Milestone Databases

Briefly describe the artifact. What is it? When was it created?

The artifact is a desktop application for an animal shelter management system, created using Python with the Tkinter library for the GUI, and MongoDB Atlas as the database. The application allows users to perform CRUD operations on animal records, as well as user authentication functionalities. The application was developed as part of the CS-499 Computer Science Capstone project, with significant enhancements made during the third milestone of the course.

Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in databases? How was the artifact improved?

I selected this artifact for inclusion in my ePortfolio because it effectively demonstrates my skills in database management and integration, which are crucial aspects of software development. The application showcases several key components:

1. CRUD Operations: The implementation of Create, Read, Update, and Delete functionalities demonstrates my ability to interact with databases and manage data effectively. This showcases my proficiency in database operations and understanding of data lifecycle management.
2. Database Integration: By connecting the application to MongoDB Atlas, a cloud-based database service, I demonstrated my capability in cloud computing and database management. This highlights my skills in setting up, configuring, and maintaining a cloud-based database, ensuring the application can handle data efficiently and securely.
3. Data Security: Implementing secure database connections and handling sensitive data such as user authentication information showcases my understanding of database security practices. This includes encrypting data, managing secure connections, and handling user credentials safely.
4. Efficiency and Optimization: Enhancing the application to handle large datasets required optimizing database queries and ensuring application performance remained robust. This demonstrates my ability to write efficient database queries, manage indices, and optimize performance for large-scale data operations.

The artifact was improved by:

* Creating a MongoDB Atlas Account and Deploying the Database to the Cloud: This enhancement enabled the application to be used across multiple devices, demonstrating my ability to work with cloud-based databases and ensure data accessibility and consistency.
* Adding User Authentication Features (Registration and Login): This involved securely storing user credentials and managing user sessions, which is crucial for applications handling sensitive data. Implementing these features required an understanding of secure data storage and retrieval practices.
* Enhancing the GUI for Better User Experience: Improving the interface included adding separate screens for adding and updating animal records, which required designing database schemas that effectively support these functionalities.

Did you meet the course objectives you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

Yes, I met the course objectives I planned to meet with this enhancement. Specifically, I aimed to demonstrate my proficiency in designing and evaluating computing solutions using best practices in database management. This was achieved by effectively integrating MongoDB Atlas into the application and ensuring robust CRUD operations.

Additionally, the enhancements covered multiple program outcomes:

* Collaborative Environments: While this is a desktop application, the design considerations for user authentication and data management reflect the ability to support organizational decision-making by providing accurate and timely data.
* Professional-Quality Communication: The development process involved creating a coherent and technically sound application, showcasing my ability to deliver professional-quality software, particularly in terms of database design and management.
* Computing Solutions: The application solves a real-world problem using well-founded computing practices, balancing trade-offs in database design choices, such as choosing MongoDB Atlas for its scalability and flexibility.
* Security Mindset: User authentication features and secure database connections demonstrate an understanding of security principles, aiming to ensure privacy and enhanced data security.

Screenshots to show working application



