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CS499 Computer Science Capstone

Milestone Two: Enhancement One: Software Design and Engineering Narrative

For my Category One enhancement, I chose to improve the mobile application I originally developed in CS-360 Mobile Architecture and Programming at the beginning of 2025. The reason I selected this artifact is because it was one of the first hands-on mobile development projects I built from the ground up, and I knew it had real potential for improvement.

The enhancement I planned was to implement a Favorites feature. Originally, the app allowed users to create and view events in a grid layout, but it didn’t give them a way to mark certain events as important or preferred. Adding the ability to "favorite" an event and view a filtered list of only those favorite events felt like a practical and valuable upgrade that could also help me showcase skills in database integration, UI interaction, and activity navigation.

Before beginning my planned enhancements, I added temporary sample data to the *EventGridActivity.java* file, this helped populate the grid with data during the enhancement to ensure I was doing it correctly. I also created helper methods like *getFavoriteEventsList()* and *setFavorite()* to interact with the *is\_favorite* flag. One major obstacle I ran into here was a crash that occurred every time I clicked the favorite icon. The app would either return to the login screen or shut down entirely. Using Android logcat, I found the issue: a *SQLiteException* was being thrown due to a reference to a column called *favorite\_id*, which didn’t exist in the events table. Fixing this immediately stopped the crashes and allowed the favorites to be saved and updated correctly.

To start, I modified the Event model to include a *boolean isFavorite* property and updated the event layout to display a star icon. I made sure users could toggle this icon to mark or unmark an event as a favorite. Then, I worked on storing that favorite state in the SQLite database. This required updating the schema to include a new *is\_favorite* column and creating helper methods like *setFavorite()* and *getFavoriteEventsList*() in my *AccountDatabaseHelper* class.

One of the biggest challenges I ran into was that my original event data was hardcoded in the app and wasn’t actually being written to the database. That meant even though the favorites logic was in place, nothing would show up on the favorites screen because the database was essentially empty. To fix this, I refactored the code to load events directly from the database and insert new ones as the user added them.

Another small but frustrating issue was forgetting to import basic UI components like *TextView*, which caused build errors that were easy to overlook at first. I also encountered an *ActivityNotFoundException* when I forgot to declare my new *FavoriteEventsActivity* in the Android manifest.

But after figuring that out, I was able to successfully enhance the app by allowing users to mark events as their favorite, with a heart icon, and when tapped it will change the icon to a filled heart, I was also able to save the favorite event into the database, and created a new screen to display only the favorite events, and a feature that was not added in my previous class was the ability to save the events even after the user restarts the app.

I believe I met the Module One planned course outcomes for Category One: Software Design and Engineering. The goal was to demonstrate proficiency in applying fundamental design principles and working with scalable, maintainable code. This enhancement required architectural thinking across multiple layers, database schema design, UI updates, and logic implementation in Java. I do not have any updates to my outcome coverage plans for now.