International Academic Institute for Science and Technology

International Academic Journal of Innovative Research
Vol.10, No.2, 2023, pp.36-55.

ISSN 2454-390X

International Academic Journal of Innovative Research

www.iaiest.com

Pharmacy Management System

Dr. N. Baggyalakshmi [a*], M. Anubarathi [b], Dr. R. Revathi [c]

[a*] *Assistant Professor, Department of Computer Science, PSGR Krishnammal College for Women, India.*
E-mail:baggyanethra@gmail.com
[b] *Student, BSc. Computer Science, PSGR Krishnammal College for Women, India.*
E-mail: anubarathimanikandan@gmail.com
[c] *Assistant Professor, Department of Computer Science, Karpagam Academy of Higher Education, India.*
E-mail:ravathilakshay@gmail.com

Abstract

Chemists can streamline their pharmacy operations with the help of the Pharmacy Management System. When a user inputs the name of a medicine, the Pharmacy Management System provides detailed information about that medication, streamlining procedures. Details on a medicine, including its cost and when it will expire, are provided by a computer. In big pharmacies, it can be difficult to manually manage the data of all the medications. But with this pharmacy management system in place, we can keep track of all the medications. Whenever new medications are added to the system, the information is updated accordingly. The system also includes an expiration date and a search option. When you type the name of a medicine, the system gives you all the information you need about it. In order to foster productive working relationships and accomplish set goals, pharmacy management is vital in keeping an eye on and guiding the pharmacy personnel. The administration of the pharmacy should clarify each of these duties because they are critical to its operation. Improved precision, security, and productivity in the pharmaceutical industry are the primary goals of the pharmacy management system. The chemist's capacity to oversee stock, keep expenses in check, and guarantee patient safety is all improved by the computer-based method. When it comes to accessing and providing services to consumers, the pharmacy management system was built to ensure the confidentiality of data and the dependability of pharmacy records. With the help of the Marg ERP 9 Plus environment, the system is built using C# and ASP.NET programming languages, and the SQL database is MYSQL.

Keywords: Security, Productivity, Pharmaceutical Industry.

DOI: 10.71086/IAJIR/V10I2/IAJIR1008
Received: 27 March 2023/Revised: 12 April 2023/Accepted: 22 May 2023/Published: 30 June 2023

Introduction

When you input the name of a medicine into a pharmacy management system, it will provide detailed information about that medicine, making the work much easier. Data pertaining to the drug, including its cost, is supplied by a computer. In big pharmacies, it can be difficult to manually manage the data of all the medications. But we can keep track of all the medications with our pharmacy management system. The Pharmacy Management System has many benefits; for example, a powerful search function makes it easy to find medicine. Customers and chemists alike gain a lot from the ability to add medication, identify its type and due date, and edit or delete entries as needed [2].

Data entering errors are reduced by reducing the programme. Furthermore, it provides a warning when incorrect data is entered [3]. Users can utilise this system without any prior expertise. So, it's clear that it's convenient for users. Management that is free of mistakes, secure, reliable, and efficient may be possible with the help of the system outlined earlier [4]. It can handle record keeping so users can focus on other activities, which helps organisations make better use of their resources.

What follows is a list of what the system will accomplish.

- Store medicine data's
- Search Medicine data effectively
- Update, delete, and edit medicine information
- Generate report on medicine
- bill for the medicine prepare
- Changing login password

Users can access a variety of services through the pharmacy management system, which is a computer-based technology. Chemists oversee the operation, which helps to save both time and resources by implementing functions efficiently. By taking the place of manual processes, the system aims to reduce errors, make medical records more accessible, and guarantee the safety of all data entry and access.

Product

A consumer can place an order for a pharmaceutical after registering themselves with this programme, which is a comprehensive collection of pharmaceuticals. The patient also has the option to contact a doctor via email for personalised drug advice. The primary consumers of this product are those who live in rural areas where there are no pharmacies in the vicinity [5].

Scope

An online pharmacy system that automates and streamlines essential operations is the planned software solution. Keeping track of pharmaceuticals, inventory levels, and related data is an integral part of the following processes.

Modify the attributes of medicines.

- Adding a new doctor.
- Deleting a medicine.
- Viewing Registered patient's detail.
- Approving orders.

Literature Review

Senna et al [6] In order to better understand how supply chain risk management (SCRM) is implemented in healthcare supply chains and identify areas for improvement, this research presents a systematic literature review (SLR).Three research issues were addressed in this SLR using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method: (1) In terms of healthcare supply chain risk management (HCSCRM), what are the primary gaps? (2) How does one define HCSCRM? and (3) What methods and strategies are employed for risk management in healthcare supply chains? The authors provide a thorough overview of the corpus of research on HCSCRM, examining research areas such as clinical engineering and the relationship between HROs and HCSCRM; The five pillars of HCSCRM were identified by this research; (2) the writers established a formal definition for HCSCRM that took into account all of the literature blocks examined; and (3) after doing in-depth article research, the authors produced a list of hazards that are present in healthcare supply chains.

Manzini et al [7] Pharmacists employed by the Brazilian public health system have the option to enroll in a 360-hour specialized blended in-service course called Pharmaceutical Service and Access to Medicine Management. Data on

the course results were gathered via focus groups, records of the researchers' observations, and one-on-one interviews with pharmacists employed in the Brazilian public health system. Models of learning and training assessment theory served as the foundation for the analysis. The results demonstrated programmatic outcomes in the organization and management of health services, behavioral changes, and proximal outcomes on students' knowledge, skills, and attitudes. These findings encouraged the identification and integration of the "pharmaceutical services division," a specialized division within state and local health departments.

Herranz-Alonso et al [8] intended to explain the primary organizational modifications made to Hospital GU Gregorio Marañón's Department of Hospital Pharmacy and how it interacts with other hospital pharmacies in the Madrid community. A description of the tactics that should be used to restructure a hospital pharmacy department and guarantee the safe and efficient use of pharmaceuticals is given. Methods include the establishment of essential hospital task groups (COVID-19 crisis task group, protocolization task group, research task group) and the modification of the Department of Hospital Pharmacy's internal structure, which includes aspects of leadership and management; an internal and external communication plan; personnel management; and process reorganization and adaptation. These tactics revolve around people—patients and professionals.

Pharmacy management systems are now essential to delivering effective and secure medical treatment in pharmacies, which are a vital part of the healthcare industry. Even with system improvements, there may still be a number of problems with data sharing, interoperability, and effective utilisation. Many factors, including technology, the end user, regulations, and organizational limitations, might be blamed for the challenges encountered. There is discussion of the different facets of pharmacy management systems. The pharmacy management system is still an essential part of pharmacy services, despite certain shortcomings in its utilization.

Mariappan et al [9] Using an innovative artificial intelligence (AI) and machine learning (ML) approach, this study attempts to address the urgent challenge of predicting the shipment timeframes of treatments, diagnostics, and vaccines during the ongoing COVID-19 epidemic. The current investigation made use of organic real-world real-pharmacy pharmaceutical supply data from over 3 million shipments that were gathered during the COVID-19 epidemic. Using striped datasets of (source, destination, shipper) triplets, the researchers constructed a variety of machine learning (ML) multiclass classification models, including random forest (RF), extra trees (XRT), decision tree (DT), multilayer perceptron (MLP), XGBoost (XGB), Cat Boost (CB), linear stochastic gradient descent (SGD), and the linear Naïve Bayes (NB). The research constructed layered meta-models by stacking the underlying models.

Proposed Methodology

Presently, medical procedures rely on manual processes, with each task being documented on paper. The specificities of medicine procurement, audits, and sales reports are now recorded on paper. However, this method poses a security risk since anybody may access the system and modify these reports. Therefore, it is not a secure approach to save information on paper. The chemist encounters difficulty in locating products on the shelves due to the challenge of remembering the specific location of each remedy. There is currently no Pharmacy Management System that has the capability to notify the chemist when medications are running low.

Functional Requirements

Storage of vital medicine information, generation of medicine bills, facilitation of easy medicine search, and management of changes, deletions, and data preservation for medicine records are all functions of the system.

Store the necessary information of the drugs: All of a medicine's details, such as its proper name, chemical composition, importance, and the diseases that require it, are kept in the Pharmacy Management System (PMS). Details on each medication, including when it was taken, for what purpose, and by whom, may be required in some situations.

