**5-2 Milestone Four: Enhancement Three: Databases - Narrative**

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The artifact is the Android event tracking app, which I initially developed in CS 360 and have since improved in CS 499. I concentrated on the persistence model that facilitates reminder scheduling for the databases category. I made an index on that column, added a stored trigger time in Coordinated Universal Time as an epoch millisecond value, and wrote a migration that fills the new field with the existing dateTime column while preserving stored rows.

I selected this item for my ePortfolio because it shows that I can safely edit the contents in a live database and consider how the database can affect and enable features. The schema change that added the remindAtUtc column, the migration that rebuilt the table according to Room expectations, the backfill from the current display string, and the index that enables quick queries on the next reminder are the components that best showcase my skills and abilities in creating and maintaining databases. Also, the scheduler can avoid time zone and daylight saving problems and avoid string parsing by using a single, clear epoch value and retains the original date string for editing and display. I checked the table information and index metadata and used the Database Inspector to confirm the outcome. Along with the planned modifications, I enhanced data security by switching to salted PBKDF2 hashes and removing the plain text password storage, which better aligns the application with responsible user credential handling. The database modifications follow the same pattern as the description of my previous improvements, which placed equal emphasis on useful enhancements that maintain user-visible behavior.

I met the outcomes that I aimed to cover for this category as laid out in the Module One assignment. The app now stores a precise trigger time, uses an index to support upcoming lookups, and includes a migration that keeps data intact through the upgrade. These changes improve the reliability and performance of scheduling without altering the user experience. The password hashing upgrade extends the security mindset I have applied throughout the project and complements the databases work by protecting stored data. I don't have any updates to my outcome-coverage plans.

By improving the databases in the app, I learned how to handle room migrations in a way that strikes a balance between accuracy and safety. Also, I discovered that, particularly when index names and default values can result in schema verification failures, it is frequently more dependable to recreate a table to match the precise schema that Room validates rather than attempting to change columns in place. I used straightforward queries to verify the migration, making sure the new column was present, the index name was correct, and the existing rows had nonzero epoch values. By first confirming a legacy password and then saving the secure hash for subsequent logins, I also learned how to implement a credential upgrade path that keeps users from being locked out. The main challenges were understanding why the first migration failed, aligning the new table with Room conventions, and keeping the changes minimal so the rest of the codebase did not need to be updated. The result is a cleaner persistence model that the scheduler can use directly, a safer approach to credential storage, and a clearer picture of how small database decisions affect user facing behavior.