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CS 499 Milestone Four

Database Narrative

The artifact I have chosen for the database category of the e-Portfolio is my final project for CS-340 Client/Server Development. The project is a web dashboard application that uses data from a database to allow the user to filter and interact with the data. It uses a Python module to perform create, read, update, and delete operations from a MongoDB database. This artifact has different components that showcases my skills and abilities in database. It demonstrates my skills in using CRUD operations to query and modify data in a database. I also configured a secure database by using credentials to handle interactions with MongoDB collections, which demonstrates my commitment to security. It demonstrates my skills in using a database to populate a web dashboard in real time utilizing libraries such as Pandas. IT also demonstrates my skills in designing aggregation pipelines to handle complex searches and regex-based matching. I improved the artifact by adding a new method "complex\_search" in the AnimalShelpter class to handle the complex queries using the MongoDB aggregation pipeline. I modified the update\_dashboard callback to call the complex\_search method and to dynamically construct the query parameters based on the selected filter type. To enhance search criteria, I updated the dashboard's filter-type logic. This enhancement meets the course outcome of "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". IT uses algorithmic principles such as $match for conditional filtering and $regex for text matching. It also uses computer science principles such as modularity by creating a separate CRUD class to manage database operations. The implementation of error handling in the CRUD methods guarantees reliable database interactions. I have learned how to optimize database queries using MongoDB aggregation framework.