

Drug Inventory and Supply Chain Tracking System

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ABSTRACT-*This project presents a Drug Inventory and Supply Chain Tracking System, a web-based application designed to simplify and automate the management of medicines, suppliers, inventory, and purchase records. The system enhances inventory control by providing an efficient platform for maintaining accurate medicine stock, supplier information, purchase details, and inventory reports. It ensures better stock management, reduces manual effort, and improves the overall efficiency of pharmaceutical inventory operations through a centralized database. The proposed Drug Inventory and Supply Chain Tracking System addresses these challenges by automating inventory-related activities, improving data accuracy, minimizing paperwork, and ensuring efficient management of pharmaceutical resources. The system provides a scalable solution that can be further enhanced with features such as*

integration, cloud-based storage, and multi-user access in future versions.

KEYWORDS: *Drug Inventory Management, Flask Framework, MySQL Database, Medicine Management, Supplier Management, Purchase Management, Web Application, Inventory Automation.*

INTRODUCTION

Drug inventory management plays a vital role in pharmacies, hospitals, and healthcare organizations by ensuring the availability of medicines and maintaining accurate stock records. With advancements in web technologies and database management systems, digital inventory systems have become an efficient solution for managing medicines, suppliers, and purchase records. This project develops a Drug Inventory and Supply Chain Tracking System using Python Flask and MySQL to automate inventory management and improve supply chain operations. The proposed system provides secure access, efficient stock monitoring, supplier

management, and report generation, reducing manual effort and improving the accuracy and reliability of pharmaceutical inventory management.

LITERATURE SURVEY

Drug inventory management systems have become increasingly important in healthcare organizations due to the growing need for efficient medicine stock control and supply chain management. A drug inventory system is designed to maintain accurate records of medicines, suppliers, purchases, and stock availability while reducing manual effort and human errors. Modern inventory management systems integrate web technologies and database management systems to provide secure, reliable, and real-time access to inventory information. The core objective of these systems is to improve inventory accuracy, ensure the continuous availability of medicines, optimize supply chain operations, and support effective decision-making through centralized data management.

RELATED WORK

Several researchers have contributed to the development of drug inventory management systems with the aim of improving medicine availability, inventory control, and supply chain efficiency. Early inventory management systems mainly

focused on maintaining medicine records manually or through basic desktop applications, which provided limited functionality and required significant human effort. These systems often lacked real-time inventory tracking, centralized database management, and automated reporting, resulting in inaccurate stock records and inefficient supply chain operations.

EXISTING SYSTEM

The existing drug inventory management systems mainly depend on manual record-keeping, spreadsheets, or basic desktop applications to maintain medicine stock and supplier information. Pharmacists and inventory managers must manually update medicine details, stock quantities, and purchase records, which increases the chances of human errors and data inconsistency. Inventory tracking is often time-consuming, and generating reports requires additional manual effort. These systems provide limited support for centralized data management and real-time inventory monitoring. As a result, medicine shortages, excess stock, and duplicate records may occur, affecting the overall efficiency of pharmaceutical inventory management. Overall, the existing system lacks automation, real-time inventory tracking, and efficient supply chain management.

PROPOSED SYSTEM

The proposed system implements a **web-based Drug Inventory and Supply Chain Tracking System** to efficiently manage medicines, suppliers, inventory, and purchase records. It provides a secure administrator login to ensure that only authorized users can access the system. The application enables administrators to add, update, delete, and view medicine and supplier details while maintaining accurate inventory records. It also records medicine purchases and generates reports for effective inventory monitoring and decision-making. The system eliminates the need for manual record-keeping by storing all information in a centralized MySQL database. Developed using Python Flask, MySQL, HTML, CSS, Bootstrap, and JavaScript, the proposed system improves inventory accuracy, reduces human errors, and enhances the overall efficiency of pharmaceutical supply chain management.

SYSTEM ARCHITECTURE

The architecture of the Drug Inventory and Supply Chain Tracking System consists of an Administrator, Web Interface, Flask Application, and MySQL Database. The administrator accesses the system through a secure login page and performs operations such as managing medicines, suppliers,

inventory, purchases, and reports using the web interface.

The Flask application processes the user requests, validates the input data, and communicates with the MySQL database to store, update, retrieve, or delete records. The database securely maintains all information related to medicines, suppliers, inventory, purchase transactions, and administrator credentials. The processed information is then displayed through the web interface in the form of tables, dashboard statistics, and reports. This architecture ensures secure, efficient, and reliable management of drug inventory and supply chain operations.

