# Chapter 1

## Purpose:

- The pharmacy is the place that specializes in formulating and providing medicines by selling them to patients and reviewing them so as to ensure that the patient gets the correct medicine .. with a description of how to use it to be effective for the disease he suffers from.

## Scope:

- System concerning more on helping the owner and facilitate the process of buying and selling.

## Objectives:

- Adding some modern features like shopping online , recording all information about drugs , making special section for table drugs.
- Making a system for solving some difficulties facing the owner of the pharmacy like pricing , searching for drugs , recording payment processes.

# Abbreviation:

We asked him about some abbreviations that he use and we came up with this:

- QD : Once a day.
- BID : Twice a day.
- PC : After meals.
- QH : Every hour.
- I.M : intramuscular.
- I.V : intravenous.
- SC : subcutaneous.

# Terminology:

- Prescription .
- Treatment .
- Side effect (nausea , dizziness , headache , … etc) .
- Antibiotic .
- Antipyretics .
- Analgesic / painkiller .
- Syrup .
- Tablet .

- Capsules .
- Effervescent .
- Creams .
- Ointments .
- Lotion .
- Ampules .
- Topical medicines .
- Drops .
- Injection (intramuscular , intravenous , subcutaneous ).

## Definition :

1- Contraindication: A specific condition or circumstance in which a medication should not be used or prescribed.

2- Therapeutic : Referring to a medication or treatment that is intended to treat or alleviate a disease or symptom.

3- Pharmacology : The study of how drugs interact with the body and how they are used to treat disease.

4- Pharmacist : is a person who specializes in pharmacology. Its traditional role is to dispense medicines written in medical prescriptions from specialized doctors, while reviewing the correct methods of use and clarifying the side effects of drugs . the pharmacist ensures the safe and effective use of medicines .

5- Pharmacy / Drug store :
The place where prescriptions are processed and medicine given to you . This store contains cosmetics, vitamins and nutritional supplements, in addition to containing a place dedicated to processing medical prescriptions .

6- Prescription: formal communication from a physician or other registered health-care professional to a pharmacist, authorizing them to dispense a specific prescription drug for a specific patient .

7- Side effect: Most medicines have some side effects that may appear in some people and not appear in others.

# Reference:

# Chapter 2

# FEASABILITY STUDY FOR PHARMACY SYSTEM

Hp

# - Operational feasibility:

In this branch of the pharmacy, we will create software system serve it and will make it connected with original one in the main branch. This new will help them to find the products, if they are available or sold out, their reactive elements, and their prices. There are some features our software system will provide such as:

- Recording the staff attendance, deductions and salaries.
- Calculating the profit from each price but only the administrator can access it which make our system more secure.
- Management the selling of table drugs that make all doctors careful about it.
- We will also add a periodic inventory, tracking expiration dates, and generating alerts when stoke levels are low.

All of these features satisfy the requirements identified in the requirements analysis phase. We show a prototype of our software system to stack holders and they found it easy to use and convenient their requirements.

# Technical feasibility:

- Keeping branches synchronized:
    - To achieve this, we will have to rent one server and connect all system devices on this server.
- to record the staff attendance, deductions and salaries:
    - We will have to make a database for the pharmacy workers and record this information on it.
- To calculate the profit from each price and only the administrator can access it
    - To accomplish this in a database, we can create a table that includes the price and profit information and restrict access to this table using database privileges and make only administrator can control this section.
- to make all doctors careful about the selling of table drugs
    - we will these kinds of drugs colored red so they can identify it easily
- to accomplish periodic inventory:
    - We can create a table to store the inventory data and schedule a task to update the table at regular intervals. and we will make sum function to calculate the SUM of quantities
- expiration date alert
    - to achieve this, we will store every expiration date of every drug on database table
    - We can set up a periodic alert system to notify you when a drug is about to expire or has expired.
- the technologies and tools that we will use in this project:
    - we will use SQL Server as a database management system to create our database

- dart as a programming language
- flutter framework for building the mobile app for the system
- php laravel framework for backend

# Risks:

1. Time could not be enough to accomplish what the client needs.

2. The cost of the program might not be affordable for us. 3. It would be challenging for us as students to create professional software.

4. It can be difficult to handle the technology because this is the first time using it.

5. Accessibility: If the technology is not widely available or requires specialized knowledge or expertise to use, it may limit the feasibility of the project.

6. Reliability: If the technology is unreliable or prone to failure, the project may not be feasible.

7. Security risks associated with the use of technology

can impact the technical feasibility of a project. 8. If the project is too complex, Technical feasibility can be impacted, making it difficult or impossible to implement with existing or available technologies.

9. Scalability: A project may be technically feasible for a small-scale implementation but become infeasible when scaled up to a larger size.

10. Integration of different technologies or systems can pose a challenge in terms of technical feasibility.

# Economic feasibility:

## First: Tangible VS Intangible benefits

### A) Tangible benefits:

1. **Increased Effciency**: With a well-designed pharmacy system, pharmacists can manage their workfow more effciently by automating many routine tasks such as inventory management, products pricing & categorizing.
2. **Reduced Errors**: Our pharmacy system will help reduce errors in medication dispensing without confusion, ensure that patients receive the right medication at the right dosage& will decrease the overall probability of system failure .
3. **Enhanced Security**: A pharmacy system can provide enhanced security for sensitive patient information, including prescription details and medical histories.

