

Pharma Tracker: A web application for streamlining various Pharmaceutical operations.

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Abstract – The pharmaceutical industry plays a crucial role in the health and well-being of society. However, traditional manual methods of managing pharmaceutical operations is challenging and often result in errors in managing expiration dates of drugs, and the need for accuracy, efficiency and reducing delays. To address these challenges, the proposed system is developed, which can significantly improve the efficiency and accuracy of tracking the level of stocks and ordering and receiving of products which will facilitate B2B and B2C services. Pharma Tracker is a web application designed to streamline various pharmaceutical operations, with a focus on providing an ease to perform various pharmaceutical operations. This system has been developed to enhance the efficiency and accuracy of tracking stock levels, as well as facilitating the ordering and receiving of products, thereby enabling seamless B2B and B2C services in the pharmaceutical industry. The application provides robust features enabling pharmaceutical businesses to have real-time visibility into their stock levels. By implementing Pharma Tracker, organizations can monitor and track the availability of their products, reducing the risk of stockouts, loss due to expired drugs and optimizing their supply chain management processes. This paper explores the potential applications, benefits, and implications of Pharma Tracker that offers a comprehensive solution for pharmaceutical companies to optimize their inventory management processes, resulting in improved efficiency, accuracy, and customer service. By leveraging this web application, businesses can enhance their supply chain operations and ensure seamless availability of pharmaceutical products in the market.

Keywords — Pharma Tracker, web application, Analysis, Python, Django, Libraries, Virtual environment, supply chain optimization Visualization HTML, SQL-lite, CSS.

I. INTRODUCTION

The Bradina Aaronalis is a pharmaceutical drug distribution company situated in Punjab. Their distribution network is all over Punjab and nearby areas including but not limited to Haryana. The company also sells its drugs directly to hospitals in its own physical retail stores. Currently, their business is not

digitalized, to propel their sales to new heights the proposed system is developed to take the business online through web app that will streamline various pharmaceutical operations to cater their requirements which will connect them to both retailers and customers. Performing various pharmaceutical operations effectively in

order to minimize loss in business of pharmaceutical products is crucial for pharmaceutical businesses to ensure uninterrupted supply, availability of stocks, restocking of expired products and meet customer demands. However, traditional manual methods often result in errors, delays, and challenges in maintaining accurate stock records. Pharma Tracker addresses these issues. It empowers organizations to monitor stock levels in real-time, enabling better decision-making and reducing the risk of stockouts. With accurate stock tracking, pharmaceutical companies can optimize their supply chain management processes, minimize disruptions, and ultimately improve customer satisfaction. Pharma Tracker is a cutting-edge web application developed using the Django Python framework, aimed at streamlining various pharmaceutical operations. With its advanced features and functionality, this system significantly enhances the efficiency and accuracy of tracking stock levels and managing the ordering and receiving of pharmaceutical products. By seamlessly integrating with existing systems, Pharma Tracker provides a comprehensive solution that facilitates both B2B and B2C services in the pharmaceutical industry. Furthermore, Pharma Tracker simplifies the process of ordering and receiving pharmaceutical products. Through a user-friendly interface, businesses can easily place orders with suppliers, track the status of their orders, and receive timely notifications upon product delivery. This streamlines the procurement process, eliminates manual errors, and ensures a smooth flow of goods. By automating these operations, Pharma Tracker saves time and effort, allowing pharmaceutical companies to focus on core business activities while maintaining a reliable supply chain. The web application's architecture is built with scalability and flexibility in mind, accommodating the diverse

needs of different pharmaceutical organizations. Whether it's a large-scale B2B operation or a small B2C business, Pharma Tracker provides a centralized platform that consolidates various operations. This consolidation not only simplifies workflows but also enhances data integrity and accessibility. In conclusion, Pharma Tracker is a powerful web application that revolutionizes pharmaceutical operations. Its ability to improve the efficiency and accuracy of tracking stock levels, ordering, and receiving of products offers significant advantages to pharmaceutical businesses, both in B2B and B2C sectors. By leveraging this system, companies can streamline their operations, optimize supply chain management, and ultimately deliver high-quality pharmaceutical services to their customers. The paper discusses the development of Pharma Tracker, its core features, and the benefits it brings to the pharmaceutical industry. The research demonstrates the effectiveness of Pharma Tracker in improving pharmaceutical operations and presents insights into its practical implementation.