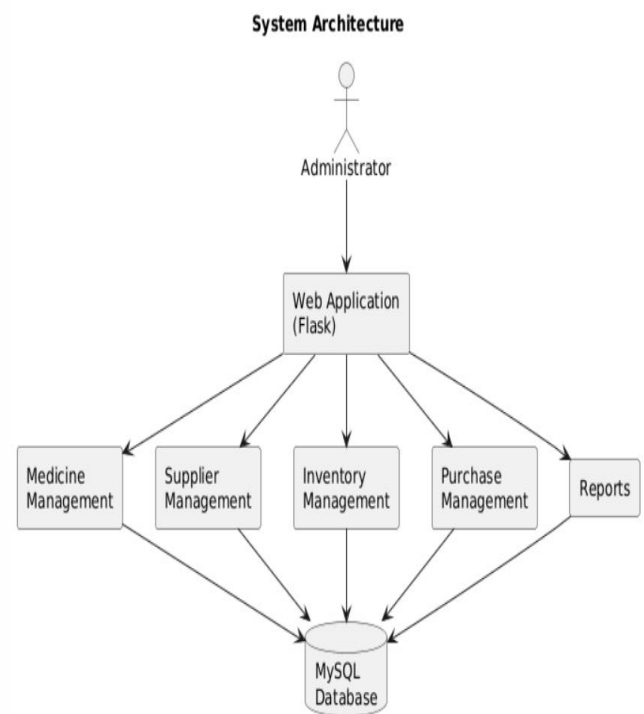


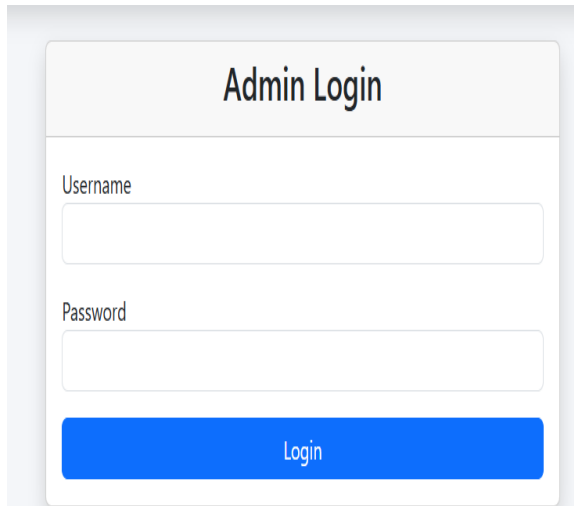
Fig :1 system architecture

METHODOLOGY DESCRIPTION

The methodology of the Drug Inventory and Supply Chain Tracking System is designed to provide efficient management, monitoring, and control of medicines, suppliers, inventory, and supply chain operations using modern web technologies and database management techniques. The system follows a structured approach that includes user authentication, data entry, database processing, inventory tracking, report generation, and inventory management.

RESULTS AND DISCRIPTION

Login Page



The image shows a web form titled "Admin Login". It contains two input fields: "Username" and "Password". Below these fields is a blue button labeled "Login".

FIG:2 LOGIN PAGE

The Login Page serves as the primary interface through which the administrator securely accesses the Drug Inventory and Supply Chain Tracking System. It provides authentication using a valid username and

password, ensuring that only authorized users can access the system. This enhances data security and protects sensitive inventory information from unauthorized access.

