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Title of the project: Pharmacy Management System

Abstract: Pharmacists can use the Pharmacy Management System program to help them methodically manage their pharmacies. When a medicine's name is input, the Pharmacy Management System can help by providing details about the medicine. A computer displays information about the medicine, such as its description. In large medical stores, manually handling the specifics of all the drugs becomes very tough. We can keep track of all the medicines by using this pharmacy management system. It is updated with new information as new medicines are introduced. When we complete the name of a medicine, it displays the medicine's details. We can also keep the record of the vendor from whom the medicines are purchased To make this system, Netbeans 13.0 with JAVA was used. The SQL database was created with MySQL on XAMP server.

Introduction: This project has been developed to simulate the working and features of an Automated Teller Machine (ATM) using JAVA and MySQL programming. The graphical user interface (GUI) has been developed using JAVA SWING, for a user-friendly environment. The database is handled by MySQL, and has been programmed on the MySQL Workbench.

Objective: The Pharmacy Management System is a project developed to automate medical stores' activities and improve their productivity. This helps pharmacies organize, manage, and secure drug information efficiently. Its' features aids in the resolution of challenges with manual pharmacy management.

This system can also help you keep track of your drug supplies. Records and bills are proper and supplied in precise amounts using Pharmacy Management software. It oversees and manages the pharmacy team to preserve strong working relationships and outcomes. This can also improve quality and customer satisfaction ratings, as well as keep medicines from going bad.

Scope:

- **Document management**

Document management is mandatory for accessing EHR/EMR (electronic health and medical records) of a patient.

- **Electronic Batch Record**

EBR systems help in easy integration with scanning technologies for both capturing and managing information.

- **EPCS (Electronic Prescriptions for Controlled Substances)**

EPCS or Electronic Prescriptions for Controlled Substances functionality ensures secure transmissions between insurance verifier, pharmacy stores and the point of care.

- **Revenue cycle management**

This module facilitates practices such as insurance eligibility verification, referrals, prior authorisation, claims processing, risk evaluation and remittance advice

Software Requirement Specification:

For careful understanding of the project, a software requirement analysis is important.

Operation Environment:

Processor	Intel Core i3
Operating System	Windows 7
Memory	3 GB
Space on Hard Disk	64 GB minimum (for future requirements)
Database	MySQL on XAMPP server
IDE used	Apache Netbeans IDE 13

Product Description: The **pharmacy management system**, also known as the **pharmacy information system**, is a system that stores data and enables functionality that organizes and maintains the medication use process within pharmacies.

Problem Statement:

Most pharmacies faced problems such as insufficient service promotions, lack of coherence of pharmacy services in hospitals, poor drug information systems, and the inconsistency of the pharmacy information management due to its manual processes. Now, these are the problems that must be solved with this Pharmacy Management System Project Proposal.

System Requirements:

Non-Functional Requirements:

- **Capacity:**

The Pharma System shall provide customers a 24-hour service.

- **Quality:**

The primary objective is to produce quality software.

- **Reliability:**

The data communication protocol shall be such that it ensures reliability and quality of data and voice transmission in a mobile environment.

- **Availability:**

The product will have a backup power supply in case of power failures.

- **Security:**

The system shall be compatible with AIMS security standards.

- **Maintainability:**

The system components i.e. modem, memory, disk, drives shall be easily serviceable without requiring access to the vault.

- **Usability:**

The system should be designed for a user-friendly requirement so that the customer can access the Pharma system in an easy and effective way.

Functional Requirements:

- **Categorize Medicine Information:** Categorizing the drugs available in the pharmacy will be much easier for the admin through the help of this module. This will do the monitoring and checking of the medicine information to identify its category.
- **Monitor Medicine Orders:** is used to keep track of dates and events throughout the process chain, from placing an order with an external vendor to presenting goods in a store or receiving goods in a distribution center.
- **Manage Sales and Stocks:** This module will help the Pharmacist with the sales and stocks management that includes ordering, storing, tracking, and monitoring stock levels as well as monitoring their revenue.
- **Vendor information:** This modules helps to maintain the info of the vendors/suppliers of medicines.
- **Vendor transaction:** This module helps in maintaining the record of the medicines purchased through vendors.

Software and Hardware Requirements:

This section discusses the software and hardware requirements of the system:

SOFTWARE REQUIREMENTS:

- **Operating System:** Windows 11 is used as the operating system but Windows 7 can also be used as it is a stable software that supports many features and is user-friendly.
- **Database:** MySQL is used as the database as it is easy to maintain and the records can be retrieved by simple queries in English language which is easy to understand and use.
- **Database server:** Xampp server is used to host the database in localhost
- **Development Tools and Programming Language:** Java(JDK 18) is used to develop the entire programme. For the GUI, Java SWING has been utilized.
- **Integrated Development Environment:** Apache Netbeans 13 is used for the development of this software.