### B) Intangible Benefits:

1. **Improved Customer Satisfaction**: A well-designed pharmacy system can help improve customer satisfaction by reducing wait times and ensuring that patients receive the correct medication.
2. **Competitive Advantage**: Implementing a pharmacy system can give a pharmacy a competitive advantage over competitors who do not have similar systems in place.
3. **Better Decision Making**: A pharmacy system can help pharmacists make better decisions by providing access to real-time data and analytics about prescriptions, inventory, and patient history.

4. **Increased Staff Satisfaction**: A pharmacy system can help alleviate workload for pharmacy staff, allowing them to focus on other important tasks and improving job satisfaction.

## Second: Tangible VS Intangible costs

### A)Tangible costs

**1. Software costs** :as we may need to purchase certain software to aid us in making the system .

**2. Maintenance costs**: when the system is finished we need to keep it maintained and updated .

**3. Staff training costs**: as the employees as the employees working in the pharmacy won't know how to use the system .

**4. System integration costs**: as there could be another system in place that we need to integrate the new system with .

### B) Intangible costs

**1. Time and effort:** as implementing a new system is a time consuming process that requires effort .

**2. Staff morale**: as the system could affect it if the staff aren't trained for the new system

**3. Customer satisfaction**: as any delay caused by the implementation of the new system could have long-term effects on the customer retention rate .

**4. Disruption of the workflow:** as it may take time for the staff to adapt to the new system causing delays or confusion.

# Third: One time Vs Recurring costs

## A) One time costs

***It means first year costs. It includes the initial costs needed to start business like:***

1. Design.
2. Installation.
3. Implementation of hardware & software.
4. Buying major equipment.
5. Hiring fees.
6. Logo design.
7. Paying for permits, licenses & fees.

## B) Recurring costs:

***It's any cost your business incurs weekly, monthly or annually like*:**

1. The incremental time required for staff to support the system.
2. Repacking medications that doesn't have standard barcodes.
3. Directed costs:
    - The lease agreements for repackaging center.
    - Carousel system.
    - Operating and maintenance costs for equipment.
4. Bills.
5. Staff salaries.
6. Insurance fees

# Interview dr.wessam pharmacy

1. **What is the pharmacy name ?**

*Dr.wessam pharmacy.*

2. **Is there other branches and where ?**

*There are 2 branches Mahalat-Marhum and Tanta.*

3. **Do you have a software system that serves all the branches ?**

*There is only one system that serves the main branch.*

4. **What are the services you would like us to offer to you ?**

*The client said that he needs to create a system in the other branch and connect it with the original one (which means in our software engineering perspective that means he needs more than one node with a copy of software system in each branch connected in a network).*

5. **What are the problems you face in the branch that is not connected to the system ?**

*He found a great difficulty in remembering the prices of the products.*
*He wasn't sure whether the products were available or sold out.*
*Difficulty in searching for the products inside the pharmacy which wastes time.*

6. **What are the features the existing system provides you with ?**

*Supervising other doctor's attendance shifts.*

*Amount and pricing and categorizing the places inside the pharmacy. Alternatives for a sold-out medicine.*

7. **What are the disadvantages of your existing system?**

*Experiencing system failure from time to time which takes about 15:20 minutes which hinders the workers.*

8. **What are the features you would like to add to the existing system?**

   *He would like to add a feature that records the workers' salaries and deductions. He would like to add a feature that calculates the profit from each piece but only him (the administrator) can access it.*

9. **What about narcotic and sedative drugs (table drugs), does you system support its management?**

   *No, but I would like to add this feature to make all the doctors careful with selling these special products.*

10. **Would adding a feature for identifying the usage of each medicine be useful for you ?**

    *Yes, I sometimes find it hard to remember the reactive elements of some medicines.*

11. **Does the existing system supports other services provided by your pharmacy ( blood pressure, sugar level, vitamins levels, embody,….etc.) ?**

    *Well I never thought of it but it would be a great feature that helps us to handle these services more easily.*

12. **When do you expect to receive the system ?**

    *As a professional company I expect to receive it in one week, but as you are still students I expect to take **2 months** to produce it*.

13. **After our discussion how about making a deal that serves both of us, we as students and you as a pharmacy administrator ? would you help us to finish the project and In holiday we will try our best to provide you with the system with the new features that we agreed on for free only for you ?**

    *Yes, I would like to support a hardworking team like you that suggests really creative ideas and features and I am looking forward to using it.*

**14. Have you ever worked in pharmacy without system?**

*Yes, I have another pharmacy without system.*

**15. Do you prefer working with a system or not ?**

*Yes, I prefer working with system.*

**16. Would you prefer to have a separate system for each branch, or a single system that connects all branches ?**

*I prefer a single system connects all my branches.*

**17. Do you want a completely new system, or to modify the current system ?**

*I want to modify the current system.*

**18. Would you like a system with a simple and easy-to-use interface, or do you want an interface that contains many features?**

*I would like to have both in my system.*

**19. Do you want to arrange the medicine in alphabetical order or according to the disease ?**

*alphabetical order.*

**20. Does the current system crash from time to time ?**

*Yes, it does.*

**21. Would you like a section devoted to narcotics and sedatives(table drugs) ?**

*Yes, it will be very helpful.*

**22. Would you prefer everybody in the staff to have an access on the whole system or they are limited to do only specific actions ?**

*No, I want it limited.*

**23. Do you want an alert notification when a specific medication runs out ?**

*Yes, it's a good option.*

# SURVEY

1- What's your experience with any

2- Tell us about your experience of using other systems ?

3- How satisfied are you with the other systems ?

