MedicTrack

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Introduction

- The MedicTrack Pharmacy Management System is a comprehensive software solution designed to streamline and enhance the operations of pharmacies. This project aims to address the challenges faced by pharmacies in managing inventory, processing prescriptions, maintaining patient medication histories, and ensuring regulatory compliance.
- Key Functionalities
- Inventory Management: Real-time tracking of medication stock levels, automated alerts for low-stock items, and expiration date tracking.
- Prescription Processing: Efficient and accurate processing of prescriptions, including integration with healthcare providers for electronic prescriptions.
- Patient Medication History Management: A centralized database for storing and accessing patient medication histories, aiding pharmacists in providing informed patient care.
- Reporting and Analytics: Advanced tools for generating reports on medication usage patterns, inventory trends, and other critical data insights for informed decision-making.
- Regulatory Compliance: Ensures adherence to healthcare regulations, crucial for pharmacy operations.

Problem Statement

- Healthcare facilities, including pharmacies, face operational challenges that impact the efficiency and quality of service.
- Pharmacies often grapple with issues such as cumbersome inventory management, prescription processing delays, and a lack of streamlined medication tracking systems.
- These challenges are further exacerbated by the need for compliance with stringent healthcare regulations, contributing to an environment where productivity is hindered.
- The aim of this project is to address these critical issues by developing a comprehensive Pharmacy Management System

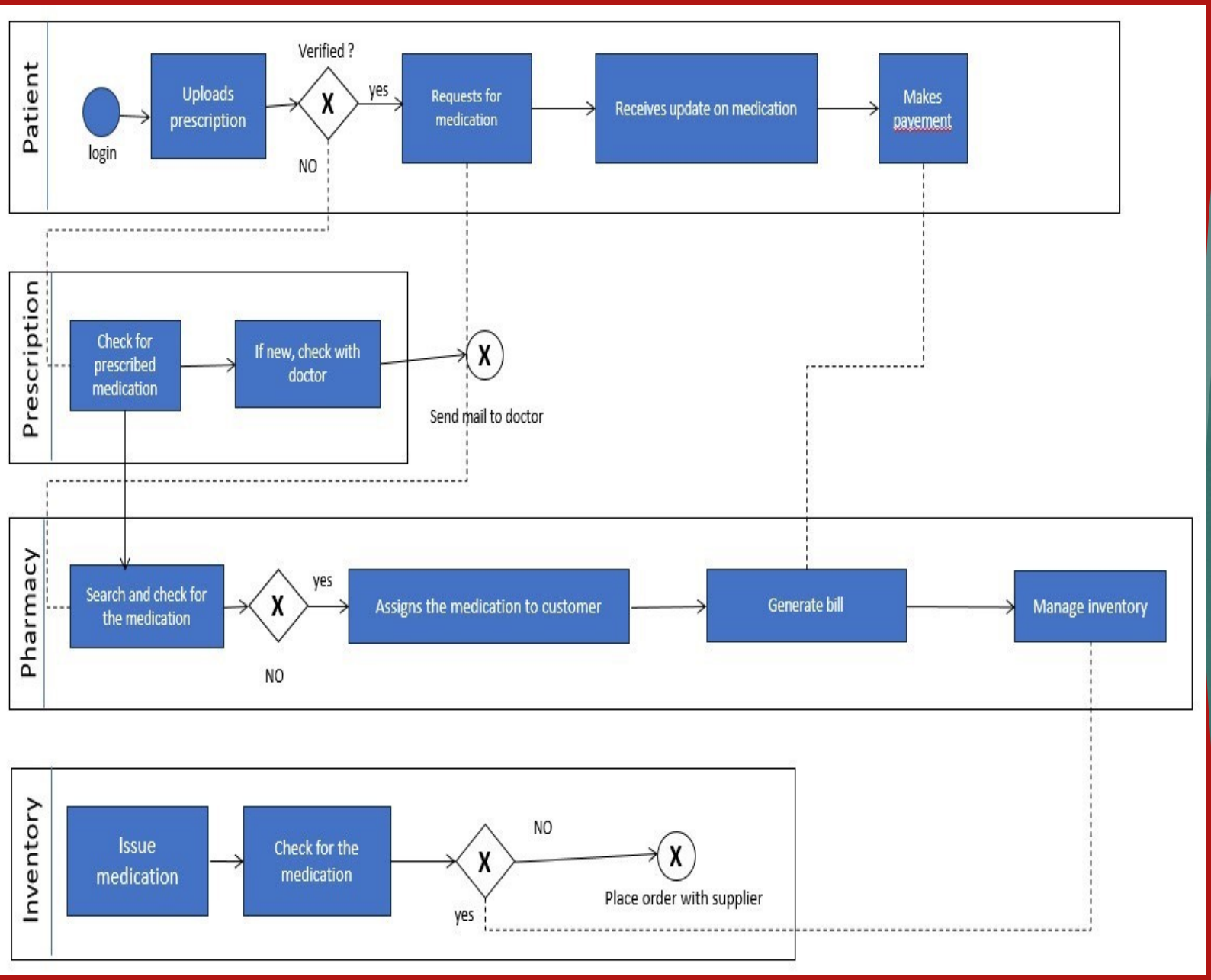
Objectives

Pharmaceutical businesses face numerous challenges in managing their day-to-day operations. These are quite a few we are trying to solve in the project:

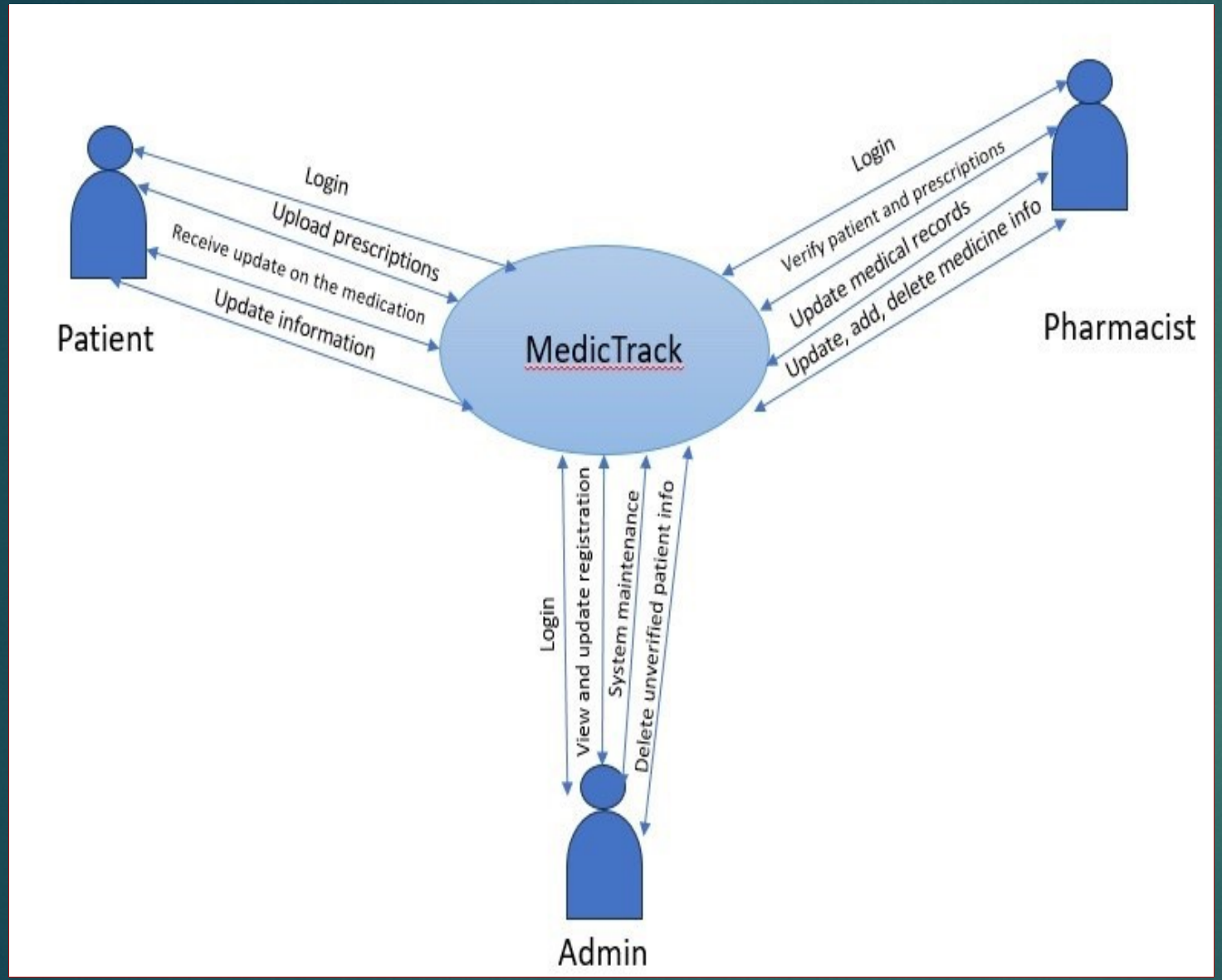
- Inventory Management: Streamline inventory management of pharmaceutical products.
- Prescription Processing: Process prescriptions efficiently and accurately.
- Patient Management: Manage patient information and medication history.
- Billing and Payment: Manage billing and payment processes.

Proposed Solution:

- Conduct user research-Collect feedback from pharmacy staff regarding their needs and preferences
- Define requirements-Define the requirements for the system, including inventory management, prescription processing, patient management, regulatory compliance, and billing and payment.
- Plan the structure-Plan the technical structure of the system, including the necessary hardware and software components, and how they will be integrated
- Develop the system-Develop the system, including the hardware components such as barcode scanners and the software components such as the inventory management system and prescription processing system
- Test the system-Test the pharmacy management system to ensure it is functioning properly
- Deploy the system-Deploy the system to the pharmacy and make it available to staff.
- Collect feedback: Collect feedback from staff to determine if any improvements or additional features should be added.

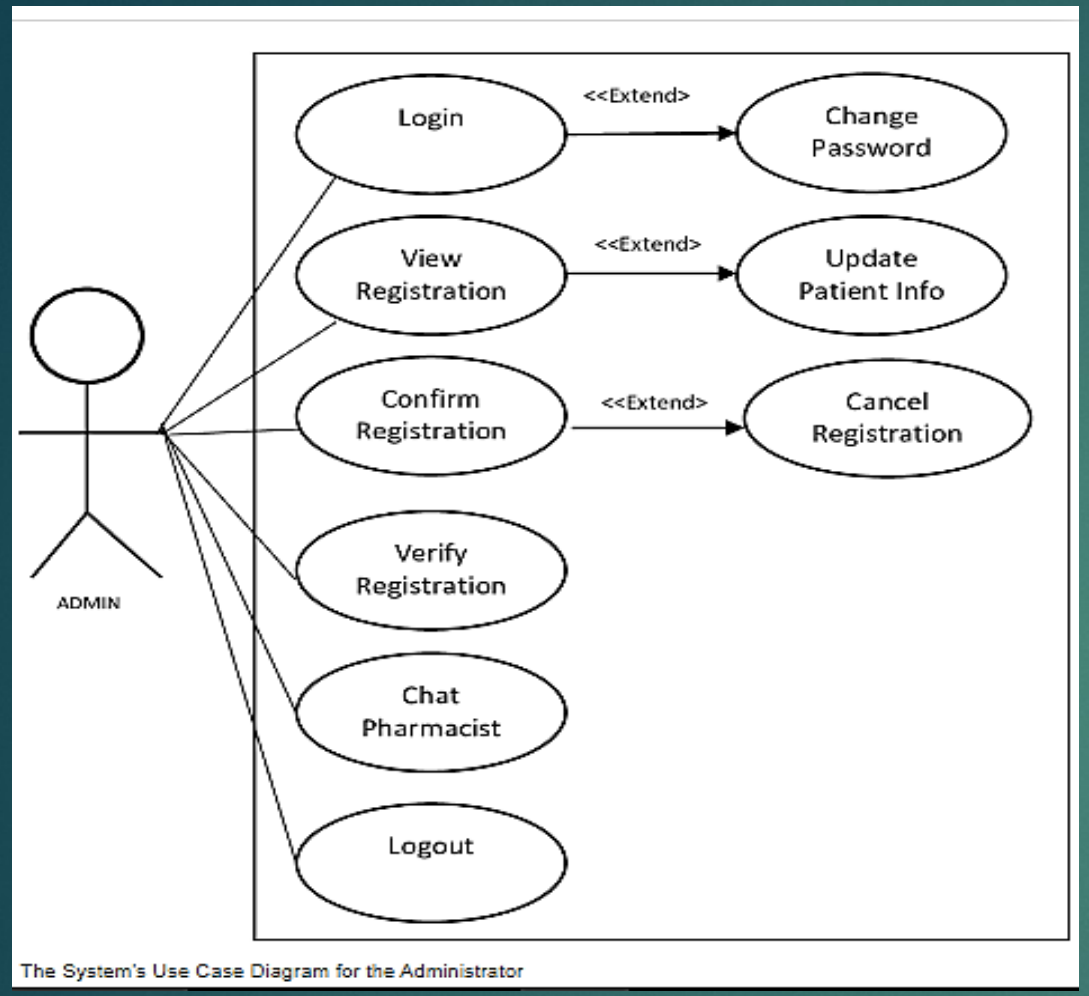


Business Process Model Notation (BPMN)



