Software Requirements Specification

for

# Supermarket Management System (SMS)

Version 1.0 Approved

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# 1. Introduction

## 1.1 Purpose

This Software Requirements Specification (SRS) outlines the Supermarket Management System (SMS), a desktop-based system aimed at optimizing the daily operations of supermarkets, including inventory control, sales processing, reporting, and user management. The document serves as a foundation for development, testing, and validation of the application and is intended for software engineers, testers, and end users.

## 1.2 Document Conventions

Font: Times New Roman  
Font Size: 18 for Main Headings  
Font Size: 14 for Subheadings  
Font Size: 12 for the content  
Color: Purple text indicates where images should be inserted

## 1.3 Intended Audience and Reading Suggestions

- Developers: to understand system design and required functionalities.  
- Testers: to create test cases based on system behavior.  
- Managers: to assess feature completeness and business goals.  
- End users: to get insight into how the system works.  
Read from Section 2 onward to understand the application's structure and purpose.

## 1.4 Product Scope

SMS is a Windows desktop application for supermarket staff to manage operations efficiently. Features include inventory control, sales transactions through POS, dynamic reports in PDF, and secure user account management.

## 1.5 References

Internal developer documents and C# Windows Forms application documentation.

# 2. Overall Description

## 2.1 Product Perspective

SMS is a standalone desktop application using C# and Windows Forms with no external network dependency. It integrates DevExpress for UI enhancement and iTextSharp for PDF generation.

## 2.2 Product Functions

- Authentication system with SHA-256 encrypted passwords.  
- Inventory management including adding, editing, deleting, and searching products.  
- POS for scanning barcodes and generating receipts.  
- Sales reporting and inventory timeline analytics.  
- Admin functionality to monitor activity logs and manage users.

## 2.3 User Classes and Characteristics

- Admin: Manages all system features and users. Experienced with administrative tasks.  
- Cashier: Focused on POS and product lookup. Requires minimal training.  
- Inventory Manager: Manages stock and reporting. Intermediate knowledge required.

## 2.4 Operating Environment

- Windows 10 or newer operating system  
- .NET Framework 4.7.2 or higher  
- SQLite database  
- DevExpress and iTextSharp libraries

## 2.5 Design and Implementation Constraints

- Local-only data access (no cloud sync)  
- Data stored in flat .db SQLite files  
- UI limited to Windows Forms  
- Requires DevExpress license for advanced UI components

