Project title: Smart Pharmacy

Project Description:

A smart pharmacy dedicated to help people buy medicines in a more efficient way. People save plenty of time buying and it's easy to use and easy to find available medicines. 100% private and experience a new smart helping assistant named pharmacy Bot. Everything done in our website which will have an easy access using a link or via a Qr code. Also keep your bought medicine history along with the customer medical records like diabetes or heart disease which will be used in the pharmacy Bot.

Team Members:

- Ahmed Ayman Farouk 21200129 (project manager),
- Maged Abdelnasser Mohamed 21100853,
- Youssef Wael Nabil 21100877,
- Nour Basem 21100861

System and Customer Requirements:

Functional Requirements:

1.first you open the website you have the option to choose if you are new user (Signup) or already have an existed account.

- you can choose if you are a normal user or the pharmacist as every user has his own features.
- you must enter all the needed information also you have to give us some accesses to get the whole experience (Camera, microphone and your location).
- once you finished making your email (normal user) you will have to give us more information about your health states (if he has any chronic disease) as it important for your health record.

2.the user will choose which type of user he will be dealing with the website.

- The user will have to enter his name, age, address, mobile number, email, password.
- The user can login using his Facebook, google account and etc..
- If the user is pharmacist, he should upload his university certificate beside the pervious information to get the access of the website to use it in the pharmacy.

3.The user can use option like forgot the password.

- The website uses the phone number and email to check if you are the are the account's owner.
- The website sends you verification code to your phone or your email to help you get back your account.

4.The system automatically store the data of the users and add health record for them to the system.

- The web site adds the information that it takes from the user about his health status to the database of the system to give the user the best experience.
- It also updates the health record every time the user orders any item.

5.If the logged in User is (pharmacist) the system provides him some special features.

- He can store the locations of the medicines and their quantities according to the classification standards.
- The user can view the expired products and return them to the suppliers.
- The user can order medicines by contacting the suppliers we have collaborations with.
- The user can have reports about medicines count and the work shifts of the workers and medicines suppliers.
- The system provides the user with an easier payment process with customer.
- The pharmacist can answer the questions provided by the pharmacy bot about the customer's need.
- It provides the pharmacist with an easier way to deal with customers online and makes it more efficient.

6. If the logged in User is (normal User) the system provides him with some special features.

- He can search for his needed medicine with many searching techniques.
- He is able to view all the categories of the medicines (Liquid, Tablets, Capsules, Topical medicines (Creams, lotions) , Suppositories, Drops , Inhalers , Injections , Implants or patches).
- He can search for information about the medicine if it is suitable with his or her health state.
- The website provides an ai system called (Pharmacy Bot) to help customer.

7. Now the user can choose the medicine he needs by many searching techniques (auto correction if he doesn’t know the correct spelling of the medicine, speech recognition, picture recognition)

- The website will ask for some access to get the whole experience as we mentioned before (camera for picture recognition, microphone for speech recognition)
- The web site will suggest for him only the medicine that will not affect his health according to the health record to avoid the side effects of the medicines.
- The web site will suggest for him alternative medicines if the one he wants is out of stock.
- The web site automatic after the customer’s order it updates the health record for that person.

8.The user should give us the access to the locations as it depends on the suggested Pharmacy that will the website show.

- The system shows only the pharmacy that has our access to the user.
- The user after choosing the needed medicine a list of pharmacies is showed depending on his location.
- The web site shows the nearest pharmacy to your location that has your medicine.

9.The user will be able to choose the needed items and added to cart to continue the process.

- The web site will show the user all payment methods he can use.
- The user will have the option to pay by visa or his bank account if he already added them as it optional while signing up.
- The website also allows to pay cash on delivery.
- It also has collaborations with some apps which makes the delivery process easier and safer.

10.The website provides a gps feature for the user to track their order.

- The user can see the status of their order, whether it is being processed, shipped, or delivered.
- The user will also receive notifications about the status of their order.

11.The website has a feature for the user to leave a review for the product they purchased.