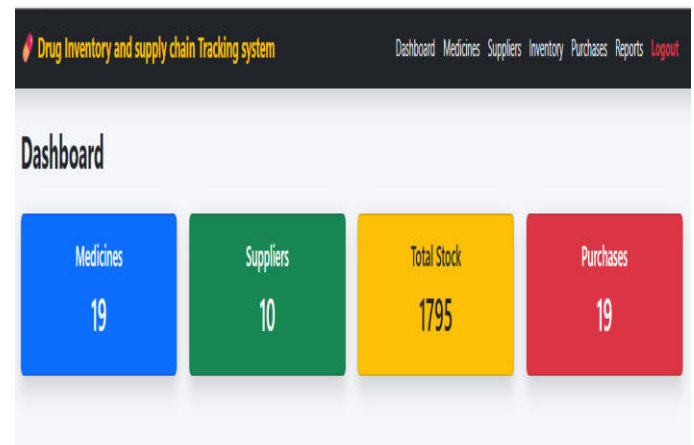
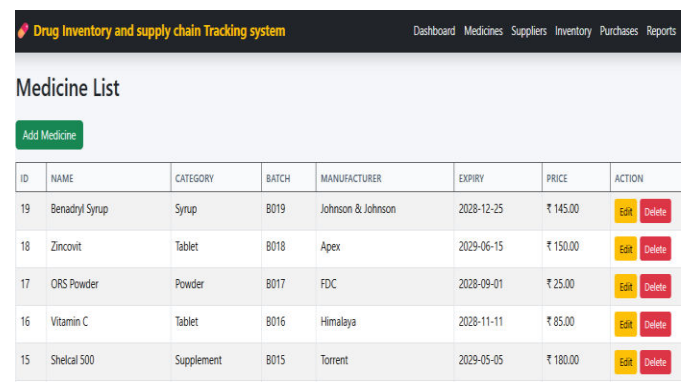


FIG:3-DASHBOARD

The Medicine Management module is one of the key components of the system. It allows the administrator to add, update, delete, and view medicine records efficiently. The module stores important information such as medicine name, category, manufacturer, price, and quantity, ensuring accurate inventory maintenance and reducing manual errors.

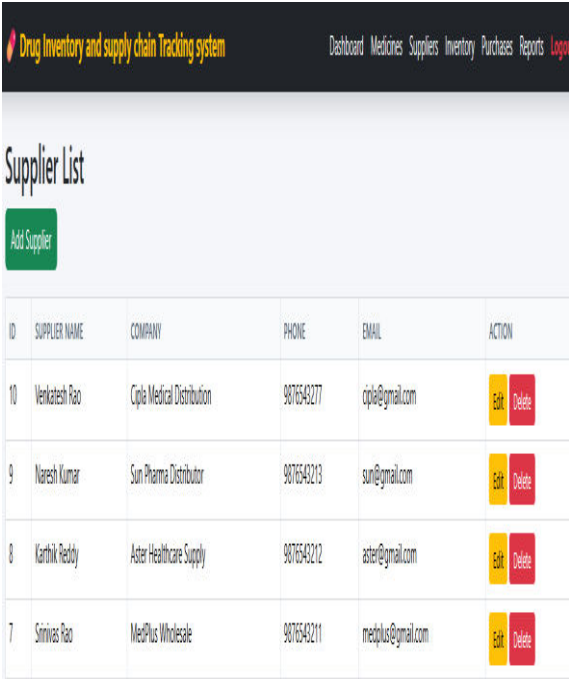


The image shows a table titled "Medicine List" with a table header and five data rows. Each row has columns for ID, NAME, CATEGORY, BATCH, MANUFACTURER, EXPIRY, PRICE, and ACTION. The ACTION column contains "Edit" and "Delete" buttons.

ID	NAME	CATEGORY	BATCH	MANUFACTURER	EXPIRY	PRICE	ACTION
19	Benadryl Syrup	Syrup	B019	Johnson & Johnson	2028-12-25	₹ 145.00	Edit Delete
18	Zincovit	Tablet	B018	Apex	2029-06-15	₹ 150.00	Edit Delete
17	ORS Powder	Powder	B017	FDC	2028-09-01	₹ 25.00	Edit Delete
16	Vitamin C	Tablet	B016	Himalaya	2028-11-11	₹ 85.00	Edit Delete
15	Shekal 500	Supplement	B015	Torrent	2029-05-05	₹ 180.00	Edit Delete

FIG:4 MEDICINES LIST

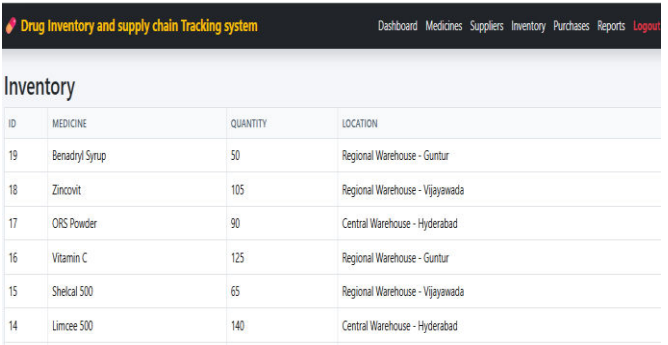
The Supplier Management module is responsible for maintaining supplier information required for efficient supply chain operations. It enables the administrator to register new suppliers, update supplier details, and manage supplier records. This module helps maintain an organized supplier database and supports smooth procurement of medicines.