## 2.6 User Documentation

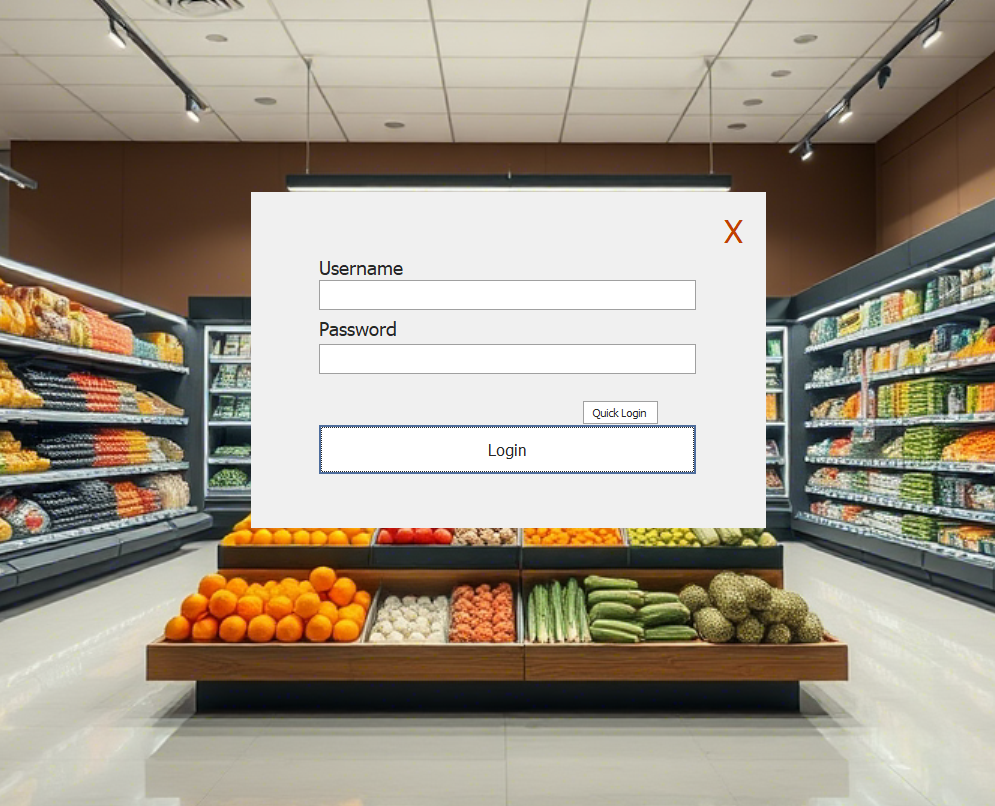
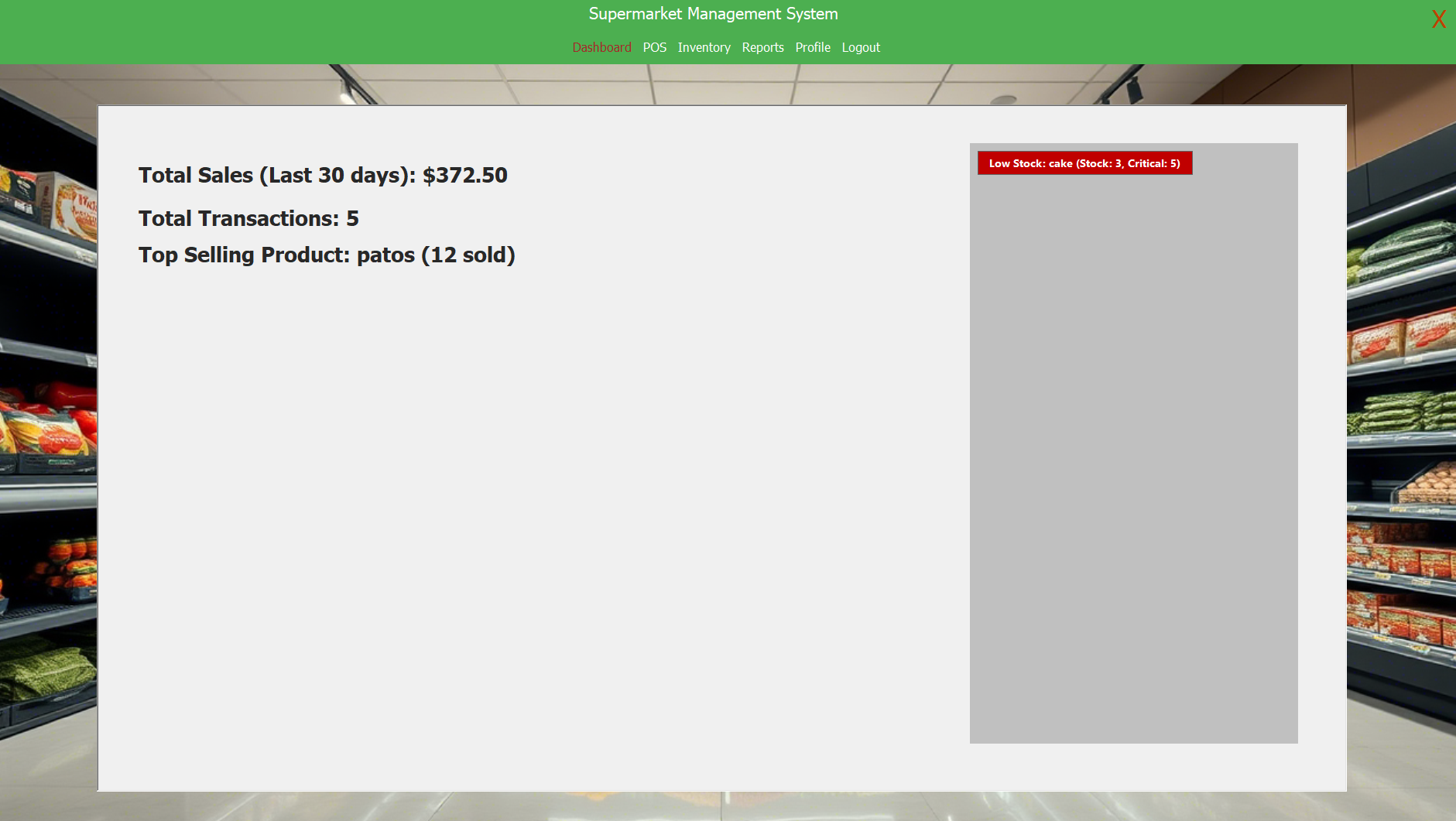
User manual (PDF), quick-start guide, and in-app tooltips.