Searching Medicine and other Data's: Information regarding the whereabouts and features of medications, such as their shelf placement and behaviour, is readily available through the PS. The identity of the item or data is crucial to this archiving method. Search results are returned to the user as they type their query into the search bar. The next step is for the user to choose the exact item they need.

Alerting pharmacy Data in the system: Old drugs can be replaced, recorded pharmaceutical data can be edited (including incorrect information), and pharmacy data can be deleted using the system.

Non-Functional Requirements

This pharmacy management system is able to operate in the following characteristics,

- **Usability**: Because of its straightforward interface, any user familiar with Windows operating systems will have no trouble navigating the system. In order for the self-directing programme to be used properly, the system must offer clear and brief instruction menus that lead users in the right direction.
- **Reliability**: In addition to prioritising secure data management for the pharmacy, the system is designed to meet the specific needs of the user by providing excellent functionality and fast transaction processing. There will be no data loss and the system will resume automatically in 5 seconds if an invalid or faulty operation occurs. To prevent unauthorised access, the pharmaceutical system requires a password before any changes may be made.
- **Performance**: Anyone, or more than one, can access the pharmaceutical management system at the same time, and its processing time is less than two seconds. The user needs to log in with the pharmacy system rights before they can utilise the system. The system can also hold data up to 40 GB in size.
- **User interface**: The UI is simple and straightforward. The frame structure is both functional and visually beautiful, having been planned to integrate with other applicable systems. In addition, the user can now customise the system to their liking by adding or removing interfaces.
- **Operation**: The pharmacy manager is responsible for regulating and supervising the pharmacy management system to guarantee the safe running of the business.
- **Supportability**: Any version of Windows can be used with this pharmacy management system. Windows XP, Windows 2003, Windows 7, Windows 8, and related versions are some examples. The administration can easily maintain the pharmaceutical system by using the prearranged documentation that come with the system.
- **Implementation**: Computer requirements for running the system include a 64-bit architecture, 4 GB of RAM, and an Intel(R) Core (TM) i5 CPU. To put it into action, we run tests using both the black and white versions. A MYSQL database, the Java Development Kit (JDK), and the NetBeans IDE are the tools used to build the system.

Modules in the System

The entire project mainly consists of 7 modules, which are

- Pharmacy Information Management
- Medicine Management
- Categorize Medicine Information
- Manage Sales and Stocks
- Monitor Medicine Orders
- drug inventory management
- Generate Processes Reports

Module 1: Pharmacy Information Management

As a multi-use system, it facilitates the organisation and tracking of pharmaceutical supplies for chemists. Medication errors can be better managed, patient safety can be enhanced, drug usage can be reported, and costs can be better tracked with the help of these modules.

Module 2: Medicine Management

Medication management modules will check the patient's adherence to treatment plans, how well they understand their medications, and how often they need to take them.

Module 3: Categorize Medicine Information

With this module, the administrator will have a lot easier time classifying the medications in the pharmacy. This will keep an eye on the medication data and verify its classification.

Module 4: Manage Sales and Stocks

Managing sales and stock, including ordering, storing, tracking, and monitoring stock levels and revenue, is made easier with this module for the chemist.

Module 5: Monitor Medicine Orders

From the initial order placement with an external vendor all the way to the goods' presentation at a store or their receipt in a distribution centre, it is utilised to record dates and events along the process chain.

Module 6: Drug Inventory Management

In order to keep up with client and prescriber demands while keeping procurement and carrying costs down, the drug inventory management module is always working on new strategies. This will also help keep tabs on the pharmacy's efficiency and identify the medications that are most in demand.

Module 7: Generate Processes Reports

There is no organisation or business that does not rely on reports. This module's purpose is to assist the admin with these concerns by creating transaction reports that record all operations related to the pharmacy.

Detailed System

Context, Data Flow, and Entity Relationship Diagrams (DFDs) are all created during this phase of system development from the system specification, process models, and data models that will be utilised.

System Flowchart

A system flowchart is a graphical representation of an algorithm or process that uses arrows to depict the relative positions of different types of boxes representing the various steps. A problem can be solved step-by-step using this diagrammatic representation. These boxes stand for process operations, and the arrows between them show the control flow. Flowcharts have many practical applications in the analysis, planning, documentation, and management of programmes and processes. In a flowchart, several symbols stand for various aspects of the process, including input, output, decision, connectors, and process itself.

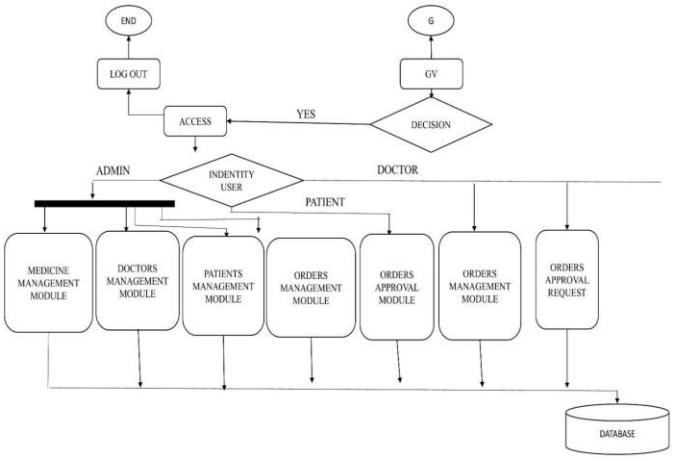


Fig. 1: Context Diagram

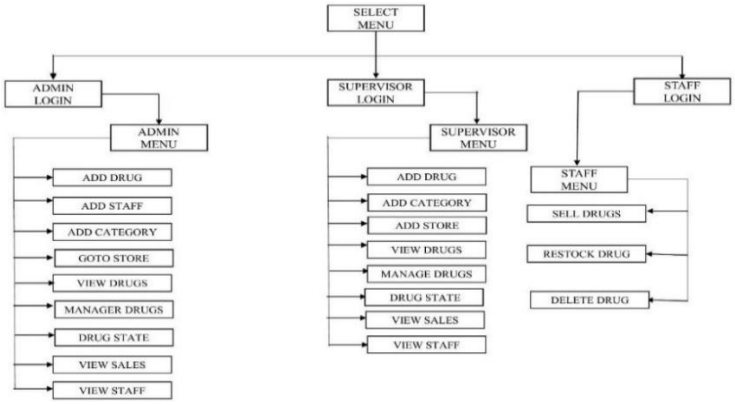


Fig. 2: Entity Relationship Diagrams

Decision Tree

A decision tree takes as input an object or situation described by a set of properties, and outputs a yes/no decision. Decision trees therefore represent Boolean functions. It is also a method of showing the relationship between each condition and its permissible actions. The diagram resembles branches on a tree, hence the name.

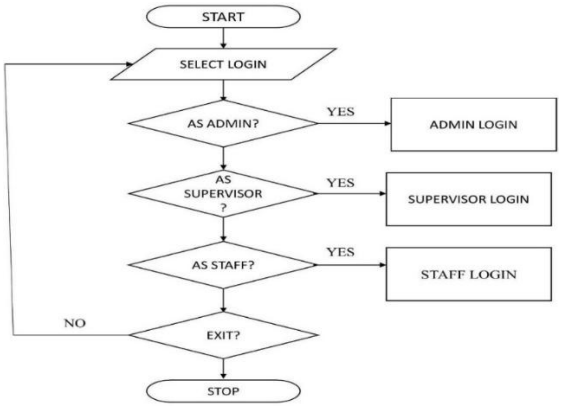


Fig. 3: Data Flow Diagram

Data Flow Diagrams

A data flow diagram is a graphical representation of the processes and steps involved in moving data from an input to an output. The DFD's partitioning represents successively more complex information flows and functional details. Everything from processes to data storage to data flow is detailed in the Data Dictionary.

Zero Level Data Flow Diagram (B Level DFD)

In this Zero Level DFD of the Pharmacy Management System, we have described the Pharmacy process at a high level. It's a high-level summary of the entire process or system being modelled or studied in the pharmacy management domain. Its purpose is to provide a bird's-eye perspective of the system as a whole, including sales, inventory, and login, as well as its connections to the outside world of pharmacies, medicines, and stock. Many people, particularly those working in the pharmaceutical, stock, and sales industries, should be able to understand it. We have outlined the system-level flow of the pharmacy in the zero-level DFD of the pharmacy management system.