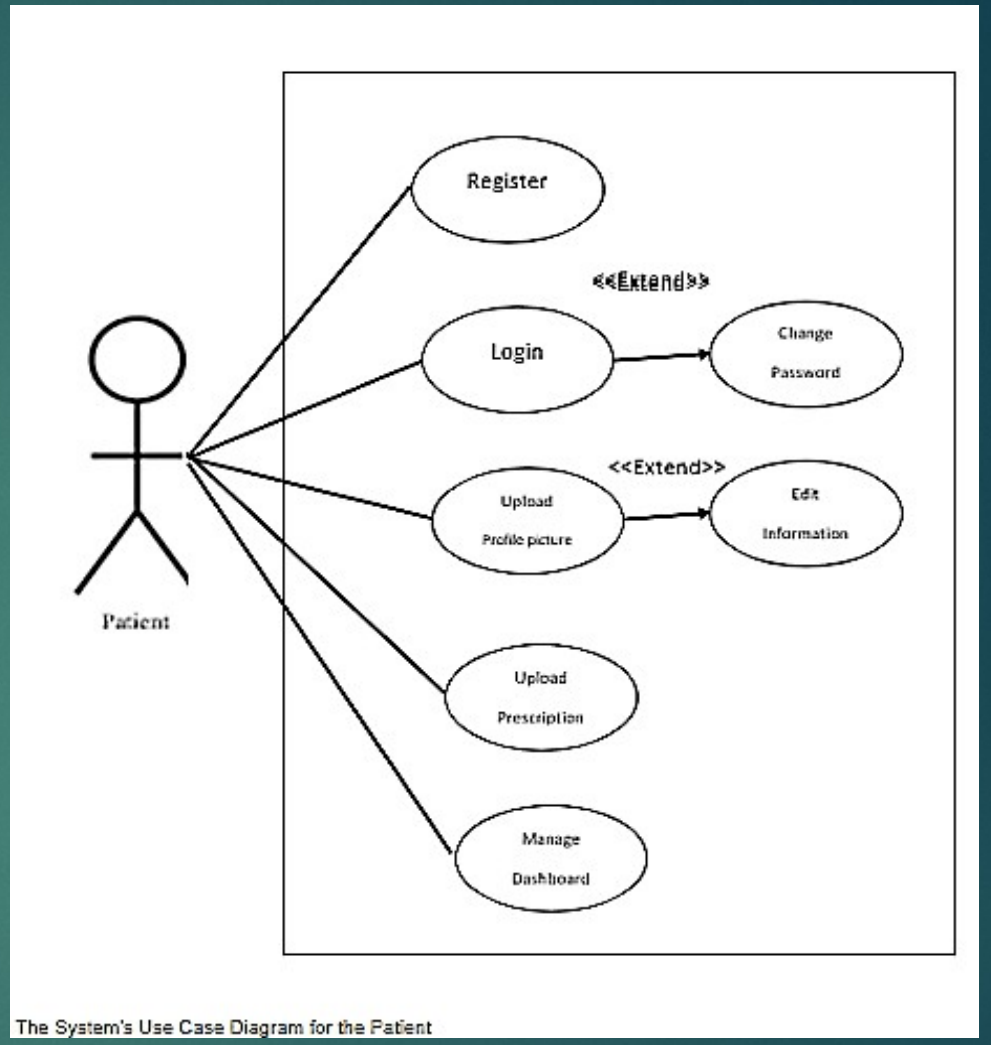
System Context Diagram

USE CASE DIAGRAS:



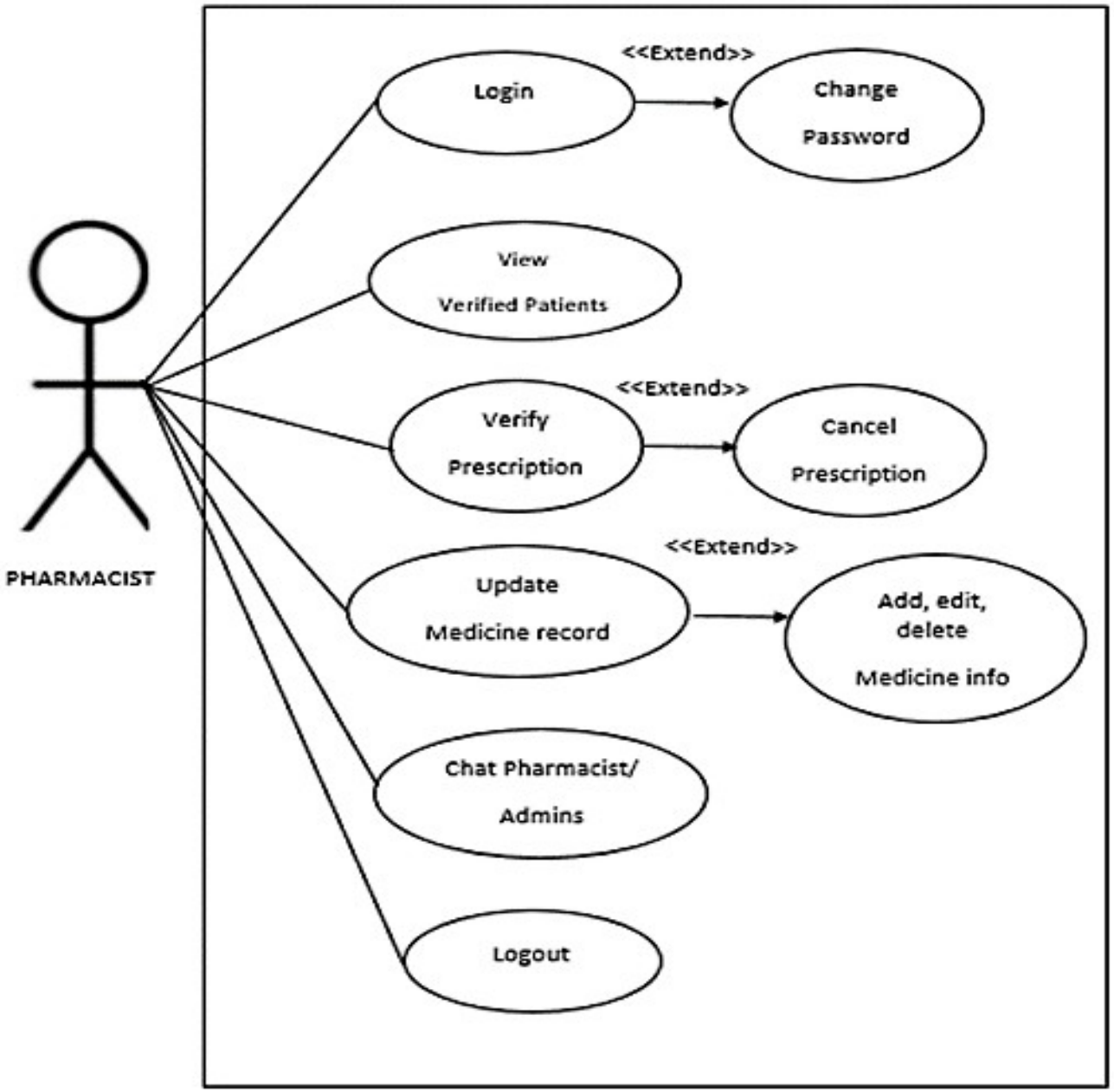
The System's Use Case Diagram for the Administrator

The figure shown above illustrates an elaborated flow system for the admin. The admin can log in, change password, confirm or cancel patient registration, verify patient registration, edit patient barangay, chat with co-admin and pharmacist, and logout his account.



