Dain Lee

CS-499 Computer Science Capstone

7-1 Final Project – Narrative

**Enhancement Three: Databases**

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

I chose the Weight Tracking Android Mobile App as my artifact, initially developed in the CS-360: Mobile Architecture and Programming course using Android Studio. The app enables users to track their weight progress, log entries, set goal weights, and manage user authentication. Previously, the app relied on SharedPreferences for data storage, which limited both scalability and security. The goal of this enhancement was to upgrade the data storage to an SQLite database, providing a more secure and efficient way to handle user data such as weight entries and goal tracking.

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 software development? How was the artifact improved?**

I included this project in my ePortfolio because it demonstrates my ability to integrate databases with mobile applications—a critical skill in software development. The key improvement was the migration from SharedPreferences to SQLite, which enhanced both data management and security. This transition allowed for more efficient handling of user data, including data retrieval, insertion, updates, and deletions. Additionally, I implemented password hashing with PBKDF2 to ensure secure handling of user credentials. These enhancements not only made the app more scalable and robust but also showcased my ability to implement secure database solutions.

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 set for this enhancement. By integrating SQLite, I demonstrated my ability to design and implement secure, efficient database systems for mobile apps. The app can now handle operations like storing user credentials, logging weight entries, and updating goal weights more effectively. The system ensures smooth interactions between the database and the app’s UI, resulting in a better user experience. I’m satisfied with the overall improvements in both security and performance, and I don’t have any updates to my original outcome-coverage plan.

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 process of enhancing this artifact helped me deepen my understanding of database integration within mobile applications. One of the key challenges I faced was ensuring that data flowed seamlessly between the database and the app’s UI, such as when displaying the user’s weight history or updating goal weights. I also learned how to write efficient SQL queries to avoid performance bottlenecks, especially as the dataset grows. Another significant challenge was securely handling user credentials. Implementing PBKDF2 password hashing taught me how to protect sensitive data while maintaining the app’s performance. This experience highlighted the importance of balancing security, performance, and usability in mobile app development.