High Level Entities and process flow

- Managing all the Pharmacy
- Managing all the Medicines
- Managing all the Stocks
- Managing all the Company
- Managing all the Sells
- Managing all the Inventory
- Managing all the Login

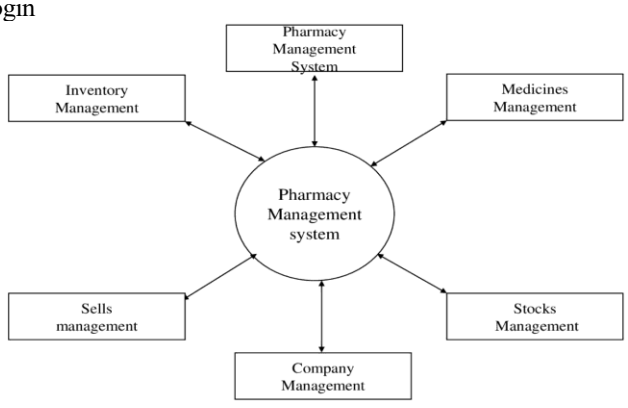


Fig. 4: Pharmacy Management system (zero Level DFD)

First Level Data Flow Diagram (1st Level DFD)

Subsystems (processes) within the Pharmacy Management System are depicted in the First Level Data Flow Diagram (DFD) (1st Level). These subsystems handle various data flows to and from external agents and, collectively, provide the functionality of the entire system. Additionally, it displays the data flow between the different components of the

system and highlights the internal data stores of Login, Inventory, Sells, Company, Stocks that are necessary for the Pharmacy system to function. Pieces of the first level of DFD are broken down more thoroughly in DFD Level 1. It is your job to draw attention to Pharmacy's primary features.

Main Entities and Output of First Level DFD (1st Level DFD)

- Processing Pharmacy records and generate report of all Pharmacy
- Processing Medicines records and generate report of all Medicines
- Processing Stocks records and generate report of all Stocks
- Processing Company records and generate report of all Company
- Processing Sells records and generate report of all Sells
- Processing Inventory records and generate report of all Inventory
- Processing Login records and generate report of all Login`

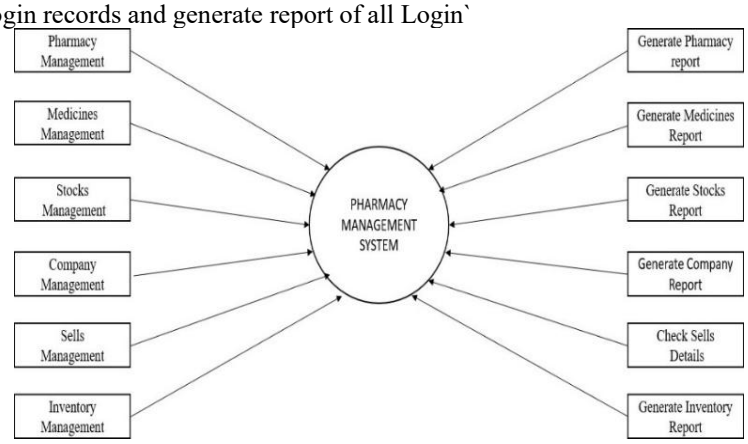


Fig. 5: Pharmacy Management System (First Level DFD)

Second Level Data Flow Diagram (2nd Level DFD)

After that, DFD Level 2 delves even farther into some aspects of Pharmacy Level 1. In order to get to the required degree of detail regarding the working of the pharmacy, it may be essential to add new pharmacy functionalities. The first level of the drug management system's data flow diagram (DFD) illustrates the system's sub-systems, or processes. Additional facts regarding the Login, Inventory, Sales, Company, Stocks, Medicines, and Pharmacy can be found in the 2nd Level DFD.

Low Level Functionalities of Pharmacy Management System

- Admin logins to the system and manage all the functionalities of Pharmacy Management System
- Admin can add, edit, delete and view the records of Pharmacy, Stocks, Sells, Login
- Admin can manage all the details of Medicines, Company, Inventory
- Admin can also generate reports of Pharmacy, Medicines, Stocks, Company, Sells, Inventory
- Admin can search the details of Medicines, Sells, Inventory
- Admin can apply different level of filters on report of Pharmacy, Company, Sells
- Admin can track the detailed information of Medicines, Stocks, Company, Sells

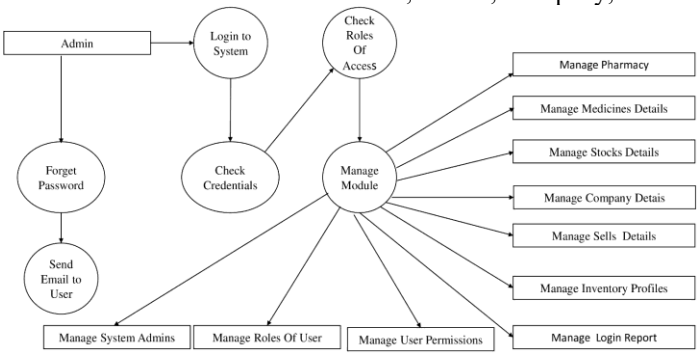


Fig. 6: Pharmacy System (Second Level DFD)

Entity Relationship Diagram (E-R Diagram)

This ER diagram shows the model of the entity in the pharmacy management system. The Pharmacy Management System's entity-relationship diagram provides a visual representation of the database tables and the relationships between various entities, such as medicines, companies, pharmacies, sales, and more. It defined the links between groupings of structured data utilised by the Pharmacy Management System and employed structure data to implement its features. Medication, Stocks, Company, Inventory, and Sales are the primary components of the Pharmacy Management System.

An entity relationship diagram consists of several components. It has 3 simple components.

- **Entities** - A thing is an entity. The business world considers it a term more suited for a glossary or a concept. This is known as the table in relational databases.
- **Relationships** - Observing the connections between the many components in the diagram is where the true value lies. As a verb that connects two or more nouns, we have a relationship. Numerical modelling of relationships is possible through the use of Crows Foot Notation or the multiplicity syntax of a class diagram.
- **Attributes** - Multiple attributes can exist inside a single entity. The concept's attributes give specific information about it. The fields that store data within a record in a relational database stand in for attributes.

