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Module 5 Narrative

The artifact I selected for this milestone is the Rescue Animal project, originally developed in an earlier course as a set of Java files for managing animal data. The initial version relied entirely on in-memory lists to store records, which limited scalability and data persistence. For this enhancement, I transformed the project into a fully functional, database-driven application using a Java Spring Boot backend, Angular frontend, and MongoDB database. This enhancement focuses specifically on the database layer structuring, connecting, and managing persistent animal data efficiently and securely.

I chose this artifact because it provides a clear opportunity to demonstrate my database design and integration skills in a real-world full-stack context. The enhanced version now uses MongoDB collections to store structured JSON documents for Dogs and Monkeys. Each document contains detailed species-specific attributes. This data model replaces the old in-memory approach with persistent storage, allowing users to create, read, update, and delete animal records directly through the Angular interface.

This enhancement demonstrates several core database competencies. I implemented data validation rules to ensure that each record adheres to proper structure and type requirements before being inserted into the database. I also tested and refined data access patterns to support efficient retrieval. By separating the backend service logic from database operations, the application now follows a clean, modular architecture that improves maintainability and scalability. These design choices reflect industry-standard database practices and demonstrate my ability to implement reliable, persistent data management systems.

The enhancement aligns with the Computer Science program outcome of demonstrating the ability to use innovative techniques, skills, and tools in computing practices to implement solutions that deliver value. By designing a persistent and structured database system that supports full CRUD functionality, I showed my capacity to integrate modern database tools within a professional software engineering context. My outcome coverage plan has not changed significantly, but this milestone deepens my focus on backend integration and data persistence as key strengths of my portfolio. I also did not use the HashMap sorting method I initially described, and I instead loaded all data from the start.

During this process, I learned a lot about developing a frontend application and implementing lots of validation methods directly into the interface. In the past, I have rarely used any HTML or CSS, but I spent a lot of time learning about both and modifying the project to ensure that data could be entered correctly and that the interface was simple and appealing.