The System's Use Case Diagram for the Patient

Figure above illustrates an elaborated flow system for the "patient" or the client requesting for medicines. The client/patient can register, log in, change his password, upload a prescription, and log out of his account.



The System's Use Case Diagram for the Pharmacist

Figure beside depicts the flow of the pharmacist's module. The pharmacist can log in, change his password, view verified patients by admins, verify and cancel prescriptions, update medicine information, chat with admins and log out of his account.

DATA DICTIONARY

Administrator Login Table:

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

Medicine information table:

Field Name	Data Type	Description
ID	Integer	Unique identifier for each medication.
Name	String	Name of the medication.
Type	String	Type or category of the medication.
Dosage	String	Dosage information for the medication.
Manufacturer	String	Manufacturer of the medication.
Stock Level	Integer	Current stock level of the medication.
Reorder Level	Integer	Stock level at which an order should be placed.
Expiration Date	Date	Expiration date of the medication.

Prescription Table:

Field Name	Data Type	Description
Prescription ID	Integer	Unique identifier for each prescription.
Patient ID	Integer	Identifier of the patient for whom it's written.
Medication ID	Integer	Identifier of the prescribed medication.
Dosage	String	Prescribed dosage of the medication.
Duration	String	Duration for which the medication is prescribed.
Date Issued	Date	Date when the prescription was issued.
Prescribing Doctor	String	Name of the doctor who prescribed the medication.

Patient Table:

Field Name	Data Type	Description
Patient ID	Integer	Unique identifier for each patient.
Name	String	Full name of the patient.
Date of Birth	Date	Date of birth of the patient.
Gender	String	Gender of the patient.
Contact Information	String	Contact details of the patient.
Allergies	String	Known allergies of the patient.
Medication History	Text	Record of medications previously prescribed.

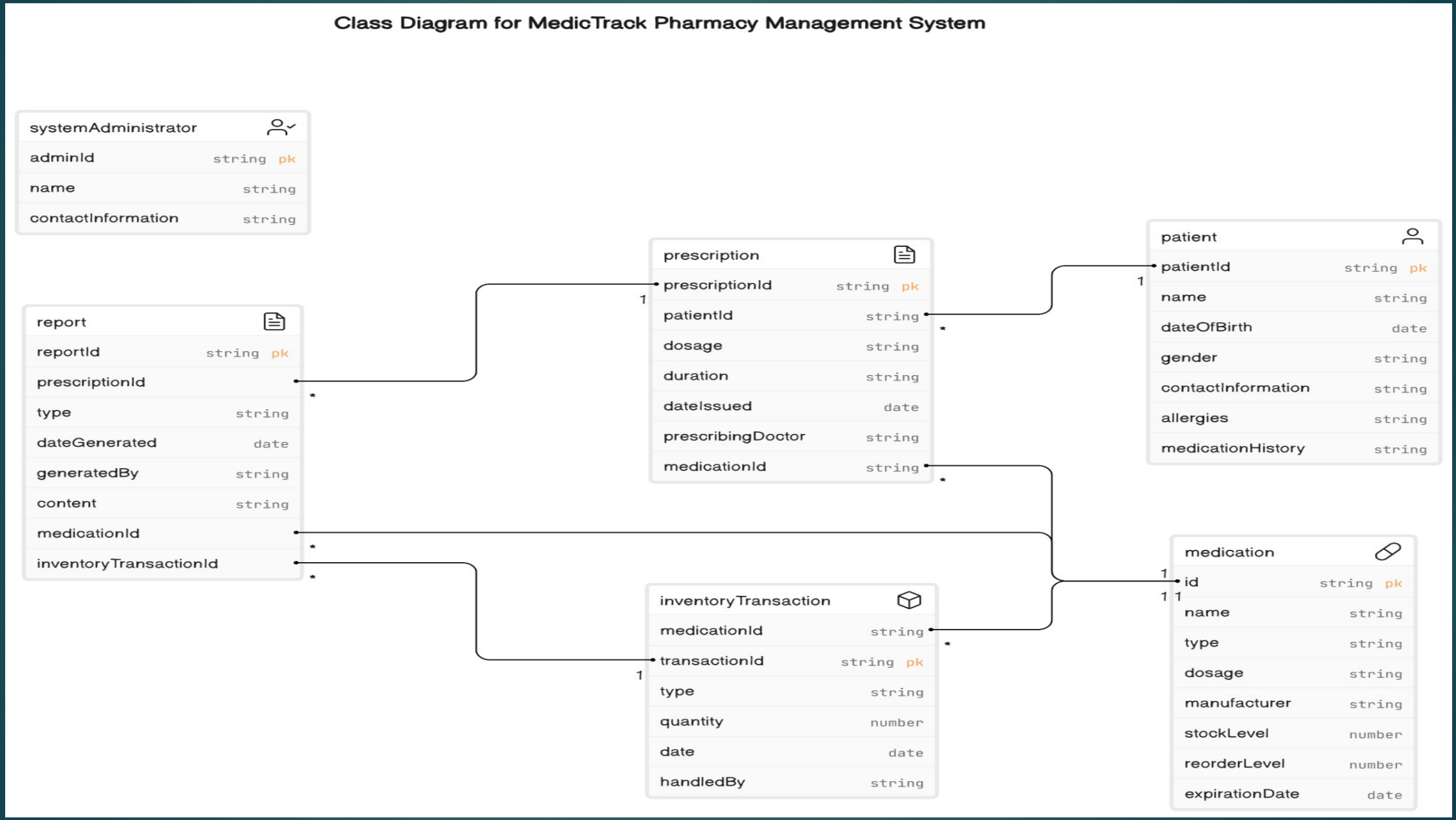
Inventory Transaction Table:

Field Name	Data Type	Description
Transaction ID	Integer	Unique identifier for each transaction.
Medication ID	Integer	Identifier of the medication involved.
Type	String	Type of transaction (e.g., stock-in, stock-out).
Quantity	Integer	Quantity of medication involved.
Date	Date	Date of the transaction.
Handled By	String	Staff member who handled the transaction.

