Software Requirements Specification

Clothing Management And Distribution System

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Client: Mira Textile

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1. Introduction

1.1 User Story

As a fabric store owner managing multiple responsibilities-from inventory control to order processing and payment tracking-I need an efficient system that simplifies my daily operations. Our staff should be able to process sales quickly through an intuitive POS interface, while Inventory personnel can easily update stock levels. Store managers need a central dashboard for monitoring operations and generating comprehensive reports. The system must also support customer relationship management and offer the flexibility to handle credit transactions with defined payment periods. This system will streamline our workload and boost efficiency across all levels of our business.

1.2 Purpose

This document serves as the Software Requirements Specification (SRS) for the Clothing Management And Distribution System. It clearly defines the system's objectives, functionalities, and constraints in a way that is easily understood by developers, testers, project managers, and other stakeholders. The goal is to build a reliable, intuitive, and efficient system that supports manual SKU entry, order processing, payment handling (cash and QR code), and customer relationship management.

1.3 Scope

The Clothing Management And Distribution System is designed to support all facets of a fabric retail store's operations. It emphasizes manual inventory management and streamlined payment processing while also integrating advanced customer management features. The system includes:

1. Manual SKU entry and management

2. Customer order processing
3. Pricing and discount application
4. QR code and cash payment processing
5. Invoice generation
6. Inventory tracking and management
7. Returns processing
8. **Customer Relationship Management (CRM):** Managing customer profiles, order history, and communications
9. **Credit Period Handling:** Allowing credit transactions by defining a credit period for payment

The system will not include:

1. Barcode scanning functionality
2. Credit/debit card processing
3. E-commerce integration
4. Advanced analytics and reporting

1.4 Definitions, Acronyms, and Abbreviations

Term	Definition
POS	Point of Sale
SKU	Stock Keeping Unit
QR Code	Quick Response code used for digital payments
GST	Goods and Services Tax
UPI	Unified Payments Interface
PCI-DSS	Payment Card Industry Data Security Standard
PO	Purchase Order
UI	User Interface
API	Application Programming Interface
CRM	Customer Relationship Management

1.5 References

1. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications
2. Payment Card Industry Data Security Standard (PCI DSS)
3. Local tax regulations and compliance requirements

1.6 Overview

This SRS document is structured to provide a comprehensive understanding of the Clothing Managerment And Distribution System.

Section 2 provides a contextual perspective of the system, explaining how it fits into the broader retail environment. It details the system's core functions, describes the target users and their technical capabilities, outlines implementation constraints, and clarifies key assumptions that underpin the system's development.

Section 3 delves into detailed technical requirements. It specifies the user and software interfaces that will enable interaction with the system, describes all functional capabilities in precise terms, and outlines the non-functional attributes that determine system quality, including performance metrics, security standards, and reliability expectations.

Section 4 contains supplementary information to aid in system development and implementation. This includes a glossary of domain-specific terminology, visual analysis models that illustrate system structure and behavior, and practical supporting details such as naming conventions and implementation timelines.

By progressing through these sections, stakeholders will gain a thorough understanding of what the system will do, how it will operate, and the standards it must meet to successfully serve Mira Textile's business needs...

2. Overall Description

2.1 Product Perspective

The Clothing Management And Distribution System is an independent application crafted for small to medium-sized fabric retail stores. It moves away from traditional barcode-based systems and embraces a manual, form-driven approach. This system integrates modern QR code payment methods and incorporates CRM features to enhance customer management. It is designed to work seamlessly with external payment gateways while maintaining a straightforward and intuitive user experience.

2.2 Product Functions

The system's core functionalities include:

- **Manual SKU Management:**
  Create, manage, and validate SKUs based on fabric properties, with automatic generation of unique identifiers.
- **Customer Order Processing:**
  Facilitate manual order entry, calculate prices (including discounts and taxes), and confirm orders.
- **Payment Processing:**
  Generate QR codes for digital payments, handle cash transactions with change calculation, verify payments, and process refunds. Additionally, support credit transactions by managing defined credit periods.
- **Inventory Management:**
  Track stock levels, alert for low stock, and allow for inventory adjustments and updates.
- **Invoice and Reporting:**
  Generate detailed invoices, reconcile daily payments, and provide various reports on sales and inventory.
- **Returns Processing:**
  Process customer returns, issue refunds, and update inventory accordingly.
- **Customer Relationship Management (CRM):**
  Manage customer profiles, track order histories, and support targeted communication strategies.

2.3 User Characteristics

This system is designed for:

- **Sales Staff:**
  With minimal technical expertise, they require an intuitive interface for fast and accurate order processing.

- **Inventory Staff:**
  With moderate technical skills, they need detailed access for managing stock levels and recording transactions.