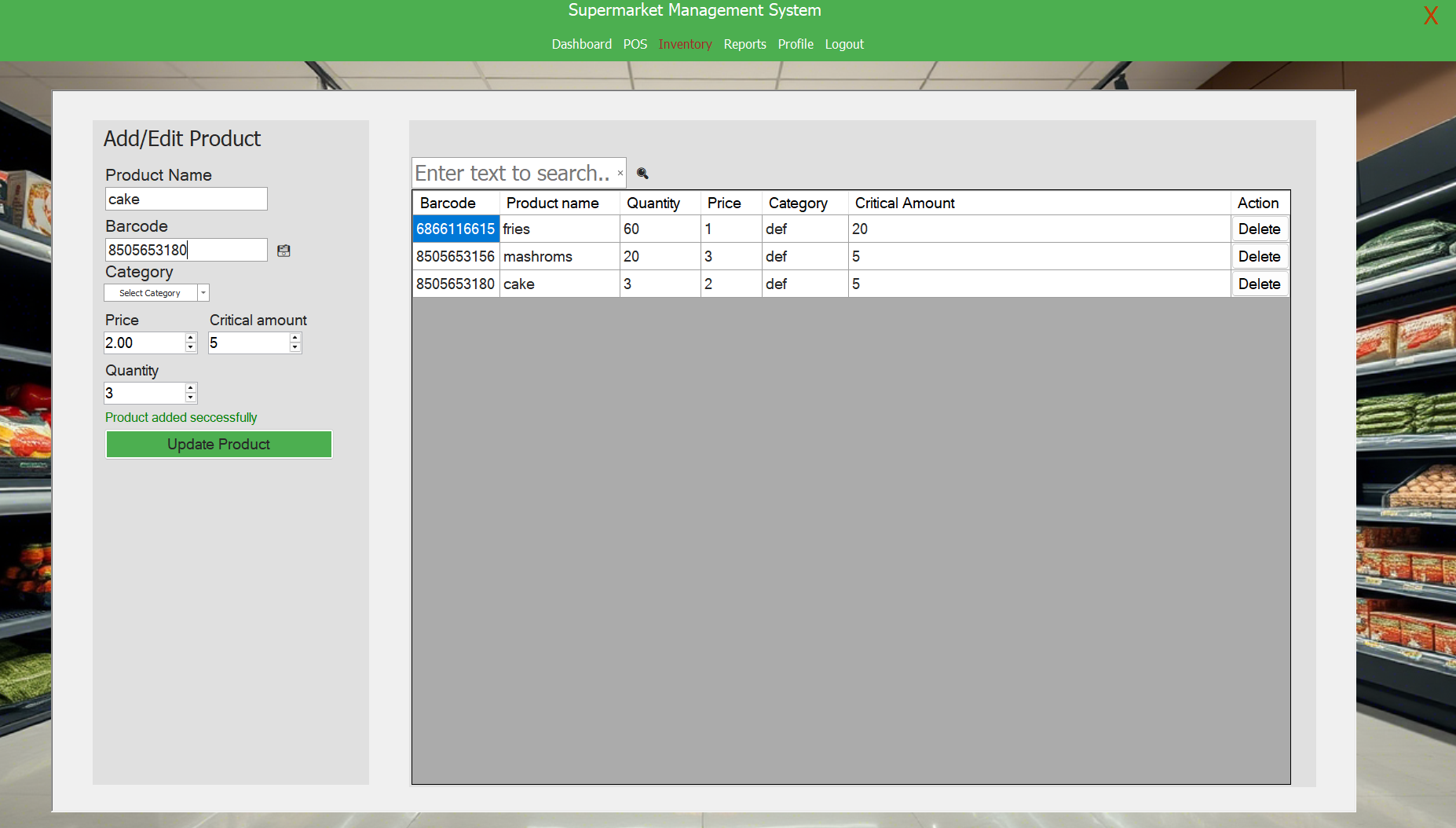