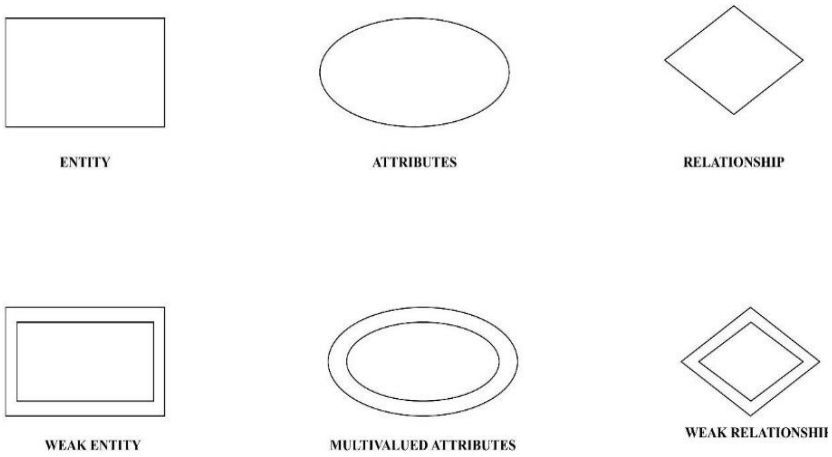


Fig. 7: Objects of ER Diagram

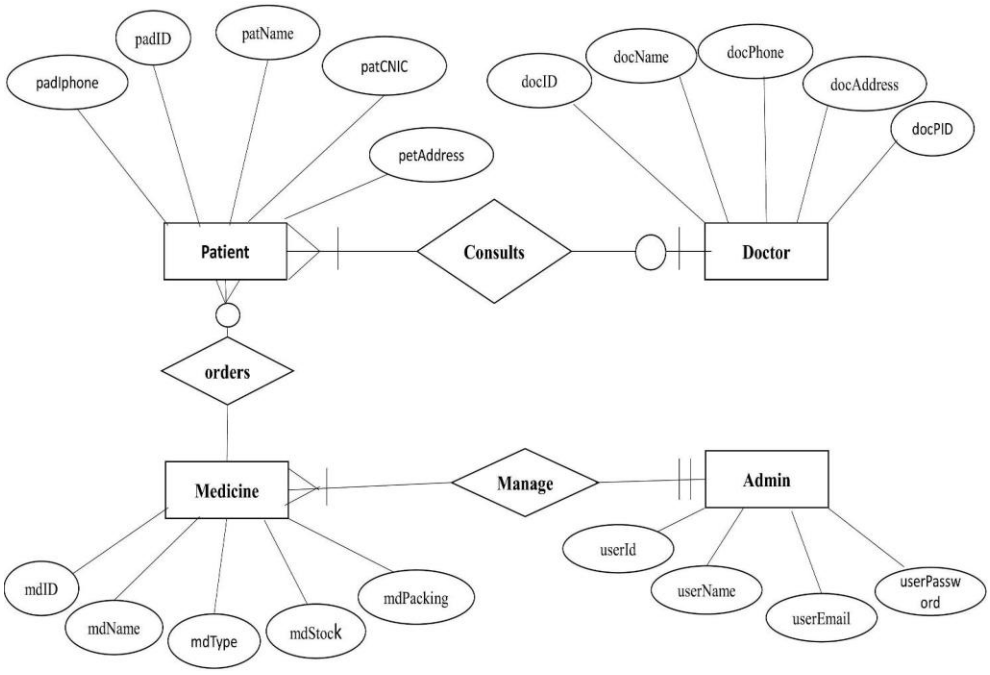


Fig. 8: Entity Relationship Diagram

Activity Diagrams

Login

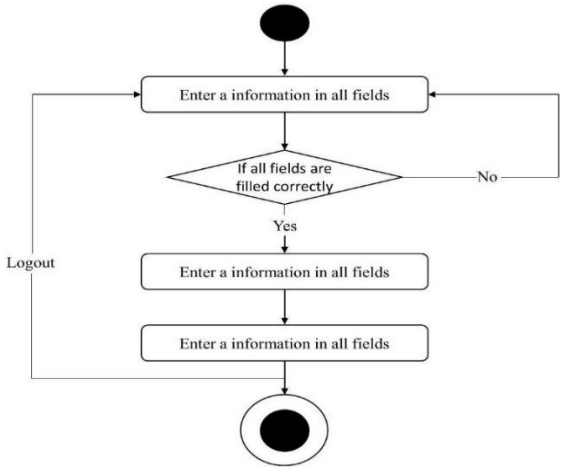


Fig. 9: Login Page

Creating An Account

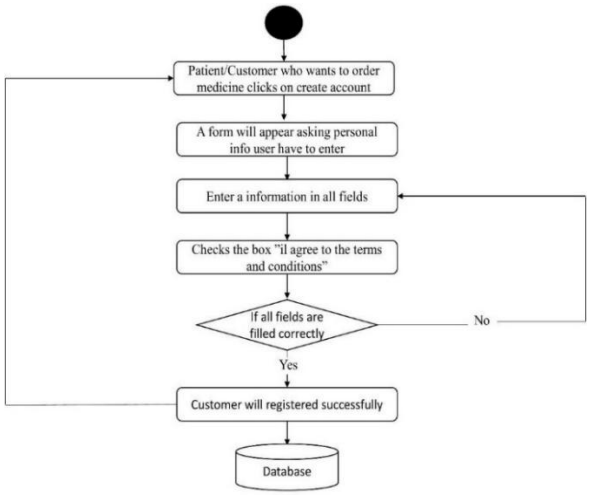


Fig. 10: Account Creation

Change Password

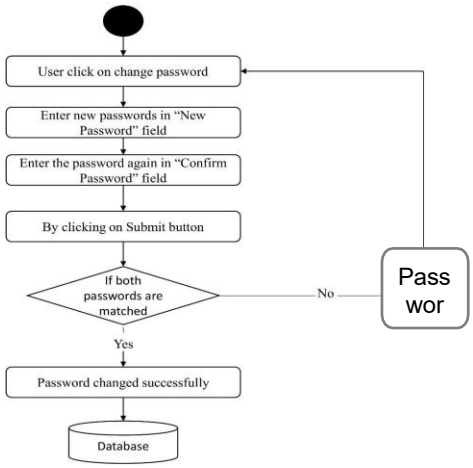


Fig. 11: Password Change

Add New Doctor

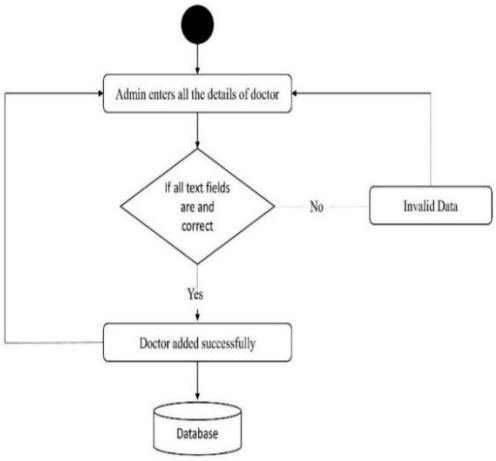


Fig. 12: ADD New Doctor

Add New Medicine Brand

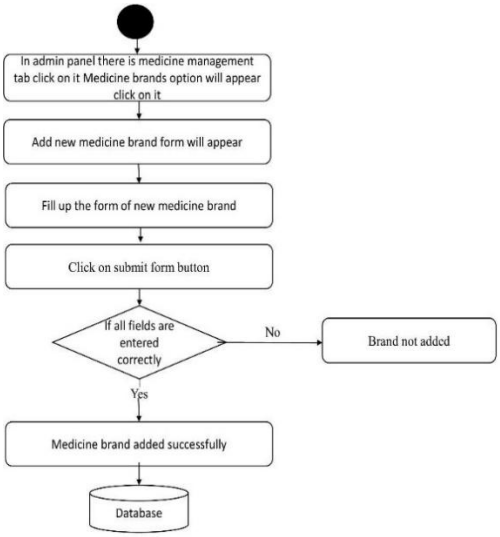


Fig. 13: Add New Medicine Brand

Add To Cart

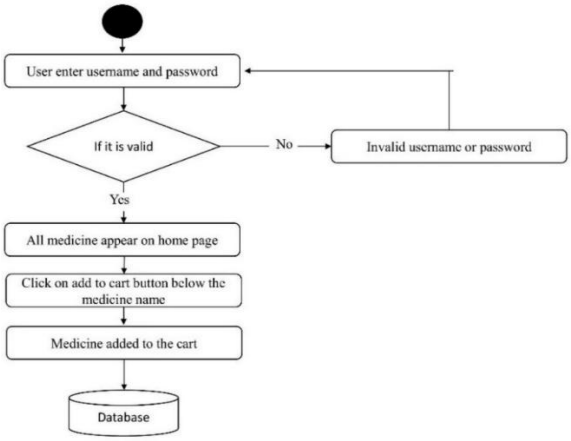


Fig. 14. Add to Cart

Delete Medicine

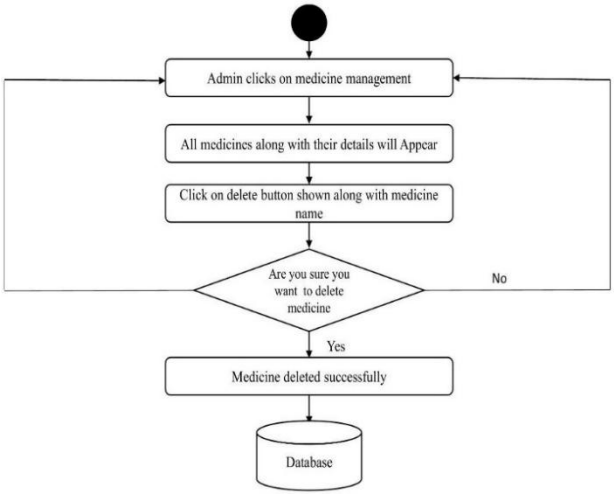


Fig. 15: Delete Medicine

Delete Patient Record

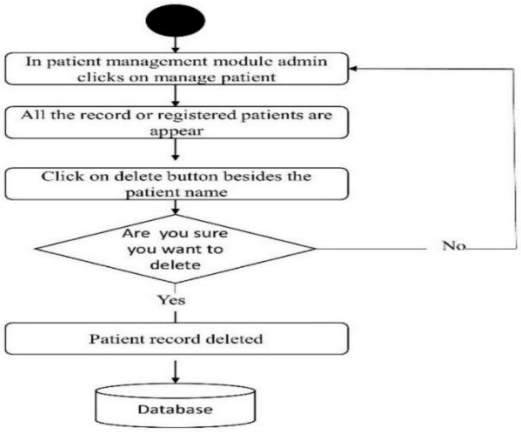


Fig. 16: Delete Patient Record

Add Medicine

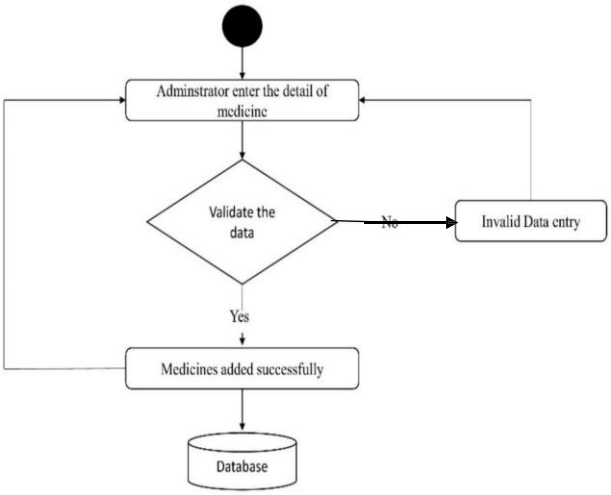


Fig. 17: Add Medicine

Manage Order

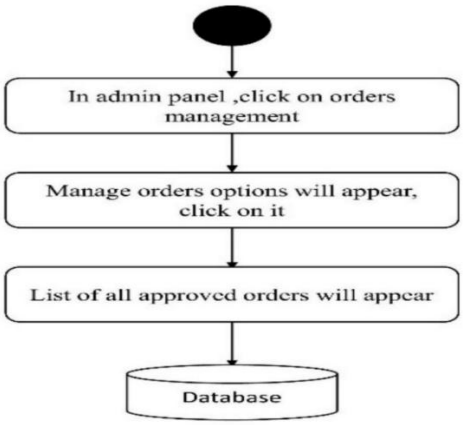


Fig. 18. Manage Order

Search Medicine

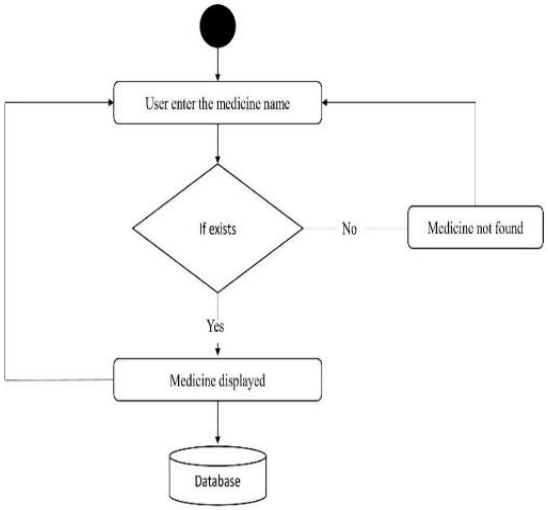


Fig. 19: Search Medicine

Update Medicine

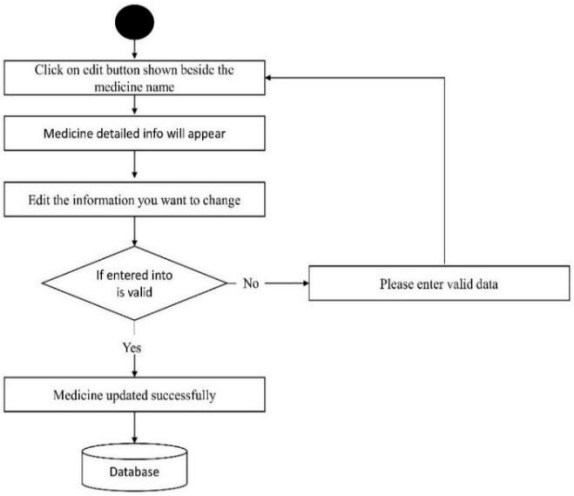


Fig. 20: Update Medicine

Results And Discussion

Homepage

This is the home page where pharmacist can login.