HARDWARE REQUIREMENTS:

- **Processor:** Intel i3 can be used to provide a reliable and stable performance.
- **RAM:** 4 GB
- **Disk Space:** 64 GB

SOFTWARE TOOLS USED:

The entire project is divided into two parts:

FRONT END:

JAVA SWING: Java Swing tutorial is a part of Java Foundation Classes (JFC) that is used to create window-based applications. It is built on the top of AWT (Abstract Windowing Toolkit) API and entirely written in java.

Unlike AWT, Java Swing provides platform-independent and lightweight components.

The javax.swing package provides classes for java swing API such as JButton, JTextField, JTextArea, JRadioButton, JCheckbox, JMenu, JColorChooser etc.

BACK END:

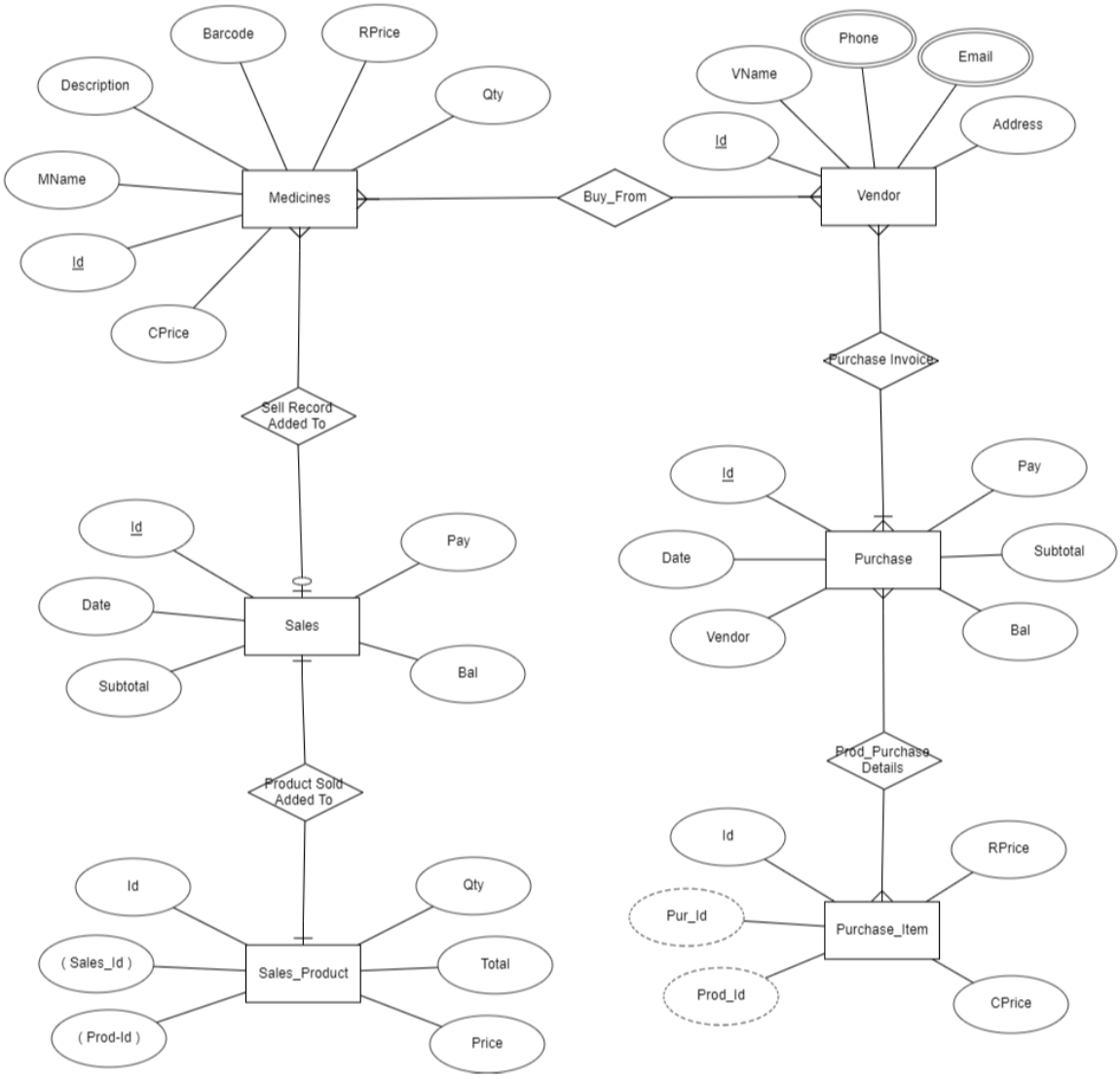
JAVA: Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let programmers write once, run anywhere, meaning that compiled Java code can run on all platforms that support Java without the need to recompile. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but has fewer low-level facilities than either of them. The Java runtime provides dynamic capabilities (such as reflection and runtime code modification) that are typically not available in traditional compiled languages. As of 2019, Java was one of the most popular programming languages in use according to GitHub, particularly for client–server web applications, with a reported 9 million developers.

