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Module 5   
CS 499

Enhancement Three: Databases

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

The artifact I selected is my Animal Shelter Dashboard, which was originally created during CS-340: Client/Server Development. It was built in Python using the pymongo library inside Jupyter Notebook. The purpose of the artifact was to demonstrate CRUD operations on a MongoDB Atlas database while displaying animal records such as adoption status, species, and age. It represented my first experience integrating database logic into a client-facing interface and taught me the importance of structuring data in a usable way.

**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 software development? How was the artifact improved?**

I chose to include this artifact in my ePortfolio because it represents a key step in my progression as a software developer. The original version highlights my early skills in connecting to a NoSQL database, performing CRUD operations, and using Python to handle data. The enhanced version demonstrates my ability to take an academic prototype and transform it into a modern, production-ready backend service. By rebuilding the project with Node.js, Express, and MongoDB, I was able to showcase skills in RESTful API design, backend modularity, and the use of environment variables for security. The artifact was improved significantly by moving from a notebook-based prototype to a structured backend application that can serve as the foundation for a full-stack web app.

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

Yes, I met the outcomes I had planned. From the beginning, my goal was to use this enhancement to demonstrate my ability to design and implement a backend system that integrates with a database, follows software engineering best practices, and aligns with industry-relevant technologies. I was able to meet these goals by creating modular routes and models, implementing proper error handling, and adding a data seeding process. In fact, I went beyond my initial plan by including features like environment variable configuration, which adds a layer of professionalism and security. I do not have updates to my outcome-coverage plans because the enhancement fully addressed the outcomes I had intended.

**Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?**

The process of enhancing and modifying this artifact taught me how to transition from an academic prototype into a scalable and modern application. While the original notebook helped me learn CRUD operations, it was not designed to support real-world use cases. By rebuilding the artifact as a Node.js and Express backend, I learned how to design REST APIs, separate application logic into models and routes, and securely manage database connections with environment variables. One of the main challenges I faced was dealing with technical issues on macOS, particularly with MongoDB Atlas connections and port conflicts. At times, requests were not reaching the server due to IPv6 resolution and port usage by other system processes. Solving this required research, debugging, and adjustments such as binding the server to IPv4 addresses and selecting safer ports. Overcoming these challenges gave me a stronger understanding of backend networking issues and improved my confidence in troubleshooting real-world problems. Ultimately, this enhancement allowed me to demonstrate growth as a developer and strengthened my ability to modernize legacy code into a more professional, industry-ready application.