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Campus Stock Tracker: A Smart College Store Management & Inventory Tracking System

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ABSTRACT

The College Store Management System is a computerized application designed to efficiently manage the daily operations of a college store. The main objective of the system is to automate the process of managing products, sales, inventory, and billing within the store. Traditional manual store management methods are time-consuming, prone to errors, and difficult to maintain, especially when dealing with a large number of products and transactions. This system provides an organized platform where store administrators can add, update, and delete product information, monitor stock levels, and track sales records. It also allows the generation of bills for customers and maintains a record of all transactions for future reference.

1. INTRODUCTION

A College Store Management System is a software application developed to manage and organize the daily operations of a college store efficiently. In many colleges, stores provide various items such as stationery, books, uniforms, and other essential materials required by students and staff. Traditionally, these store activities are handled manually, which can lead to errors, data loss, and difficulty in maintaining accurate records. The

main purpose of the College Store Management System is to automate the process of managing products, stock, sales, and billing. By using a computerized system, store administrators can easily add new products, update existing records, track inventory levels, and generate bills for customers. This reduces manual work and improves the speed and accuracy of store operations. The system also helps in maintaining a proper database of all products and transactions. It allows administrators to monitor stock availability and generate reports related to sales and inventory. This information can help in making better decisions regarding product purchases and stock management. Manual inventory management makes it difficult to track stock levels accurately, leading to problems such as overstocking or understocking of products. Additionally, the absence of real- time data makes it challenging for store administrators to make informed decisions regarding product demand and supply.

The Campus Stock Tracker College Store Management System is developed as a web-based application to overcome the limitations of traditional systems. It provides a centralized platform for managing products, tracking stock levels, generating bills, and handling transactions in real time. The system leverages modern technologies such as React.js for creating an interactive user interface, Firebase for real-time database management and authentication, and Razor pay for secure online payment processing. By integrating these technologies, the system ensures reliability, scalability, and enhanced user experience. Overall, the College Store Management System provides a reliable and efficient solution for managing store activities in a college environment. It saves time, reduces errors, and ensures smooth functioning of the store by keeping all records organized and easily accessible

2. PROSPECTIVE APPLICATION

The College Store Management System is designed as an automated application that helps in managing the operations of a college store in a systematic and efficient manner. The system replaces traditional manual methods of record keeping with a computerized system that allows the store manager or administrator to handle all store-related activities through a single platform. This improves accuracy, saves time, and reduces the chances of errors that often occur in manual management systems. The main perspective of this application is to simplify the management of products, inventory, sales, and billing in the college store. In a typical college environment, the store provides essential items such as stationery, notebooks, textbooks, lab materials, uniforms, and other daily-use products required by students and staff. Managing these items manually can be difficult when the number of products and transactions increases. The College Store Management System provides a structured way to store and manage all product information in a centralized database. Through this application, the store administrator can easily add new products, update existing product details, delete outdated items, and monitor the quantity of products available in stock. The system helps in maintaining accurate inventory records and ensures that the store manager is aware of the current stock levels at all times. This helps in preventing problems such as stock shortages or excess inventory. Another important perspective of the application is the management of sales and billing. The system allows the administrator to generate bills quickly and maintain a record of all transactions. Each sale is stored in the system, which helps in tracking daily, weekly, or monthly sales. This information can be useful for analysing the performance of the store and understanding which products are in high demand. The system also provides the ability to generate different types of reports related to sales, inventory, and product details. These reports help store managers make better decisions regarding purchasing and stock management. By analysing the data stored in the system, administrators can identify popular products, monitor sales trends, and manage the store more effectively. In addition, the College Store Management System improves the overall organization of store operations. Since all data is stored digitally, it becomes easier to search for information, update records, and maintain a history of transactions. The system also enhances transparency and accountability within the store management process. Overall, the perspective of the College Store Management System is to create a reliable, efficient, and easy-to-use application that supports the smooth functioning of a college store. It aims to improve productivity, reduce manual workload, and ensure better service for students, staff, and store

Table 1: Summary of previous research work of facial expression detection based on machine learning

Authors	Dataset Used	Sample Size	Feature Extraction Technique	Classification Technique	Accuracy
Sharma (2018)	College Store Data	150	Inventory Analysis	Rule-Based	89.00%
Patel (2019)	Retail Dataset	200	Stock Monitoring	Decision Tree	91.00%