- This helps other customers to know the quality of the product.
- The website can also use the feedback to improve their service and products.

12. the website offer cost savings compared to traditional pharmacies.That’s why the user may choose our website.

- The user gets discounts on medications by using promocodes or dealing with us for the first time.
- The user can also get free shipping for his/her order also by using promocodes or dealing with us for the first time.

13.the user now has ordered his items so he can use the features of the web site that provide to customers after taking their order.

- The website provides a 24/7 access so you can access your prescriptions and other information whenever you need.
- The website allows the customer to contact with the pharmacist.
- The web site needs the access to your (calendar or remainder) as it provides you with tools to help customers manage their medications, such as reminders to take their medication at a certain time or alerts if they have missed a dose.

14.the user can also contact with our customer service if he has any question.

- The user can contact us using our phone number or email or hotline.
- The user can also suggest for us features to add for better experience.
- The user also can ask for his history if he has a problem with his orders or money.
- As we mentioned the website is 24/7 access so he can call us any time to help him to solve his problems.

15.the user also have the option to chat with the helping assistant (pharmacy bot)

- Pharmacy bot an ai helping assistant helps the customer to get any information he needs or to ask about a medicine if you are feeling not good, but it has limits.
- The bot asks you many questions first to specify you case carefully.
- The bot starts to suggest for you a suitable medicine if your case isn’t that bad.
- The bot will suggest to you calling the pharmacist or a doctor if the case is so bad or you can ask him to contact with them directly if you feel that it isn’t the answer you want

Nonfunctional Requirements:

16. The website provides the customer with a system that safe his data as it is personal information.

- The system doesn’t show data to anyone only for the user as data is always encrypted.
- The system gives every customer a unique id to be dealt with

17. the website has security system that helps the user to avoid scams or to secure his account.

- The website sends you a message every time someone login with your email to see if you are same person.
- the website sends you a receipt after every order so you can use if you have any problems.
- The website is always updated with the latest security patches.
- The website is always secured and protected against attacks, such as hacking attempts or data breaches.
- The website achieved that using encryption, secure authentication methods, and regular security updates.

18. the website always wants the user to get the best experience, so the developers try to improve the performance.

- The website handles the problem of any lagging, so he tries to load quickly, with a response of no more than a few seconds.
- The website handles increasing traffic as the user base grows. This means that the website's performance doesn’t degrade as more users access it simultaneously.
- The website compatibles with a wide range of devices and browsers, including desktop computers, laptops, tablets, and mobile using responsive design and testing on different devices and platforms.

19. Developers try always to serve the customers a website with easier technology to be easy for all the users to use.

- The website is user friendly, easy to navigate and suitable for use with clear and concise instructions for users.
- The website achieved that using intuitive design and user testing to ensure that the website meets the needs of its intended audience.

System Rules:

Must have rules:

- User must have a valid email address to register an account.
- Users must have a secure and verified account to access and purchase products on the website.
- Users must have a secure password that meets certain complexity requirements.
- Users must protect the security and confidentiality of their account information and not share their login information with others to avoid hackers.
- Users must comply with all applicable laws and regulations when using the website or its services.
- Users must have accurate and up to date personal and medical information to ensure safe and appropriate use of medications.
- Users must report any adverse reactions or side effects from their medications to the website and their healthcare provider.
- Users must follow any specific instructions or warnings provided by the website or the medication's manufacturer for safe and appropriate use.
- Users must respect the intellectual property rights of others and not use or distribute copyrighted or trademarked materials without permission.
- User (pharmacist) must upload a photo of his university certificate and wait for the approval to get the access to the website.
- User must have uploaded any photos in a pdf format and clearly photos.
- User must pay in cash if he chooses that option.
- User must give us the access to his (location, microphone, calendars, remainders and camera) to get the whole experience.
- User must give us any important information about his health statue to avoid any side effects.
- Users must have a valid prescription from a licensed healthcare provider to purchase prescription drugs.
- User must use a proper language with the Ai language (pharmacy bot) while asking for questions.
- User must have the receipt if he has any problems want to solve it by contacting the customer services.