Fig. 21: Home Page

Login Page

The login page displays the text fields for both username and password. When admin enters the correct username and password it automatically redirects to homepage.

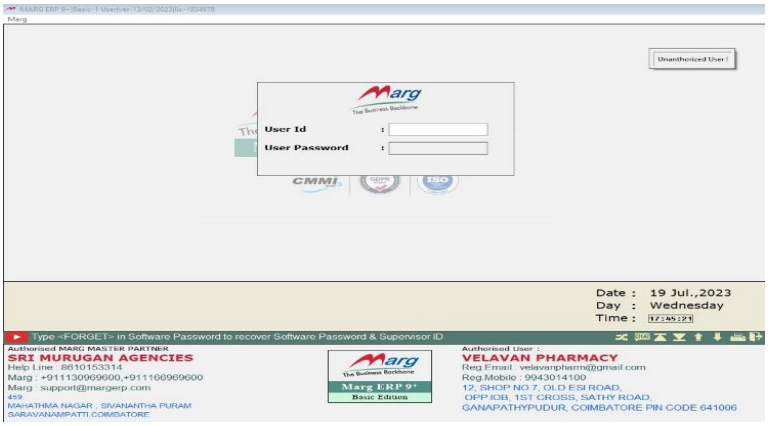


Fig. 22: Login Page

Search Tab

Here we can search different invoices, customers, sales, medicines, etc.

Fig. 23: Search Tab

Add Medicine Page

This is how new products are created by entering their medicine name, quantity of that product, purpose of that medicine, rack location, type of the medicine, cost of the product, expiry date of that product and manufacturer of the medicine, at last click the submit button to finish the entire process.

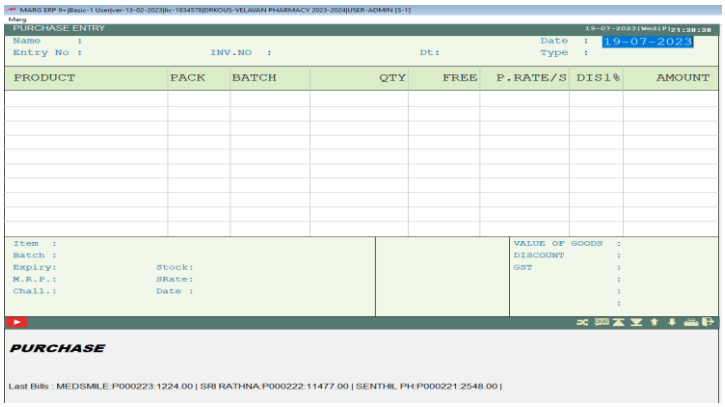


Fig. 24: Add Medicine Page

Modify Medicine Page

This is how admin can able to modify the medicine details by entering their name of the medicine they want to change and enter changed value of that product then press submit button to finish the process.

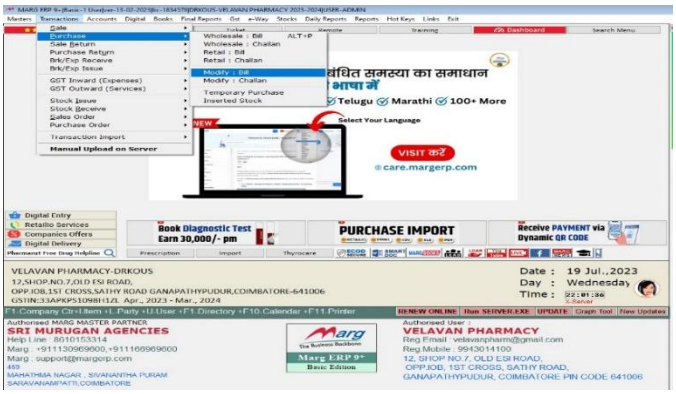


Fig. 25: Modify Medicine Page

Delete Product

This is how admin can able to delete the unnecessary medicine by entering the product name and quantity of the medicine want to delete. By pressing the delete button to finish the process.

