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Cs 360

### Project Three

The Inventory Tracker application is designed to help users organize and maintain accurate counts of their personal or business inventory. It provides a simple and efficient interface that allows users to log in, create or update accounts, and store inventory data persistently through an internal SQLite database. After logging in, users can add an item name and quantity, which appears immediately in a grid display. Each grid cell contains up and down arrows to adjust quantity and a trash icon to remove entries. When quantities fall below a threshold of five, the app automatically triggers a low-stock alert and requests permission to send an SMS notification. If the user grants permission, the system sends a real-time text alert to a configured phone number. If the user denies permission, the app continues to operate normally without interruption. This makes the program reliable and adaptable for different users, including small business owners and home organizers who need simple inventory management without network dependency. The app icon will feature a minimalist box with a barcode design to represent stock management, emphasizing clarity and efficiency for its visual identity in the app store.

Inventory Tracker supports Android 8.0 (Oreo) and higher, targeting Android 14 to ensure both backward compatibility and compliance with current standards. It uses modern APIs such as runtime permissions and RecyclerView to provide efficient grid rendering and responsive performance. SQLite provides complete offline functionality, allowing users to manage their data even without internet access. The manifest includes explicit exported activity declarations to comply with Android 12 and higher requirements, and the layout adheres to

Material 3 design principles for accessibility and aesthetic consistency. The project builds successfully under Gradle 8.5 and Java 17, maintaining alignment with Google Play's most recent build expectations.

The app requests only one optional permission: the ability to send SMS messages. This permission is used strictly for low-stock alerts and requires explicit user consent. If permission is denied, a short on-screen message appears explaining that SMS alerts are disabled, but the rest of the application continues to function normally. All other features operate locally and do not require any external data transmission. This approach limits potential privacy issues and ensures that users maintain control over their device's messaging capabilities. The login system stores usernames and passwords within a local database; future updates may incorporate password hashing to increase data protection. By requesting the minimum necessary permissions, the app demonstrates respect for user privacy and aligns with Android's best security practices.

The app will initially be released as a free version to maximize accessibility and gather feedback from a broad user base. A future paid version may include premium features such as customizable alert thresholds, CSV data export, and cloud synchronization. This freemium model encourages adoption while allowing opportunities for revenue from power users. The free version will not display intrusive advertisements, ensuring a professional and distraction-free interface. Over time, the developer may explore adding a small, unobtrusive banner ad to support continued development if it does not affect usability. Marketing will focus on small business communities, independent sellers, and productivity forums. Word-of-mouth and positive reviews will be important to establish credibility and increase downloads.

Before release, the app will undergo comprehensive testing across multiple Android versions and emulators. Tests will verify that login and registration work reliably, that database

operations persist after the app is closed, and that the SMS permission system functions correctly whether accepted or denied. Once all tests pass, the app will be uploaded to the Google Play Console with the necessary details, including screenshots, a privacy policy, and a descriptive overview explaining its features and offline capabilities. Post-launch maintenance will involve monitoring user feedback, releasing updates for bug fixes, and ensuring compatibility with future Android versions. Planned enhancements include adding backup features, analytics for inventory trends, and optional cloud support for advanced users.

Inventory Tracker demonstrates strong software engineering and design principles while offering a straightforward and practical mobile solution. It fulfills the essential criteria for a complete Android application: secure login, persistent local data, dynamic grid display, and optional notifications. With careful testing, minimal permissions, and a clear strategy for growth, this app is ready for launch and future expansion.