Inventory Management System

Complete System Documentation

Generated: October 21, 2025

# Table of Contents

1. 1. Introduction
2. 2. Standard Operating Procedures (SOP)
3. 3. Objectives
4. 4. Scope
5. 5. Limitations
6. 6. System Features

# 1. INTRODUCTION

The Inventory Management System is a comprehensive Django-based web application designed to streamline inventory operations, user management, attendance tracking, and supplier collaboration. This enterprise-grade solution provides role-based access control with four distinct user types: Super Admin, Admin, Staff, and Supplier.

Built with security as the top priority, the system implements multiple layers of protection including SQL injection prevention, CSRF protection, XSS protection, and comprehensive audit logging. The application supports multi-user environments with granular permission management and complete activity tracking for compliance and security.

The system is designed for businesses that require precise inventory control, production tracking, supplier management, and employee attendance monitoring. It features automated workflows, real-time stock tracking, expiration management, and QR code-based purchase order processing.

# 2. STANDARD OPERATING PROCEDURES (SOP)

## 2.1 User Management SOP

Step 1: Super Admin creates user accounts with appropriate roles (Super Admin, Admin, Staff, or Supplier)

Step 2: Admin assigns granular permissions to staff users based on job responsibilities

Step 3: Users login with their credentials through the unified login system

Step 4: System automatically logs all user activities with IP address and timestamp

Step 5: Admin monitors user activities through audit logs

Step 6: Deactivate or delete users when necessary (Super Admin only for deletion)

## 2.2 Inventory Management SOP

Step 1: Create items with auto-generated codes (Format: YYYYMM0001)

Step 2: Set item category, unit, reorder level, and perishable status

Step 3: Receive stock and create lots with lot numbers, quantities, and expiration dates

Step 4: Monitor stock levels through dashboard alerts

Step 5: Track expiration dates using the expiration tracker

Step 6: Consume stock using FIFO (First In First Out) method

Step 7: Generate reorder alerts when stock falls below reorder level

Step 8: Perform stock adjustments when necessary with proper documentation

## 2.3 Production SOP

Step 1: Create recipes with product selection and yield quantities

Step 2: Add recipe ingredients with quantities, units, and loss factors

Step 3: Initiate production by selecting recipe and entering production quantity

Step 4: System automatically consumes ingredients using FIFO method

Step 5: System creates finished goods stock lot with production details

Step 6: Record production in stock movement history

Step 7: Review production summary on staff dashboard

## 2.4 Purchase Order SOP

Step 1: Create purchase order with supplier and items

Step 2: Add items with quantities to the order

Step 3: Submit order to supplier (system generates unique QR code)

Step 4: Supplier logs in and reviews pending orders

Step 5: Supplier approves order with unit pricing and expected delivery date

Step 6: Supplier marks order as shipped when dispatched

Step 7: Scan QR code upon delivery to receive order

Step 8: System automatically creates stock lots for received items

Step 9: Verify received quantities match ordered quantities

## 2.5 Attendance Tracking SOP

Step 1: Staff member clocks in for AM shift at start of morning

Step 2: Staff member clocks out for AM shift before lunch

Step 3: Staff member clocks in for PM shift after lunch

Step 4: Staff member clocks out for PM shift at end of day

Step 5: System prevents duplicate clock-ins for same shift

Step 6: Admin reviews attendance records and generates reports

Step 7: View monthly calendar with attendance status indicators

## 2.6 Supplier Portal SOP

Step 1: Admin creates supplier master data

Step 2: Admin creates supplier user account and links to supplier

Step 3: Supplier logs in through unified login

Step 4: Supplier views assigned purchase orders

Step 5: Supplier approves orders with pricing

Step 6: Supplier updates order status to shipped

# 3. OBJECTIVES

## 3.1 Primary Objectives

• Streamline Inventory Operations: Provide real-time tracking of stock levels, movements, and expiration dates to minimize waste and optimize inventory levels.

• Enhance Security: Implement comprehensive security measures including SQL injection protection, CSRF protection, audit logging, and role-based access control to protect sensitive business data.

• Improve Production Efficiency: Automate ingredient consumption and finished goods creation through recipe-based production workflows.

