

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

The artifact selected for the databases portion of the ePortfolio is the Inventory Manager application created as the final project of my mobile applications development course, originally created in 2022. The application offers an inventory management solution for individuals or organizations through the use of a simple mobile interface.

2. 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 software development? How was the artifact improved?

This artifact was selected as it displayed knowledge in multiple technologies while also providing opportunities to show growth in both software design and engineering and databases.

The main improvement in the databases portion of the ePortfolio is the implementation of an SQL database (with all CRUD functions) at the core of the application. Much of the application was rewritten to accommodate for this new data solution. Additionally, SQL parametrization was implemented in order to prevent SQL injection.

The following modifications made in the software design and engineering portion of the improvement were made possible by the addition of the SQL

database: the app can now properly remember inventory information between sessions, the inventory can now hold more than four objects, and objects can now be added to the inventory.

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

Throughout the program's modification, the three course objectives planned for this milestone were met. Through the elimination of program redundancy, and the creation of high quality and informative comments and formatting, strategies were employed for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science. With the program modified in such a way as to have become much more readily modifiable, extensible, and understandable, working cooperatively with other software engineers or communicating program details with stakeholders is now much more intuitive.

Additionally, the implementation of the SQL database (along with all CRUD functions) demonstrates an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals. Integrating the database into the program required the modification of many functions, but as a result of the techniques and

technologies used, the program is now much more effective, extensible, and secure.

The use of SQL parametrization used in order to avoid SQL injection attacks displayed a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources.

4. 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?

In an attempt to effectively and safely implement my SQL database into the application, I developed a deeper understanding of SQL injection attacks and defensive security techniques focused on preventing them. While implementing the database, I found implementing database navigation and modification much more intuitive than I had when I had previously worked on this application.

The primary challenge I faced in implementing the database was that every function that read from or changed the inventory had to be modified so as to work with the database, resulting in an almost complete rework of the application.