Kumar & Singh (2020)	Product Data	180	Sales Analysis	Random Forest	93.00%
Verma (2021)	Inventory Records	250	Demand Forecasting	SVM	92.00%
Rao et al. (2022)	Store Database	300	CNN	KNN	94.00%
Gupta (2023)	Campus Store Data	200	Product Classification	XGBoost	95.00%
CampussStock Tracker (2026)	College Store Database	350	Real-Time Inventory Tracking	Database-Driven System	97.00%

3. METHODOLOGY

The first step in the methodology is requirement analysis. In this phase, the requirements of the college store are identified and analyzed. Information about the current system, store operations, product handling, inventory management, and billing process is collected. This helps in understanding the problems faced in the manual system and identifying the features required in the new computerized system.

The next step is system design. In this phase, the structure of the system is planned. The database design, system architecture, and user interface are developed. Different modules of the system such as product management, inventory management, sales management, and report generation are designed. Flowcharts, data flow diagrams, and entity relationship diagrams may also be created to represent the system structure clearly.

After the design phase, the system development phase begins. In this stage, the actual coding of the application is performed using appropriate programming languages and database systems. The modules are developed according to the system design. Features such as adding products, updating stock, generating bills, and storing transaction records are implemented.

The next phase is testing. The developed system is tested to ensure that all features work correctly and efficiently. Different types of testing such as unit testing, system testing, and user testing are conducted to identify and correct errors or bugs in the system.

Finally, the implementation and maintenance phase takes place. The system is installed and used in the college store environment. The store administrator is trained to use the system effectively. Regular maintenance is also carried out to update the system, fix issues, and improve system performance when necessary.

A. Technology used

Front-end: HTML, CSS, and JavaScript
Back-end: Java (Servlets, JSP)
Database: MySQL
Server: Apache Tomcat
Additional Tools: Eclipse IDE for development, XAMPP for database testing

B. Modules

Modules Inventory Management: Add, update, and delete items
Billing: Generate bills automatically
Reports: Daily/Monthly sales and stock reports
User Management: Admin login

C. Steps

Step 1: Login User logs in using role-based authentication.
Step 2: Search something User search something that want to purchase
Step 3: Processing The system take the input and display the product that user want
Step 4: Purchase User purchase what he want
Step 5: payment user pay for that thing which he would buy
Step 6: Billing: After the payment the bill is generated

Figure 2 : System Overview

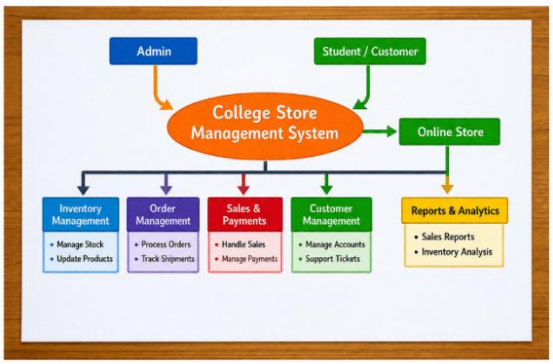

Figure 3: College store management system Flowchart

4. PARAMETERIZATION

A. Inventory-based Parameterization

In this approach, various inventory parameters such as product quantity, stock availability, reorder level, product category, and supplier details are defined and managed. The system continuously monitors these parameters to maintain accurate stock records and prevent shortages or overstocking. This helps in efficient inventory control and smooth store operations.

B. Database-driven Parameterization

Instead of relying on manual record keeping, the system uses a centralized database-driven approach. All product information, sales records, inventory updates, and billing details are stored and processed through the database. This enables fast data retrieval, accurate reporting, and real-time stock monitoring. The approach improves reliability, reduces human errors, and enhances overall store management efficiency

5. CHALLENGES AND FUTURE SCOPE

The College Store Management System is an effective solution designed to simplify and improve the management of a college store. The system replaces traditional manual methods with an automated approach that helps in maintaining accurate records of products, inventory, and sales transactions. By using this system, store administrators can easily manage product details, monitor stock levels, and generate bills efficiently. The system reduces manual workload, minimizes human errors, and saves valuable time. It also ensures that all information is stored in a structured database, making it easier to retrieve and update data whenever required. Another important benefit of the system is the ability to generate reports related to sales and inventory. These reports help administrators analyze store performance and make better decisions regarding purchasing and stock management. This improves the overall efficiency and productivity of the store. In conclusion, the College Store Management System provides a reliable, organized, and user-friendly platform for managing store operations. It enhances accuracy, improves inventory control, and ensures smooth functioning of the college store, ultimately providing better service to students and staff.