• Facilitate Supplier Collaboration: Enable seamless communication and order processing with suppliers through dedicated portal and QR code tracking.

• Monitor Employee Attendance: Track staff attendance with AM/PM shift support and calendar views for better workforce management.

## 3.2 Secondary Objectives

• Reduce Manual Data Entry: Auto-generate codes, usernames, and order numbers

• Minimize Stock Waste: Track perishable items and provide expiration alerts

• Ensure Compliance: Maintain complete audit trail of all system activities

• Support Decision Making: Provide dashboards with key metrics and trends

• Enable Mobile Access: Support access from phones and tablets on local network

# 4. SCOPE

## 4.1 Functional Scope

### User Management

• User account creation, modification, and deletion

• Role assignment (Super Admin, Admin, Staff, Supplier)

• Granular permission management (10 permission types)

• User relationship tracking (manager, subordinate, colleague)

• Account activation/deactivation

### Inventory Management

• Item master data management (4 categories: Ingredient, Finished Good, Packaging, Equipment)

• Stock lot tracking with lot numbers and expiration dates

• Stock movement recording (6 types: Receive, Consume, Produce, Adjust, Transfer, Spoilage)

• Real-time stock level calculations

• Low stock and out-of-stock alerts

• Expiration tracking and alerts

• FIFO (First In First Out) stock consumption

### Production Management

• Recipe creation with ingredients and yield quantities

• Loss factor calculation for ingredients

• Automated ingredient consumption during production

• Finished goods stock lot creation

• Production history and tracking

### Purchase Order Management

• Purchase order creation and management

• QR code generation for order tracking

• Order workflow (Draft → Pending → Approved → Shipped → Received)

• Supplier approval with pricing

• QR code scanning for receiving

• Automatic stock lot creation upon receipt

### Supplier Portal

• Supplier account management

• Order viewing and approval

• Pricing input during approval

• Order status updates

• Expected delivery date setting

### Attendance Tracking

• AM/PM shift clock in/out

• Daily attendance records

• Monthly calendar view

• Attendance history

• Admin attendance overview

### Reporting & Analytics

• Dashboard with key metrics

• Stock value trends (6-month chart)

• Low stock reports

• Expiration tracker

• Production summaries

• Audit logs with filtering

## 4.2 Technical Scope

• Web-based application accessible via browser

• MySQL database backend

• Django framework (Python)

• Responsive design for desktop and mobile

• Local network access support

• Asia/Manila timezone support

• UUID-based primary keys

• RESTful API endpoints for dynamic data

## 4.3 User Scope

• Super Admin: Full system access and control

• Admin: User management and staff permission assignment

• Staff: Attendance tracking and production operations

• Supplier: Purchase order management through dedicated portal

# 5. LIMITATIONS

## 5.1 Technical Limitations

• Single Database: The system currently supports only MySQL database. Migration to other databases would require configuration changes.

• Local Network Deployment: Designed for local network deployment. Cloud deployment would require additional security configurations and HTTPS setup.

• No Multi-location Support: The system does not currently support multiple warehouse locations or inter-location transfers.

• Limited Reporting: Advanced reporting features like custom report builders and data export to Excel are not implemented.

• No Email Notifications: The system does not send automated email notifications for low stock, expiring items, or order updates.

## 5.2 Functional Limitations

• No Barcode Scanning: While QR codes are supported for purchase orders, general barcode scanning for items is not implemented.

• No Multi-currency Support: All pricing is in single currency. Multi-currency support is not available.

• No Integration with Accounting: The system does not integrate with external accounting software.

• Limited Batch Operations: Bulk operations are limited. Mass updates require individual processing.

• No Mobile App: Access is through web browser only. Native mobile applications are not available.

## 5.3 Business Limitations

• Single Organization: The system is designed for single organization use. Multi-tenant support is not available.

• No Customer Management: The system focuses on inventory and suppliers. Customer relationship management features are not included.

• No Sales Module: While production is tracked, sales order management is not implemented.

• Limited Shift Management: Only AM/PM shifts are supported. Complex shift patterns are not available.

## 5.4 Security Limitations

• No Two-Factor Authentication: The system uses username/password authentication only.

• No Password Recovery: Password reset functionality requires admin intervention.

