**Milestone 3 Narrative**

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

The artifact I chose to work on is an Inventory application from our mobile architecture course in Spring 2025. For this week’s enhancement I chose to focus on improving the software design and engineering of this application by incorporating the ability for users to scan and search via barcode. \*\*See *SearchItemActivity*.java and item\_list.xml in project\*\*

1. **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 algorithms and data structure? How was the artifact improved?**

I selected this artifact for inclusion in my ePortfolio because it highlights my ability to apply algorithms and data structures to a real-world problem. Specifically, I implemented a binary search algorithm that allows both the barcode scanner and the traditional search bar to efficiently query inventory items. This demonstrates not only my understanding of algorithmic design, but also my ability to integrate it with user interface components in a mobile application. The artifact was improved over time by refactoring code for modularity, optimizing search logic, and integrating it with the barcode scanning feature to enhance user experience.

1. **Did you meet the course outcomes you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?**

Yes, I met the course outcomes I planned to achieve with this artifact. I designed and evaluated a computing solution using algorithmic principles and trade-offs, employed innovative tools and techniques relevant to computing practices, and created a professional-quality solution that is technically sound. At this time, I have no updates to my outcome-coverage plan, as this artifact aligns well with the original goals outlined in Module One.

1. **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?**

The enhancement process taught me a lot about balancing efficiency and usability in real-time applications. Implementing the binary search algorithm required careful attention to data structure design, especially in how inventory items were stored and accessed. One of the biggest challenges I faced was integrating the binary search with barcode scanning in a way that felt seamless to the user. I also had to debug compatibility issues between components of the Android SDK and third-party libraries. Overall, this process strengthened both my coding discipline and my problem-solving skills, and gave me more confidence in building full-stack mobile solutions.