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Milestone Two Narrative – Enhancement One

The artifact that I chose for all three enhancements, beginning with the Software Design/Engineering enhancement was the Weight Tracker app from CS:360 Mobile Architecture & Engineering. The original purpose of the app was to have users make local accounts with a username and password. Once they were logged in they would be able to record their weight on a specific date, and if they had a goal weight set in the settings they would be able to see the distance from the weight on the recorded date from the goal. Furthermore, they would be able to edit and remove weights from desired dates. The app was created around April of 2024 towards the end of CS:360.

The reason I chose this artifact is because I recalled how much I enjoyed the android programming I did in CS:360. It was my first exposure to working with android studio, and I especially enjoyed seeing and operating the program I was making along side the code I created to run it. It was especially enjoyable in programming the UI to interact with the code itself. So it was an obvious choice to do the enhancements on it, being able to immediately see the results of the coding is helpful in the development process. Overall, I think the specific components of the artifact that showcase my skills (in addition to the CSV export option) is the easy functionality of the login and the main menu functions. Registering and logging in is simple, and adding, editing, and deleting weights per date works well. And lastly, the goal weight once set is immediately reflected on the main menu screen and the difference between the current weight and goal is calculated automatically. Furthermore, there seemed to be some sort of disconnect when I brought over the project from one PC to another, so I had to spend some time ensuring that all the original functionality the project started with was restored. So the enhanced version of the project now has the functions that were missing originally in the code review video.

Some of these changes were handling a mismatch of `insertUser` and `addOne`, I accidentally had misnamed some methods and aligned them properly in `Database_User` to resolve an issue. Another problem I had to fix prior to the enhancement was having the username stored in `SharedPreferences`, as there was an issue verifying the user account from screen to screen. I had to redo my `increaseOne` method so new weight entries were properly written to the user's database entry. Finally, I had to connect all the weight entries to the `RecyclerView` adapter so the `Weight_Info` screen displayed everything on the main menu screen not only the most recent entry.

I met the my goal of meeting course outcome four. Course outcome four focuses on, “Demonstrate 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 (software engineering/design/database)”. The enhancement of adding the CSV export button is not only innovative but it is also reliant on using built in tools native to mobile architecture. This change is innovative because it is a natural evolution of how a user can make use of the data the app has and transfer it in other ways as needed. To continue, it’s a valuable change because it takes advantage of Android’s SAF (Storage Access Framework). SAF allows users to, “browse and open documents, images, and other files across all of their preferred document storage providers.” (developer.android.com, 2025). It was enjoyable to code and add the export button and have the SAF launcher work right as I pressed the button. The feature made my enhancement seem natural and not out of the scope for the assignment.

Overall, the process for enhancing and modifying the artifact to add CSV export functionality wasn’t too challenging. The easiest part was adding in a button to the `weight_data_activity.xml` page so the button was on the main menu screen after a user logged in. Then I added the corresponding code in a method with the `Weight_Info` file. The next step was to setup an `ActivityResultLauncher` method in `Weight_info.java` using `ACTION_CREATE_DOCUMENT` function option, this lets the user pick where they want to name and save the file. By doing this we can bypass having to write files directly too storage by using SAF instead. Then in the same file I made a helper method that sorts all the weight data into one file to export. At this point I did run into a minor issue where the CSV file wasn’t printing out properly, the column headers and the corresponding data was all printed to the same row making it unreadable. To resolve this I utilized a method to escape special characters, by doing so it allowed it to export correctly in Excel, Google, etc. for whatever sheet I needed it displayed in (ssojet.com, 2022). Another challenge which I didn’t anticipate running into was actually just having a reliable way to view the CSV file after it was made. I could not make a Google account on the emulator to download apps, nor could I find a working apk to install on the emulator to read the file. I had to settle with finding a site online that read uploaded CSVs to ensure the data was printing in the format I needed it in. I learned quite a bit from creating enhancement one. I learned that a lot of the issues that we run into, there are often thought out tools and methods that can help us work through them. I did not expect to have formatting issues with the CSV, and that ended up teaching me a specific lesson on escaping special characters for CSV files. That was something I was not aware was a common issue for java coding. Additionally, I learned that it is better to check all of your tools prior to implementing a change, I should have checked earlier on whether I could even read CSV files like normal on the emulator. But luckily the emulators are connected to the Internet so I found a roundabout solution since normal apk installations were not available to me. So the biggest takeaways I will have for enhancement two is to check all my tools and resources prior to implementing any changes.

Reference:

Open files using the Storage Access Framework. (2025). Android Developers.
<https://developer.android.com/guide/topics/providers/document-provider>

SSOJet. (2022). *CSV Escaping in Java* | SSOJet. SSOJet | Enterprise-Grade SSO in Minutes, Not Days or Months. <https://ssojet.com/escaping/csv-escaping-in-java/>