II. SURVEY OF RECENT METHODS

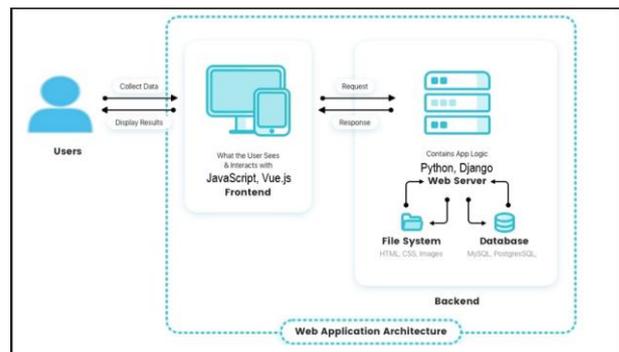
Current Challenges in Pharmaceutical Operations: The pharmaceutical industry faces numerous challenges in its operations, ranging from regulatory compliance to supply chain management. One of the prominent challenges is inefficiency in managing expired drugs, leading to stockouts or excess stock. This can result in revenue loss, increased costs, and customer dissatisfaction. Additionally, manual tracking of stock levels and the ordering process is prone to errors and delays, further exacerbating these challenges. Addressing these issues is crucial for pharmaceutical companies to improve operational efficiency and meet the demands of both B2B and B2C customers. Effective management of pharmaceutical products plays a vital role in ensuring the smooth functioning of the pharmaceutical industry. It involves tracking stock levels, managing expiration dates, and optimizing the supply chain. Traditional methods such as manual record-keeping or spreadsheet-based systems, are time-consuming and error-prone. Therefore, the industry has recognized the need for advanced technologies and solutions to streamline inventory management processes. Automation, real-time tracking, and predictive analytics are being increasingly employed to optimize inventory levels, reduce wastage, and improve overall operational efficiency.

Web Applications for Pharmaceutical Operations: Web applications have gained significant attraction in the pharmaceutical industry due to their ability to centralize and automate various operations. These applications offer features like order placement, order tracking, and customer management. By leveraging web applications, pharmaceutical companies can streamline their processes, improve data accuracy, and enhance communication with suppliers and customers. The accessibility and user-friendly interfaces of web applications allow seamless collaboration and data sharing, leading to better decision-making and overall productivity.

III. METHODOLOGY

A. System Design

The development of Pharma Tracker, a web application for streamlining pharmaceutical operations, follows a systematic approach. The development team have conduct a thorough analysis of the requirements and objectives of the application. This involves understanding the specific needs of pharmaceutical companies .The system development includes stages such as requirement gathering, system design, implementation, testing, and maintenance. Pharma Tracker is developed using the Django Python framework, which provides a robust foundation for building web applications. Django offers a range of features and libraries that expedite development, ensure security, and facilitate scalability. Additionally, front-end technologies such as HTML, CSS, and JavaScript are utilized to create a user-friendly interface. The integration of JavaScript graph libraries enables graphical representations of stock levels and facilitates visual analysis.



The architecture diagram of the proposed system is shown in fig 1.

Fig.1. System Architecture

B. Technical requirements:

Frontend - Javascript : *JavaScript* is the world's most popular programming language. *JavaScript* is the programming language of the Web.

Framework -Vue.js: *Vue.js* is a relatively new open-source *Javascript framework* that allows users to design web apps quickly. *Vue.js* is a progressive and promising *JavaScript framework* that is created on top of standard HTML, CSS, and JavaScript with insightful API.

Backend- SQLite: SQLite is one of the supported database backend in Django, a popular Python web framework. Django provides built-in support for SQLite, allowing developers to use it as the underlying database for their Django applications.

Framework - Django: *Django* is a high-level Python web framework that encourages rapid development and clean, pragmatic design.

System Deployment- Heroku: Heroku is a cloud platform as a service supporting several programming languages.

C. SDLC Model

Software Development life cycle (SDLC) is a spiritual model used in project management that defines the stages included in an information system development project, from an initial feasibility study to the maintenance of the completed application.

