**5-2 Milestone Four: Enhancement Three - Narrative**

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CS-499: Computer Science Capstone

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February 5, 2025

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The artifact selected for this enhancement is the CS-360 Mobile Programming Inventory Manager Android application, originally developed between April and June 2024. The initial implementation utilized a local SQLite database, which is effective for lightweight applications but lacks scalability, availability, and multi-user access capabilities required for a growing business. To align the project with enterprise-level requirements, I migrated the database from SQLite to Microsoft SQL Server. This enhancement provides better performance, enhanced security features, and greater availability, enabling the application to support multiple channels of service, including web and mobile platforms while ensuring data integrity and concurrency control. The new database structure includes normalized tables with primary and foreign keys to enforce referential integrity and reduce redundancy. Additionally, I integrated Entity Framework as an Object-Relational Mapping tool to ensure efficient, maintainable, secure, and consistent database operations.

I selected this artifact because it complements the other enhancements made to the project, completing the migration from a standalone mobile application to a fully scalable full-stack web application. A more robust database infrastructure was a natural step in improving the system’s overall security, reliability, and efficiency. This enhancement demonstrates my ability to utilize innovative database technologies, including MS SQL Server, Entity Framework, and advanced LINQ queries, to streamline interactions with the database, aligning with Outcome 4. Additionally, I incorporated security best practices, such as parameterized queries, to prevent SQL injection, aligning with Outcome 5. Through detailed documentation, structured implementation within my ePortfolio, and iterative refinements based on instructor feedback, I am actively demonstrating Outcome 1 by ensuring clear communication, collaboration, and continuous improvement of the project.

A diagram of a computer

Description automatically generated with medium confidence**Database Diagram:**  
  
Try it out! I’ve stood up the application in Microsoft Azure for the convenience of testing. The site is bound to my personal domain with a valid SSL Certificate for security.

<https://inventorymanager.jamesfrost.dev>

**User Role:**

Email: [test@user.com](mailto:test@user.com)

Password: Test!ng25

**Admin Role:**

Email: [test@admin.com](mailto:test@admin.com)

Password: Test!ng25