CS-499: Computer Science Capstone
Milestone Two: Software Design and Engineering Enhancement Narrative
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Artifact Description

The artifact I selected is my Android mobile app, *EventTrackerApp*, originally created in CS-360: Mobile Architecture and Programming. The app enables users to create, edit, and manage events while offline. The original version used a basic Model-View structure with core CRUD functionality through SQLite. It served as a solid starting point for enhancement in this capstone project.

Justification for Inclusion

I selected this artifact because it demonstrates my growth in professional software engineering. The enhancements—refactoring to MVVM, integrating AI-powered title suggestions, and applying Material Design 3—reflect an ability to build modern, scalable, and user-focused software. The MVVM architecture separates concerns, improves lifecycle management with LiveData, and supports cleaner testing. The AI feature provides real-time, context-aware title suggestions based on user history, improving usability. The Material Design updates enhance layout consistency and accessibility.

These improvements align with real-world expectations for maintainable architecture and intuitive design. They showcase my skills in applying design patterns, modern Android components, and AI-assisted UX features in a cohesive way. Each change directly builds on knowledge gained throughout my coursework.

Course Outcomes and Coverage

This enhancement addresses the course outcomes I targeted in Module One:

- **Design and develop maintainable, scalable solutions that meet user needs** – Achieved through MVVM structure and user-informed features.
- **Apply software development principles and practices** – Demonstrated in the consistent use of Material Design 3 and accessible UI elements.
- **Employ modern tools and frameworks** – Implemented with Android Jetpack components like ViewModel and LiveData.
- **Evaluate and select tools and approaches to solve computing problems** – Shown in the AI integration and architecture redesign.

No updates are needed to my original outcome-coverage plan.

Reflection on the Enhancement Process

Enhancing this app pushed me to think more deeply about architecture and user interaction. MVVM required restructuring how data is shared between the UI and backend, using LiveData observers to drive UI updates. This made the app more maintainable and easier to extend. I also learned how to decouple UI logic from database and business layers.

Implementing the AI suggestion feature was both creative and technical. I had to process past user data and offer smart defaults in a non-intrusive way. This required balancing logic design with usability, and I learned a lot about user-centric thinking and contextual input handling.

Updating the UI to Material Design 3 meant overhauling layouts with ConstraintLayout and switching to components like MaterialCardView and MaterialButton. These changes improved consistency, visual clarity, and accessibility. I also applied content descriptions to enhance support for screen readers.

This enhancement taught me how to unify technical improvements with real design goals. I gained confidence in applying architectural principles, making UX-driven decisions, and refining app quality across layers. It elevated the original project into a portfolio-ready artifact.