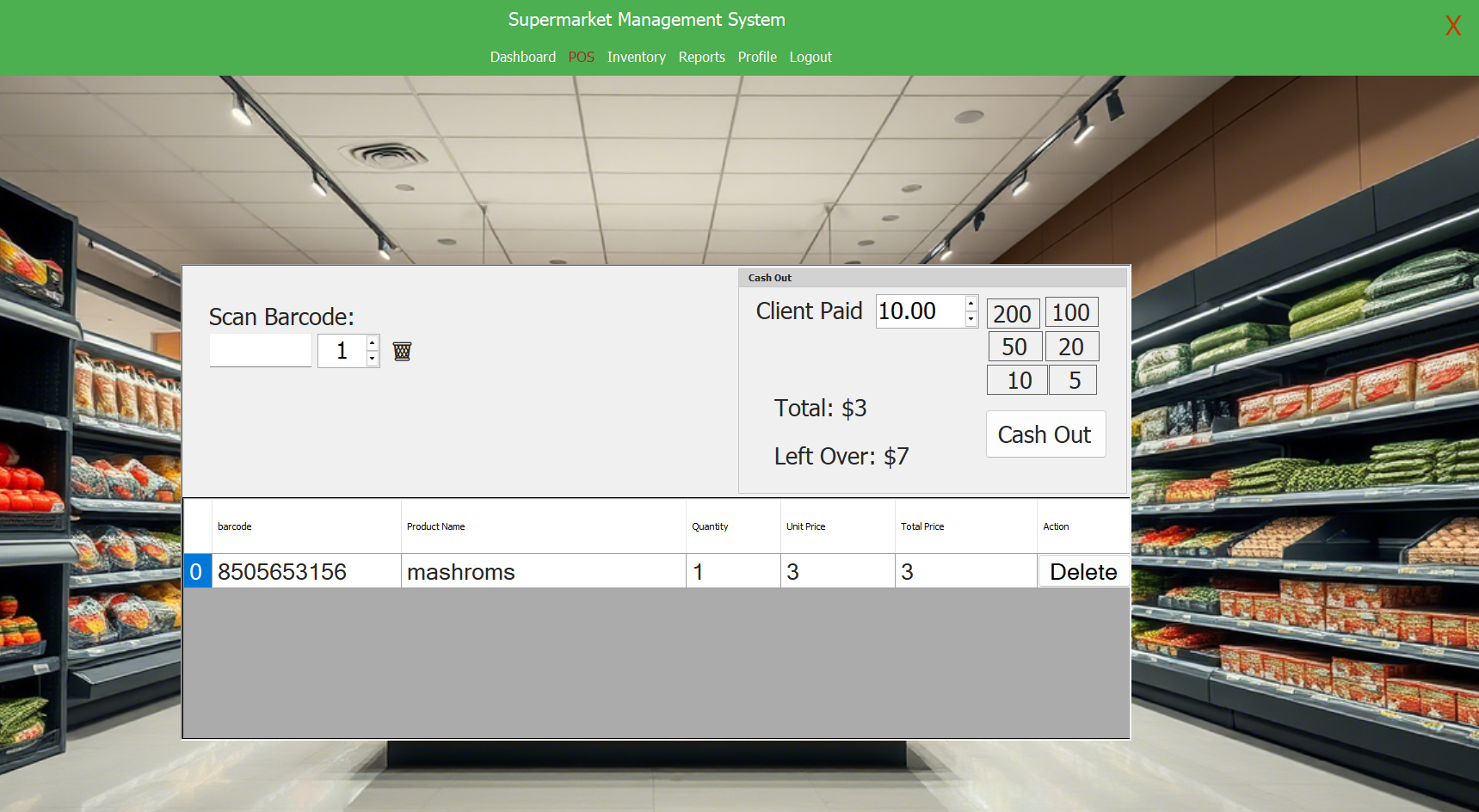
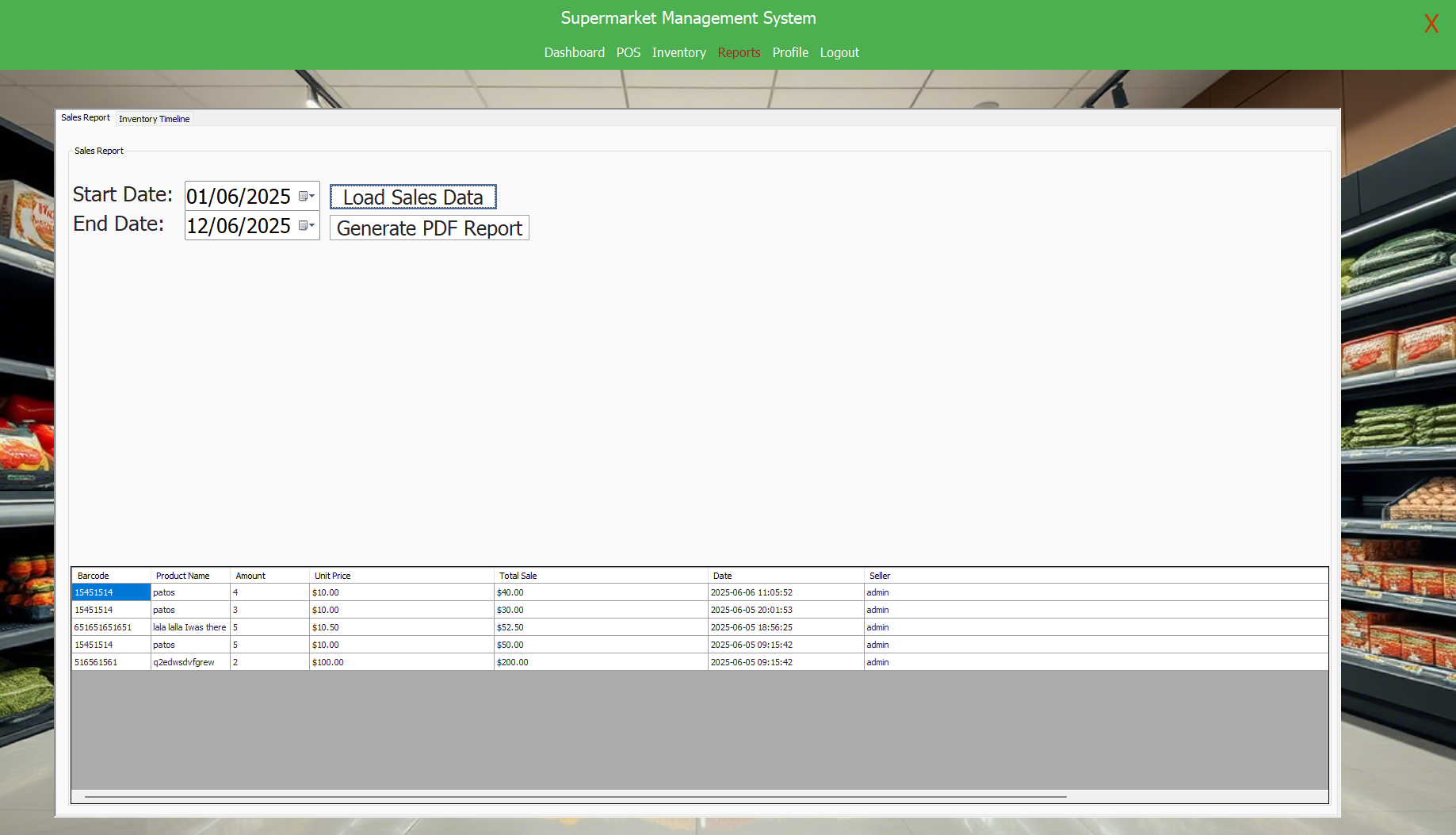
## 2.7 Assumptions and Dependencies