- **Store Managers:**
  Responsible for overseeing overall operations, they require a comprehensive dashboard that aggregates key performance indicators, CRM insights, and credit period management details.

2.4 Design and Implementation Constraints

Key constraints include:

- **Manual Entry Focus:**
  Rely on manual SKU entry with rigorous form validations.

- **Payment Methods:**
  Support only cash and QR code payments while integrating with common QR code payment gateways (e.g., UPI, PayPal).

- **Security:**
  Adhere to data protection regulations and ensure secure transaction storage with role-based access.

- **Offline Capability:**
  Maintain basic functionality during internet outages by queuing QR payments.

- **Hardware Limitations:**
  Operate on standard commercial hardware without the need for specialized equipment.

- **Responsive Design:**
  Ensure compatibility with touch screens and various screen sizes.

- **Development Stack:**
  Build the system using **ReactJS** for the front-end, **Spring Boot MVC** for the back-end, and **PostgreSQL** as the database.

2.5 Assumptions and Dependencies

The system assumes:

- Reliable internet connectivity for payment processing.
- Adequate staff training on manual SKU and CRM functionalities.
- Well-defined SKU naming conventions and customer data policies.

It depends on:

- Integration with third-party QR code payment gateways.
- Adherence to local tax regulations for invoicing.
- Availability of compatible hardware for system operation.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

The system will provide the following interfaces:

1. **Manual Entry Form (POS):**
   - **Purpose:** Facilitate customer order entry and processing.
   - **Features:** Dropdown menus for fabric type and color, text fields for pattern/use and quantity, auto-populated price fields, and buttons for validation and payment processing.
   - **Design:** A clean, intuitive layout with clear error indicators (e.g., red highlights for validation errors).
2. **Inventory Management Interface:**
   - **Purpose:** Manage and monitor stock levels.

- **Features:** Manual stock entry forms, stock level displays, low stock alerts, and tools for inventory adjustments.
- **Design:** A tabular format with filtering options and color-coded indicators for low inventory.

3. **Payment Processing Interface:**
   - **Purpose:** Handle both cash and QR code payments.
   - **Features:** QR code displays, cash amount and change calculators, and payment status indicators.
   - **Design:** A straightforward layout with clear confirmation steps.
4. **Store Manager Dashboard:**
   - **Purpose:** Provide managers with a comprehensive view of store operations.
   - **Features:** Aggregated sales reports, inventory status and alerts, CRM insights, and credit period tracking.
   - **Design:** An interactive dashboard featuring graphical charts and notification panels.
5. **Reporting Interface:**
   - **Purpose:** Generate detailed sales and inventory reports.
   - **Features:** Options to select date ranges, report types, previews, and export/print capabilities.
   - **Design:** Customizable report templates with clear previews.

3.1.2 Software Interfaces

The system will interface with:

- **Payment Gateway APIs:**
  Using JSON/REST for initiating payments, verifying payment statuses, and processing refunds over encrypted (TLS/SSL) connections.
- **Database Management System:**
  For storing inventory, sales, CRM, and payment data via standard connectivity (JDBC/ODBC).

- **Operating System APIs:**
  For file system access, network communication, and peripheral device control.

3.2 Functional Requirements

FR-1: Manual SKU Management

1. **FR-1.1:** Provide a form-based interface for creating and managing SKUs.
2. **FR-1.2:** Auto-generate unique SKU identifiers based on fabric properties.
3. **FR-1.3:** Validate SKU entries to prevent duplicates and invalid formats.
4. **FR-1.4:** Support SKU attributes including fabric type, color, pattern/use, and price per meter.
5. **FR-1.5:** Log all SKU creation and modification actions with user identification.

FR-2: Customer Order Processing

1. **FR-2.1:** Offer a manual entry form for customer orders.
2. **FR-2.2:** Validate order details against available inventory.
3. **FR-2.3:** Calculate order prices based on quantity and price per meter.
4. **FR-2.4:** Allow the application of percentage-based discounts.
5. **FR-2.5:** Calculate and apply applicable taxes.
6. **FR-2.6:** Display order summaries for customer confirmation.

FR-3: Payment Processing

1. **FR-3.1:** Support cash payments with automatic change calculation.
2. **FR-3.2:** Generate QR codes for digital payments.
3. **FR-3.3:** Verify payment completion before finalizing sales.
4. **FR-3.4:** Record payment details including method and amount.
5. **FR-3.5:** Process refunds via the original payment method.
6. **FR-3.6:** Generate daily payment reconciliation reports.
7. **FR-3.7:** Allow credit transactions by defining a **Credit Period** (recording the start date, due date, and payment status).

