CSE 428

Data Engineering

Proposal and Use Cases

Inventory Management System

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1. Introduction

Inventory control is a critical operational requirement for businesses that manage physical goods, particularly those with multiple branches or warehouses. This proposal outlines a project to develop an **Inventory Management System (IMS)**—a C# .NET MVC web application that facilitates the efficient tracking, selling, and movement of products across various branch locations. The system aims to reduce manual errors, improve stock visibility, and streamline inter-branch collaboration. With features tailored for the automotive repair industry (e.g., fields for windshield code and adhesive amount), it supports industry-specific workflows while remaining flexible for general inventory management needs.

2. Project Objectives

- Enable accurate real-time tracking of product inventory per branch location.
- Facilitate sales recording and customer data capture.
- Manage inter-branch stock transfers through an ordering mechanism.
- Provide branch-specific visibility and accountability using role-based employee assignments.
- Create a clean, responsive, and user-friendly interface for inventory operations.

3. Use Case

Target Organization:
A medium-sized auto glass repair chain with multiple branch locations.
Use Case Scenario:
A customer walks into **Branch A** requesting a specific windshield. The inventory shows it is out of stock at Branch A but available at **Branch B**. Using the system, the employee at Branch A can:

- Create a stock request to Branch B.
- Notify staff via the system.
- Record the sale once the item is delivered.
- Update inventory levels at both branches automatically.

Meanwhile, the system also saves the customer's information for future reference and reporting.

4. Core Features

4.1. Inventory Management

- Track the quantity of each product by branch.
- Update stock levels automatically after sales or transfers.

4.2. Sales Management

- Record sales transactions with client details.
- Special fields for **windshield code** and **adhesive amount**.

4.3. Inter-Branch Ordering

- Request products from other branches.
- Manage transfer orders and statuses.

4.4. Product Catalog

- Store details like product name, type, and color.

4.5. Employee Management

- Associate employees with branches.
- Use for role-based access and auditing.

4.6. Location Management

- Maintain detailed information on each branch.

4.7. Client Management

- Save and retrieve customer data for reporting or repeat transactions.