Max Gilhespy CS 499 Milestone Two

Enhancement One Narrative

The artifact I am working on is a weight tracking app that I built in my CS360 Mobile Architecture and Programming class at SNHU.

The app was designed to help anyone keep track of their weight and to be able to compare it to a goal weight.

Justification for Inclusion of the Artifact in My ePortfolio

Why I Selected This Item

I selected this particular artifact for my ePortfolio because it is a comprehensive demonstration of my capabilities in full-stack Android development. The project is a weight-tracking application, a practical and relevant tool that addresses a common need, showcasing my ability to create useful, real-world software solutions. The application encompasses various aspects of software development, including user interface design, database management, and user authentication, making it a well-rounded example of my skills.

Specific Components Showcasing My Skills and Abilities

1. User Interface Design:
    - The activity_results.xml file demonstrates my ability to design intuitive and user-friendly interfaces using XML layout files in Android. The layout includes dynamically generated TableRows, showing my proficiency in creating and managing complex UI components programmatically.
2. Database Management:

- The DatabaseHelper class handles SQLite database operations, illustrating my skills in database design, SQL queries, and data manipulation within an Android context. The ability to retrieve and display data from a local database is a critical skill in many applications.

3. Data Handling and Processing:
    - The ResultsActivity.java file showcases my ability to handle data, including fetching user-specific data, calculating progress, and populating the UI with dynamic content. This includes using Cursors to navigate database results and dynamically generating table rows based on the retrieved data.
4. Localization and Time Zone Handling:
    - The improved code snippet for date and time formatting demonstrates my understanding of localization and time zone considerations, ensuring the application is user-friendly for a global audience. This showcases my attention to detail and commitment to creating universally accessible software.
5. Debugging and Logging:
    - The use of Log.d statements to debug and track data flow within the application reflects my approach to systematic debugging and ensuring code reliability.

How the Artifact Was Improved

The artifact underwent several improvements based on the code review and iterative testing:

1. Enhanced UI/UX:

- Initially, the application had a basic interface. By incorporating user feedback, I enhanced the UI to be more visually appealing and intuitive. This included better padding, alignment, and the addition of borders to improve the readability of the weight history table.

2. Robust Error Handling:
    - Improved error handling mechanisms were implemented to ensure that the application provides meaningful feedback to users when data retrieval fails or when there are no records to display.
3. Localization:
    - The initial implementation used hardcoded date and time formats. I improved this by using SimpleDateFormat with localization support, ensuring the app displays dates and times in the user's local format, enhancing the app's usability for a global audience.
4. Code Refactoring:
    - The code was refactored to improve readability and maintainability. Methods were broken down into smaller, more manageable units, and redundant code was eliminated.

Including this artifact in my ePortfolio highlights my extensive skills in Android development, encompassing UI design, database management, localization, and debugging. This project exemplifies my capability to create functional, user-friendly applications and improve them continually based on user feedback and industry best practices.

During the enhancement process, I implemented several new features that significantly upgraded the app from its original version. This undertaking involved various aspects of Software Engineering and Design, reflecting my ability to integrate advanced design patterns and methodologies. A notable improvement was the transition to a Model-View-ViewModel (MVVM) architecture, which enhanced the organization and maintainability of the codebase.

The shift to the MVVM architecture had a substantial impact. It allowed for a clear separation of concerns, resulting in a more modular and testable code structure. This architectural change improved the handling of user interactions and data binding, making the application more responsive and user-friendly. Additionally, it simplified future enhancements and debugging, demonstrating my dedication to developing robust and sustainable software solutions.

I am happy with the amount of course objectives that have been covered so far. I do intend to continue with the kinds of updates that I have already implemented so that the whole app not only functions smoothly, but is also user-friendly, and attractive. The user experience is important to me as is the privacy and security of the app.

Reflection

Enhancing and modifying the weight-tracking application was a deeply enriching experience that significantly contributed to my growth as a software developer. Throughout this process, I applied theoretical knowledge from my Computer Science program, such as object-oriented programming, database management, and user interface design, which helped solidify my understanding and see how these concepts come together to create functional software. Additionally, focusing on user-centered design principles allowed me to iterate on feedback and enhance the application's usability and overall user experience.

One of the significant learning experiences was implementing localization for date and time formatting, which made the application more accessible to a global audience. This involved understanding time zones, locale settings, and cultural considerations in software design. I also faced several challenges, such as creating and managing dynamic UI components, integrating the SQLite database, and handling localization issues. These challenges required careful planning, attention to detail, and thorough testing to ensure the application was efficient and user-friendly.

Moreover, I learned the importance of error handling and debugging, which improved my problem-solving skills. Systematically tracking down bugs, understanding error logs, and implementing robust error handling mechanisms made the application more resilient. Dealing with scenarios where user data was incomplete or missing and ensuring the app handled such cases gracefully without crashing was another critical aspect of the development process.

In conclusion, the process of enhancing and modifying the artifact was invaluable. It not only honed my technical skills but also deepened my understanding of user needs and how to create software that effectively meets those needs. The challenges I encountered were valuable learning opportunities, teaching me resilience, problem-solving, and the importance of continuous improvement. This artifact showcases my abilities in software development and my commitment to creating high-quality, user-centric software solutions.