- Users must have a backup data and recovery plan in case of data loss or system failure.

Shall not have rules:

- Users shall not have the ability to share login credentials with others.
- User (pharmacist) shall not have the access to open the website in the pharmacies that doesn’t have collaborations with us.
- Website shall not have any content that promotes hate speech, discrimination, or violence.
- Users shall not have the ability to purchase medications for illegal or non-medical use.
- Users shall not have the ability to purchase medications that are not approved or authorized for sale in their country or region.
- Users shall not have the ability to post fake reviews or manipulate product ratings on the website.
- Users shall not have the ability to harass, threaten, or harm others on the website or through its messaging system.
- Users shall not have the ability to modify or interfere with the website's security or software systems to gain unauthorized access or cause disruption.
- Website shall not suggest medicines without receipt.
- Website shall not accept the promocodes of the discounts twice.
- Website shall not show data to any one only for the user as data is always encrypted.
- Website shall not have any lagging problems or bad performance.
- User shall not ask the pharmacy bot improper questions.

Subsystem Name	Subsystem function	Subsystem interface
1.User registration	Users log in() Users sign up() Users' accesses()	1.Public static void pharmacistSingUp (string email, string fullname, string address, int age, int phoneNumber, int password, Object university Certificate, int ConfirmationCode) 2.Public static void NormalUserSingUp (string email , string fullname , string address , int age , int phoneNumber , int password , Object healtstatePdf , int ConfirmationCode) 3.Public static Boolean accesses(string location, string camera , string microphone) 4.Public static void Login (string email, int password)
2.Password recovery	Forget password() Recover password() AddNewPassword()	1.Public static Boolean forgetpassword (int phoneNumber, string email) 2.Public static Boolean recoverPassword (int verificationCode) 3.Public static void NewPassword (int newPassword, int ConfirmPassword)
3.User data management	Store users' data() Update health record()	1.Public static void storeData (string UsersInformation) 2. Public static void updateRecord (string users'Orders, string healthstate)
4.Manage medicine inventory	Add medicine() Remove medicine() Store locations() View count()	1.Public static void AddMedicine (string newMedicine) 2.Public static void RemoveMedicine (string removedmedicine) 3.Public static void StoreLocation (string location) 4. Public static void ViewCount ()
5.Contact suppliers	ReturnExpired Medicine() orderMedicine()	1. Public static void ReturnMedicine (string ExpiredMedicine) 2.Public static void Ordermedicine (string medicine)

6.Searching	AutoCorrection() VoiceRecognition() PictureRecognition()	1.Public static void AutoCorrection (String wrongSpelling) 2.Public static void PictureRecognition (Object Photo, Boolean Camera) 3. Public static void VoiceRecognition (Boolean Microphone) Voice recognition is the process of taking the spoken word as an input to a computer program.
7.Medication management system	AddReminders() viewCategories() AlternativeMedicine() SuggestMedicines()	1.Public static void Addreminders (string reminders, Boolean calendars) 2.Public static String Alternative() 3.Public static String Sugmedicine () 4.Public static void ViewCategories()
8.Delivery management system	TrackOrders() contactDeliveryApps() ShowPharmacy() OrderNotification() CustomerReview()	1.Public static void TrackOrder(Boolean Gps) 2.Public static void ContactApps(string choosedApp) 3.Public static void ShowPharmacy (string pharmacy, Boolean location) 4.Public static void OrderNotification (Boolean accessNotification) 5.Public static void CustomerReview (string feedback)
9.Payment and order management	AddItem() OrderItem() PaymentMethod() AddVisa() AddBankAcc() Addtaxes() DeliveryCost()	1. Public static void AddItems(string items) 2.Public static Boolean orderItem (string items) 2.Public static void PaymentMethod (String method) 3. Public static Boolean AddVisa(int visaNo) 4.Public static Boolean bankAcc(int AccNo) 5. Public static void AddTaxes(int Taxes) 6. Public static void DeliveryCost ()
10.Cost saving	UsePromocodes() GetDiscounts() getFreeshipping()	1.Public static Boolean Promocodes(int PromoCodes) 2.Public static Boolean Getdiscounts(Boolean Promocodes(),Boolean firsttimeUse) 3.Public static Boolean Freeshipping(Boolean firsttimeUse)