Fig. 26: Delete Product

Adding New Supplier

In this tab we can add drugs supplier.

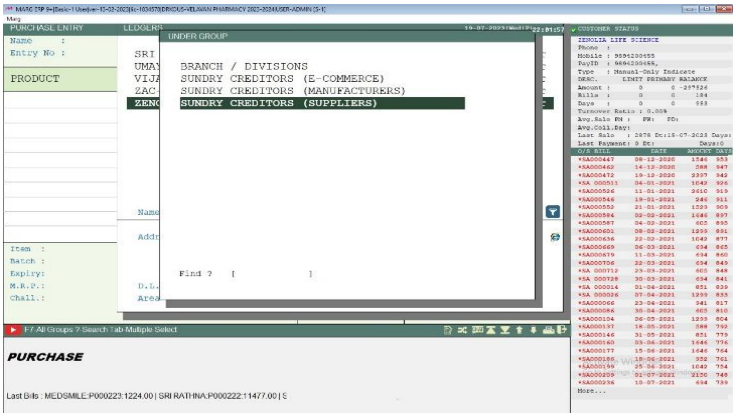


Fig. 27: Adding New Supplier

Managing Supplier

Here we can manage supplier data like contact details.

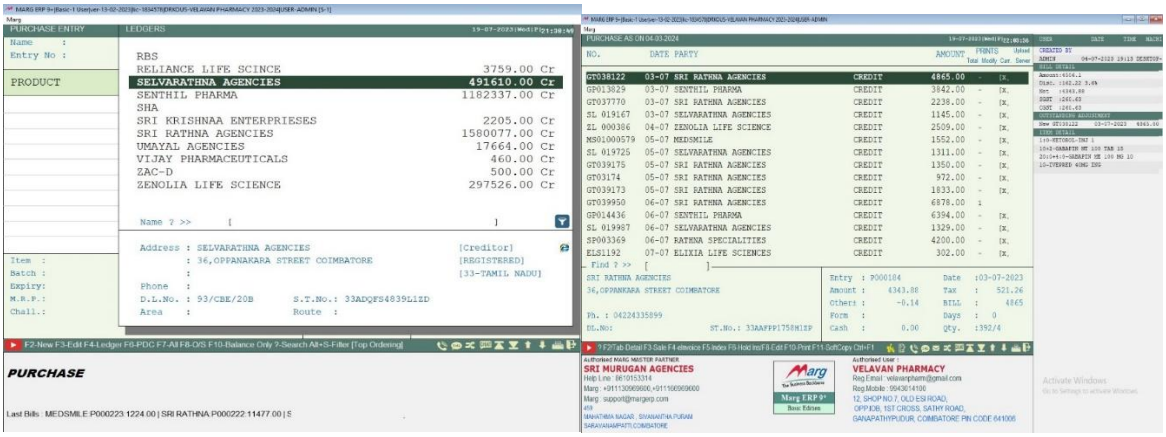
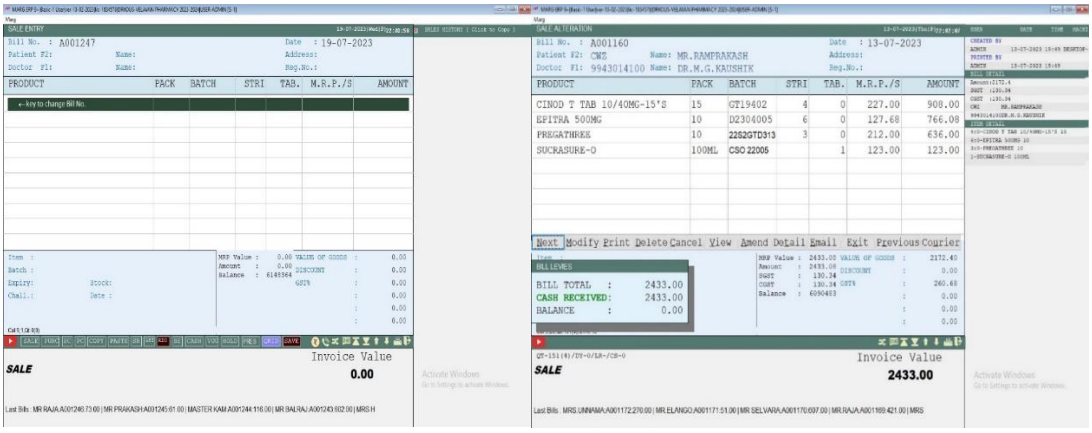


Fig. 28: Managing Supplier

Patient Management

In this screen the details of all patients who are registered in the website will appear. The status of the regular patients are active and those who are not regular are inactive.



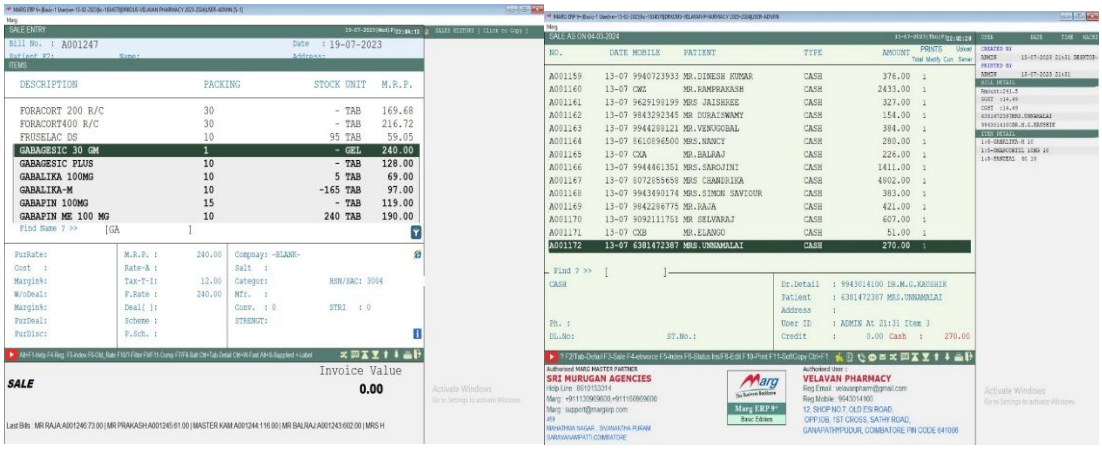


Fig. 29: Patient Management

Stock Management

It automates inventory to help ensure that the pharmacy has enough stock of medications and supplies to serve the needs of the patients. It is important for the pharmacies to ensure that they have adequate stocks of the drugs to provide for the needs of the patients.

