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# 1.0 Introduction

In today's fast-paced retail environment, managing grocery inventory efficiently is crucial for business success. Grocery stores face numerous challenges, from keeping track of stock levels and managing suppliers to ensuring smooth sales transactions. Handling these tasks manually or using outdated systems often leads to errors, inefficiencies, and unnecessary costs. To address these challenges, "K Mart Grocery Inventory Management System" has been designed as an all-in-one solution that streamlines key grocery management operations.

K Mart's system is built to simplify daily tasks such as inventory tracking, sales processing, employee management, and data reporting. By automating these processes, the system helps reduce human error, improves operational efficiency, and allows for real-time data access. This makes it easier for store managers, staff, and administrators to make quick, informed decisions, ultimately enhancing customer satisfaction and driving business growth.

## 1.1 Key Features of the Application:

* **Inventory Management:** Track and manage stock levels in real-time, ensuring products are always available when needed.
* **Sales Processing:** Simplify sales transactions with quick invoice generation and integrated payment options.
* **Supplier and Customer Management:** Maintain comprehensive records of suppliers and customers for streamlined operations.
* **Reporting & Analytics:** Generate detailed reports and visual analytics to support data-driven decision-making.
* **Automated Alerts:** Receive notifications for low stock levels, pending approvals, or critical system updates.
* **Data Backup & Recovery:** Ensure business continuity with regular data backups and easy recovery options.
* **Multi-User Access:** Supports multiple users simultaneously without compromising performance.
* **Mobile Compatibility:** Accessible on mobile devices, enabling managers and staff to work remotely.

## 1.2 Impact on the Business:

The "Supermarket Desktop Application" significantly enhances the efficiency of supermarket operations by centralizing all critical functions into one easy-to-use system. Managers and employees no longer need to juggle multiple disparate tools for managing inventory, billing, or customer interactions, reducing the chance of errors and improving workflow. Additionally, real-time access to inventory and sales data allows for faster decision-making, enabling the supermarket to react quickly to market trends, customer demands, or potential issues in stock levels.

By automating routine tasks, the system frees up employees to focus on higher-value activities such as improving customer service and engaging with customers in-store. Furthermore, the built-in analytics and reporting features help identify areas for cost-saving or process improvement, ultimately leading to better resource utilization and higher profitability.

Overall, the "Supermarket Desktop Application" is a scalable, secure, and versatile solution for modernizing supermarket operations, helping businesses stay competitive, deliver better customer experiences, and achieve long-term success in a highly dynamic retail environment.

# 2.0 User Story

The K Mart Grocery Inventory Management System is designed with three key user roles, each with specific responsibilities to ensure smooth business operations:

1. **Admin:** The Admin oversees the entire system, handling user management, security settings, and system configurations.
2. **Manager:** The Manager focuses on product and stock management, supplier coordination, customer relationships, and generating insightful reports.
3. **Staff:** The Staff is responsible for handling day-to-day sales transactions, customer interactions, and basic stock-related activities.

## 2.1 General Features

The system comes with several core features designed to support all users:

* + **User Authentication:** Ensures secure login for all users with unique credentials.
  + **Role-Based Access Control:** Limits system access based on user roles to maintain data security.
  + **Data Encryption:** Protects sensitive business data from unauthorized access.
  + **Real-Time Data Sync:** Provides up-to-date information on inventory, sales, and reports.
  + **User-Friendly Interface:** Designed for easy navigation, making it accessible to users with different technical backgrounds.

### 2.1.1 Admin Features

Admins have the highest level of access and are responsible for maintaining system security and user management:

* + **User Authentication & Role Management:** Create, manage, and assign roles to users with specific access rights.
  + **Password Reset:** Manage password recovery and reset requests securely.
  + **Backup and Restore:** Schedule regular data backups and restore data when needed.
  + **Currency and Tax Settings:** Configure currency preferences and tax rates according to business needs.
  + **Data Encryption & Audit Logs:** Secure data using encryption methods and monitor system activities through detailed audit logs.

### 2.1.2 Manager Features

Managers play a key role in overseeing inventory and business operations:

* + **Product Registration & Stock Tracking:** Add new products, manage inventory, and track stock movements.
  + **Low Stock Alerts:** Receive automated notifications when stock levels are low.
  + **Batch & Supplier Management:** Organize products in batches and manage supplier details efficiently.
  + **Customer Management:** Keep track of customer information and interactions.
  + **Stock Adjustments:** Make necessary stock adjustments to reflect accurate inventory levels.
  + **Reports & Visual Charts:** Generate comprehensive stock and sales reports with visual data charts for better decision-making.

### 2.1.3 Staff Features

Staff members focus on sales operations and customer service:

* + **Sales Entry & Invoice Generation:** Process sales quickly and generate invoices for customers.
  + **Barcode Scanning:** Speed up the checkout process using barcode scanners.
  + **Customer & Product Search:** Easily find customer or product information during transactions.
  + **Stock Adjustment Requests:** Submit requests for stock adjustments when discrepancies are identified.
  + **Data Import/Export:** Import or export data for inventory and sales management.