11.Pharmacy bot	AlternativeMedicine() SuggestMedicines() AnswerQusetions() ContactDoctors()	1.Public Static String Alternative() 2.Public Static String Sugmedicine () 3.Public Static String Ansques(String Questions) 4.Public static Boolean Contact(string Call, string text)
12.Customer service	HelpCustomers() ComplainsReports() feedbackReports()	1.public static String HelpCustomers(string complains , string feedbacks, string questionsAboutwebsite) 2.Public static void ComplainsRep() 3.public static void feedbackRep()
13.Security system	SecureData() DetectProblems() SecurePayment() ApprovePermissions()	1.Public static void SecureData (object user's information) 2.Public static void Solve (String problems) 3.Public static void SecurePayment (string payment's information) 4.Public static Boolean Approve (String receipt, Object pharmacistCert.)

A. User registration
B. Password Recovery
C. User data management
D. Manage medicine inventory
E. Contact suppliers
F. Searching
G. Medication management system
H. Delivery management system
I. Payment and order management system
J. Cost saving
K. Pharmacy bot
L. Customer service
M. Security system

Traceability matrix:

Requirements number	A	B	C	D	E	F	G	H	I	j	K	L	M
1	T	F	T	F	F	T	F	T	F	T	T	T	T
2	T	F	T	F	F	F	F	F	F	F	F	F	T
3	T	T	T	F	F	F	F	F	F	F	F	F	T
4	F	F	T	F	F	F	T	F	F	F	T	F	T
5	F	F	T	F	F	F	T	F	T	F	T	F	F
6	F	F	F	F	T	T	T	F	F	F	T	F	F
7	F	F	T	T	F	T	T	F	F	F	F	F	T
8	F	F	F	F	F	F	F	T	F	F	F	F	T
9	F	F	F	F	F	F	F	T	T	F	F	F	F
10	F	F	F	F	F	F	F	T	T	F	F	F	F
11	F	F	F	F	F	F	F	F	F	F	F	T	F
12	F	F	F	F	F	F	F	T	F	T	F	T	F
13	F	F	T	F	F	F	T	F	F	F	F	T	F
14	F	F	F	F	F	F	F	F	F	F	F	T	F
15	F	F	F	F	F	F	F	F	F	F	T	T	T
16	T	F	F	F	F	F	F	F	F	F	F	F	T
17	T	F	F	F	F	F	F	F	F	F	F	F	T
18	F	F	T	F	F	F	F	F	F	F	F	T	T
19	F	F	F	F	F	F	F	F	F	F	F	T	T

User diagram:

Actors:

System

Delivery apps

Pharmacist

Pharmacy bot

Supplier

Bank

User

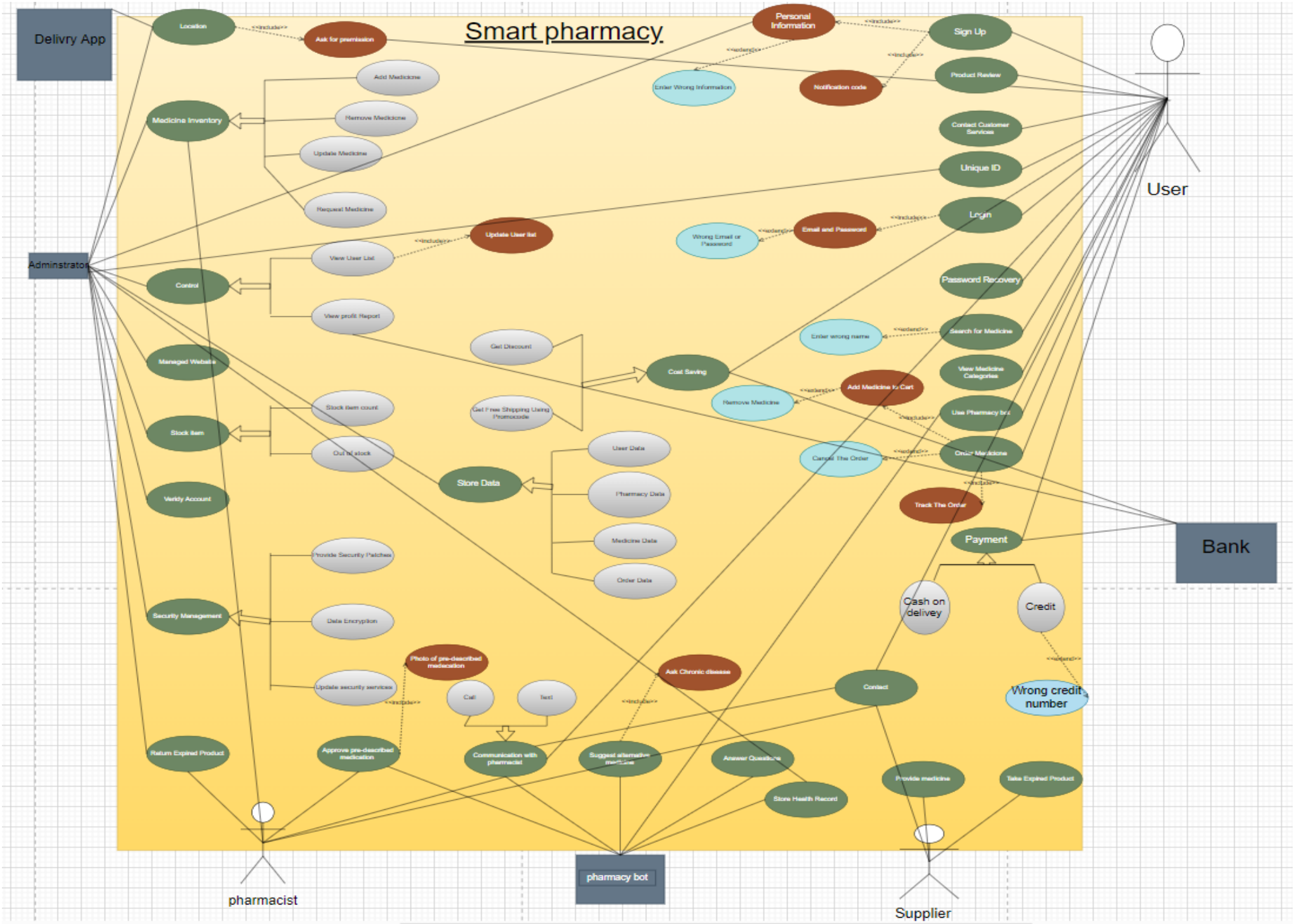
Use Cases:

- Password recovery: Allows users to recover their password, verify identity using phone number and email and Receive verification code to phone or email to reset password.
- Store Data: Allows system to store Data and health records, Update health record after user orders medication.
- Medicine inventory: Allows pharmacist to add medicine, remove medicine, update medicine, request medicine
- Security management: allows the system to provide security patches, Data Encryption and update security services.
- Contact: allows customers to contact with pharmacist and pharmacy bot
- track order: allows users Use GPS feature to track order Receive notifications about order status (processing, shipped, delivered)
- payment: allows user to choose payment method (Visa, bank account, cash on delivery) or to use the delivery apps for easier and safer delivery process.
- product review: allows user to Leave a review for purchased product, help other customers know about product quality and help website improve service and products based on feedback.

