Supermarket Billing System: Inventory App Workflow

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1 Overview

The `inventory` app is a core component of the Supermarket Billing System, responsible for tracking product stock levels, managing restocking, and providing low-stock alerts. It integrates with the `products` app to manage inventory for each product and the `users` app to enforce role-based access.

2 Working Flow

The `inventory` app operates as follows:

1. **Stock Tracking**: Each product has an associated `Inventory` entry with current stock quantity and a restock threshold.

2. **Restocking**: Admins log restocking events via a form, updating the stock quantity and timestamp.

3. **Low-Stock Alerts**: The system identifies products with stock below the threshold and displays alerts in the inventory list.

4. **Viewing Inventory**: Admins and cashiers can view stock levels, with search functionality by product name.

5. **Access Control**: Only admins can create or update inventory; cashiers can only view.

3 Technical Details

- **Model**:
    - `Inventory`: Fields include `product` (OneToOne with `Product`), `quantity`, `restock_threshold`, `last_restocked`.
- **Views**: Includes `ListView` (view inventory), `CreateView` (add inventory), `UpdateView` (edit inventory).
- **Templates**: Bootstrap-styled templates for listing (`inventory_list.html`) and forms (`inventory_form.html`).
- **URLs**: Routes include `/inventory/` (list), `/inventory/add/` (create), `/inventory/<id>/ed` (update).
- **Access Control**: Uses `role_required` decorator to restrict create/update to admins.
- **Database**: SQLite for development, with migrations applied.

4 User Interface

- **Inventory List**: Displays a table with product name, quantity, restock threshold, last restocked, and low-stock status. Includes a search bar.
- **Forms**: Admins can add or update inventory with fields for product, quantity, and threshold.
- **Styling**: Uses Bootstrap for responsive design, consistent with other apps.

5 Future Enhancements

- Integrate email or in-app notifications for low-stock alerts.

- Support bulk restocking for multiple products.

- Link with `billing` app to update stock during sales.

- Add API endpoints for mobile access.

6 Conclusion

The `inventory` app provides robust stock management, ensuring accurate tracking and timely restocking. Its integration with `products` and `users` apps ensures a secure and efficient workflow, supporting the overall functionality of the Supermarket Billing System.