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CS499

Databases

The third enhancement was for the Databases category. This also used the MongoDB Shelter Dashboard, but here I focused specifically on improving how the application interacted with the database. In its original state, the project used very basic MongoDB commands, primarily reading data with simple queries and displaying it without much customization. There was also no error handling, and the database connection details were hardcoded, which could pose security issues in a real-world environment.

To improve this, I implemented more advanced MongoDB query techniques using operators like $and, $or, and aggregation pipelines, which allowed for better data filtering and grouping. I also added indexing to speed up queries on larger datasets. From a security standpoint, I updated the database connection to use environment variables and added error handling to catch and report issues gracefully. These changes brought the project closer to a production-level application and helped me better understand how to balance performance, scalability, and security in a database-driven app. This enhancement tied directly to the course outcomes for working with databases and gave me experience applying secure coding practices.