Milestone Three Narrative - Algorithms and Data Structure.

Artifact Description

The artifact selected for this enhancement is the Weight Tracker Android application, which was originally created during CS 360: Mobile Architecture and Programming. The application is designed to help users track their weight over time, set a personal goal weight, and manage their progress using a local SQLite database. The app includes multiple activities, such as user login, goal weight input, and weight monitoring, and was developed using Android Studio, Java, XML layouts, and SQLite.

Justification for Inclusion in the ePortfolio

I selected the Weight Tracker application because it represents a realistic, user-facing software system that integrates aspects of algorithms and data structure. The enhancement focuses on how data is processed after retrieval, rather than simply how it is stored. Specifically, the application uses an ArrayList<WeightItem> to store and manage user weight entries in memory and applies conditional logic to analyze recent data trends.

For this milestone, I enhanced the application by evaluating the most recent and previous weight entries to determine whether a user's weight is trending upward, downward, or remaining stable. This improvement showcases skills in data structure selection, iteration, comparison logic, and edge-case handling. The artifact was improved by adding meaningful analysis of user data, transforming raw inputs into actionable feedback rather than simply displaying stored values.

Course Outcomes Alignment

This enhancement met the course outcome planned in Module One related to **designing and evaluating computing solutions using algorithmic principles and data structures (Outcome 3)**. This outcome is demonstrated through the use of structured data handling and algorithmic logic to evaluate user weight trends. The solution demonstrates deliberate use of collections, conditional branching, and decision-making logic while managing trade-offs such as simplicity versus extensibility. No updates are needed to the original outcome-coverage plan, as the enhancement aligns well with the intended goals for this category.

Reflection on the Enhancement Process

Through the process of enhancing this artifact, I learned how to separate algorithmic logic from database responsibilities while still creating a cohesive user experience. One challenge was ensuring that the algorithm handled edge cases, such as when insufficient data exists to perform comparisons. Addressing this required thoughtful conditional checks and reinforced the importance of defensive programming. Overall, this process strengthened my understanding of how algorithms and data structures contribute to meaningful functionality in user-facing applications.