in Python using the pymongo library to interact with a MongoDB database. It was created during a previous course in the Computer Science program to manage records in an animal shelter.

2. Justify the Inclusion of the Artifact

This artifact was selected for inclusion in my ePortfolio because it effectively demonstrates my ability to work with databases, perform CRUD operations, and apply data structures and algorithms. The specific components that showcase my skills include:

Efficient data retrieval using optimized queries.

Robust data validation ensure data integrity.

Detailed error handling providing meaningful feedback.

Implementation of security measures to protect data.

3. Meeting Course Outcomes

I planned to meet the following course outcomes:

Design and evaluate computing solutions: By optimizing the read operations and improving error handling.

Demonstrate the ability to use well-founded techniques: By implementing data validation and security improvements.

These enhancements align with my outcome-coverage plans, showcasing my proficiency in algorithms, data structures, and software engineering principles.

4. Reflection on the Process

Enhancing this artifact provided valuable insights into optimizing database operations and implementing robust validation and security measures. I faced challenges such as understanding the best indexing strategies for MongoDB and integrating a schema validation library with pymongo. Overcoming these challenges enhanced my problem-solving skills and deepened my understanding of database management.