FR-4: Inventory Management

1. **FR-4.1:** Track inventory levels for all SKUs.
2. **FR-4.2:** Automatically deduct sold items from inventory.
3. **FR-4.3:** Alert users when inventory falls below predefined thresholds.
4. **FR-4.4:** Support manual inventory adjustments with associated reason codes.
5. **FR-4.5:** Provide an interface for recording new stock arrivals.
6. **FR-4.6:** Log all inventory adjustments with user identification and timestamps.

FR-5: Invoice Generation

1. **FR-5.1:** Generate detailed invoices for every sale.
2. **FR-5.2:** Include SKU details, quantities, prices, discounts, taxes, and payment information on invoices.
3. **FR-5.3:** Support both printed and electronic invoice formats.
4. **FR-5.4:** Maintain a searchable invoice database.
5. **FR-5.5:** Enable invoice retrieval by invoice number or customer name.

FR-6: Returns Processing

1. **FR-6.1:** Support processing of customer returns.
2. **FR-6.2:** Validate returns against original sales records.
3. **FR-6.3:** Process refunds through cash or QR code reversal.
4. **FR-6.4:** Update inventory for returned items marked as resellable.
5. **FR-6.5:** Log all return transactions with associated reason codes.

FR-7: Reporting

1. **FR-7.1:** Generate daily sales reports.
2. **FR-7.2:** Provide inventory status reports.
3. **FR-7.3:** Generate cash reconciliation reports.
4. **FR-7.4:** Support filtering of reports by date ranges.
5. **FR-7.5:** Allow export of reports in common formats (PDF, CSV).

FR-8: Customer Relationship Management (CRM)

1. **FR-8.1:** Store and manage customer profiles.

2. **FR-8.2:** Record customer order histories and interaction logs.
3. **FR-8.3:** Provide tools for customer segmentation and targeted communications.

3.3 Non-Functional Requirements

- **Performance:**
    - All form validations should complete within 2 seconds.
    - QR code generation must occur within 3 seconds.
    - Payment verification should complete within 5 seconds.
    - The system must support at least 10 concurrent users.
    - Invoice generation should take no more than 3 seconds.
    - The database must efficiently handle a minimum of 100,000 SKU records and maintain sales data for at least 5 years.
    - Report generation should be completed within 10 seconds.
- **Design and Usability:**
    - The system will be developed using cross-platform technologies, ensuring it runs smoothly on Windows and macOS.
    - It will use a relational database and operate on standard commercial hardware without requiring specialized equipment.
    - The user interface will be designed for touch screen compatibility and responsiveness across various screen sizes.
    - Offline capability is essential, with QR payments queued during connectivity outages.
- **Reliability and Availability:**
    - The system should achieve a mean time between failures (MTBF) of at least 720 hours.
    - It must maintain data integrity during unexpected shutdowns and provide automatic recovery features.
    - The system is expected to be available during all business hours, with offline operations for basic sales functions during internet outages.

    - Automated backups will minimize downtime, with scheduled maintenance not exceeding 2 hours per month and recovery from crashes within 5 minutes.

- **Security:**
    - User authentication and role-based access controls are mandatory.
    - All payment information must be encrypted and stored securely in compliance with PCI-DSS standards.
    - Audit logs will record all critical operations, with automatic logout of inactive users after 15 minutes and enforced strong password policies.

- **Maintainability:**
    - The system will be designed with a modular architecture, making it easy to update and expand.
    - Diagnostic tools will be included to simplify troubleshooting.
    - It will be built to accommodate future payment methods and configuration changes without source code modifications.
    - Comprehensive documentation and user guides will support maintenance and further development.

4. Appendices

4.1 Glossary

Term	Definition
Fabric Type	The material composition of the fabric (e.g., cotton, silk, polyester)
SKU	Stock Keeping Unit – A unique identifier for a specific product
QR Code	A two-dimensional barcode used for digital payments
Reorder Point	The inventory level at which new stock should be ordered

Term	Definition
UPI	Unified Payments Interface – A real-time payment system
PCI-DSS	Payment Card Industry Data Security Standard – Security standards for payments
CRM	Customer Relationship Management – A system for managing customer data

4.2 Analysis Models

Data Flow Diagram: Customer Purchase Process

Entity Relationship Diagram: Core System Entities

4.3 Supporting Information

Sample SKU Naming Convention

- **Format:** [Fabric Type Code]-[Color Code]-[Unique ID]
- **Example:** COT-RED-001 (Cotton, Red, ID 001)

Testing Strategy

1. Unit testing for individual functions
2. Integration testing for system components
3. User acceptance testing in actual store scenarios
4. Performance testing under expected load
5. Security testing including penetration tests

Implementation Timeline

1. **Phase 1:** Develop core inventory, sales functions, and CRM (2 months)
2. **Phase 2:** Integrate payment processing and credit period functionality (1 month)
3. **Phase 3:** Implement reporting and analytics (1 month)
4. **Phase 4:** Conduct comprehensive testing and refinement (1 month)