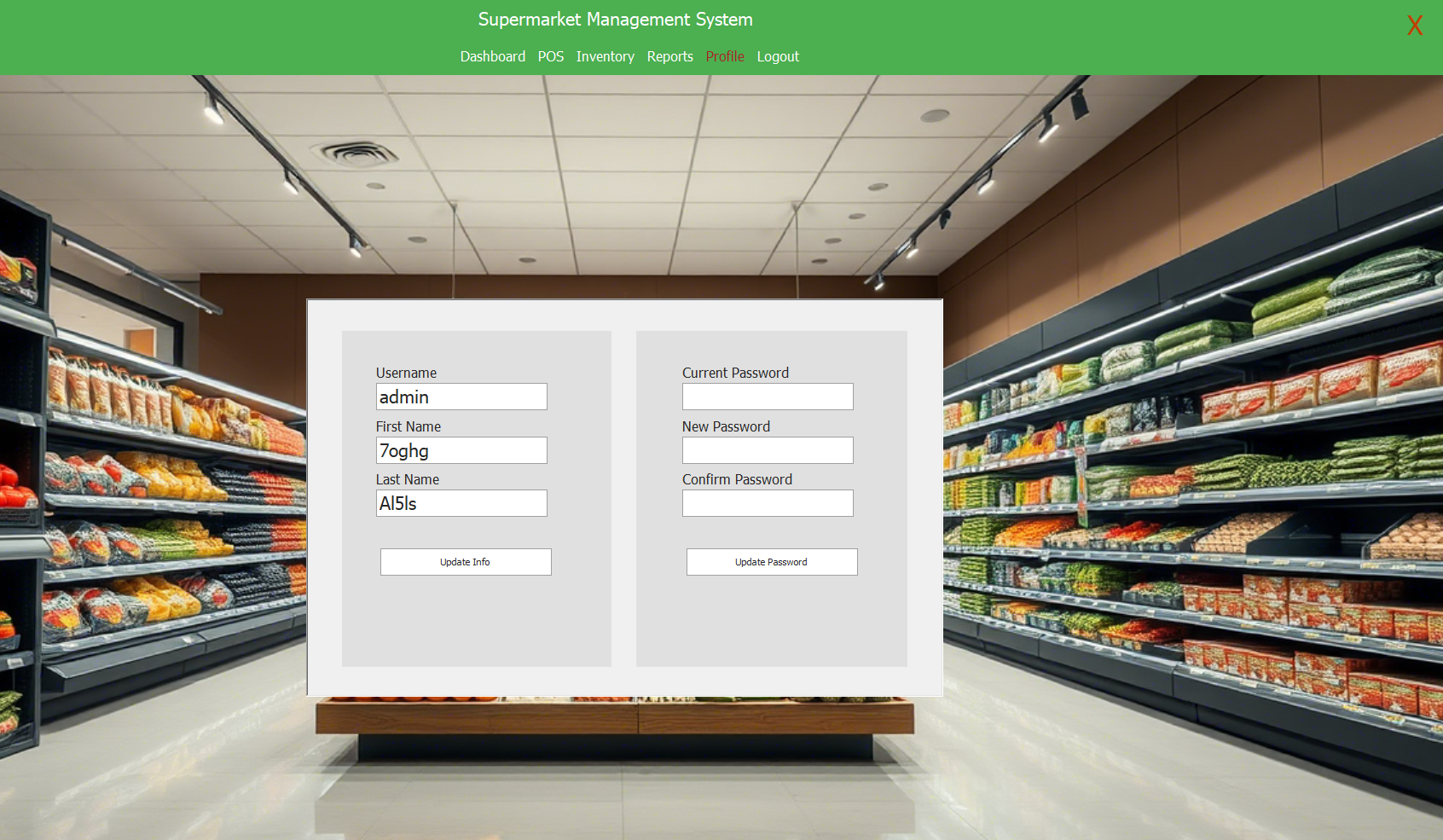
- Assumes operators can use Windows desktop environments  
- Barcode scanner (optional) must emulate keyboard input  
- Visual Studio environment for development and updates

