**Milestone Two: Software Design and Engineering**

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CS 499 Computer Science Capstone Module 3 Milestone Two

Southern New Hampshire University

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My artifact is the inventory mobile app that I created as part of the CS 360 Mobile Architect and Programming course in the fall of 2024. This app was developed in the software engineering and design category. Initially, I was satisfied with the basic functionality of the app, which allowed users to view and manage inventory items. However, upon further inspection and during the code review process, I realized there was plenty of room for improvement. The initial plan was to implement a full-screen view for each individual item in the inventory list, but I identified other key enhancements that would improve the user experience, such as adding an edit button, limiting character count in the list view, and making inventory management more efficient.

I chose this app as the artifact for my ePortfolio because, despite being satisfied with the original version, I knew there were significant opportunities to enhance it further. The improvements I made included adding a full view button and an edit button to the inventory list. The full view button allows users to get a full detailed view of each item in the inventory and a close button inside of that view, so users do not have to use the back button on their phone, and the edit view button allows users to modify any field without needing to delete and re-enter data. I also addressed issues with quantity adjustment buttons, which were too slow when handling large quantities. The edit button also reuses the “add\_item” XML dialog view to keep files to a minimum. By providing an option to edit all fields directly, the app became much more user-friendly. These changes showcase my skills in mobile development, specifically in user interface design, code optimization, and ensuring smooth user interactions. I also improved the app’s overall functionality by implementing features that users would find intuitive and helpful.

I successfully met the course outcomes I had planned for this part of the project, and I went beyond what I initially expected. The enhancements made to the app allowed me to demonstrate a deeper understanding of software development concepts, such as user-centered design, problem-solving, and optimization. While I initially aimed to focus on just implementing a full-screen view, the added features and improvements expanded my knowledge of mobile architecture and development. I am confident that the modifications I made not only align with the course outcomes but also exceed them in terms of complexity and user impact.

The process of enhancing and modifying this app taught me several important lessons. I gained a deeper understanding of XML layouts in Android development, especially how resource IDs are integer-based and how they link to the actual string values in the resources. I also learned the importance of using resource strings over concatenation, particularly to ensure that the app could support future language changes. During the development process, I encountered numerous challenges, including formatting errors and forgetting to cast integers to strings and vice-versa, which are common pitfalls in Android development. One of the more frustrating challenges involved debugging an app crash caused by attempting to pass a text view object as an edit text object, which led to the app crashing without any warnings in the IDE. I solved this by utilizing log statements and stack tracing to pinpoint the exact cause of the crash, helping me find the issue that IntelliSense did not catch. These troubleshooting steps helped me gain valuable experience in debugging complex issues that aren't always easily identifiable.