Report Table:

Field Name	Data Type	Description
Report ID	Integer	Unique identifier for each report.
Type	String	Type of report (e.g., inventory, sales).
Date Generated	Date	Date when the report was generated.
Generated By	String	Staff member who generated the report.
Content	Text	Content or data contained in the report.

CLASS DIAGRAM:



- ***Diagram Explanation:***

- Classes and Attributes: Each class (Medication, Prescription, Patient, InventoryTransaction, Report, SystemAdministrator) is represented with its respective attributes, such as ID, Name, Type, Dosage, etc.
- Methods: Methods for each class are listed, like addMedication(), createPrescription(), addPatient(), etc., which define the actions or functionalities associated with each class.
- Relationships: The diagram shows relationships such as: Prescription is associated with Medication and Patient. InventoryTransaction is associated with Medication. Report can be generated for Medication, Prescription, and InventoryTransaction data.
- This class diagram provides a structured view of the system's architecture, highlighting how different classes interact and contribute to the overall functionality of the MedicTrack Pharmacy Management System. It serves as a blueprint for system development and understanding the object-oriented approach of the system.
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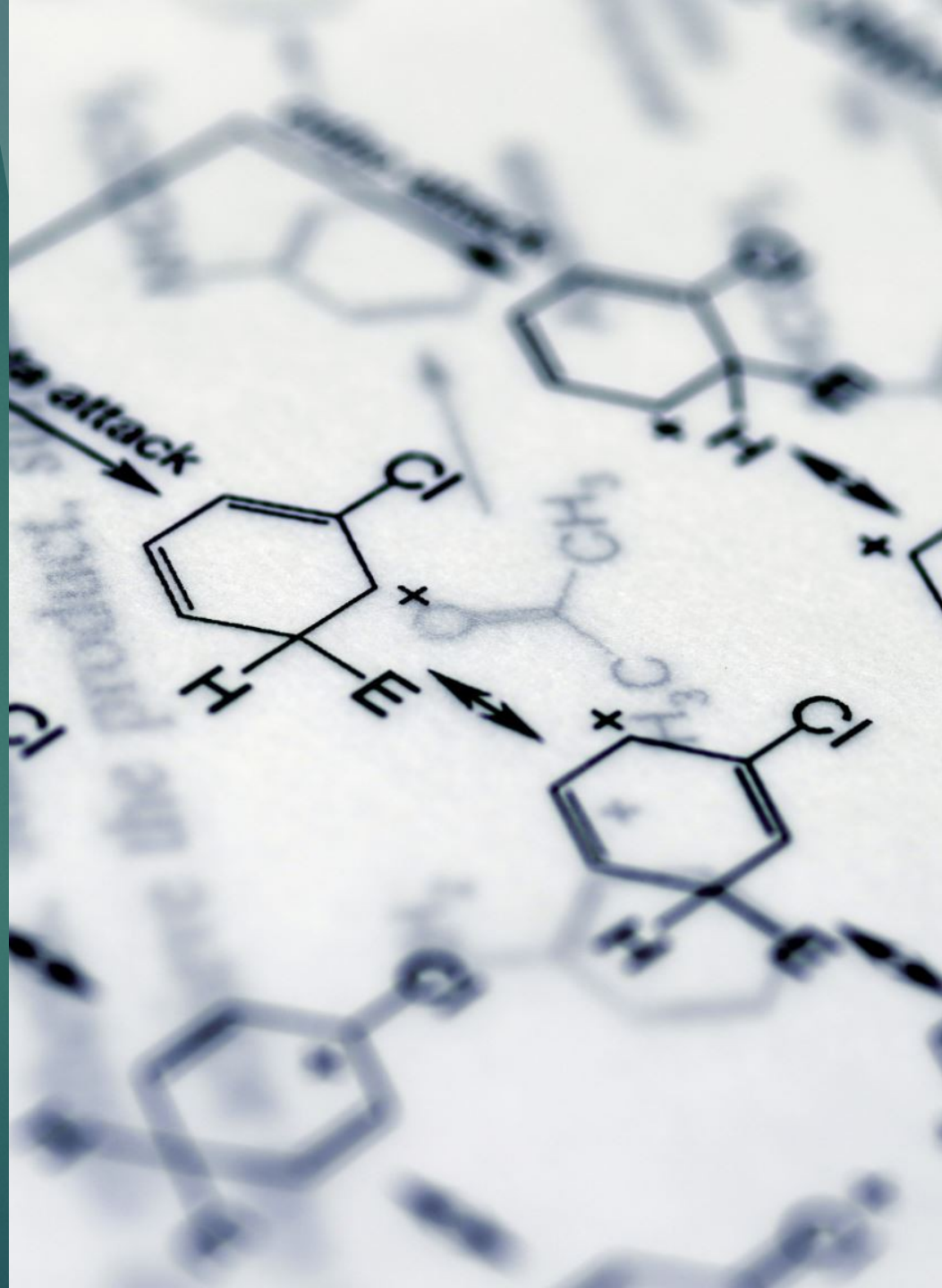
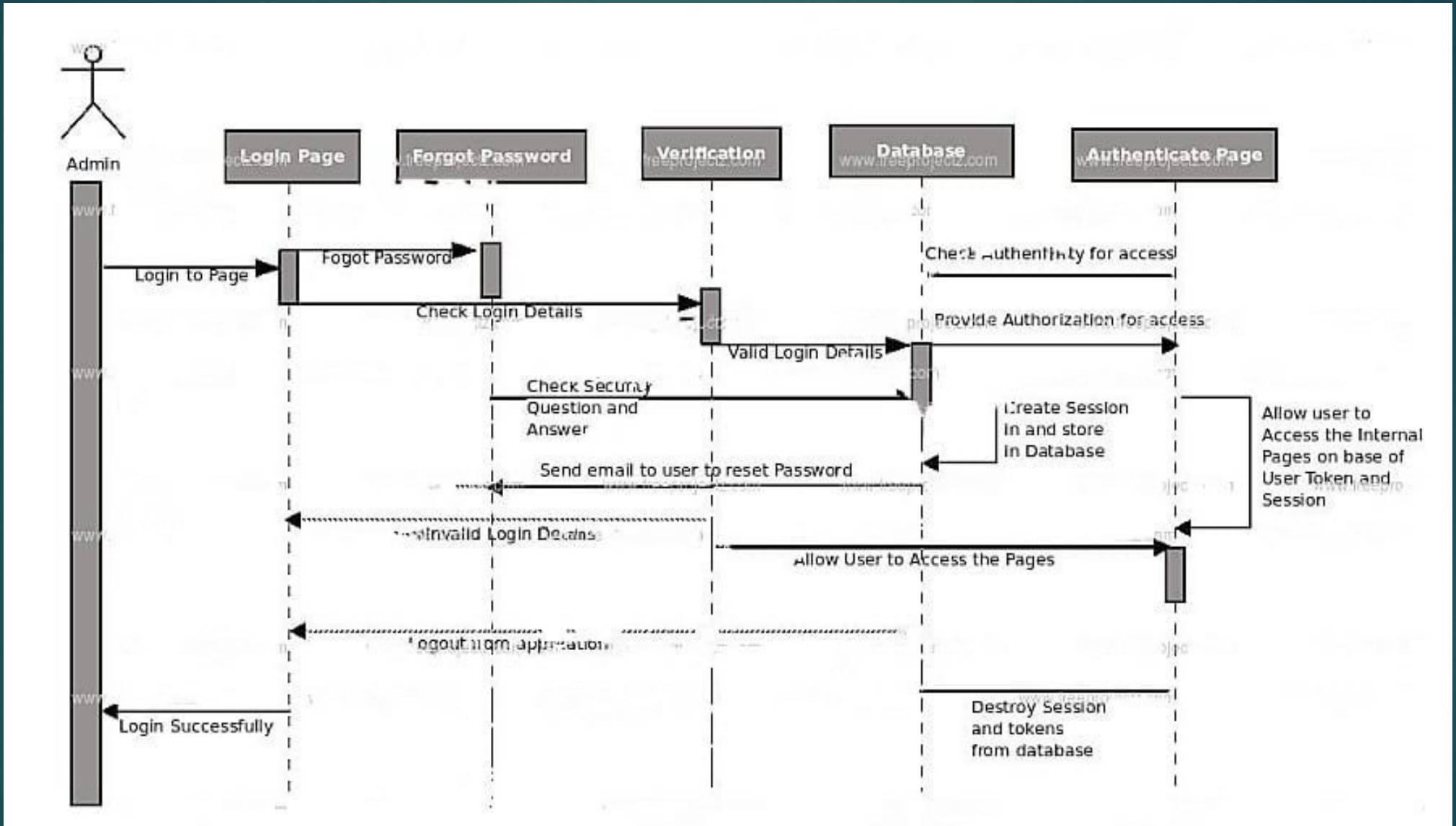