- Cost savings: allows user to get discounts on medications using promocodes or first-time deals and get free shipping using promocodes or first-time deals.
- Contact Customer service: allows user to contact customer service for any questions or concerns.
- Suggest alternative Medicine: allows the system and pharmacy bot to suggest alternative medicines to the user if the medicine is out of stock.
- Order Medicine: allows customer to order medicine and cancel orders.
- Ask questions allows user to ask any question the have to the pharmacy bot.

Those are some of the core use cases we have in the system.

Use Case Diagram:



Use case	Payment
Goal in context	The goal of the payment use case is to provide a secure and efficient way for users to pay for their orders on the online pharmacy platform. this use case includes a user who has added medicines to their cart and wishes to complete their purchase by making a payment using one of the available payment methods. The system should provide a smooth and user-friendly payment process while ensuring the security of the user's financial information. The payment process should be integrated with the order and inventory management systems to ensure that the medicines are reserved, and the order is marked as paid once the payment is successfully processed. Additionally, the system should provide confirmation of the payment to the user and generate a receipt for their records. The payment use case should also handle any errors or exceptions that may occur during the payment process and provide appropriate feedback to the user.
Preconditions	1.The user must have an account and be logged in to initiate a payment. 2. The user must have added at least one item to their cart before initiating a payment. 3. The user must have added a valid payment method to their account. 4. The user's payment method must have sufficient funds to cover the total cost of the order. 5. The user must have entered a valid shipping address before initiating a payment. 6. The system must have calculated the total cost of the user's order, including any applicable taxes and shipping fees.
Success end Condition	1. The payment is successfully authorized by the payment gateway, and the user receives a confirmation of the successful transaction. 2. The payment is successfully processed by the payment gateway, and the funds are transferred from the user's account to the pharmacy's account. 3. The pharmacy system receives the payment confirmation from the payment gateway, and the user receives an order confirmation that their order has been successfully placed. 4. A receipt is generated for the user, which includes details of the order, the payment amount, and the transaction ID.

	5. The pharmacy system updates its inventory to reflect the successful order, and the user can track the status of their order.
Failed end Condition	1.If the user does not have enough funds in their bank account or their credit card limit has been reached, the payment will fail, and the user will receive a notification informing them about the failed transaction. 2. If there is a technical issue with the payment gateway, such as a server outage or network connectivity problem, the payment may fail. In this case, the user will be notified about the issue and advised to try again later. 3. If the user enters incorrect or invalid card details, such as an expired card, incorrect card number or CVV code, the payment will fail, and the user will receive a notification about the invalid details. 4. If the user cancels the payment during the process, either intentionally or accidentally, the payment will fail, and the user will receive a notification about the cancelled payment. 5. If the payment gateway detects any suspicious or fraudulent activity, the payment will be declined, and the user will receive a notification about the declined transaction.
Primary Actor	User (Customer)
Secondary Actor	System, Bank
Trigger	The user wants to complete the payment process after adding selected medicines to his cart. This would involve providing payment information and initiating the payment process

Interaction Scenario for payment use case:

Actor intentions:	System Responsibility:
1.Actor (customer) selects items to purchase and proceeds to checkout.	
	2.System calculates the total amount due and displays it to the customer.
3.The customer should choose his payment method (credit card or using his BankAcc or by cash) if he chooses to pay using BankAcc or cash	
	4.System will display a successfully message to the user
5.If he chooses to pay using a credit card, he should enter his payment information (credit card number, expiration date, CVV, etc.) and submits the payment.	
	6. System validates the payment information, ensuring it is complete and accurate.
	7.System contacts the bank to authorize the payment. 8.System generates a receipt for the customer, showing the details of the transaction. 9.System updates the inventory system to reflect the items that were purchased. 10.System sends a confirmation email to the customer, including the receipt and estimated delivery date.
11. Actor (Customer) receives the confirmation email, and the purchased items are shipped to them.	

