CS-499 Milestone Four Narrative

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

   This artifact was created for CS-360 and SNHU and is an Android app designed to help track daily weight measurements of a user and then text the user when their desired weight is hit.

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?

   My reason for selecting this artifact for my database enhancement is again for two reasons. First, I wanted to enhance this project in one direction it could potentially go. Currently, this app uses SQLite through persistence rooms in Android to hold a local database with a table for the users, goal weights, and daily weights. The CS-360 mandated the structure of using these three separate "databases" for this project. This however left us with one database still used by each user but only containing one integer of note for each user. For this project, I want to demonstrate my ability to learn and implement new technology into my project in the form of Google's Firebase Realtime Database.

   Going into this enhancement I had only a vague understanding of the capabilities of this system and not the process required to implement it. Through learning this technology, I was able to implement Firebase alongside SQLite to manage the goal weight portion of my database. When the user is online data is stored in both SQLite and Firebase and data

from Firebase is shown to the user. When the user is offline and data is added the data is queued to be added to Firebase and the data from SQLite is used. This is an enhancement as it would allow you to access information while logging into other devices if the login process was set up to allow logging in across multiple devices. I am however very happy with the way I was able to get the SQLite database to work with the Firebase database in terms of offline and online processing.

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?

My goal has been met for this milestone. I had discussed possibly moving both my goal weight and daily weight database over to Firebase and adding my daily weight database would not be that difficult at this point but it would not be any different techniques and would also not add any real addition to the function of this project. This enhancement's time or difficulty was more in the setup of Firebase rather than the implementation. To truly take full advantage of Firebase I would have to set up Firebase Authentication as the login method on my app which would be a large amount of work through my entire app. This would also replace the work done in my second enhancement with library calls which would be far superior for production software but would fail to meet the goal I set forth with my enhancement. This would be the next step if I were to aim to bring this app to market with the capabilities of signing in to user profiles from multiple devices. However, this would take an amount of effort that I judge would be far outside the scale of this enhancement.

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?

This entire enhancement was a learning experience for me. Not knowing more than the absolute basics of the functionality of Firebase I had to spend a large amount of time reviewing documentation and resources on the process of implementing Firebase. Android Studio has a section explaining the basic procedure built into the IDE, but just the basic procedure. I managed to get my application writing to the database rather quickly but discovered the version of the Google Services Gradle Plugin I was using would cause other Android API versions I was targeting to crash. At this point, I kept managing to get my project to work with a particular API but this was making others fail or other dependencies. This process took me several days to resolve but I finally managed to get my project to work targeting API 28-34 using Gradle version 7.3 and Google Services Gradle Plugin version 4.3.15 along with many other configurations. I know this process is one of the most difficult aspects of development in general and one many college students don't fully experience as most of our project environments have been partly or fully set up for us. This has been one of the more frustrating problems I have dealt with to date and I am happy with how it has turned out at this point.