SEQUENCE DIAGRAM:



FUNCTIONAL REQUIREMENTS:

There are functions done by the system such as: store the necessary information of medicine, prepare bill for the medicine, easily searching of medicine, Update, delete and save data of medicine.

Store the necessary information of the drugs:

Searching Medicine and other Data's:

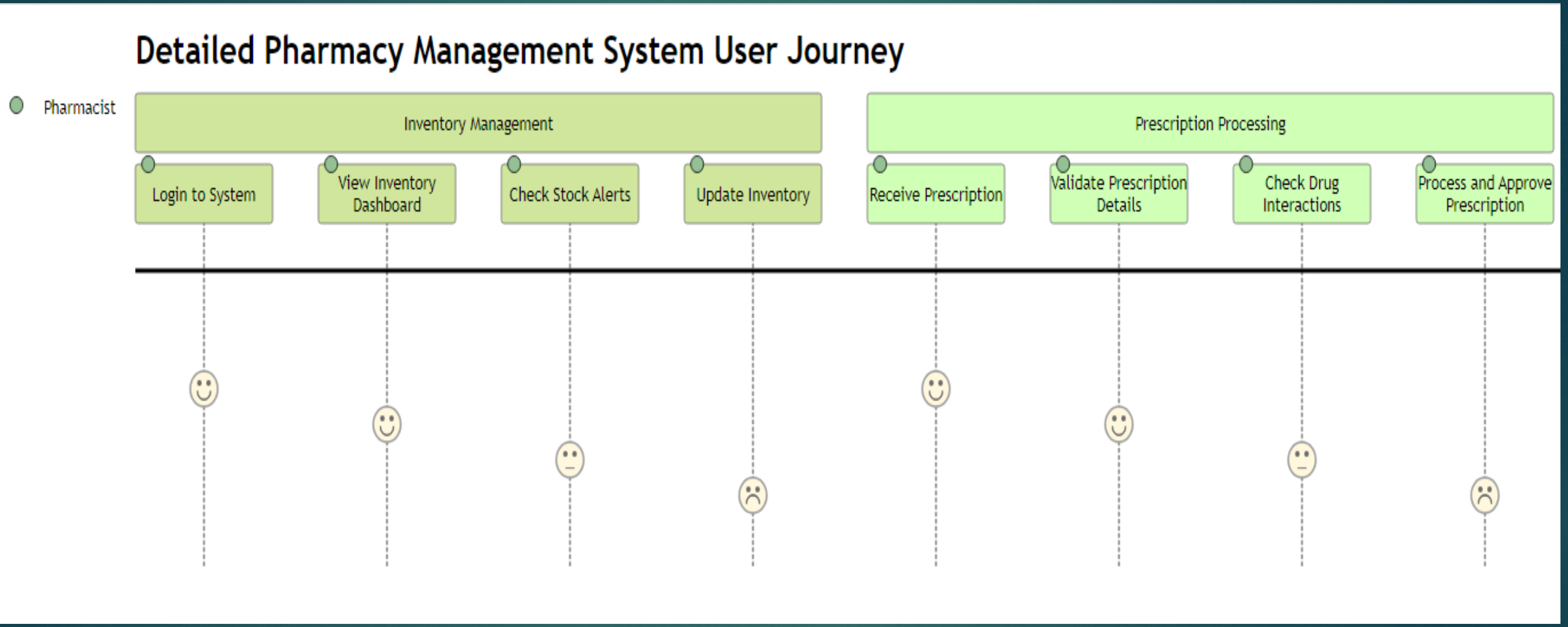
Alerting pharmacy Data in the system:

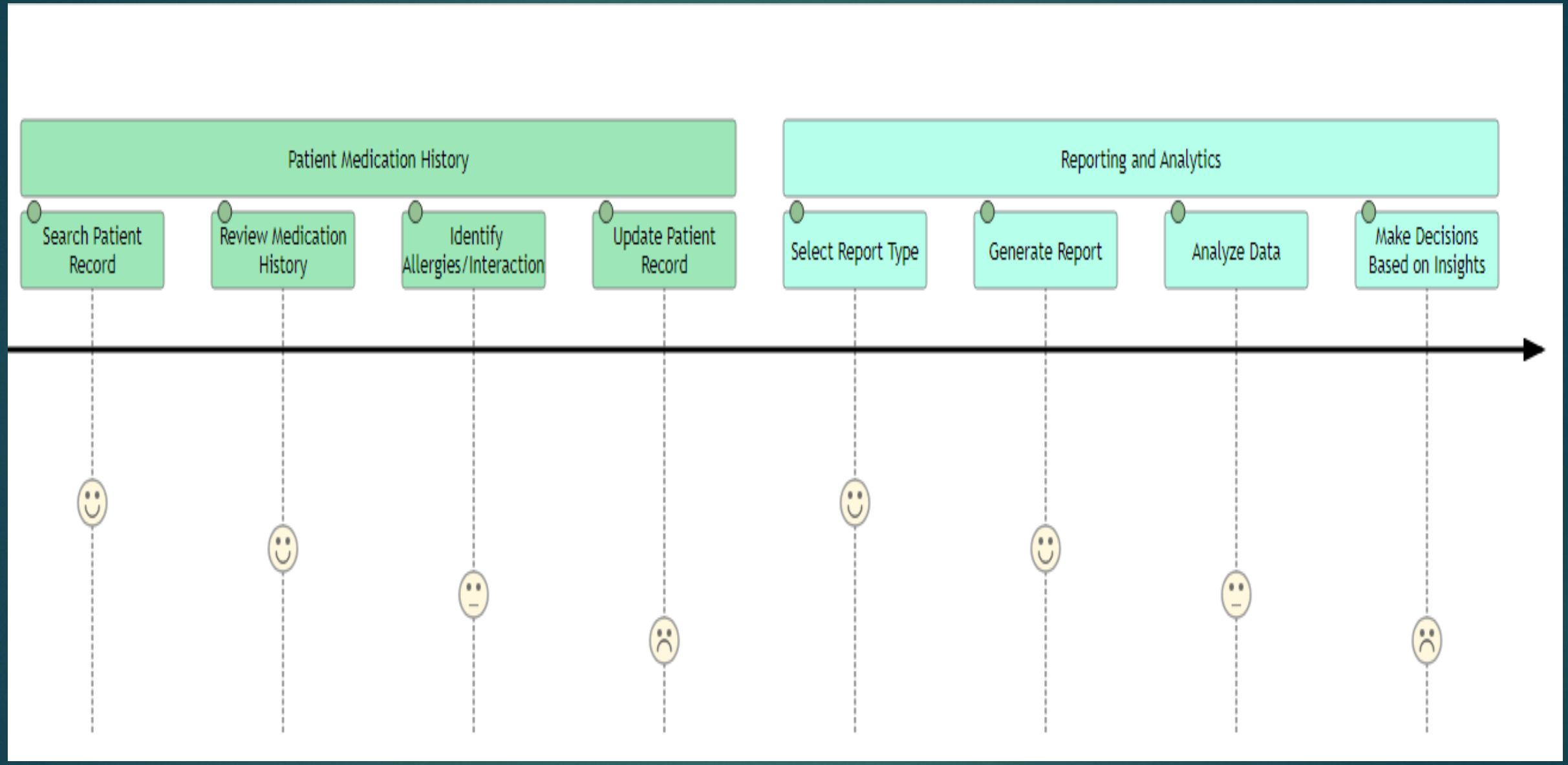
Non-FUNCTIONAL REQUIREMENTS:

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

- Usability
- Reliability
- Performance
- User interface
- Operation
- Supportability
- Implementation

Interface Design




Patient Medication History
Reporting and Analytics
Search Patient Record
Review Medication History
Identify Allergies/Interaction
Update Patient Record
Select Report Type
Generate Report
Analyze Data
Make Decisions Based on Insights

Dashboard | Inventory | Prescriptions | Patient Records | Reporting | Settings

Stock Levels

Real-time data on stock levels...

Pending Prescriptions

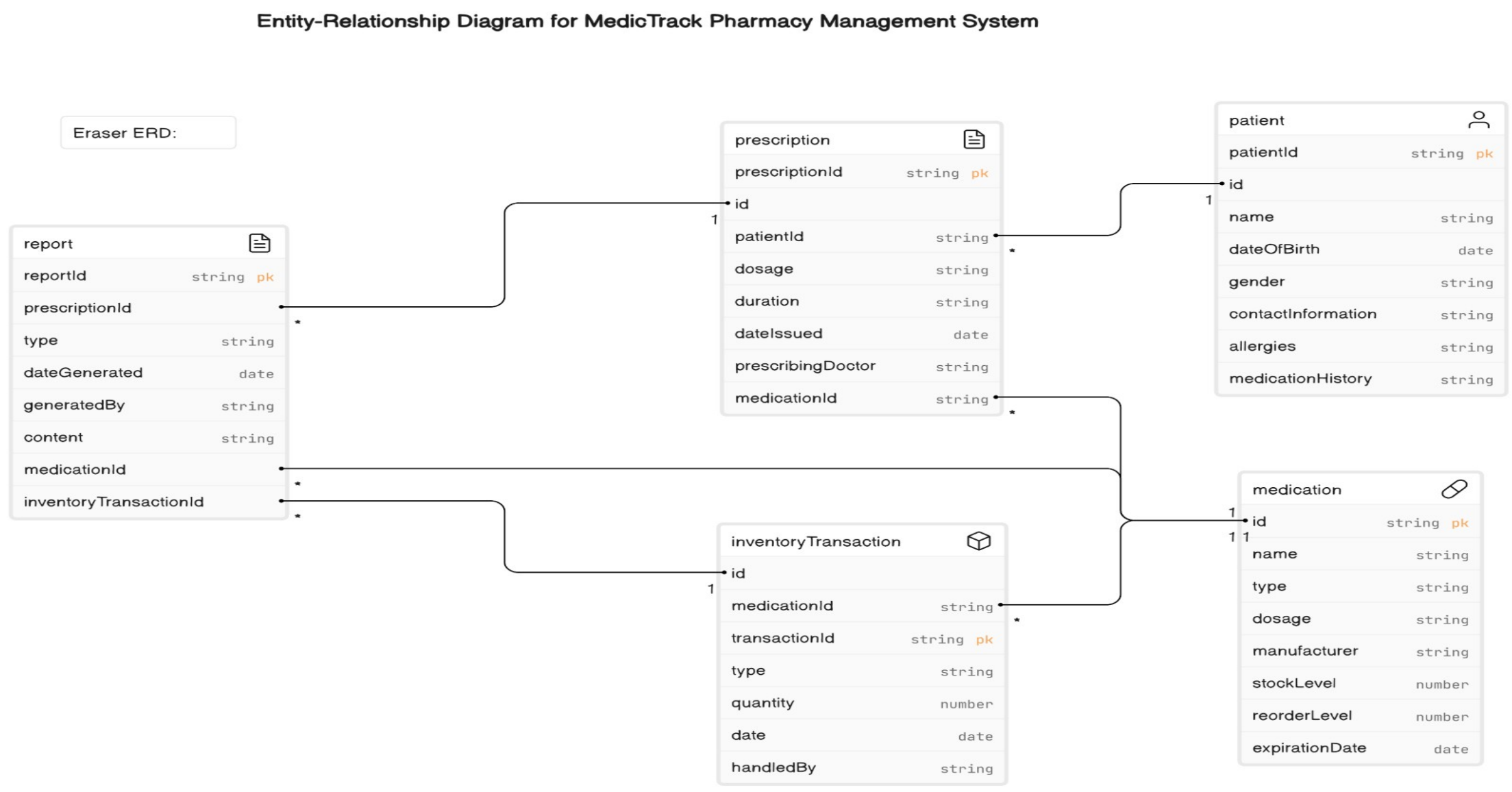
List of pending prescriptions...

