

Zewail City of Science, Technology and Innovation
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School of Computational Sciences and Artificial Intelligence CSAI
202 – Fall 2025

Introduction to Database Systems

Pharmacy Management System

Design Phase – ER Diagram initial version Report

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Project : Pharmacy Management System

-Proposed Project Overview:

This system will assist with the operation of the pharmacy itself. This entails recording medicines, suppliers, customers, and sales transactions. It will allow the pharmacist to manage inventory, keep track of stock counts, and manage orders for medicines and suppliers. This system will also allow customers to request medicines online and admins can use the back-end of the system to generate sales and stock reports.

-List of System Users:

1. Admin
 2. Pharmacist
 3. Supplier
 4. Customer
-

-Functionality available by User Type:

Admin:

- Oversee all accounts and permissions for users.
- Supervise all orders and transactions.
- Create sales and stock reports.
- Alert users about expired and low stock medications.
- Manage and approve supplier requests for new medicine deliveries

Pharmacist:

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- Add and modify medicine data.
- Review stock availability and update counts.
- Store customer orders.
- Ask for stock from vendors.
- See sales reports and reports of transactions during the day.
- Manage customer's prescriptions.

Supplier:

- Register for and review requests from pharmacists.
- Give available medications and their costs.
- Approve or deny supply requests.
- Provide deliveries and see if payments are completed.
- Communicate with pharmacists to confirm or modify orders.

Customer:

- Look up medications by their name or their classification.
- See available medications and what prices they have.
- Order medications from the website.
- Look at the status of orders.
- Leave feedback or a rating for the service.

-List of Entities

1. **User** — UserID (PK), Username, Password, Role, Email, Phone

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2. **Admin** — AdminID (PK)(Sub entity from user)
3. **Pharmacist** — Pharmacist ID (PK),License No, Branch ,(Sub entity from user)
4. **Supplier** — Supplier ID (PK), Company Name, (Sub entity from user)
5. **Customer** — Customer ID (PK),Name, (Sub entity from user)
6. **Medicine** — Medicine ID (PK), Name, Price, Expiry Date, StockQuantity
7. **Category** — Category ID (PK), Category Name, Description
8. **Order** — Order ID (PK), Total Amount, Order Date, Status, discount
9. **Inventory** — Inventory ID (PK), Quantity in Stock, Last Updated
10. **Payment** — Payment ID (PK), Amount, Payment Date, Payment Method, Status
11. **Supplier_Request** — Request ID (PK), Quantity, Status, Request Date
12. **Feedback** — Feedback ID (PK), Message, Rating, Date
13. **Notification** — Notification ID (PK), Message, Type, Date, Status
14. **Report** — ReportID (PK), ReportType, GeneratedDate

User

Represents the login account for any system user, containing credentials and contact details.

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Admin

Represents system administrators who control permissions, reports, and notifications.

Pharmacist

Represents pharmacists who manage medicine inventory and customer prescriptions.

Supplier

Represents companies that provide medicines and receive requests from pharmacists.

Customer

Represents customers who buy medicines and provide feedback.

Medicine

Contains information about medicines such as name, category, supplier, and stock data.

Category

Represents the classification of medicines (Antibiotics, Painkillers, Vitamins).

Order

Represents a customer's medicine order handled by a pharmacist.

Payment

Stores payment details related to each order, including payment method and status.

Inventory

Keeps records of medicine stock quantities and last updates.

Supplier_Request

Represents requests made by pharmacists to suppliers for new medicine stock.

Feedback

Contains customer feedback and ratings for pharmacy services.

Notification

Represents system alerts or messages sent to users.

Report

Represents reports generated by admins, including stock and sales summaries.

Pharmacy Management System - Relationships Report

The Pharmacy Management System is designed to automate the operations of a pharmacy, including managing medicines, suppliers, customers, and sales. It ensures efficient stock control, reduces errors related to expiry or shortages, and provides reporting tools for administrators.