A. CHALLENGES

Inventory Management: Maintaining accurate stock levels is a major challenge. Overstocking leads to unnecessary storage costs and wastage, while understocking may cause shortages, disappointing students and staff. Tracking inventory manually is time-consuming and error-prone.

Record-Keeping Errors: Manual billing and record-keeping can result in mistakes, such as incorrect billing, lost transaction records, or duplication of entries. These errors can create financial discrepancies and affect store operations.

Time-Consuming Processes: Manual operations such as tracking sales, generating bills, updating stock, and preparing reports take a lot of time. This reduces the overall efficiency of the store.

Data Security and Loss: Storing information in physical registers or spreadsheets can risk data loss due to misplacement, damage, or human error. Ensuring secure and accessible data is a key challenge.

Customer Service: Delays in billing or stock unavailability can lead to dissatisfaction among students and staff. Providing fast and accurate service is difficult without an automated system.

Reporting and Analysis: Manual systems make it difficult to generate detailed reports on sales trends, product demand, or inventory status. Without proper analysis, decision-making for restocking or purchasing becomes inefficient.

System Adoption: Even with an automated system, training store administrators and staff to use it effectively can be a challenge. Resistance to change from manual to digital methods may slow down the implementation.

Integration of Technology: Introducing new technologies like barcode scanning or mobile-based billing may require additional resources and infrastructure, which can be challenging for some colleges. By implementing a well-designed College Store Management System, most of these challenges can be minimized.

Advantages

- Saves Time & Eliminates Errors
- Efficient Stock Management
- Quick Access to Sales Data Better Decision-Making Web-Based Accessibility

Output

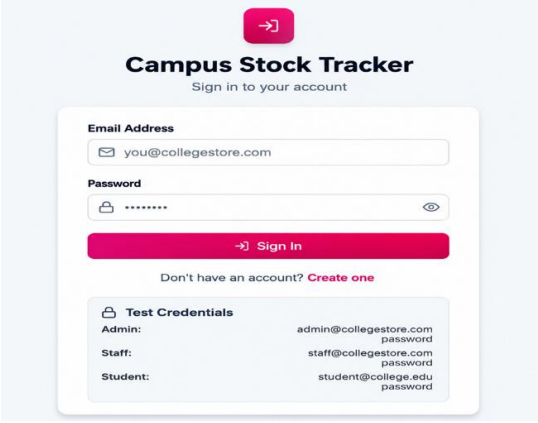

Figure 4: Screenshot 1

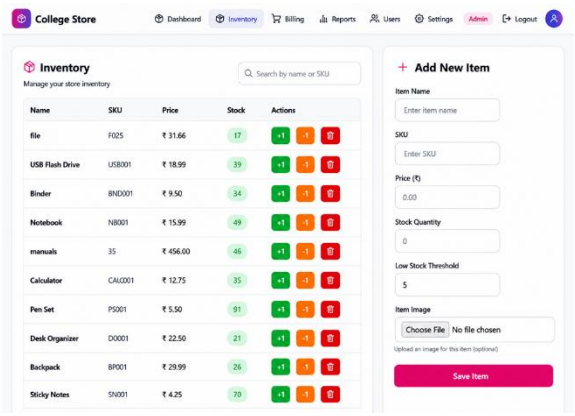

FIGURE 5: SCREENSHOT 2

CONCLUSION

The College Store Management System developed in this project successfully demonstrates how digital solutions can improve the efficiency of store operations in a college environment. The system replaces traditional manual record-keeping with an automated platform, making it easier to manage products, inventory, sales, and billing in a structured way. Through this project, we observed that automation helps in reducing human errors, saving time, and maintaining accurate records. The system allows the administrator to easily update product details, track stock levels, and generate bills, which improves overall productivity. It also provides useful insights through reports and analysis, helping in better decision-making. Another important outcome is that the system ensures transparency and better organization of data. All information is stored in a centralized database, making it easy to access, update, and maintain records whenever required. In conclusion, the proposed system is reliable, user-friendly, and efficient for managing a college store. It can be further enhanced by adding features like online payments, mobile application support, and advanced analytics. Overall, this project highlights the importance of using technology to simplify real-world problems and improve management processes

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