Alerts

Notifications for low stock or near-expiry items...

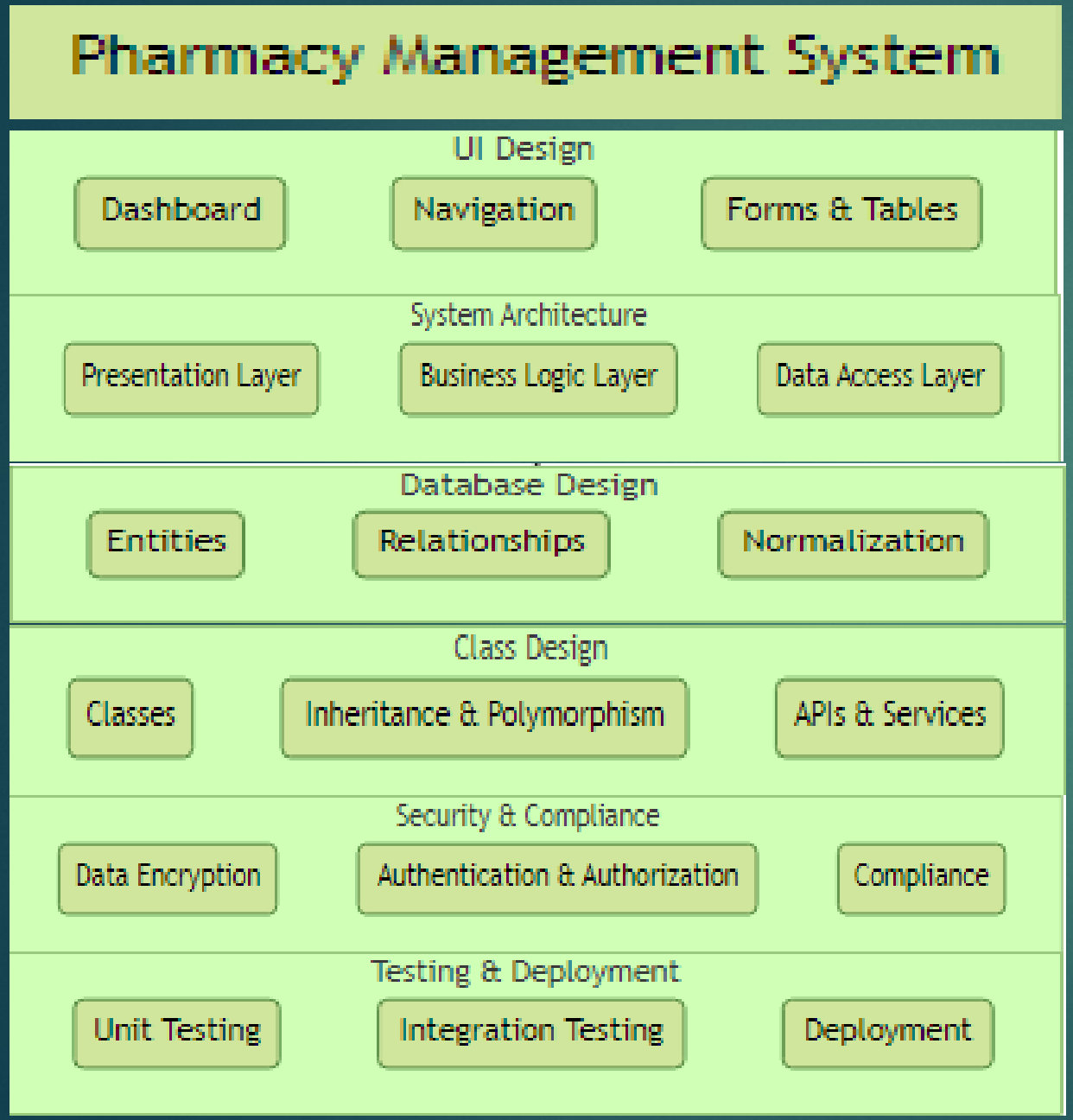
Add Inventory Item | Create Prescription | View Reports

Database Design



This diagram visually represents the structure of the database, showing how different entities like ***PHARMACY, PATIENT, PRESCRIPTION, MEDICATION, and INVENTORY*** are interconnected. The relationships between these entities depict how data flows within the system, supporting functionalities such as prescription management, patient record keeping, and inventory control.

Software Design



The software design diagram provides a clearer and more detailed visual representation of the system's architecture and its various components:

- **UI Design**: Highlighting the Dashboard, Navigation, and Forms & Tables.
- **System Architecture**: Detailing the Presentation Layer, Business Logic Layer, and Data Access Layer.
- **Database Design**: Focusing on Entities, Relationships, and Normalization.
- **Class Design**: Covering Classes, Inheritance & Polymorphism, and APIs & Services.
- **Security & Compliance**: Emphasizing Data Encryption, Authentication & Authorization, and Compliance.
- **Testing & Deployment**: Including Unit Testing, Integration Testing, and Deployment.

Main Selling Point

- **Enhanced Efficiency and Accuracy**: By automating key processes like inventory management and prescription processing, MedicTrack significantly reduces the likelihood of errors and increases operational efficiency.
- **Improved Patient Care**: Access to comprehensive patient medication histories allows pharmacists to provide personalized and safer healthcare services, including alerts for potential drug interactions or allergies.
- **Real-Time Data Insights**: The system's robust reporting and analytics capabilities enable pharmacies to make data-driven decisions, optimizing inventory levels and understanding patient needs better.
- **Regulatory Compliance**: With built-in features to ensure compliance with healthcare regulations, pharmacies can operate with confidence, knowing they adhere to industry standards.
- **Scalability and Integration**: Designed to be scalable, MedicTrack can accommodate the growing needs of a pharmacy. Its ability to integrate with various healthcare systems and providers makes it a versatile tool in a connected healthcare environment.
- **User-Friendly Interface**: Despite its comprehensive functionalities, MedicTrack boasts a user-friendly interface, making it accessible to all levels of tech-savvy users.
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Conclusion

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