MySQL: MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010, when Oracle acquired Sun, Widenius forked the open-source MySQL project to create MariaDB.

Applications which use MySQL databases: include: TYPO3, MODx, Joomla, WordPress, phpBB, MyBB, Drupal and others software. MySQL is also used in many high-profile, large-scale websites, including Wikipedia, Google (though not for searches), Facebook, Twitter, Flickr, and YouTube.

ER Diagram:



UML Design:

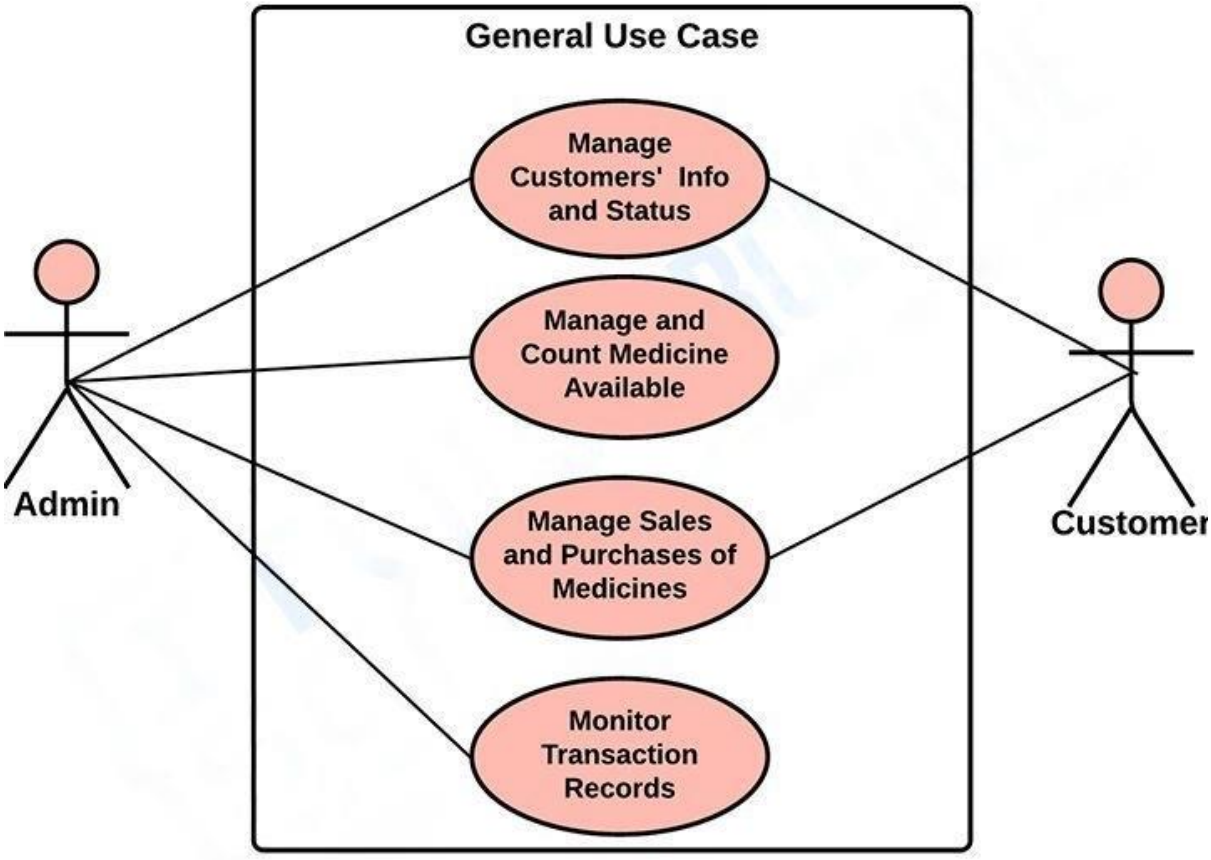
Use case diagram:

Preconditions:-

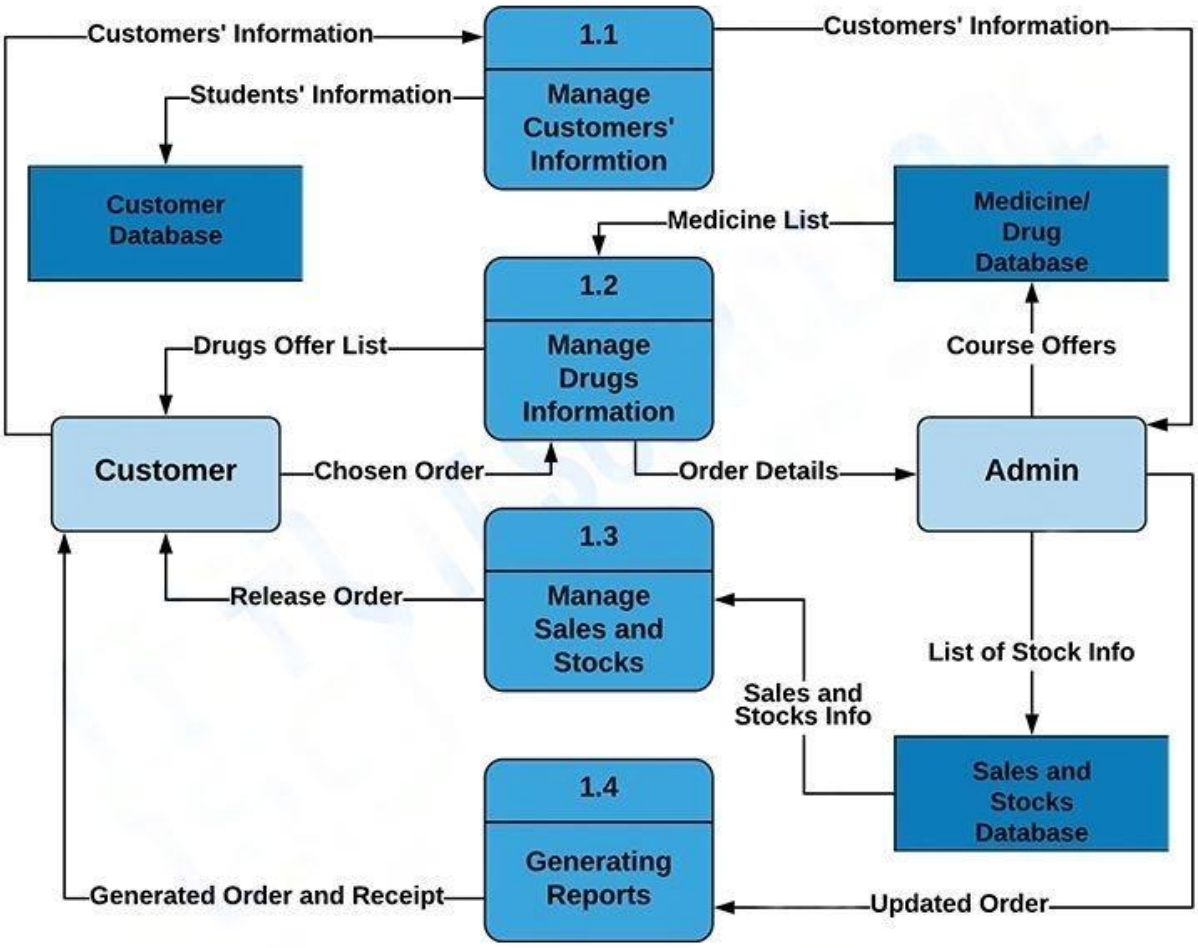
- The PC must work properly to host the database, etc.
- The network connection of the medical store should be active and working properly.
- There must be some medicines available in the stock to dispense.

