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CS-499

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3-2 Milestone Two: Enhancement One: Software Design and Engineering

The artifact I chose for this milestone is my Inventory Management mobile app from CS-360: Mobile Architecture and Programming, completed in Spring 2025. The app lets users log in, add items to an inventory list, view stored items, and send SMS alerts when the quantity of an item drops below a set number. This project was one of my first chances to combine Android user interfaces, saving data, and using device features like SMS. Because it covers several areas of software design, I felt it was a strong artifact to improve and include in my ePortfolio.

I selected this app because it already showed basic skills in mobile app development, but I knew there were many ways I could make it better. In this milestone, I focused on improving the design and structure. I changed the inventory display from one long text output to a RecyclerView, which is much easier to read and works better for larger lists. I also added a Settings screen so that users can change the low-stock alert number and threshold instead of having those values hardcoded into the app. On top of that, I added input checks and error messages to stop the app from crashing when users enter invalid data, like leaving a field blank or typing a negative number. These updates made the app more stable, easier to use, and closer to what you would expect in a professional app.

These enhancements also connect to the outcomes I planned to meet. My goal was to show that I can design and build professional-quality code by using modern components and better structure. Adding RecyclerView shows I can apply standard Android tools. Moving values into SharedPreferences through a Settings screen shows I can make an app flexible and easier to maintain. Adding input checks shows I can think about security and reliability, so the app does not break. Altogether, these changes show progress toward the outcomes of professional communication in code, good engineering practices, and a security mindset. I will continue to build on this project in later milestones by improving algorithms and database design.

While improving the app, I learned the importance of keeping code organized and separating responsibilities. For example, moving database work out of the activity files and into a helper class made the app easier to manage. Switching to RecyclerView was challenging at first because it required learning a new way to connect data to the user interface, but once I set it up, it worked much better than the old method. Another challenge was making sure the original database code still worked after changes. I solved this by making changes one step at a time and testing often. This made it easier to find and fix problems quickly.

Overall, this enhancement made the Inventory Management app stronger, more user-friendly, and easier to maintain. It showed that I can recognize weaknesses in older code, plan upgrades, and apply improvements using common industry practices. It also gave me real experience that I can now highlight in my ePortfolio and in my future career.