Entity Relationships Table

Relationship Name	Entity 1	Entity 2	Cardinality (Entity1 : Entity2)
makes	Pharmacist	Supplier_Request	1 : N
receives	Supplier	Supplier_Request	1 : N
for	Supplier_Request	Medicine	N : M
processes	Pharmacist	Order	1 : N
places	Customer	Order	1 : N
has	Order	Payment	1 : 1
belongs_to	Medicine	Category	M : N
tracked_in	Medicine	Inventory	M : N
supplied_by	Medicine	Supplier	M : N
creates	Admin	Report	1 : N
writes	Customer	Feedback	1 : N
Receive	User	Notification	1 : N

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Relationship

Description

[Pharmacist] 1 <makes> N [Supplier_Request] A pharmacist can make many supplier requests.

[Supplier] 1 <receives> N [Supplier_Request] A supplier can receive many requests.

[Supplier_Request] N <for> 1 [Medicine] Each request refers to one medicine.

[Customer] 1 <places> N [Order] A customer can place many orders.

[Pharmacist] 1 <processes> N [Order] A pharmacist can process many orders.

[Order] 1 <has> 1 [Payment] Each order has one payment.

[Medicine] N <belongs_to> M [Category] Each medicine belongs to many category.

[Medicine] N <tracked_in> M [Inventory] Each medicine has one inventory record.

[Medicine] N <supplied_by> 1 [Supplier] Each medicine is provided by one supplier.

[Admin] 1 <creates> N [Report] An admin can create multiple reports.

[Customer] 1 <writes> N [Feedback] A customer can write multiple feedbacks.

[User] 1 <receives> N [Notification] A user can receive many notifications.

Assumptions:

- User have subentities,(Admin, Pharmacist, Supplier, Customer) and it can be one and only one role
- Many medicines can be supplied by many suppliers

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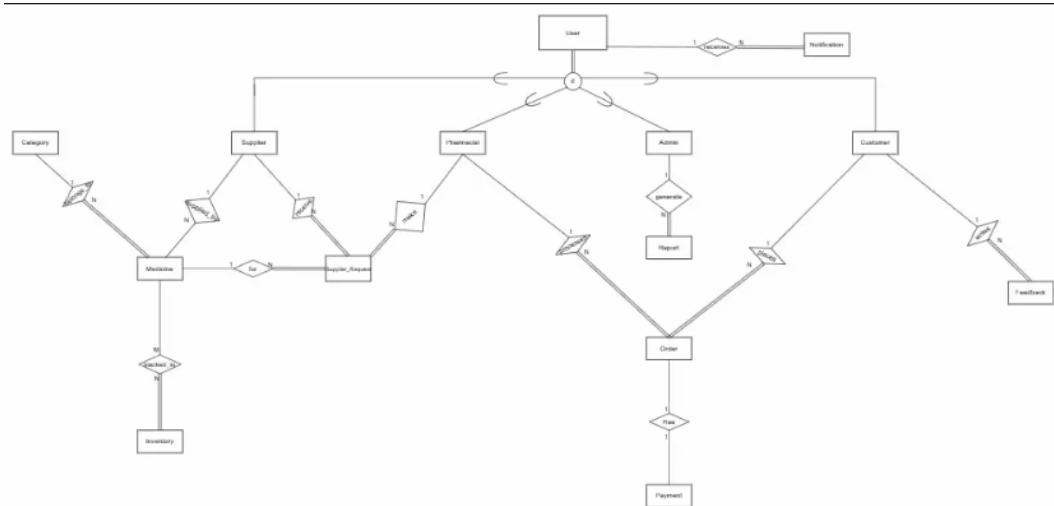
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- Many medicines can be in many inventories and inventories have many medicines
- Order have one and only one payment and it must have payment
- Medicine can be in many categories
- Medicines can have many supplier requests and supplier requests can be for many medicines

ER Diagrams:

https://drive.google.com/file/d/17Aukg_L_2ohn2BFnVxkxpIM-NE20XOPk/view?usp=sharing



<https://drive.google.com/file/d/1PspQpbWsdDC2Hm7zpUsRhaMGK502SPHE/view?usp=sharing>