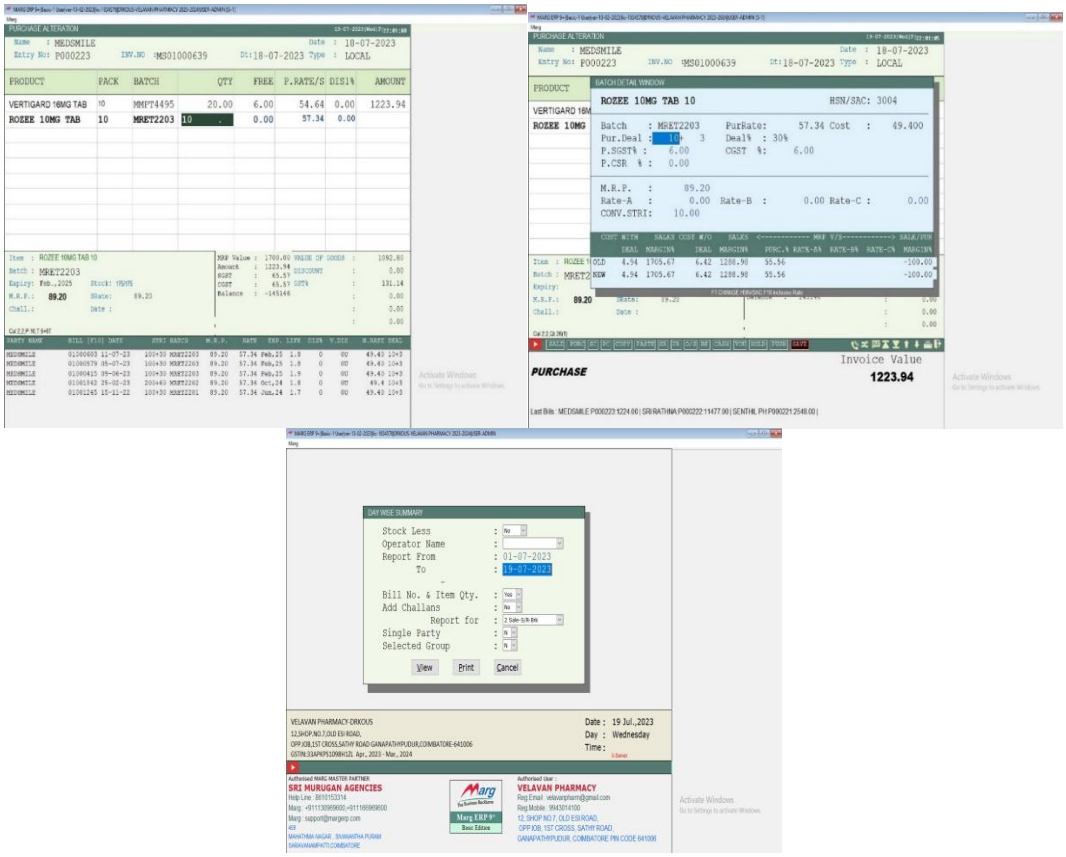


Fig. 30: Stock Management

Expiry Check

This is how admin can able to check the upcoming expiry of the medicine, by entering their name of the medicine and press the button it will show the all about the medicine.

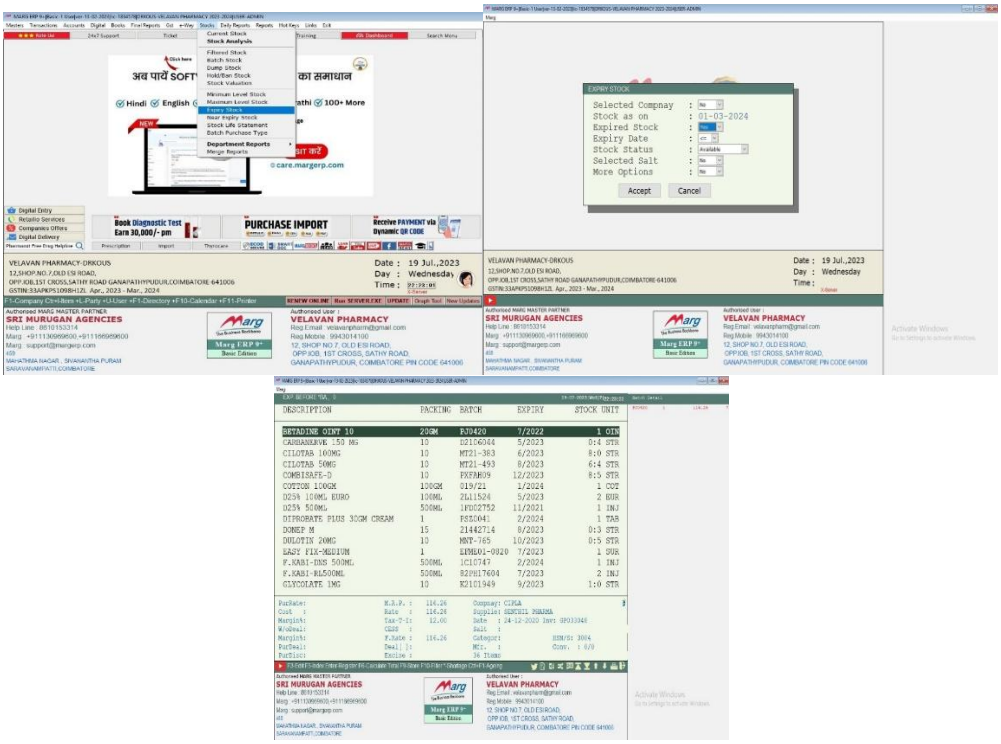


Fig. 31: Expiry Check

Billing System

This is how admin can able to print the invoice bill by entering customer name, customer address, customer ID if available, select the customer bought medicine name in the available stocks and select the quantity and press the save bill button to save the bill, if you have any source to print the bill it will automatically print.

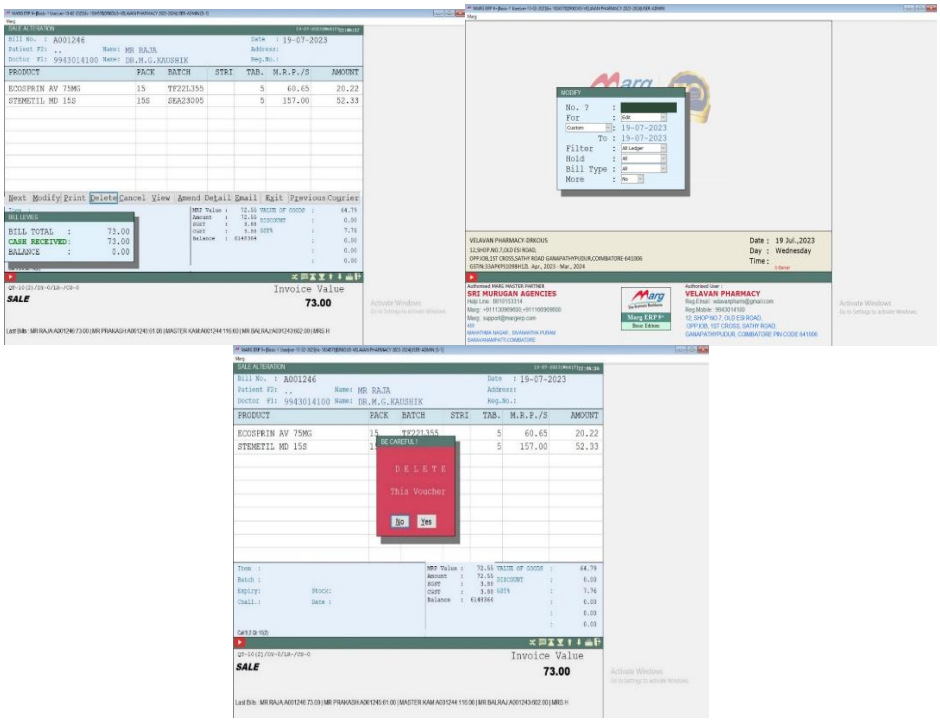


Fig. 32: Billing System

Table Designs

The data are stored in the Table format. They can be accessed using SQL Query language.

SQL Language

SQL (Structured Query Language) is a programming language specifically designed for managing and manipulating relational databases. It serves as the standard language for interacting with databases, allowing users to store, retrieve, modify, and delete data.

SQL provides a wide range of commands and statements to perform various operations on a database. It includes commands for creating and modifying database structures, such as tables, views, indexes, and constraints. SQL also offers powerful querying capabilities, enabling users to retrieve specific data using SELECT statements with conditions, sorting, grouping, and joining tables.

Proficiency in SQL allows users to interact effectively with databases, perform complex data manipulations, generate reports, and extract valuable insights from the data. It is an essential skill for database administrators, data analysts, and software developers working with relational databases.

Table Structure

Table 1: Administrator Login

Field Name	Field Type	Field Length	Description
Admin Username	Varchar	(15)	Admin Username
Admin Password	Varchar	(15)	Admin Password

This Table above serves as a repository for administrator details, that will be able to have access to the entire details on the application. It is a table that stores the administrator login details.