• Limited Session Management: Advanced session controls like concurrent login prevention are not implemented.

## 5.5 Performance Limitations

• Not Optimized for Large Scale: The system is designed for small to medium businesses. Performance with millions of records has not been tested.

• No Caching: Advanced caching mechanisms for improved performance are not implemented.

• Sequential Processing: Batch operations are processed sequentially, not in parallel.

# 6. SYSTEM FEATURES

## 6.1 Security & Authentication Features

### User Authentication

• Unified login system for all user types

• Role-based authentication (Super Admin, Admin, Staff, Supplier)

• Secure password management with validation

• Session management

• Logout functionality

### Security Protections

• SQL Injection Protection: All queries use Django ORM

• CSRF Protection: Built-in CSRF tokens for all forms

• XSS Protection: Input validation and sanitization

• Secure Headers: HSTS, X-Frame-Options, Content-Type-Nosniff

• Password Validation: Multiple validators for strong passwords

### Audit Logging

• Complete audit trail for all user actions

• IP address tracking

• User agent tracking

• Action types: Create, Read, Update, Delete, Login, Logout, Permission Grant/Revoke

• Immutable audit logs with timestamps

• Searchable and filterable audit logs

## 6.2 User Management Features

### User CRUD Operations

• Create users with role assignment

• View user details with permissions and links

• Update user information

• Delete users (Super Admin only)

• Toggle user active/inactive status

• Auto-generated usernames from first/last name

### Role-Based Access Control (RBAC)

• Super Admin: Full system access, can manage all users

• Admin: Can manage staff users and assign permissions

• Staff: Basic access with assigned permissions

• Supplier: Limited access to supplier portal

### Permission System

• Granular permissions:

- Inventory: Read, Write, Delete

- User: Read, Write, Delete

- Reports: Read, Write

- Settings: Read, Write

• Permission granting/revoking

• Permission expiration dates

• Bulk permission updates

### User Relationships

• Manager-subordinate relationships

• Colleague links

• User link management

## 6.3 Dashboard Features

### Main Dashboard (Admin/Super Admin)

• Total products count

• Total inventory value

• Low stock alerts

• Out of stock alerts

• Finished goods statistics

• Recent items with stock status

• Monthly stock value trends (6-month chart)

• Recent activity logs

• Value change percentage

### Attendance Dashboard (Staff)

• Today's attendance record

• AM/PM clock in/out buttons

• Monthly calendar view

• Attendance history

• Today's production summary

• Production ingredients breakdown

### Supplier Dashboard

• Purchase orders overview

• Order status tracking

• Pending approvals

• Shipped orders

## 6.4 Attendance/DTR Features

### Time Tracking

• AM shift: Time In/Out

• PM shift: Time In/Out

• Manila timezone support

• Single clock-in per shift enforcement

• Real-time clock display

### Attendance Management

• Daily attendance records

• Calendar view with attendance status

• Complete/Partial/Missing indicators

• Month navigation

• Admin attendance overview

### Shift Scheduling

• Morning shift

• Afternoon shift

• Whole day shift

• Effective date ranges

## 6.5 Inventory Management Features

### Item Management

• Auto-generated item codes (Format: YYYYMM0001)

• Item categories: Ingredient, Finished Good, Packaging, Equipment

• Multiple units: pcs, kg, g, L, mL, pack, box, dozen

• Item descriptions

• Reorder level tracking

• Minimum order quantity

• Active/inactive status

### Perishable Item Management

• Perishable flag

• Shelf life in days

• Expiration date tracking

• Expiring soon alerts (7-day threshold)

• Expired item detection

### Stock Lot Management

• Lot number tracking

• Quantity management

• Unit cost tracking

• Received date

• Expiration date

• Supplier association

• Lot notes

### Stock Movement Tracking

• Movement types:

- Receive Stock

- Consume Stock

- Produce Stock

- Adjust Stock

- Transfer Stock

- Spoilage

• Reference numbers

• Reason tracking

• Detailed notes

• Timestamp tracking

• User tracking

### Stock Operations

• Stock receive with lot creation

• Stock consume (FIFO - First In First Out)

