Dain Lee

CS-499 Computer Science Capstone

7-1 Final Project – Narrative

**Enhancement One: Software and Engineering**

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

I chose the Weight Tracking Android Mobile App as the artifact, initially developed in the CS-360: Mobile Architecture and Programming course. This project was created using Android Studio. The app allows users to track their weight progress over time, including user authentication, weight logging, and goal-tracking functionality. The app was designed to help users maintain records of their weight entries and set personal goals, providing an interface for data input and retrieval.

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 chose this artifact because it showcases several key skills in software design and engineering. It highlights my ability to develop an Android mobile application while managing user data securely and efficiently. One of the most significant improvements made was adopting the MVC design pattern to separate concerns—making the app more maintainable and scalable. The logic for saving and retrieving user data was consolidated into a UserDataManager class, which enhances the structure of the app by keeping business logic separate from UI code. These improvements demonstrate my ability to develop scalable and maintainable applications, important skills in modern software engineering.

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 for this enhancement. One primary goal was to showcase my understanding of software design principles, particularly the MVC pattern. I was able to refactor the app's codebase to align with this pattern, ensuring better maintainability and scalability. Additionally, I implemented secure coding practices by hashing user passwords using PBKDF2, which adds a layer of security to the authentication system. My outcome coverage plans remain aligned with my initial goals, as the enhancements reflect my understanding of designing and developing robust software systems.

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 how to refactor existing code to improve maintainability and performance. Implementing the MVC pattern required reorganizing the app's structure, which gave me insight into the importance of code organization and separation of concerns. One of the key challenges was ensuring that the transition to MVC did not disrupt existing functionality, as refactoring introduces risks if not done carefully. This required thorough testing to avoid bugs. Another challenge was ensuring secure handling of user data, specifically passwords. Implementing PBKDF2 hashing provided a real-world solution for securely managing sensitive data.