Conditions of failure:-

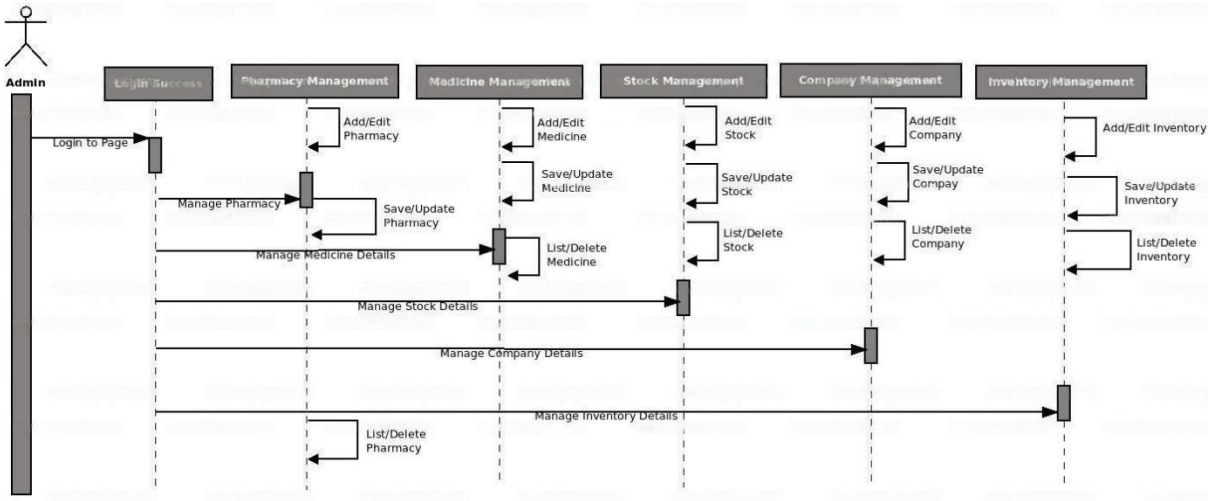
- Invalid medicine code
- Pharma system not responding.



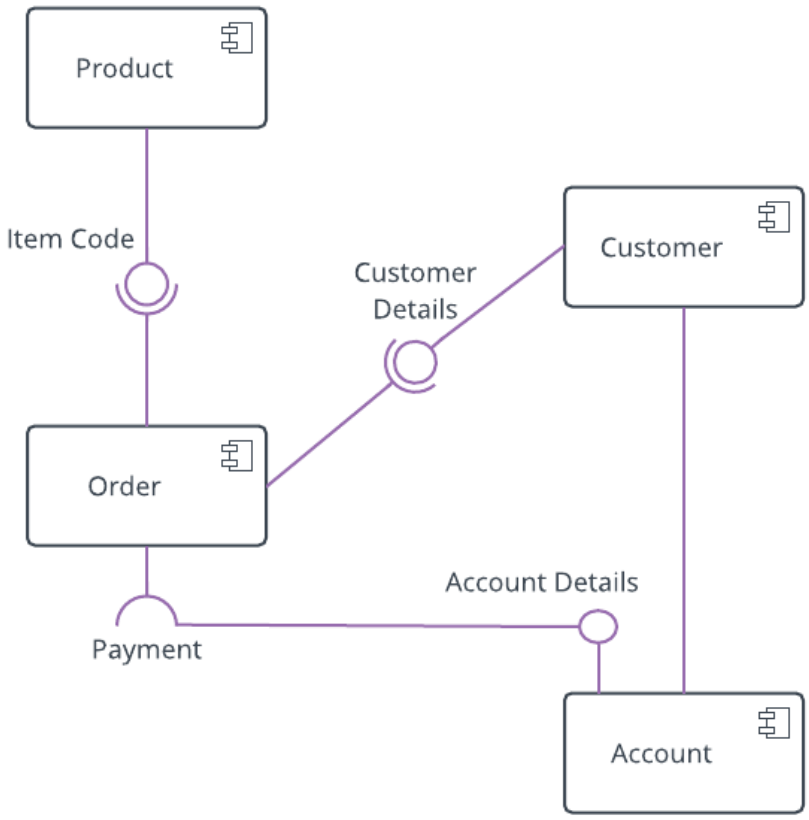
Data Flow diagram:



Sequence diagram:



Component Diagram:



Database:

1.vendor table:

id	name	phone	email	address
1	Vikas	1234567890	vikas@gmail.com	pimpri
2	Bhuvi	98765	bhuvi@gmail.com	bhosari
3	Bhushan	23456	bhushan@gmail.com	akurdi
4	Amaan	987654321	amaan@gmail.com	Sanghavi

2. medicine table

id	mname	description	barcode	cprice	rprice	qty	rlevel
1	Paracetamol	pain reliever and a fever reducer	1	200	250	402	25
2	Cetirizine	used for hay fever, conjunctivitis	102	300	320	200	21

3. purchase table:

id	date	vendor	subtotal	pay	bal
1	2022-06-01	Bhuvi	3750	4000	250
2	2022-06-01	Vikas	750	750	0
3	2022-06-01	Bhushan	1250	750	-500
4	2022-06-01	Vikas	1750	2000	250
5	2022-06-01	Amaan	25000	500000	-475000
6	2022-06-01	Bhuvi	26250	26250	0
7	2022-06-01	Bhuvi	28750	20000	8750
8	2022-06-03	Vikas	3000	3000	0
9	2022-06-03	Bhuvi	6000	6000	0