Test Requirements for payment use case:

- Validate that the user can select a payment method from a list of available options.
- Validate that the system can accurately calculate the total cost of the order, including any applicable taxes or fees.
- Validate that the user can enter their payment details (such as credit card number or bank account) securely and without errors.
- Validate that the system can process the payment and provide a confirmation message to the user.
- Validate that the system can handle errors and exceptions related to the payment process, such as declined payments or invalid payment information.
- Validate that the user can view their order history and payment details in their account.
- Validate that the system can integrate with external payment providers (if applicable) and properly handle any API or integration issues.
- Validate that the system can handle refunds and cancellations, including updating the user's account and refunding any applicable charges.
- Validate that the system can properly record and store all payment information securely and in compliance with applicable regulations.
- Validate that the user can receive and view receipts for their payments.

Use case	Medicine Inventory
Goal in context	The goal of the medicine inventory management use case scenario is to ensure that the pharmacy has an efficient and effective system for managing its medicine inventory. This includes receiving and storing medicines, tracking their expiry dates, and dispensing them to customers as per prescriptions. The use case also aims to minimize wastage and reduce the risk of expired medicines being dispensed to customers.
Preconditions	1.The pharmacy has a computer system that stores information about the medicines, including their names, quantities, expiry dates, and suppliers. 2.The pharmacy staff is trained to use the computer system to manage the inventory.
Success end Condition	1.The computer system accurately tracks the medicine inventory, including their names, quantities, expiry dates, and suppliers. 2.The pharmacy staff retrieves and dispenses medicines to customers as per prescriptions. 3.The computer system generates alerts for the staff when a medicine is about to expire, so they can take appropriate action. 4.The inventory manager monitors the inventory levels regularly and generates reports to identify slow-moving or expired medicines. 5.The pharmacy staff receives and stores medicines as per the delivery and purchase orders.
Failed end Condition	The inventory system fails to update inventory levels in real-time, leading to stockouts or overstocking of medication. This can result in delays in fulfilling medication orders, decreased patient satisfaction, increased costs due to wasted or expired medication, and potential harm to patient health.
Primary Actor	Pharmacists, Admin
Secondary Actor	suppliers
Trigger	This could be set as a predetermined value by the pharmacy, indicating that it is time to reorder more of that medicine to ensure that it remains in stock and available for customers to purchase or could be a new medicine being added to the pharmacy's inventory, which would require it to be added to the database and made available for sale.

Interaction Scenario for Medicine Inventory use case:

Actor intentions:	System Responsibility:
1.Pharmacist logs into the Medicine Inventory System.	
	2.System prompts Pharmacist to input the medicine name or scan the medicine barcode.
3.Pharmacist inputs the medicine name or scans the medicine barcode.	
	4.System retrieves the medicine information from the database and displays it on the screen.
5.Pharmacist selects the medicine to update its inventory.	
	6.System prompts Pharmacist to input the updated inventory quantity.
7.Pharmacist inputs the updated inventory quantity.	
	8.System updates the medicine inventory in the database.
	9.System sends a confirmation message to the Pharmacist that the inventory has been updated successfully.
10.Pharmacist logs out of the Medicine Inventory System.	

Test Requirements for Medicine Inventory use case:

- Validate that System can view the categories of Medicine.
- Validate that he can access for all the medicines.
- Validate that he can choose one of the available options (Add, Delete, Update, Request)
- Validate that if he chooses Add, he must classify it to put it in the right category.
- Validate that if he chooses Delete, he should pick the right Medicine to make sure he deletes it and don’t make repetition.
- Validate that if he chooses Update, he must check the quantity and classify the Medicine.
- Validate that if he chooses Request, he must contact supplier and pick the right Medicine if he chooses Request, he must contact supplier and pick the right Medicine.

