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CS499 Milestone Four: Enhancement Three – Databases

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

This artifact is a contact management system backend orginialy created during CS320: Software Engineering. It was developed using Node.js, Express, and MongoDB, with Mongoose used as the object data modeling library. The original version of the artifact implemented a basic RESTful API that supported Create, Read, Update, and Delete operations on contact entires stored in the MongoDB database. At the time, the application lacked advanced features like filtering, sorting, or full text search.

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 selected this artifact for my ePortfolio because it shows essential backend development skills, including database schema design, RESTful API creation and modular architecture- all which are vital competencies for computer science professionals. This project was a strong candidate for enhancement due to its solid base but limited feature set.

The artifact was enhanced with the following improvements:

Advanced Data Retrieval Functionality:

I implemented filter and sort query parameters to allow the client to dynamically retrieve contact records based on user-defined criteria.

This improved both performance and user experience by reducing the need to retrieve and filter large datasets client-side.

Flexible Search Endpoint:

I added a search endpoint using MongoDB regular expressions. This enabled partial and case sensitive search capabilities, significantly improving the usability and functionality of system.

Improved Error Handling and Validation:

I introduced robust validation logic at the schema level using Mongoose, ensuring data integrity.

I also added custom error messages and HTTP status code for various error cases, such as duplicate entries, missing fields, or invalid MongoDB ObjectIds.

These enhancements distinguish the improved artifact from the original version. They significantly increased the application’s data handling capabilities, aligning it with best practices in backend development.

Did you meet the course outcomes you planned to meet with this enhancement in module one? Do you have any updates to your outcomes- coverage plans?

Yes, the enhancement directly addresses the planned course outcomes by demonstrating competency in:

Developing and managing database schemas and operations using MongoDB and Mongoose.

Creating professional quality, well structed backend API services

Using software engineering best practices such as validation, error handing and modular code design.

At this time, I do not have updates to my original outcomes coverage plans but intent to further refine security and frontend integration in future work.

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?

During this time I gained valuable experience with:

-building dynamic query logic for filter/sort features using JavaScript and Mongoose.

- Implementing regex-based search that is both flexible and efficient

- managing asynchronous code flow and designing appropriate error handling propagation in Express.

The main challenges included ensuring efficient data filtering without overloading the sever, managing promise chains and error propagation correctly. This process reinforced the importance of writing clean, maintainable code a provided deeper insight into building scalable backend systems.

A screen shot of a computer

AI-generated content may be incorrect.