4. purchase_item table:

id	purID	prodid	rprice	qty	total
1	1	1	250	10	2500
2	1	1	250	5	1250
3	2	1	250	3	750
4	3	1	250	3	750
5	3	1	250	2	500
6	4	1	250	7	1750
7	5	1	250	100	25000
8	6	1	250	100	25000
9	6	1	250	5	1250
10	7	1	250	100	25000
11	7	1	250	5	1250

5. sales table:

id	date	subtotal	pay	bal
1	2022-06-01	16500	17000	500
2	2022-06-01	13750	14000	250
3	2022-06-01	1250	1300	50
4	2022-06-01	1250	1300	50
5	2022-06-01	1250	1250	0
6	2022-06-01	10000	5000	-5000
7	2022-06-03	8500	8500	0

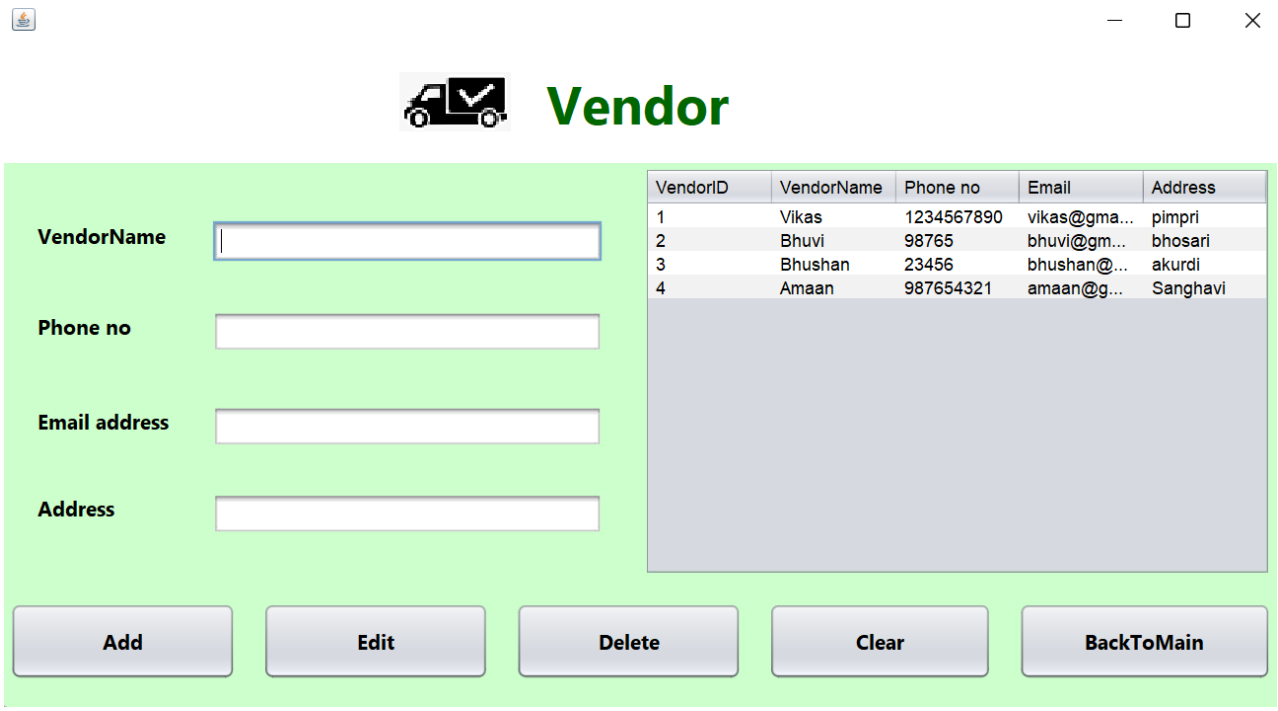
6. sales_item table:

id	sales_id	prodid	price	qty	total
1	4	1	250	5	1250
2	5	1	250	5	1250
3	6	1	250	40	10000
4	7	1	250	34	8500

