# Grocery Store Billing and Inventory Management System

## BIS 698 Information System Project


## Group 2

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**Background:**

**Name:** Pande grocers Sterling Heights
**Location:** 37196 Dequindre Rd, Sterling Heights, MI 48310
**Organization Type:** Retail Trade Business

Our client is a medium-sized grocery store that serves hundreds of customers daily. The store's operations are hindered by an outdated inventory management system and disconnected billing processes. As customer demand grows and supply chains become more complex, the store needs a system that automates both inventory management and billing while integrating modern features such as real-time stock updates, mobile payment options, and customer loyalty management. The goal of this project is to design and implement a robust, automated system that improves store efficiency and customer satisfaction.

**Business Problems:**

The grocery store faces multiple challenges that affect both its operations and profitability:

- Inventory Management Challenges
- Disconnected Billing System
- Customer Experience Issues
- Supplier Coordination Issues
- Inventory planning is complicated by the lack of information about supplier lead times.

**Business Advantages**

**Advanced data analytics:**

- Real-Time Dashboard for Managers: A customizable dashboard that shows crucial indicators such as daily income, customer traffic, and best-selling products
- Predictive Analytics for Promotions: By evaluating past data, the system can suggest the best periods for promotions and discounts to increase client engagement and sales.

**Improved Security and Data Privacy:** The system will use PCI DSS encryption and two-factor authentication (2FA) for data security and access protection.

**Sustainability Features:** The system tracks product expiration to reduce waste and offers eco-friendly incentives for sustainable customer practices.

**Project Description:**

The *Grocery Store Billing and Inventory Management System* will address these problems by integrating modern technology solutions that fully automate both inventory and billing processes. Key Features of the Proposed System:

**Real-Time Inventory Management**:

- Real-time stock tracking and smart alerts for low inventory levels.
- Automated purchase orders and expiration date management for efficient restocking.

**Modern Billing System**:

- Integrated **POS (Point of sale)** system with real-time inventory updates and multiple payment options.

- Digital receipts and loyalty program integration for personalized promotions and rewards.

**Customer Loyalty and Promotions**:
Customer management module with purchase history tracking and personalized promotions for enhanced retention.

**Data Analytics and Reporting**:
Real-time sales and inventory reports for actionable insights into revenue, product trends, and restocking needs.

**Project Feasibility:**

**Economic Feasibility:** The proposed system will reduce operational costs by optimizing stock management and reducing waste while improving customer retention through a loyalty program. The breakdown of costs is as follows:

- **Software Development**: $6,500
- **Database Hosting (Amazon RDS)**: $49 per month = $588 annually
- **Cloud Storage for Data**: $100 per year
- **Installation & Training**: $1,200
- **Ongoing Maintenance**: $75 per hour (estimated 20 hours annually = $1,500)

Total estimated cost: **$9,888** for the first year.

**Technical Feasibility**: The system will be developed using **Python** and **Node.js** for backend services, integrated with a **MySQL** database for secure and scalable data management. The POS and user interface will be developed using **React.js** for a responsive and user-friendly design. The system will integrate with payment gateways (such as Stripe) for handling modern payment methods and with SMS/email APIs for sending digital receipts and promotions.

**Schedule Feasibility**: The project is expected to take **12 weeks**, divided as follows:

- **Requirements Gathering & System Design:** 3 weeks
- **Development & Integration:** 6 weeks
- **Testing & Debugging:** 2 weeks
- **Training & Implementation:** 1 week

**Operational Feasibility**: The system will seamlessly integrate with the grocery store's existing operations. With the minimal training required, staff will quickly adopt the new system, and automated processes will ensure smoother day-to-day operations. The real-time integration of billing and inventory will provide faster checkout times, improve stock management, and enhance customer satisfaction through loyalty and personalized services.