In my CS-499 capstone, I consolidated learning across software engineering, security, data/algorithms, and professional practice by curating and enhancing three primary artifacts from my “Warehouse Inventory” app. I set out to demonstrate that I can deliver maintainable, testable, and secure software that met the stated requirements.

In the Android app, I reworked layouts for accessibility, centralized RecyclerView adapters, introduced ViewModel and LiveData for lifecycle-aware state, enforced safer SMS permission flows and input sanitation, and added unit tests for repository logic to increase reliability. These enhancements map cleanly to the program outcomes I aimed to meet. I demonstrated design and implementation skills through architectural refactors and feature work across web and mobile. I showed appropriate use of algorithms and data structures by optimizing queries and documenting trade-offs. I practiced a strong security mindset via least privilege, secure session handling, and input validation tied to OWASP risks. I raised quality through unit and integration tests, and I communicated professionally with UML artifacts, READMEs, and stakeholder-friendly summaries.

I still have room to grow. The most significant challenges were balancing security with usability, refactoring Android code without regressions, and managing scope. Throughout, I kept ethics, privacy, and compliance at the forefront—especially GDPR principles like data minimization, purpose limitation, and retention—while ensuring audit logs were useful without exposing personal data.

From this process I learned to operationalize security early rather than bolt it on late, to favor small testable iterations with CI and peer-style reviews, and to communicate trade-offs transparently so stakeholders can make informed decisions.

Overall, I met the capstone’s core outcomes by elevating my project with measurable gains in security, quality, and design clarity. The work strengthened my engineering judgment, especially in balancing user needs, performance, and risk, and it positioned me to continue improving test depth, observability, and accessibility so the systems I build are not only correct and secure but also resilient and inclusive in real-world use.