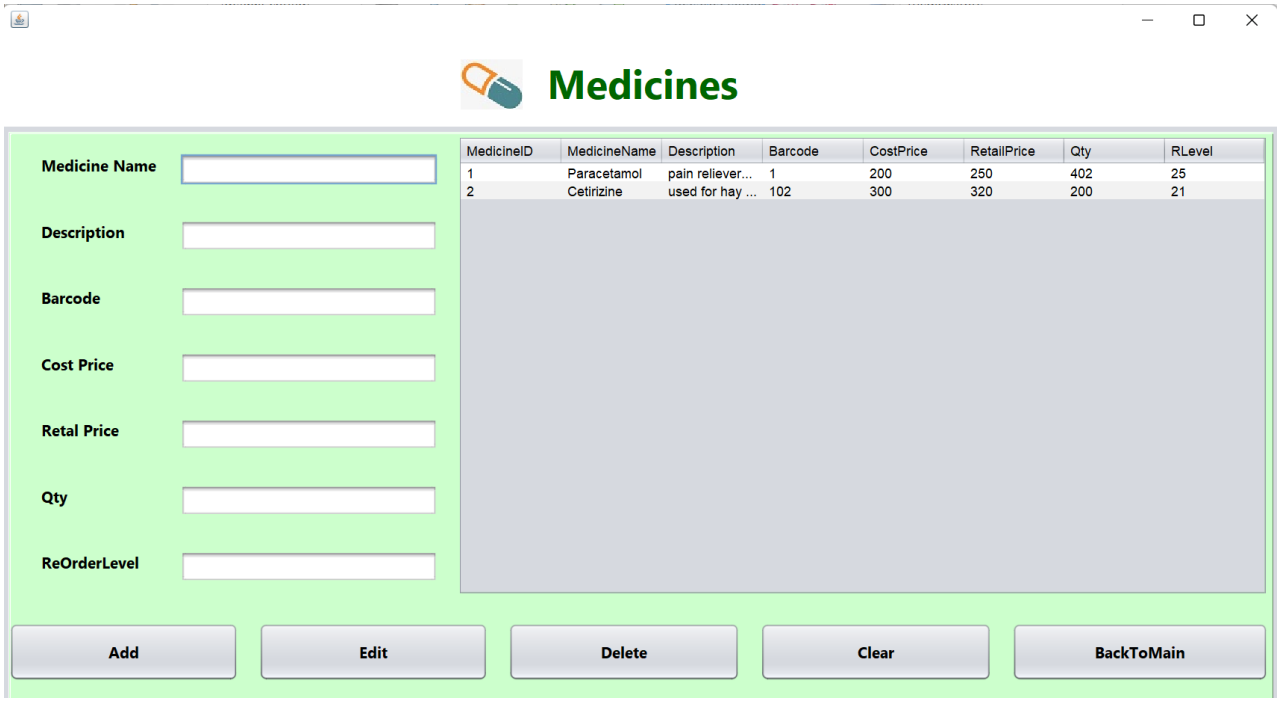
Graphical User Interface:

1. **Main Page:**

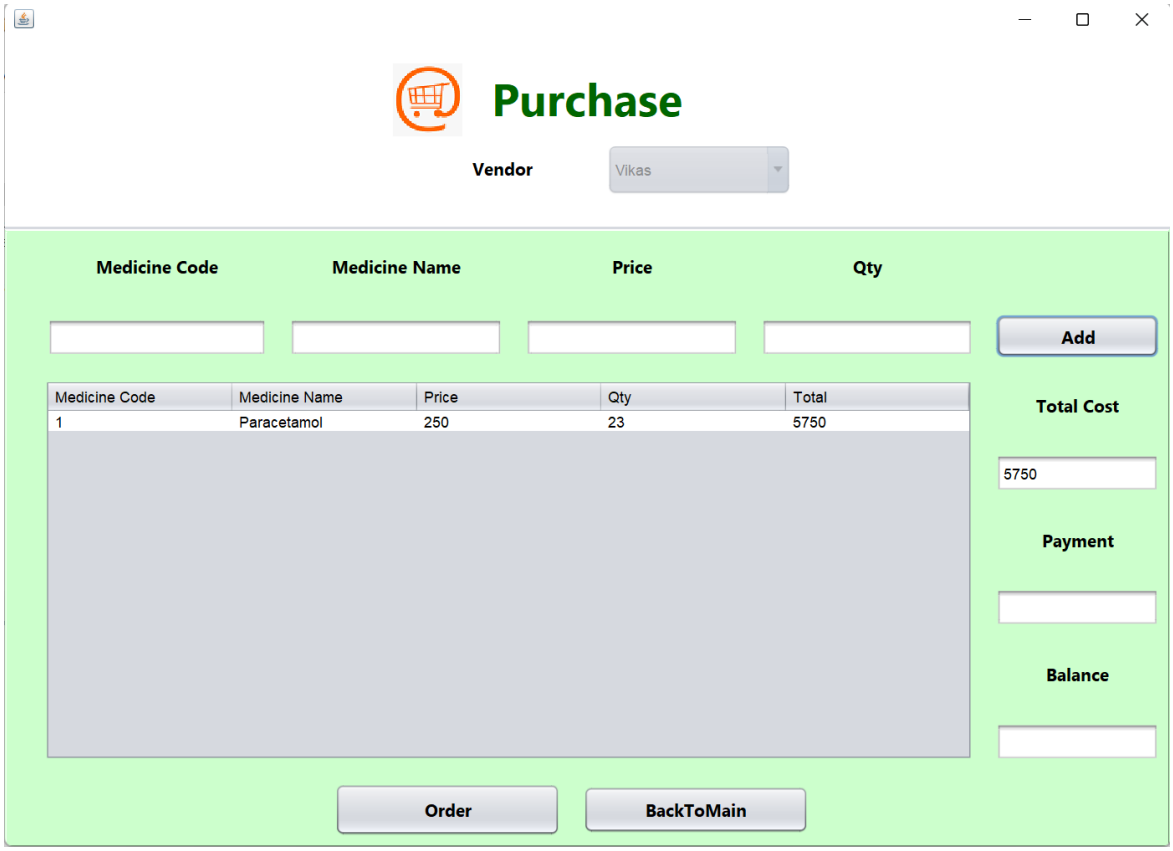
2. Vendor Page:



