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CS-499

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5-2 Milestone Four: Enhancement 3: Databases

The event tracker application I chose is a mobile app designed to help users manage their events, reminders, and tasks efficiently. It was created a year ago during my course CS-360. It allows users to create, update, and delete events, set reminders with alarms, and organize their schedules. It was chosen as an artifact for my ePortfolio because it demonstrates my skills in Java and the use of Android Studio. The app features a clean and intuitive user interface built with ConstraintLayout, CardView, and RecyclerView, demonstrating my ability to create visually appealing and user-friendly designs. I implemented a notification system using AlarmManager and NotificationManager, showcasing my ability to integrate Android components. I created a SQLite database to store and manage event data as well as CRUD operations, demonstrating my proficiency in database design and management.

This artifact shows my software development skills in database systems and design. By migrating from SQLite to PostgreSQL, I showcased my ability to evaluate and implement more scalable database solutions, complete with proper connection handling and asynchronous operations to maintain UI responsiveness. The integration of comprehensive analytics tracking to include event views, user interactions, and trend analysis highlights my capacity to extend system functionality to meet updated data-driven requirements. The improvements align with course outcome 3 through optimized queries and schema design, and outcome 4 through my implementation of industry-standard tools and techniques in a mobile environment.

Through this enhancement process, I gained valuable insights into the practical challenges of database migrations and performance optimization. The transition to PostgreSQL required careful planning to maintain data integrity while adding new features, teaching me the importance of thorough testing during structural changes. I particularly grew in my understanding of asynchronous database operations in Android, learning to balance complex background tasks with smooth user experiences. The analytics implementation pushed me to design efficient SQL queries that could aggregate data meaningfully without impacting performance, a skill that will serve me well in future data-intensive projects.

Several challenges emerged during development that significantly contributed to my growth as a developer. Adapting PostgreSQL for use in an Android environment required creative problem-solving, as this isn't a typical implementation. I learned to leverage JDBC with AsyncTask to overcome this hurdle while maintaining security and performance as best as I could. Designing the analytics system taught me to think critically about what data matters most and how to present it effectively. I also discovered how to make compromises between ideal database design and practical implementation constraints, a crucial skill for development.