# 3. External Interface Requirements

## 3.1 User Interfaces

- Login Page: Input for username and password  
  
- Dashboard: Navigation bar for POS, Inventory, Reports, Profile, Logout  


- Inventory Module: Table showing barcode, product name, price, quantity, and actions  
  
- POS Page: Barcode input, dynamic cart, checkout, and print receipt  
  
- Reports Module: Date filters, table of sales, export to PDF  


- Profile Page: Display and update user info  


## 3.2 Hardware Interfaces

Standard PC with mouse and keyboard. Barcode scanner optional. Printer required for receipts.

## 3.3 Software Interfaces

.NET Runtime, SQLite3, DevExpress UI library, iTextSharp PDF toolkit.

## 3.4 Communications Interfaces

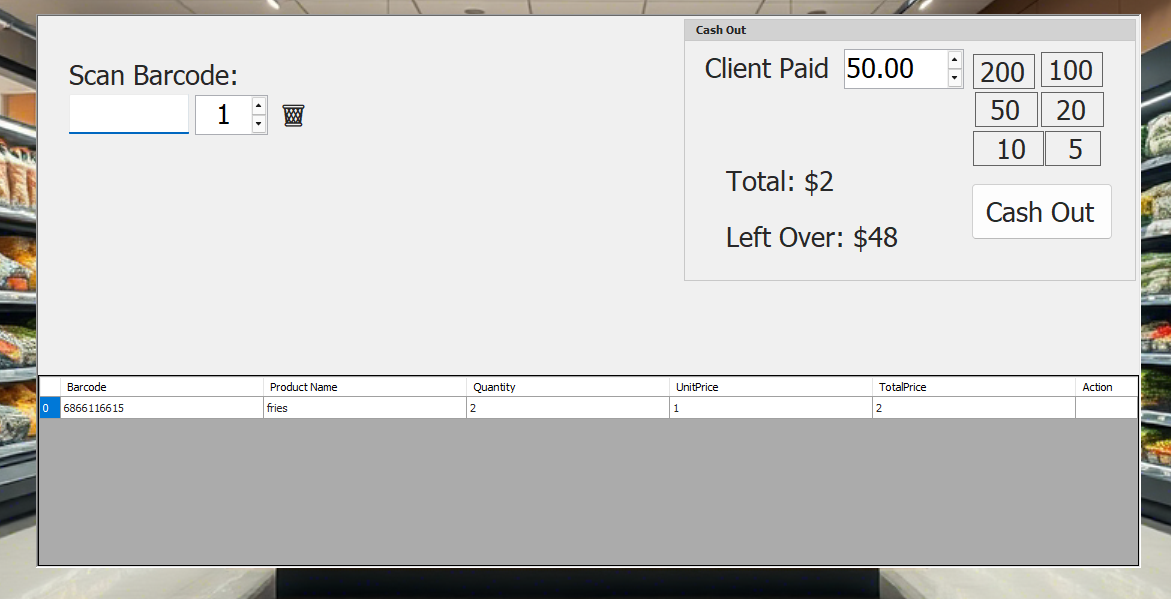
All functions are performed locally; no internet connection required.