4- How many branches do you want your system to serve ?

5- What are you trying to solve by using our Software ?

Customer signature,

6- What other features do you wish to be in your system ?

7- Do you prefer the options to be categorized or to have everything displayed on the screen ?

8- What do you prefer the data to be classified according to (alphabets-categories) ?

9- What is the type of application you want us to deliver ( desktop, mobile...etc.)?

10- Do you expect to complete tasks faster and more accurate after using our software?

Customer signature,

# Questionnaire

1- Did you use any pharmacy software before?

( Yes ,I did - No, I didn't )

2- Rate your experience with your current system ?

( Excellent - Good - Not Bad – Bad )

3- How many branches do you want your system to serve ?

( 1 – 2 - 3 - More )

4- What are you trying to solve by using our Software ?

( Saving time - Saving effort - Avoid mistakes - Other )

5- Do you need any other features to be in your system ?

( Yes, I need – No ,I don't need )

6- Do you prefer the data to be categorized or to have everything displayed on the screen ?

( Categorized - Displayed on the screen - Mixed )

7- What do you prefer the data to be classified according to ..

( Alphabets - Categories - Other )

8- What is the type of application you want us to deliver

( Desktop - Mobile - Both )

9- Do you expect to complete tasks faster and more accurate after using our software ?

( Yes, but the cost will be higher - No, I will stick with a basic plan )

10- from one to five, how satisfied are you with the other systems ?

(1-2-3-4-5)

**Customer signature,**

# Observation

- **The pharmaceutical representative you interviewed was a skilled communicator, exhibiting a nice talking style throughout the interview.**

- **He was very helpful and cooperative, showing a strong willingness to assist with any questions or concerns we had.**

- **He was able to answer all our questions, indicating a solid understanding of the pharmaceutical products that he represented.**

- **Overall, he displayed a strong level of knowledge and expertise, and he helped us achieving our goals.**

# Requirement Definition

## Functional requirements:

1. **Prescription management: The software should be able to manage prescriptions, including capturing prescription details, tracking refills, and managing inventory.**

2. **Patient management: The software should be able to manage patient information, including demographics, medical history, and medication history.**

3. **Inventory management: The software should be able to manage inventory levels, track expiration dates, and generate alerts when stock levels are low.**

4. **Billing and payment processing: The software should be able to process payments from patients or insurance providers and generate invoices.**

5. **Reporting: The software should be able to generate reports on sales, inventory levels, and other key metrics.**

## Non-Functional requirements:

1. **Security: The software should have robust security features such as encryption of sensitive data, user authentication, and access control.**

2. **Scalability: The software should be scalable to accommodate growing numbers of patients, prescriptions, and inventory items.**

3. **Usability: The software should be easy to use for both pharmacists and patients.**

4. **Reliability: The software should be always reliable and available since it deals with critical patient information.**

5. **Performance: The system should perform efficiently even during peak times when there is a high volume of transactions.**

# Chapter 4

# UML Modeling

CLASS & USECASE DIAGRAM

## 1- Pharmacy system class Diagram :

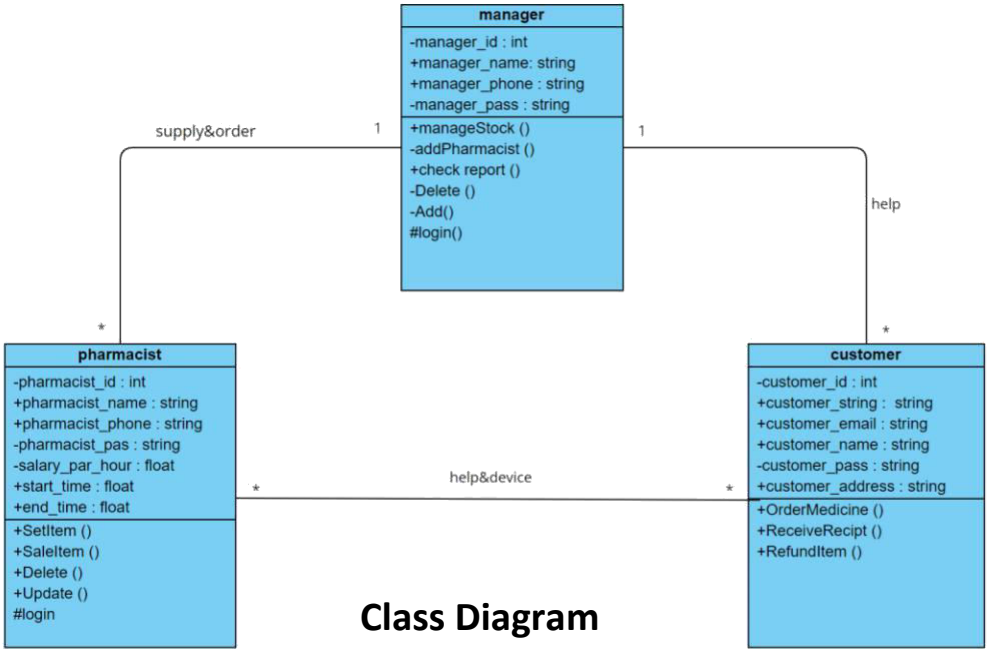
**Classes, their attributes and functions System Class Diagram:**

- Pharmacist: pharmacist_id, pharmacist_name, pharmacist_phoneNum, pharmacist_pass,

  Salary_per_hour,Start_time,End_time….***set_item(),sale_item(),control stock(),Update,Delet(),login().***