The stages followed for SDLC to be implemented are as follows:

Stage1: Planning and requirement analysis

Stage2: Defining Requirements

Stage3: Designing the Software

Stage4: Developing the project

Stage5: Testing

Stage6: Deployment

Stage7: Maintenance

D.. Core features and functionalities:

Pharma Tracker incorporates essential features and functionality to streamline pharmaceutical operations. These features include:

a) Tracking System: The application enables real-time tracking of stock levels, ensuring accurate information on product availability. It provides a user-friendly interface for managing, including features like adding products, updating stock quantities, adding suppliers adding products, generating bills.

b) Order Placement and Tracking: Pharma Tracker allows users to place orders directly with suppliers through the application. It facilitates seamless communication and tracking of orders, providing users with real-time updates on order and purchase status.

c) Graphical Representation of Stock Levels: The application utilizes JavaScript graph libraries to generate visual representations of stock levels. This feature enables users to easily analyze and interpret stock data, identifying trends and making informed decisions.

d) Recent Purchases and Sales: Pharma Tracker records and displays information about recent purchases and sales on the UI. This functionality allows users to track the movement of products, identify popular items, and assess sales performance.

e) Billing and Invoicing: The application generates bills and invoices based on purchase orders and sales transactions. This feature streamlines the billing process, ensuring accurate documentation and facilitating financial management.

f) Supplier Management: Pharma Tracker facilitates the management of supplier information. It enables the addition of new suppliers, maintains supplier contact details, and tracks supplier performance.

IV. RESULT ANDEVALUATION

A. Performance:

Pharma Tracker, developed using the Django Python framework, has demonstrated remarkable improvements in efficiently and accurately tracking stock levels. By automating the process of stock management, the application eliminates manual errors and reduces the time and effort required for tracking inventory. The real-time tracking feature ensures that users have up-to-date information on stock levels, enabling timely decision-making and preventing stockouts or overstocking. The graphical view of stock levels, implemented using JavaScript graphs, provides a visual representation that aids in quickly identifying trends and patterns, further enhancing efficiency in stock management.

B. Streamlining Pharmaceutical operations:

The integration of ordering and receiving processes within Pharma Tracker has significantly streamlined these operations for pharmaceutical companies. The application allows users to place orders directly through the system, eliminating the need for manual order placement. This centralized approach ensures accurate and timely order processing, reducing delays and potential errors. The system also provides real-time order tracking, enabling users to monitor the status of their orders and plan accordingly. By facilitating seamless communication and automated workflows, Pharma Tracker optimizes the ordering and receiving processes, leading to increased efficiency and improved overall operational performance.

C. User Experience:

The user experience provided by Pharma Tracker has a direct impact on customer satisfaction. The application offers a user-friendly interface that simplifies the process of managing stocks, placing orders, and tracking sales and purchases. The intuitive design and ease of navigation contribute to a positive user experience, ensuring that users can quickly and efficiently perform their tasks. By generating bills and invoices, Pharma Tracker enhances financial transparency and accuracy, reducing potential billing disputes and improving customer satisfaction. Overall, the application's focus on usability and customer-centric features enhances the user experience and contributes to higher levels of customer satisfaction.

The results of the developed system are displayed below.

Admin

Welcome, admin



New Incoming Stock New Outgoing Stock

Recent Sales

Bill No: #4
Purchased by **R S PHARMACEUTICALS** \$1000
March 17, 2023 [View](#)

Recent Purchases

Bill No: #2
Purchased by **GORI TRADERS** \$10000
April 12, 2023 [View](#)

Admin

Suppliers List [Add New Supplier](#)

Name	Contact	GSTIN No	Actions
GORI TRADERS	9989495510	24AAACC4175D1Z4	Edit Details Delete Supplier
R S PHARMACEUTICALS	9922887451	37AADCS0472N1Z1	Edit Details Delete Supplier

Admin

New Incoming Stock New Outgoing Stock

Recent Sales

Bill No: #4
Purchased by **R S PHARMACEUTICALS** \$1000
March 17, 2023 [View](#) [Bill](#)

Bill No: #3
Purchased by **R S PHARMACEUTICALS** \$185
March 17, 2023 [View](#) [Bill](#)

Bill No: #2
Purchased by **Bhatia company** \$50
March 17, 2023 [View](#) [Bill](#)

Recent Purchases

Bill No: #2
Purchased by **GORI TRADERS** \$10000
April 12, 2023 [View](#) [Bill](#)

Bill No: #1
Purchased by **GORI TRADERS** \$8080
March 17, 2023 [View](#) [Bill](#)

Admin

Inventory List [Add New Stock](#)

Search by stock name [Search](#)

Stock Name	Current Stock in Inventory	Actions
AFCOLAR SP TAB	220	Edit Details Delete Stock
AFCOLAR-P TAB	150	Edit Details Delete Stock
ESORBRAD INJ	170	Edit Details Delete Stock
ESORBRAD-O CAP	113	Edit Details Delete Stock
R S PHARMACEUTICALS	100	Edit Details Delete Stock

Admin

Purchases List [New Incoming Stock](#)

Bill No.	Supplier	Stocks Purchased	Quantity Purchased	Total Purchased Price	Purchased Date	Actions
2	GORI TRADERS Ph No: 9989495510	AFCOLAR SP TAB	100	\$10000	April 13, 2023	View Bill Delete Bill
1	GORI TRADERS Ph No: 9989495510	AFCOLAR SP TAB ESORBRAD INJ	20 100	\$8080	March 17, 2023	View Bill Delete Bill

Inventory Management System

Please login to continue...