# 4. System Features

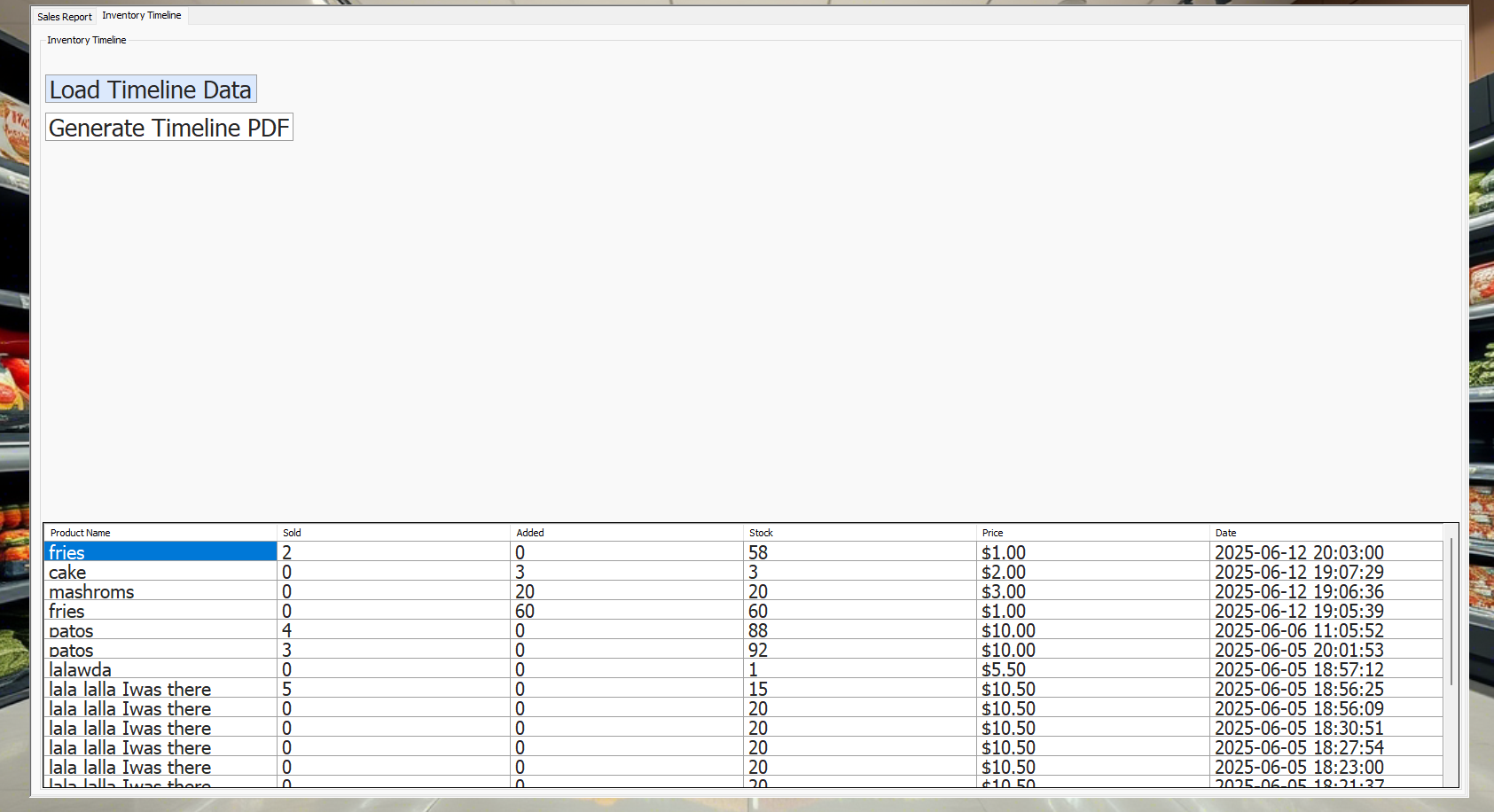
## 4.1 Inventory Management

Allows users to manage product stock with CRUD operations. Each product has fields: barcode, name, category, quantity, price, and critical level.

## 4.2 Point of Sale (POS)

Sales interface allows users to scan products, add to cart, view totals, apply discounts, and print receipts.  


## 4.3 Reporting

Reports include sales by date and inventory change over time. Reports are exportable as PDFs and viewable in-app.  


## 4.4 Profile Management

Users can update their names and passwords. Profile includes personal details and a summary of their actions.

# 5. Other Nonfunctional Requirements

## 5.1 Performance Requirements

Optimized to run on 2+ GHz processors with at least 2 GB RAM.

## 5.2 Usability

Simple layout with visual feedback. Icons and shortcuts included.

## 5.3 Security Requirements

Login protected by hashed passwords. Role-based access control enforced.

## 5.4 Software Quality Attributes

Modular structure, minimal crash reports, consistent interface elements.

## 5.5 Business Rules

Only Admins can delete users. Cashiers cannot edit products. Logs are immutable.

# 6. Appendix A: Glossary

- POS: Point of Sale, sales processing interface  
  
- SHA-256: Secure hash function used for password encryption  
  
- CRUD: Create, Read, Update, Delete  
  
- DevExpress: A library for advanced Windows Forms UI  
  
- iTextSharp: Library used to generate PDF reports  
  
- SKU: Stock Keeping Unit, unique identifier for inventory items  
  
- DB: Database