- Manager : Manager _id ,Manager _name, Manager_phoneNum ,Manager _pass….
  ***manage stock(), add pharmacist(), check report(), Delete(), update(),login()***

- Customer : Customer_id , Customer _name, Manager_phoneNum , Customer _pass, Customer_address, Customer_email…***order medicine(),receive receipt(),Rrfun item()***




**Class Diagram**

# PHARMACY SYSTEM USECASE DIAGRAM

## Actors

- Manager
- Pharmacist
- Customer

## Use Cases

- Start Up
- Log In
- Control Items
- Sale Items
- Generate Reports
- Order Medicine
- Receive Receipts
- Refund Items

## FLOW OF EVENTS:

Use Case: Start Up

Actors: Manager

Description: The Manager validates that the date and time are correct, [redacted] after which the system is ready for use.

Use Case: Log In

Actors: Manager, Pharmacist

Description: process of logging in to the pharmacy software system.

Logging in is required to access the various modules and functions of the system.

Use Case: Control Items

Actors: Manager, Pharmacist

Description: Involve monitoring the dispensing and distribution of prescription medication, medical supplies, and other products.

Use Case: Sale Items

Actors: Manager, Pharmacist

Description: Refers to a product that is available for purchase at the pharmacy. This can include prescription medications, over-thecounter drugs, medical supplies, and other health.

Use Case: Generate Reports

Actors: Manager, Pharmacist

Description: Compiling data on various aspects of the business such as sales, inventory, and customer demographics. This information is then used to analyze trends.

Use Case: Order Medicine

Actors: Customer

Description: Fulfilling a customer's prescription or specific medication request.