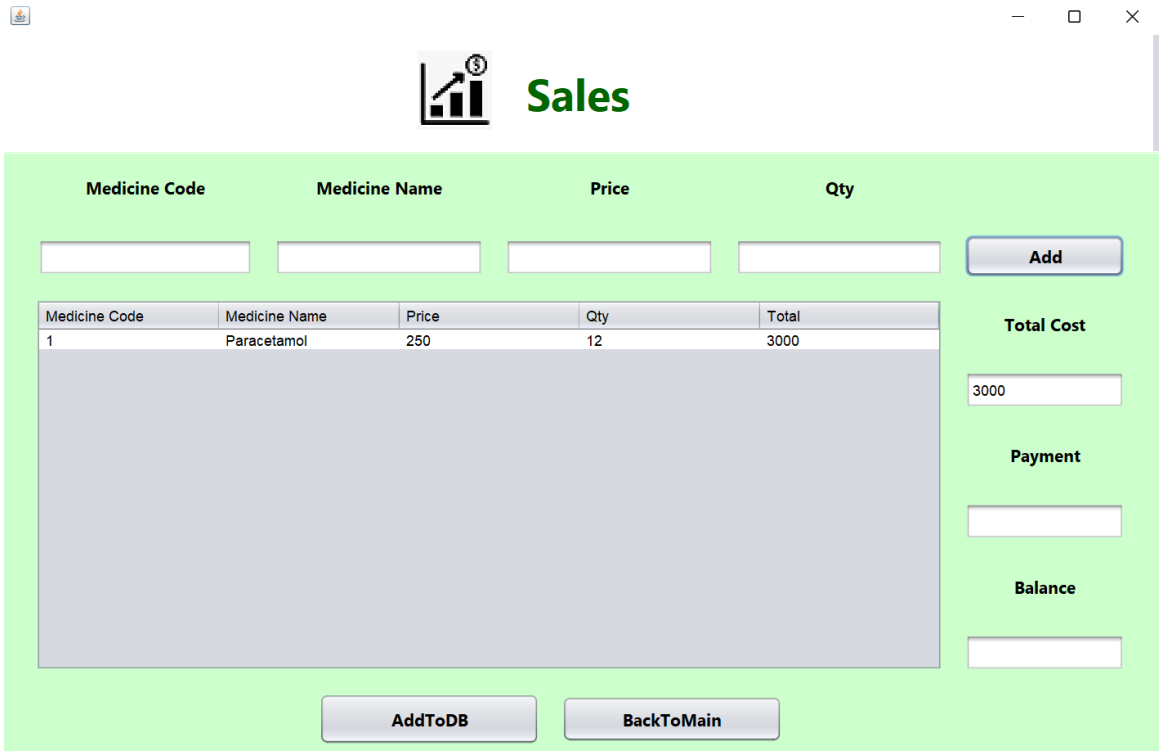
3. Medicine Page:



4. Purchase Page:



5. Sales Page:



Conclusion: Pharmacy management system is actually a software which handle the essential data and save the data and actually about the database of a pharmacy and its management. This software helps in effectively management of the pharmaceutical store or shop. It provides the statistics about medicine or drugs which are in stocks which data can also be updated and edited. It works as per the requirement of the user and have options accordingly. It allow user to enter manufacturing as well as the expiry date of medicine placing in stock and for sales transaction. This software also has ability to print reports and receipts etc.

References:

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[2] Debasish K, and Debasis S., A novel approach to generate test cases from UML activity diagrams. Journal of Object Technology, 8(3), (2009), 65–83.

[3] M.Blaha, and, J., Rumbaugh, Object-Oriented Modeling and Design with UML, Second Edition, Upper Saddle River, New Jersey, Prentice Hall,2005.