ID	SUPPLIER NAME	COMPANY	PHONE	EMAIL	ACTION
10	Venkatesh Rao	Cipla Medical Distribution	9876543277	cipla@gmail.com	<button>Edit</button> <button>Delete</button>
9	Nareesh Kumar	Sun Pharma Distributor	9876543213	sun@gmail.com	<button>Edit</button> <button>Delete</button>
8	Karthik Reddy	Aster Healthcare Supply	9876543212	aster@gmail.com	<button>Edit</button> <button>Delete</button>
7	Srinivas Rao	MedPlus Wholesale	9876543211	medplus@gmail.com	<button>Edit</button> <button>Delete</button>

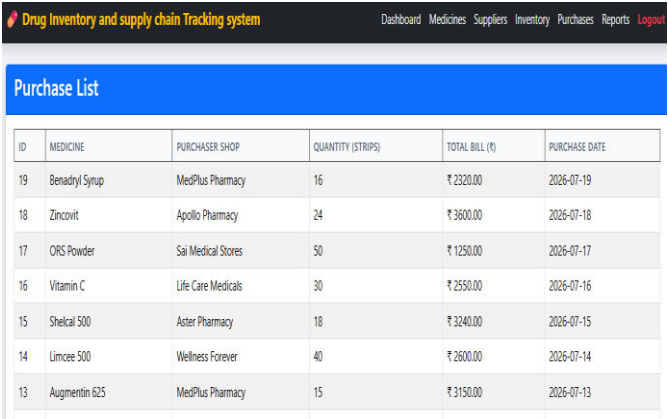
FIG:5 SUPPLIER LIST

The Inventory and Purchase Management module enables the administrator to monitor medicine stock levels and record purchase transactions. It maintains accurate inventory information by updating stock quantities whenever purchases are made. This module helps prevent stock shortages, improves inventory control, and supports efficient supply chain management.



ID	MEDICINE	QUANTITY	LOCATION
19	Benadryl Syrup	50	Regional Warehouse - Guntur
18	Zincovit	105	Regional Warehouse - Vijayawada
17	ORS Powder	90	Central Warehouse - Hyderabad
16	Vitamin C	125	Regional Warehouse - Guntur
15	Shelcal 500	65	Regional Warehouse - Vijayawada
14	Limcee 500	140	Central Warehouse - Hyderabad

FIR:5 Inventory



ID	MEDICINE	PURCHASER SHOP	QUANTITY (STRIPS)	TOTAL BILL (₹)	PURCHASE DATE
19	Benadryl Syrup	MedPlus Pharmacy	16	₹ 2320.00	2026-07-19
18	Zincovit	Apollo Pharmacy	24	₹ 3600.00	2026-07-18
17	ORS Powder	Sai Medical Stores	50	₹ 1250.00	2026-07-17
16	Vitamin C	Life Care Medicals	30	₹ 2550.00	2026-07-16
15	Shelcal 500	Aster Pharmacy	18	₹ 3240.00	2026-07-15
14	Limcee 500	Wellness Forever	40	₹ 2600.00	2026-07-14
13	Augmentin 625	MedPlus Pharmacy	15	₹ 3150.00	2026-07-13

FIG:6 PURCHASE LIST

CONCLUSION

The Drug Inventory and Supply Chain Tracking System enhances inventory management by providing efficient medicine tracking, supplier management, and stock monitoring. By automating inventory operations and maintaining accurate records, the system ensures a reliable, secure, and efficient pharmaceutical inventory management environment.

FUTURE SCOPE

The proposed Drug Inventory and Supply Chain Tracking System can be further

enhanced by integrating barcode and QR code scanning for faster medicine identification and inventory updates. Automatic expiry date alerts and low-stock notifications can be implemented to improve inventory monitoring and reduce medicine wastage. The system can be extended to support cloud storage and mobile applications for remote inventory management and real-time access. Integration with Hospital Management Systems (HMS) and Pharmacy Management Systems (PMS) can provide seamless data sharing and improve supply chain operations. Additionally, Artificial Intelligence and data analytics can be incorporated to predict medicine demand, optimize inventory planning, and support better decision-making

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