Use Case: Refund Items

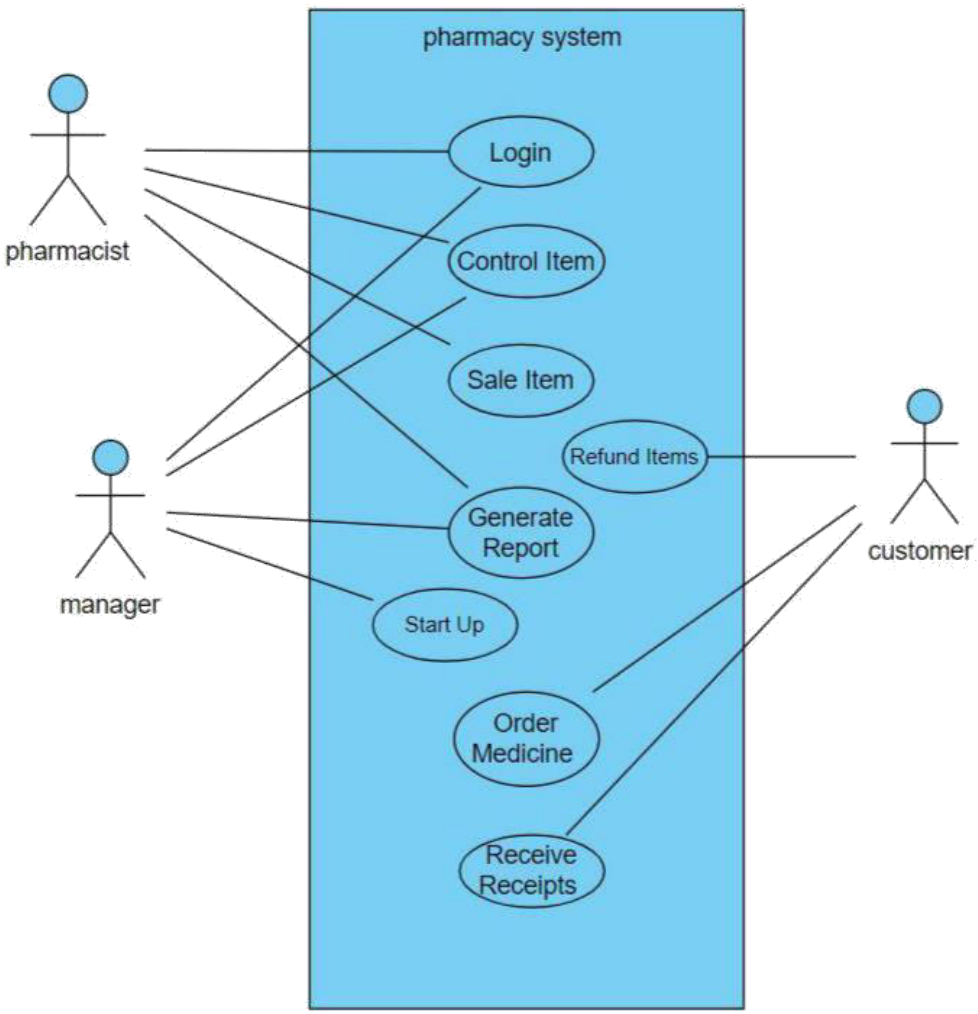
Actors: Customer

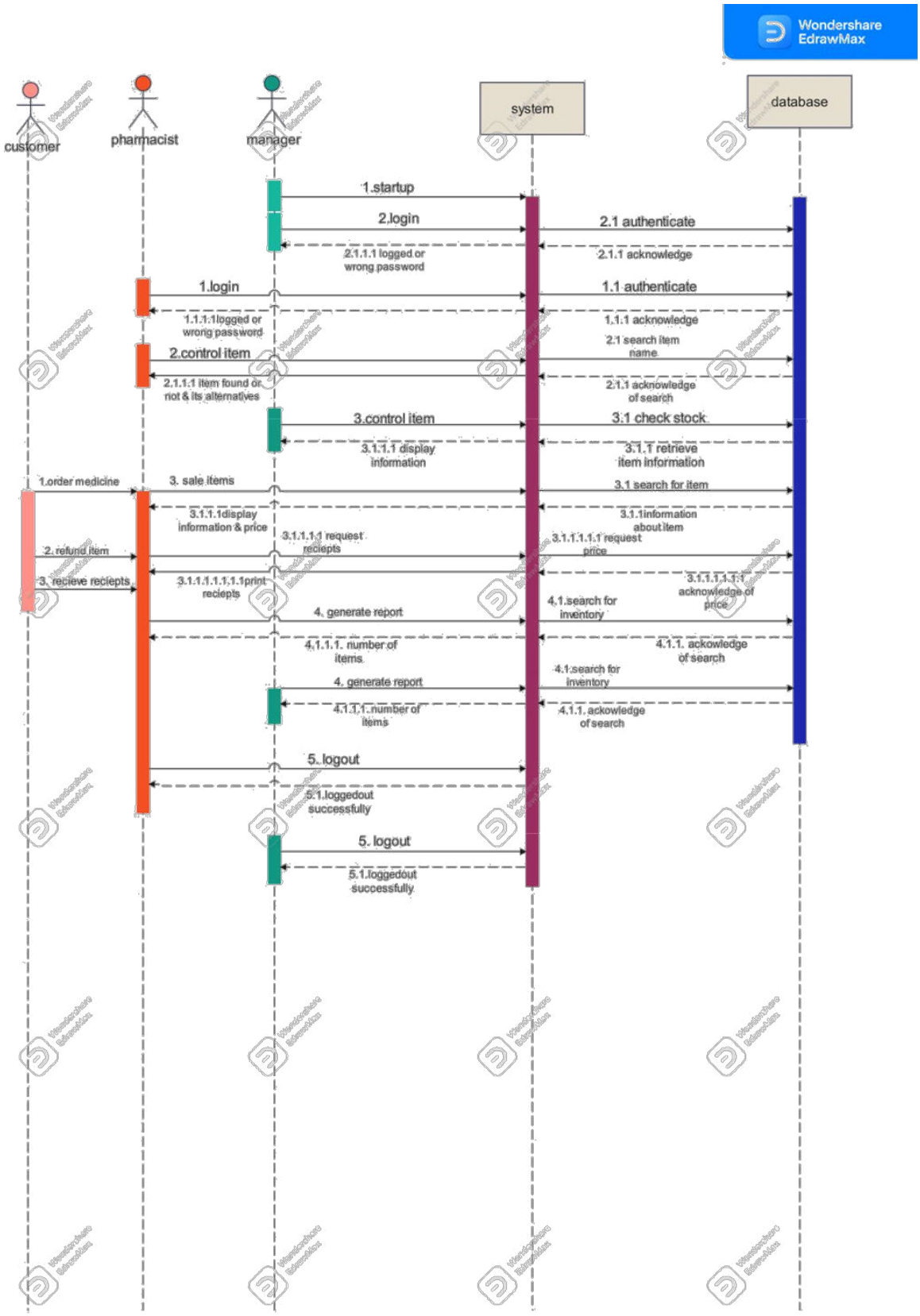
Description: Refer to products that were purchased by a customer but then returned to the pharmacy for a refund.