## 2. 2 Unique Additions:

* + **Multi-Language Support:** The system supports multiple languages, making it accessible to diverse users.
  + **Customizable Dashboard:** Users can personalize their dashboards for quick access to frequently used features.
  + **Advanced Search Filters:** Enhanced search options to quickly locate products, customers, or transactions.
  + **Integrated Payment Gateways:** Supports multiple payment methods, including credit cards, mobile payments, and online transactions.
  + **Employee Performance Tracking:** Monitor employee productivity and generate performance reports.
  + **Task and Activity Reminders:** Built-in reminders for critical tasks, such as restocking alerts or pending invoices.
  + **Audit Trail for Compliance:** Comprehensive tracking of all system activities to ensure compliance with business regulations.
  + **Cloud Integration:** Option to integrate with cloud services for secure data storage and remote access.

The K Mart Grocery Inventory Management System is a robust solution designed to enhance the efficiency of grocery store operations. By automating critical tasks such as inventory tracking, sales processing, and data reporting, the system reduces human error, saves time, and improves overall productivity.

## 2.3 Positive Impacts:

* + **Operational Efficiency:** Streamlines day-to-day tasks, reducing the workload for staff and managers.
  + **Improved Decision-Making:** Real-time data access allows managers to make quick, informed decisions.

#### **Enhanced Security:** Role-based access and data encryption ensure that sensitive information remains secure.

* + **Customer Satisfaction:** Faster checkouts and accurate inventory management lead to a better shopping experience.

## 2.4 Negative Impacts:

#### **Learning Curve:** Some users may face challenges adapting to the new system initially.

* + **Technical Dependence:** Dependence on technology means that system downtimes could disrupt operations.

## 2.4 Future Improvements:

* + **Mobile App Integration:** Develop a mobile app to allow managers and staff to access the system remotely.
  + **AI-Based Forecasting:** Integrate AI to predict stock requirements based on sales trends.
  + **Multi-Store Support:** Expand the system to support multiple store locations with centralized management.
  + **Voice Command Integration:** Implement voice command features to enhance hands-free operation.
  + **Advanced Data Analytics:** Introduce predictive analytics for sales trends, customer preferences, and inventory forecasting.

# 3.0 SQL Queries

-- Creating Tables

CREATE TABLE Customer ( Customer\_ID INT PRIMARY KEY, Name VARCHAR(100),

Email VARCHAR(100), Phone VARCHAR(15),

Address VARCHAR(255)

);

CREATE TABLE [Order] ( Order\_ID INT PRIMARY KEY,

Customer\_ID INT, Total\_Amount DECIMAL(10, 2), Order\_Date DATE,

FOREIGN KEY (Customer\_ID) REFERENCES Customer(Customer\_ID)

);

CREATE TABLE Product ( Product\_ID INT PRIMARY KEY,

Product\_Name VARCHAR(100), Order\_Quantity INT, Inventory\_Quantity INT,

Price DECIMAL(10, 2),

Barcode VARCHAR(50), Category VARCHAR(50)

);

CREATE TABLE Staff ( Staff\_ID INT PRIMARY KEY, Name VARCHAR(100), Email VARCHAR(100),

Password VARCHAR(255), Phone VARCHAR(15)

);

-- Select Queries

SELECT TOP 1000 [Customer\_ID], [Name], [Email], [Phone], [Address] FROM [kmart\_IMS].[dbo].[Customer];

SELECT TOP 1000 [Order\_ID], [Customer\_ID], [Total\_Amount], [Order\_Date] FROM [kmart\_IMS].[dbo].[Order];

SELECT TOP 1000 [Product\_ID], [Product\_Name], [Order\_Quantity], [Inventory\_Quantity], [Price], [Barcode], [Category]

FROM [kmart\_IMS].[dbo].[Product];

SELECT TOP 1000 [Staff\_ID], [Name], [Email], [Password], [Phone] FROM [kmart\_IMS].[dbo].[Staff];

-- Additional Queries

-- Join Orders with Customers

SELECT o.Order\_ID, c.Name, o.Total\_Amount, o.Order\_Date FROM [kmart\_IMS].[dbo].[Order] o

JOIN [kmart\_IMS].[dbo].[Customer] c ON o.Customer\_ID = c.Customer\_ID;

-- Get Products with Low Stock

SELECT Product\_Name, Inventory\_Quantity FROM [kmart\_IMS].[dbo].[Product] WHERE Inventory\_Quantity < 50;

-- Get Total Sales by Each Staff Member

SELECT s.Name, SUM(o.Total\_Amount) AS Total\_Sales FROM [kmart\_IMS].[dbo].[Order] o

JOIN [kmart\_IMS].[dbo].[Staff] s ON o.Customer\_ID = s.Staff\_ID GROUP BY s.Name;

-- Get Customers with More Than 5 Orders

SELECT c.Name, COUNT(o.Order\_ID) AS NumberOfOrders FROM [kmart\_IMS].[dbo].[Customer] c

JOIN [kmart\_IMS].[dbo].[Order] o ON c.Customer\_ID = o.Customer\_ID GROUP BY c.Name

HAVING COUNT(o.Order\_ID) > 5;

-- Get Sales for a Specific Date Range SELECT \*

FROM [kmart\_IMS].[dbo].[Order]

WHERE Order\_Date BETWEEN '2024-01-01' AND '2024-12-31';

# 4.0 ER DIAGRAM