• Stock adjustments

• Real-time stock calculations

• Low stock detection

## 6.6 Production Features

### Recipe Management

• Recipe creation

• Product association (finished goods only)

• Yield quantity and unit

• Recipe steps/instructions

• Active/inactive status

• Recipe cost calculation

### Recipe Items (Ingredients)

• Ingredient quantity

• Unit specification

• Loss factor percentage

• Adjusted quantity calculation

• Ingredient notes

### Production Workflow

• Recipe-based production

• Automatic ingredient consumption (FIFO)

• Production quantity input

• Stock lot creation for finished goods

• Production history

• Today's production tracking

• Ingredient usage tracking

## 6.7 Purchase Order Features

### Purchase Order Management

• Auto-generated order numbers (Format: PO-YYYYMMDD-XXXX)

• QR code generation for tracking

• Order status workflow:

- Draft

- Pending Approval

- Approved by Supplier

- Shipped

- Received

- Cancelled

### Purchase Order Items

• Item selection

• Quantity ordered

• Unit specification

• Unit price (set by supplier)

• Quantity received tracking

• Subtotal calculation

### Purchase Order Workflow

• Create order

• Submit to supplier

• Supplier approval with pricing

• Expected delivery date

• Ship order

• QR code scanning for receiving

• Receive order (creates stock lots)

• Order cancellation

## 6.8 Supplier Portal Features

### Supplier Account Management

• Supplier user accounts

• Supplier master data (name, contact, phone, email, address)

• Link user account to supplier

• Supplier login

### Supplier Order Management

• View assigned purchase orders

• Order details

• Approve orders with pricing

• Set expected delivery dates

• Mark orders as shipped

• Supplier notes

## 6.9 Reporting Features

### Stock Reports

• Current stock levels

• Stock value calculations

• Low stock items

• Out of stock items

• Stock by category

### Expiration Tracker

• Items expiring soon (7-day window)

• Expired items

• Lot-level expiration tracking

• Perishable item monitoring

### Production Reports

• Daily production summary

• Production history

• Ingredient consumption tracking

## 6.10 Additional Features

### Search & Filtering

• User search (username, name, email)

• Role filtering

• Date range filtering

• Item search

• Pagination support

### API Endpoints

• Item lots API (JSON)

• Item metadata API

• Real-time data fetching

### Data Validation

• Input sanitization

• Role hierarchy validation

• Permission validation

• Business rule enforcement

### Timezone Support

• Asia/Manila timezone

• Timezone-aware datetime handling

• Localized time display

### Database Features

• MySQL backend

• UUID primary keys

• Foreign key relationships

• Unique constraints

• Indexes for performance

### User Interface Features

• Responsive design

• Mobile-friendly layouts

• Phone access support

• Network IP access (192.168.x.x)

• Role-based navigation menus

• Breadcrumbs

• Quick access links

• Dashboard widgets

### Forms

• CSRF-protected forms

• Form validation

• Error messaging

• Success notifications

• Bulk operations

# 7. SYSTEM STATISTICS

• Total Models: 14

• Total Views: 40+

• Total URL Patterns: 40+

• User Roles: 4 (Super Admin, Admin, Staff, Supplier)

• Permission Types: 10

• Stock Movement Types: 6

• Item Categories: 4

• Unit Types: 8

# 8. KEY WORKFLOWS

## 8.1 User Management Workflow

1. Create user account

2. Assign role

3. Grant permissions

4. User logs in

5. Monitor activities

6. Manage permissions as needed

## 8.2 Inventory Workflow

1. Create item

2. Receive stock (create lot)

3. Track lot expiration

4. Monitor stock levels

5. Generate reorder alerts

6. Consume stock (FIFO)

## 8.3 Production Workflow

1. Create recipe

2. Add ingredients

3. Initiate production

4. System auto-consumes ingredients

5. System creates finished goods

6. View production history

## 8.4 Purchase Order Workflow

1. Create purchase order

2. Add items and quantities

3. Submit to supplier (QR generated)

4. Supplier approves with pricing

5. Supplier ships order

6. Scan QR to receive

7. System creates stock lots

## 8.5 Attendance Workflow

1. Clock in AM

2. Clock out AM

3. Clock in PM

4. Clock out PM

5. View attendance calendar

6. Admin reviews records