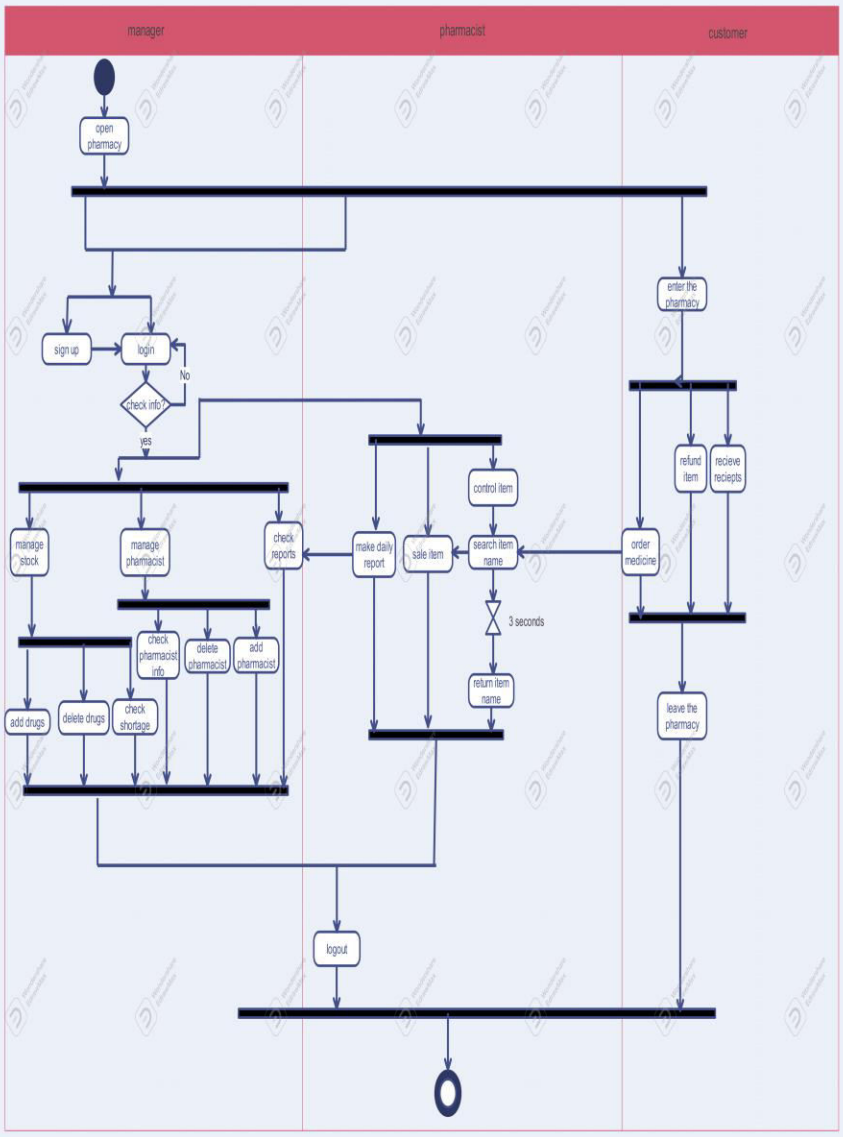
Use Case: Receive Receipts

Actors: Customer

Description: When a customer makes a purchase, the cashier enters the transaction details into the system, which generates and prints a receipt for the customer.


pharmacy system
Login
Control Item
Sale Item
Refund Items
Generate Report
Start Up
Order Medicine
Receive Receipts
pharmacist
manager
customer


customer
pharmacist
manager
system
database
1.startup
2.login
2.1 authenticate
2.1.1.1 logged or wrong password
2.1.1 acknowledge
1.login
1.1 authenticate
1.1.1.1logged or wrong password
1.1.1 acknowledge
2.control item
2.1 search item name
2.1.1.1 item found or not & its alternatives
2.1.1 acknowledge of search
3.control item
3.1 check stock
3.1.1.1 display information
3.1.1 retrieve item information
1.order medicine
3. sale items
3.1 search for item
3.1.1.1display information & price
3.1.1information about item
2. refund item
3.1.1.1.1 request reciepts
3.1.1.1.1.1 request price
3. recieve reciepts
3.1.1.1.1.1.1.1print reciepts
3.1.1.1.1.1.1 acknowledge of price
4. generate report
4.1.search for inventory
4.1.1.1. number of items
4.1.1. ackowledge of search
4. generate report
4.1.search for inventory
4.1.1.1.number of items
4.1.1. ackowledge of search
5. logout
5.1.loggedout successfully
5. logout
5.1.loggedout successfully