Username*

Password*

[Log In](#)

Admin

New Stock

Name:

Quantity:

[Add to Inventory](#) [Reset](#) [Cancel](#)

Admin

Customer Details

Customer Name:

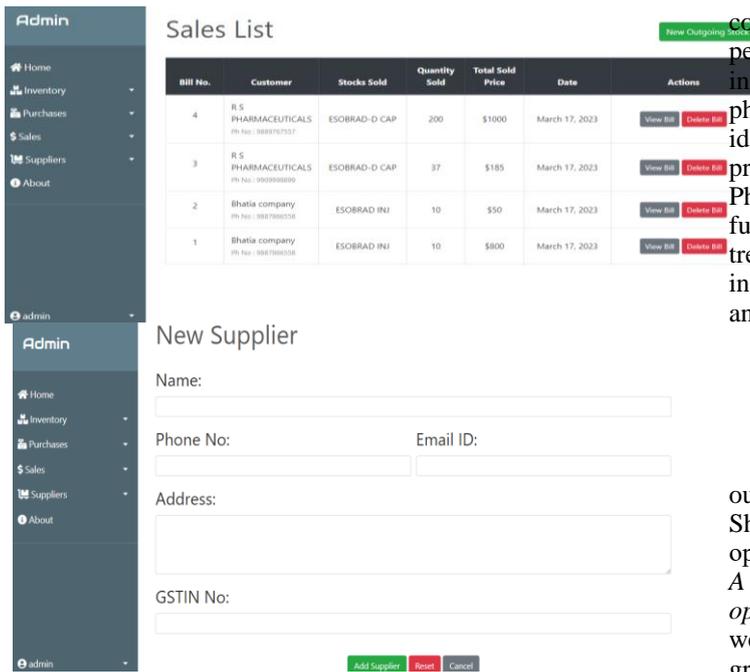
Phone No: Email:

Address:

GSTIN No:

Product Details

Stock: Price per Item: Quantity: Price:



The screenshot displays two main sections of the Pharma Tracker web application. The top section, titled 'Sales List', features a table with columns for Bill No., Customer, Stocks Sold, Quantity Sold, Total Sold Price, Date, and Actions. It lists four sales entries from 'R S PHARMACEUTICALS' and 'Bhatia company'. The bottom section, titled 'New Supplier', contains a form with input fields for Name, Phone No., Email ID, Address, and GSTIN No., along with 'Add Supplier', 'Reset', and 'Cancel' buttons.

comprehensive reports on stock levels, sales trends, supplier performance, and customer behaviour. By providing in-depth insights and data analysis, the application can help pharmaceutical companies make informed decisions and identify areas for improvement. Also by incorporating predictive analytics and demand forecasting algorithms, Pharma Tracker can help pharmaceutical companies anticipate future demand trends. By analysing historical data, market trends, and external factors, the application can provide insights into future product demand, enabling better planning and inventory optimization.

V. CONCLUSION

Pharma Tracker, a web application developed in Django Python, has emerged as a valuable tool for streamlining various pharmaceutical operations. The system addresses several challenges faced by pharmaceutical companies, including the efficient and accurate tracking of stock levels, the streamlining of ordering and receiving processes, and the facilitation of B2B and B2C services. The application has successfully streamlined the ordering and receiving processes for pharmaceutical companies. This centralized approach ensures accurate and timely order processing, reducing delays and potential errors. Real-time order tracking enables users to monitor the status of their orders, providing transparency and enhancing the overall efficiency of the supply chain. The application provides valuable insights into stock levels, enabling companies to optimize their inventory and reduce holding costs. The user experience provided by Pharma Tracker is intuitive and user-friendly, contributing to higher levels of customer satisfaction. The application's ability to generate bills and invoices accurately enhances financial transparency and reduces potential billing disputes. Overall, Pharma Tracker's focus on usability and customer-centric features ensures a positive user experience and contributes to improved customer satisfaction.

VI. FUTURE SCOPE

Pharma Tracker can be expanded to include advanced reporting and analytics features. This can include generating

ACKNOWLEDGMENT

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