Shop Management System

Project Report

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CSCL2126 Software Construction and Development

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1. Introduction

The **Shop Management System** is a web-based application developed to simplify and automate daily operations within a retail environment. Traditional shop management methods rely on manual record-keeping in registers or spreadsheets, which can lead to errors, inefficiency, and difficulty in tracking transactions.
This system aims to provide a digital solution that allows administrators to efficiently manage **products, customers, and sales** within a centralized platform.

The platform enables CRUD (Create, Read, Update, Delete) operations for each module and generates invoices dynamically after every sale. It also includes a **search module** that allows users to quickly look up records across different tables. By integrating all modules through a unified dashboard, the system ensures smooth data handling, reduced redundancy, and improved business productivity.

The system provides an intuitive interface built using **HTML, CSS, and PHP**, ensuring accessibility and ease of use for shop owners, staff, and administrators.

2. Objective

The primary goal of this project is to create a responsive and efficient Shop Management System that automates product inventory, customer records, and sales management.
Specific objectives include:

- To enable CRUD operations for products, customers, and sales.
- To automatically update stock levels when a sale is made.
- To generate sales invoices with essential transaction details.
- To include a universal search feature that retrieves data from all modules.
- To maintain a centralized database ensuring data consistency and accuracy.
- To design a simple and user-friendly interface using HTML and CSS.
- To implement the backend using PHP and MySQL for seamless data interaction.

3. Problem Description

Manual shop management often depends on handwritten records or spreadsheets, making it difficult to maintain data accuracy as the business grows. Inventory tracking, customer management, and sale record maintenance become increasingly time-consuming and prone to human error.

This traditional approach results in the following problems:

- Difficulty in tracking product stock and sales history.

- Redundant and inconsistent customer records.

- Time-consuming search and report generation.
- Limited data security and no centralized management.
- Absence of automated invoice generation.

The proposed **Shop Management System** addresses these issues by automating core shop functions. It enables accurate record-keeping, instant updates, and easy access to key data — improving both efficiency and reliability.

4. Methodology

The Shop Management System was developed following the Waterfall Software Development Life Cycle (SDLC) model, which provides a structured and step-by-step approach to software development. The process began with a requirement analysis phase, where the needs of small shop owners were studied to identify common issues in manual management systems. Based on this analysis, the system's essential features—such as CRUD operations for products and customers, automated invoice generation, and stock management—were clearly defined.

In the design phase, the database structure was planned with three core tables: Products, Customers, and Sales. Relationships between these tables were established using foreign keys to maintain referential integrity. The system's user interface layout was designed to be simple, functional, and easy to navigate.

During the implementation phase, HTML and CSS were used to develop the frontend interface, while PHP was used to handle backend operations like form validation, data insertion, updating, and retrieval. The database was built using MySQL to ensure efficient storage and management of records. For testing, the system underwent multiple validation checks to ensure that all modules worked correctly—this included form validation, stock updating after each sale, and invoice generation. Finally, the project was deployed and tested locally using the XAMPP server package, which combines Apache and MySQL for local web application hosting. This structured methodology ensured that the system was developed in a logical, organized, and efficient manner.

5. Project Scope

The scope of the Shop Management System is limited to automating key operations within a small or medium-sized retail shop. It allows administrators to add, update, delete, and view records for products and customers. It also includes a sales module where each sale automatically generates an invoice and updates the stock quantity in real-time. Additionally, a search feature has been integrated to allow users to find information across all modules—products, customers, and sales—within seconds.

The system is designed for single-user or small-scale environments, making it ideal for small business owners. However, advanced features such as online payment gateways, user authentication with multiple roles, mobile application support, or real-time analytics dashboards are beyond the current project's scope. These can be implemented as part of future enhancements. By maintaining a clear and achievable project scope, the

system delivers a functional, user-friendly, and reliable management solution within the available resources and time.

6. Tools/Technology:

The Shop Management System was built using a combination of modern web development technologies to ensure efficiency, security, and performance. The frontend of the system was developed using HTML5 and CSS3, which were used to create structured layouts, responsive designs, and an intuitive user experience. PHP served as the backend scripting language, handling all business logic, data processing, and communication with the database.

MySQL was used as the database management system to store and retrieve all records related to products, customers, and sales. The Apache web server, provided through the XAMPP package, was used for local hosting and testing of the system. Visual Studio Code and Sublime Text were used as development environments, offering features such as syntax highlighting and code debugging to streamline the coding process.

The database schema consists of three main tables: Products, Customers, and Sales. The Products table stores information like product name, category, price, and stock quantity. The Customers table holds personal details such as name, email, phone, and address. The Sales table links both customers and products, recording details like quantity, total price, and sale date. These interconnected tables form the foundation of the system, ensuring smooth and accurate data management.

7. Conclusion & Future Work:

The **Shop Management System** successfully digitizes the essential operations of a small retail shop by integrating product, customer, and sales management within a single web-based interface. The system ensures accurate record-keeping, easy retrieval of information, and smooth handling of sales through automatic stock updates and invoice generation. The inclusion of a **search module** further enhances usability, allowing users to quickly locate any record across the database.

Future Enhancements:

- Implementation of **user authentication** (admin login system).
- Integration with **barcode scanners** and receipt printing.
- Addition of **email/SMS notifications** for order and sale confirmations.
- Development of **cloud-based hosting** for multi-branch usage.
- Integration of **payment gateways** like PayPal or Stripe.

By incorporating these features in later versions, the Shop Management System can evolve into a complete retail automation solution.