# Chapter 5

## User Interface


# Dr.Wessam

**Pharmacy System**

## Login

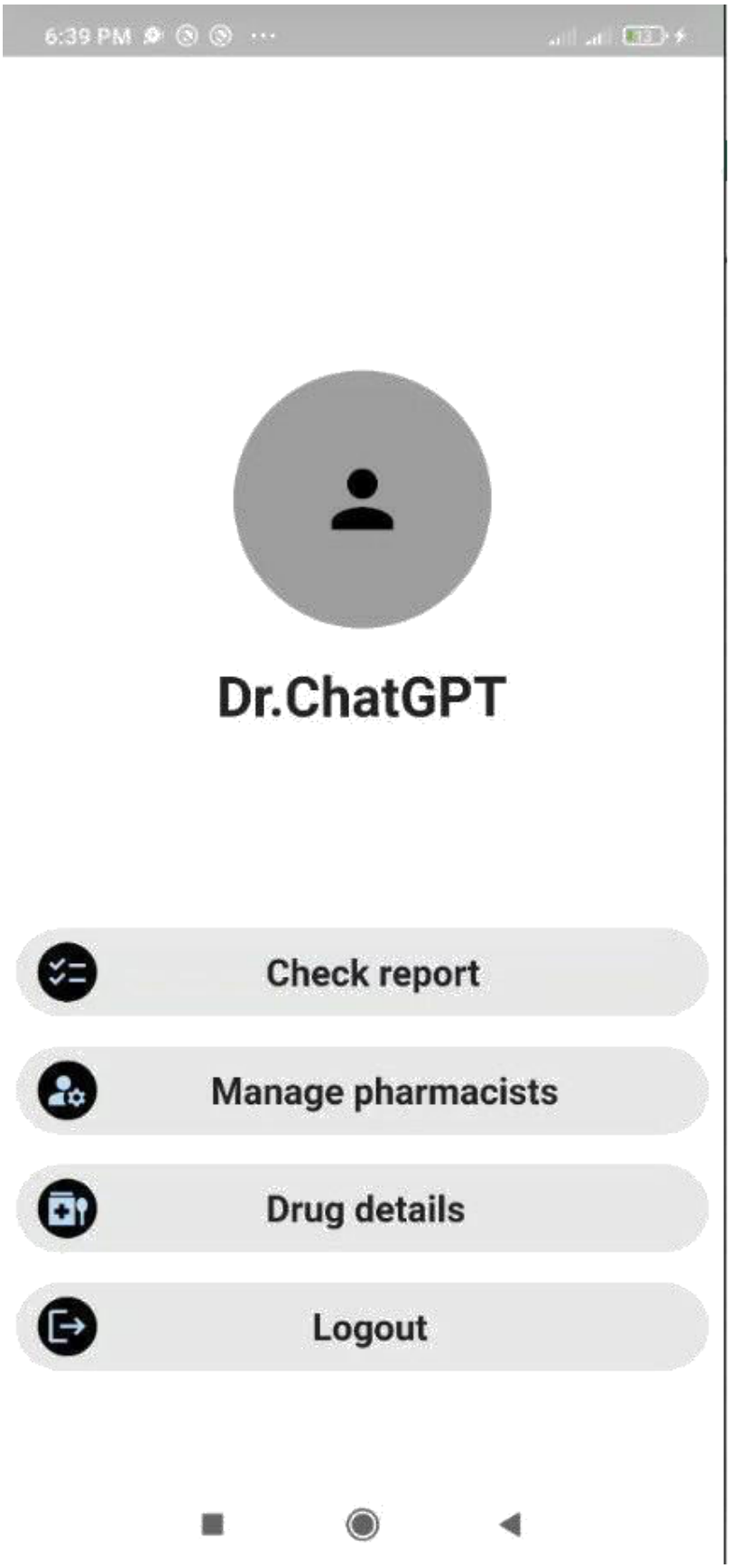
**Email**

Please Enter Your Email

**Password**

Please Enter Your Password

**Login**


6:39 PM
Dr.ChatGPT
Check report
Manage pharmacists
Drug details
Logout

# Daily report

| Drug Name | Customer name | Quantit |
|---|---|---|
| Amoxicillin | Maya Ramy | 3 |
| Prozac | Amr Abdulfattah | 2 |
| Ventolin HFA | Hassan Saeed | 6 |
| Metformin | Malek Yasser | 2 |
| Aspirin | Hend Okasha | 3 |
| Acetaminophen | Dina Aboalia | 4 |
| Ibuprofen | Magy Ashraf | 5 |
| Panadol | Zainab El-Shalaby | 1 |
| Ibuprofen | Hagar Mohamed | 5 |
| Epicopred | Menna Ammar | 4 |
| Penicillin | Aliaa Nasser | 5 |
| Penicillin | Ali Ashraf | 8 |

**Total Customers :** **12**
**Total Money Generated :** **814**

# Daily report

| Customer name | Quantity | Total price |
|---|---|---|
| Maya Ramy | 3 | $15.0 |
| Amr Abdulfattah | 2 | $14.0 |
| Hassan Saeed | 6 | $132.0 |
| Malek Yasser | 2 | $38.0 |
| Hend Okasha | 3 | $51.0 |
| Dina Aboalia | 4 | $60.0 |
| Magy Ashraf | 5 | $80.0 |
| Zainab El-Shalaby | 1 | $22.0 |
| Hagar Mohamed | 5 | $85.0 |
| Menna Ammar | 4 | $128.0 |
| Aliaa Nasser | 5 | $85.0 |
| Ali Ashraf | 8 | $104.0 |

**Total Customers : 12**
**Total Money Generated : 814**

Search for medicine

## *Most Searched Medicine*

### *Antibiotics*

| Solupred | Soulpred | Soulpre |
| --- | --- | --- |
|  |  |  |

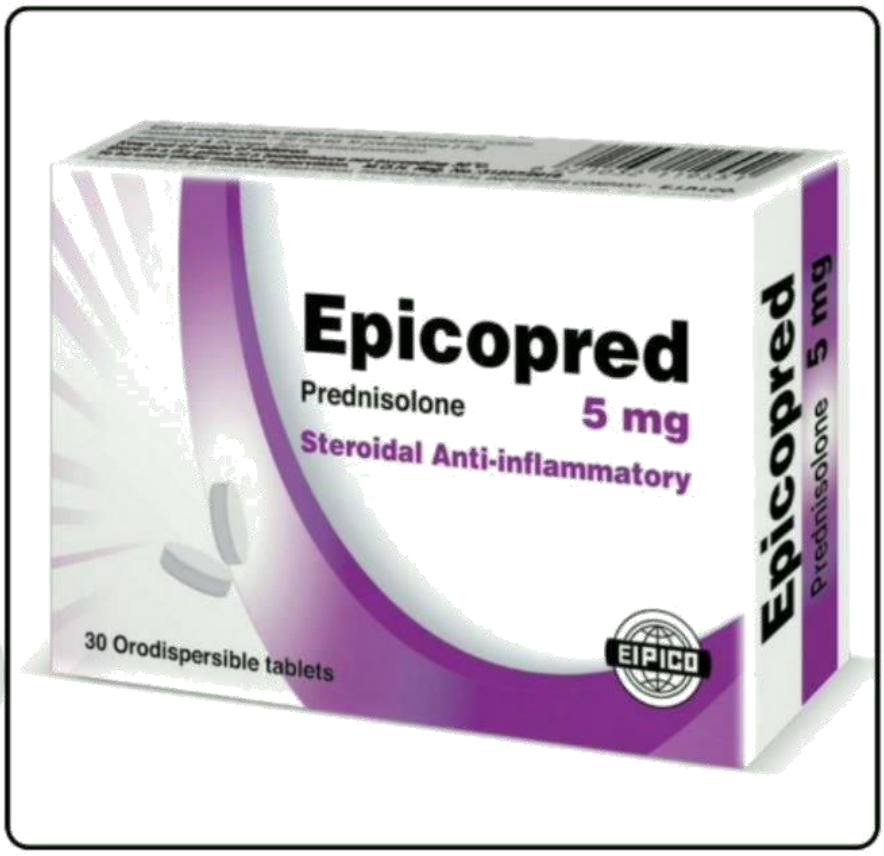
### *Cortisone*

| Epicopred | Epicopred | Epicopre |
| --- | --- | --- |
|  |  |  |

### *Vaccines*

| covid 19 | covid 19 | covid 19 |
| --- | --- | --- |
|  |  |  |

# Product




## Epicopred

used for multiple allergies, joint and eye infections, and it treats some types of cancers and anemia resulting from a lack of white blood cells and platelets