Table 2: Medicine Information

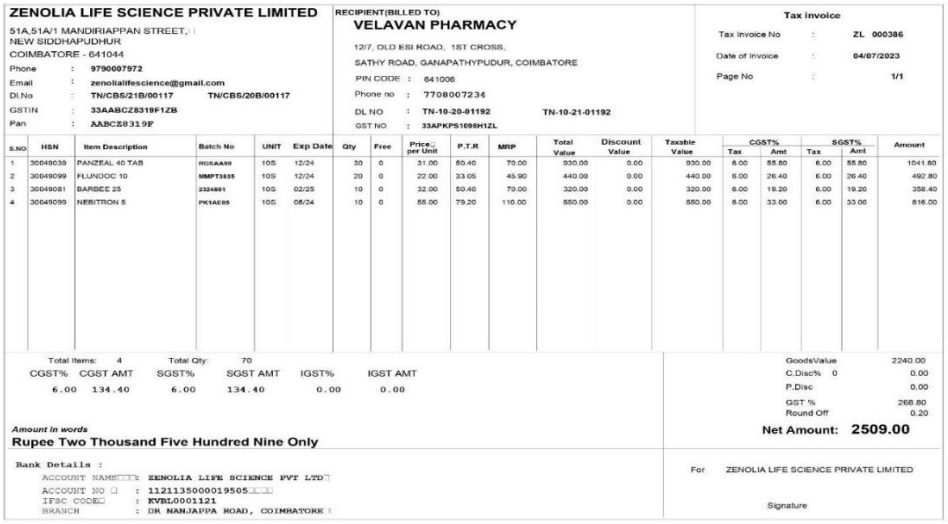
Field Name	Field Type	Field Length	Description
Medicine Name	Varchar	(15)	Medicine Name
Medicine ID	Varchar	(7)	Medicine Number in stock
Manufacturer	Varchar	( )	Manufacturer
Batch No	Varchar	( )	Batch Number
Production Date	Date/Time	( )	Production Date
Expiry Date	Date/Time	( )	Expiry Date
Dosage	Text	( )	Dosage
Reg_Date	Date/Time	( )	Registration Date
Quantity	Int	( )	Quantity
Cost Price	Int	( )	Cost Price
Interest Rate	Int	( )	Interest Rate
Expected Sale	Int	( )	Expected Sale

This Table shows the information about the medicine in the pharmacy and is being queried from the database on the medicine registration page to show all the medicine for user to select.

Reports

Purchase Report and Sales Report

Here we can track purchases made from suppliers and also we can check sales report and track sales



ZENOLIA LIFE SCIENCE PRIVATE LIMITED
51A,51A/1 MANDIRIAPPAN STREET,
NEW SIDDHAPUDHUR
COIMBATORE - 641044
Phone : 9790007972
Email : zenolialifescience@gmail.com
DLNo : TN/CBS/21B/00117 TN/CBS/20B/00117
GSTIN : 33AABCZ8319F1ZB
Pan : AABCZ8319F

RECIPIENT(BILLED TO)
VELAVAN PHARMACY
12/7, OLD ESI ROAD, 1ST CROSS,
SATHY ROAD, GANAPATHYPUDUR, COIMBATORE
PIN CODE : 641006
Phone no : 7708007234
DL NO : TN-10-20-01192 TN-10-21-01192
GST NO : 33APKPS1698H1ZL

Tax Invoice
Tax Invoice No : ZL 000386
Date of Invoice : 04/07/2023
Page No : 1/1

S.NO	HSN	Item Description	Batch No	UNIT	Exp Date	Qty	Free	Price per Unit	P.T.R	MRP	Total Value	Discount Value	Taxable Value	CGST% Tax	CGST% Amt	SGST% Tax	SGST% Amt	Amount
1	30049039	PANZEAL 40 TAB	RGSAA89	10S	12/24	30	0	31.00	50.40	70.00	930.00	0.00	930.00	6.00	55.80	6.00	55.80	1041.60
2	30049099	FLUNDOC 10	MMPT3835	10S	12/24	20	0	22.00	33.05	45.90	440.00	0.00	440.00	6.00	26.40	6.00	26.40	492.80
3	30049081	BARDEE 25	2324891	10S	02/25	10	0	32.00	50.40	70.00	320.00	0.00	320.00	6.00	19.20	6.00	19.20	358.40
4	30049099	NEBITRON S	PK1AE05	10S	08/24	10	0	55.00	79.20	110.00	550.00	0.00	550.00	6.00	33.00	6.00	33.00	616.00

Total Items: 4 Total Qty: 70

CGST%	CGST AMT	SGST%	SGST AMT	IGST%	IGST AMT
6.00	134.40	6.00	134.40	0.00	0.00

GoodsValue 2240.00
C.Disc% 0 0.00
P.Disc 0.00
GST % 268.80
Round Off 0.20
Net Amount: 2509.00

Amount in words
Rupee Two Thousand Five Hundred Nine Only

Bank Details :
ACCOUNT NAME : ZENOLIA LIFE SCIENCE PVT LTD
ACCOUNT NO : 1121135000019505
IFSC CODE : KVBL0001121
BRANCH : DR NANJAPPA ROAD, COIMBATORE

For ZENOLIA LIFE SCIENCE PRIVATE LIMITED

Signature

Fig. 33: Purchase Report and Sales Report

Conclusion

We designed this pharmacy management system database with the needs of managing pharmacies in mind. Information about both consumers and medications can be encoded by the system. Admins at the pharmacy can see how many of each medicine have been sold and how much is still available, allowing them to keep track of inventory levels. Information pertaining to medication sales, client records, and pharmacy management can all be handled by them. A pharmacy management system is a desktop programme that stores and processes information pertinent to a pharmacy's database and its administration. The programme facilitates efficient management of the pharmacy. It gives stock information for medicines and pharmaceuticals, and you can change or update that data whenever you want. The features and functionality are adjusted to meet the needs of the user. The user can input the manufacturing and expiration dates of medicines for stocking and sales purposes. You may print bills and invoices, among other things, with this programme. It also has the capability to save the supplier's supply record. Additional functions are also at your disposal. The primary objective is to manage pharmacy data efficiently and with ease.

Because it can easily and effectively store information about events occurring in the specified area, this software, when properly implemented, will meet the fundamental needs of the pharmacy management system. These will allow the system design to accomplish its goals.

The architecture of the system is such that it can be adjusted as the pharmacy administration sees fit, whenever the need arises, to accommodate future expansion.

Reference

Asmoro, E.T., Wardhani, I.P., & Ekasari, M.H. (2022). Online Information Delivery Service System Design Using Web-Based Forward Chaining Method in Pharmaceutical Companies. *Journal of Applied Engineering and Technological Science (JAETS)*, *3*(2), 116-125.

Chand, S., Shastry, C. S., Hiremath, S., Joel, J. J., & Krishnabhat, C. H. (2022). Hospital pharmacy management in a tertiary care charitable hospital: compliance study with quality standards. *Clinical Epidemiology and Global Health, 17*, 101154.

Rathnayake, W.D.W.T. (2021). *Pharmacy Management System for The Central Pharmacy-Pokunuwita* (Doctoral dissertation).

Ying, W., Qian, Y., & Kun, Z. (2021). Drugs supply and pharmaceutical care management practices at a designated hospital during the COVID-19 epidemic. *Research in Social and Administrative Pharmacy*, *17*(1), 1978-1983.

Herranz-Alonso, A., Rodríguez-González, C.G., Sarobe-González, C., Álvarez-Díaz, A., & Sanjurjo-Sáez, M. (2020). Pharmacy department management and organization. *Farmacia Hospitalaria*, *44*, 5-10.

Senna, P., Reis, A., Santos, I.L., Dias, A.C., & Coelho, O. (2020). A systematic literature review on supply chain risk management: is healthcare management a forsaken research field? *Benchmarking: an international journal*, *28*(3), 926-956.

Manzini, F., Lorenzoni, A. A., Soares, L., Rech, N., & Leite, S. N. (2021). Impact of a pharmacy management course for pharmacists working within Brazil's public health system. *American Journal of Pharmaceutical Education, 85(7)*, 8506.

Herranz-Alonso, A., Rodríguez-González, C.G., Sarobe-González, C., Álvarez-Díaz, A., & Sanjurjo-Sáez, M. (2020). Pharmacy department management and organization. *Farmacia Hospitalaria*, *44*, 5-10.

Mariappan, M.B., Devi, K., Venkataraman, Y., Lim, M.K., & Theivendren, P. (2023). Using AI and ML to predict shipment times of therapeutics, diagnostics and vaccines in e-pharmacy supply chains during COVID-19 pandemic. *The International Journal of Logistics Management*, *34*(2), 390-416.