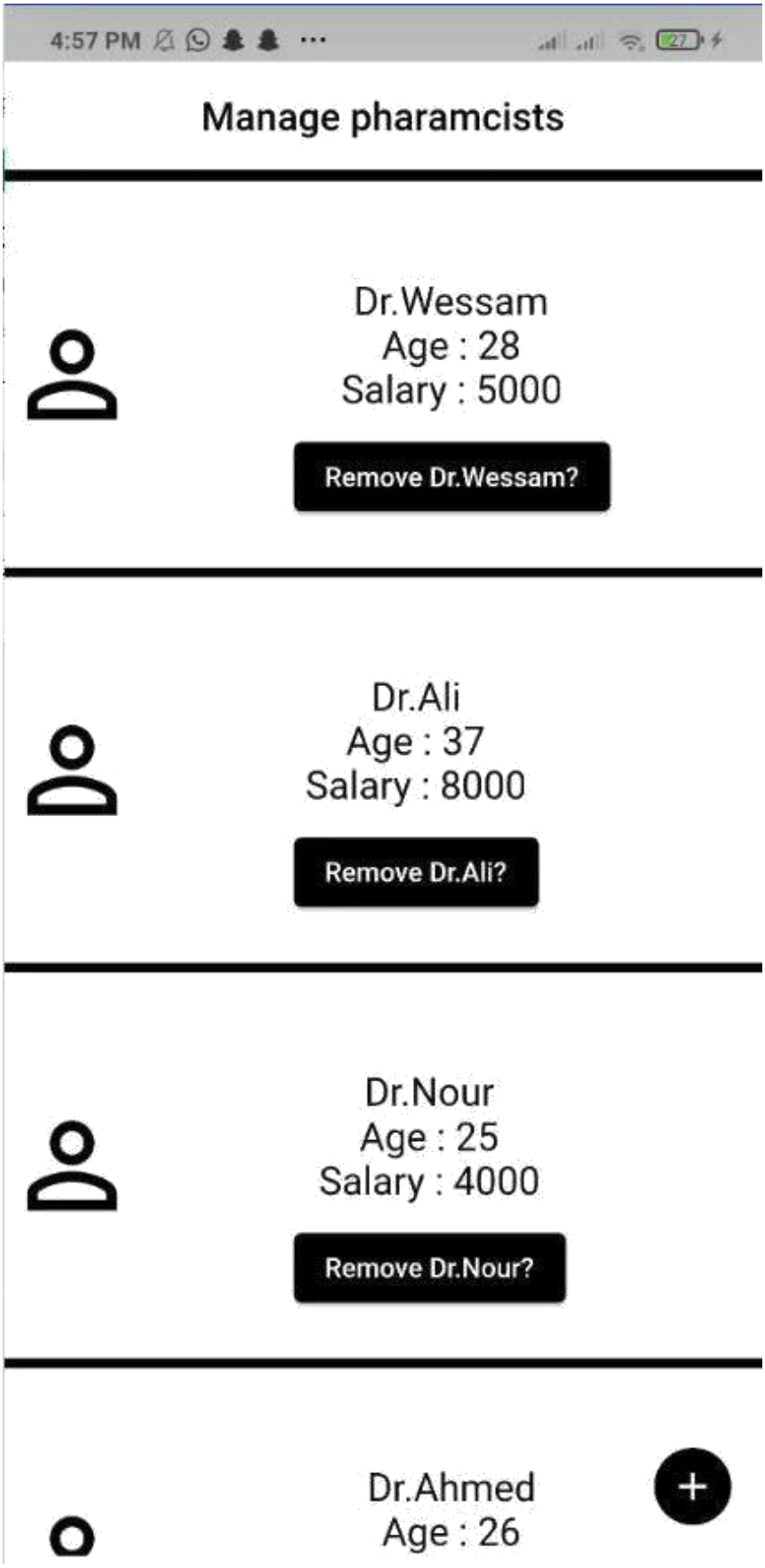
**Price : 30 EGP**

**Type : Tablet**

**No. of tablets : 30**

**Stock left : 10 caps.**

**Scientific Name : prednisolon**


4:57 PM
Manage pharamcists
Dr.Wessam
Age : 28
Salary : 5000
Remove Dr.Wessam?
Dr.Ali
Age : 37
Salary : 8000
Remove Dr.Ali?
Dr.Nour
Age : 25
Salary : 4000
Remove Dr.Nour?
Dr.Ahmed
Age : 26

# SDLC :Incremental model

- In our project we used this model as our client's requirements weren't clear so by this model we will be sure that we are working in the right path.
- We used it also as our system have lots of new features that didn't exist before so we had to use this model to meet customer satisfaction.
- This model also had a big advantage of customer interaction with most system phases be giving us feedbacks which will be helpful for us as students working on our first project.
- Our client also was the type to change his system needs from time to time so by choosing this model we will adapt to those changes more rapid than any other model.
- In this model there is a benefit of lower cost in accommodating change.
- It also provide us with risk analysis within system phases.
- And at the end: from our course perspective it's better in our situation to use the incremental model as it can be both a plan-driven approach and agile approach which makes it flexible & applicable.