Use case	Store Data
Goal in context	the goal of the store data use case is to manage and store large amounts of data related to medication inventory, dispensing, and patient records. This data includes information such as medication names, dosages, expiration dates, patient information, and prescription details.
Preconditions	1.The smart pharmacy must have access to accurate and up-to-date data related to medication inventory, dispensing, and patient records. 2.The smart pharmacy must have a data management system in place, such as a centralized database, to store and manage the medication and patient data. 3.The smart pharmacy must have appropriate access controls in place to ensure that patient and medication data is protected from unauthorized access or modification.
Success end Condition	1.The smart pharmacy can efficiently manage large amounts of medication and patient data, ensuring that data is available when it is needed, and can be retrieved quickly. 2.The smart pharmacy can store and manage medication and patient data in a secure and accurate manner, ensuring that data is protected from unauthorized access or modification. 3.The smart pharmacy can comply with relevant regulations related to the storage and management of medication and patient data 4.The smart pharmacy can effectively utilize the stored data to manage medication inventory, track medication dispensing to patients, and ensure patient safety through the accurate and secure management of medication and patient data
	1.The smart pharmacy is unable to efficiently manage large amounts of medication and patient data, resulting in slow data retrieval or data loss. 2.The smart pharmacy is unable to store and manage medication and patient data in a secure and accurate manner, resulting in data breaches or errors in patient medication management. 3.The smart pharmacy is unable to comply with relevant regulations related to the storage and management of medication and patient data, resulting in legal penalties or loss of patient trust.

	4.The smart pharmacy is unable to effectively utilize the stored data to manage medication inventory, track medication dispensing to patients, and ensure patient safety through the accurate and secure management of medication and patient data
Primary Actor	System
Secondary Actor	Pharmacist
Trigger	The trigger for the store data use case in a smart pharmacy is the need to manage and store medication and patient data efficiently and securely.

Interaction Scenario for Store Data use case:

Actor intentions:	**System Responsibility:**
1.The user wants to store some data in the system.	
	2.The system prompts the user to enter the data.
3.The user enters the data into the system.	
	4.The system validates the data to ensure it meets any specified requirements (e.g. data type, length, format).
	5.The system checks if the data already exists in the system, to avoid duplicates.
	6.The system stores the data in the appropriate data store, such as a database or file system.
	7.The system returns a confirmation message to the user, indicating that the data has been successfully stored.
8.The user acknowledges the confirmation message.	
	9.The system updates any relevant metadata or indices associated with the data store.

	10.The system triggers any downstream processes or systems that depend on the stored data. 11.The system returns control to the user, allowing them to perform further actions or exit the system.

Test Requirements for Store Data Use case:

- Validate that the system can access the categories of medicines and list of customers and list of orders and pharmacy data.
- Validate that he can choose one of the options (View user data, view medicine data, view pharmacy data, View order data)
- Validate that if he chooses View user data, he can see all information about customers that use website.
- Validate that if he chooses View Medicine data, he can view all categories of medicine and classify them.
- Validate that if he chooses View Pharmacy data, he can access all staff information and contact with them.
- Validate that if he chooses View order data, he can see all orders and do a report for each.

Use case	Contact
Goal in context	This use case allows customer, pharmacy bot, pharmacist and supplier to: . communicate with each other. . suppliers communicate with the pharmacist to send supplies and medicines. . pharmacists return expired product to supplier. . pharmacist request medicine from supplier if it's on demand. . pharmacists communicate with the system to see out of stock products. . pharmacist with system about knowing expired products. . pharmacist with the customer if the customer needs him for a question or about a prescribed medicine. . customer with system as for transactional process and payment methods . customer with contact services if the customer has a problem. . customer with pharmacy Bot for alternate medicine or help. . Pharmacy Bot and system to consider health record of customer . Customer with system within searching techniques.
Preconditions	. Type of communication between every customer and with the system or the pharmacy bot or the pharmacist or the supplier is based on certain critical conditions. . Customer must upload all documents required within contacting with the searching technique of the system in a correct pdf format and information clearly identified. . Customers information are not shared with the stores. . customers information is not shared with the supplier. . system information and pharmacist information are not shared with supplier. . pharmacist and supplier communication are only within returning or requesting medicines. . pharmacist only can know the health statue of customer nothing more and can only answer question within communication standards of the website. . pharmacists are not allowed to make threats and communicate inappropriately to customers. . Customers are not allowed to communicate badly to pharmacists.

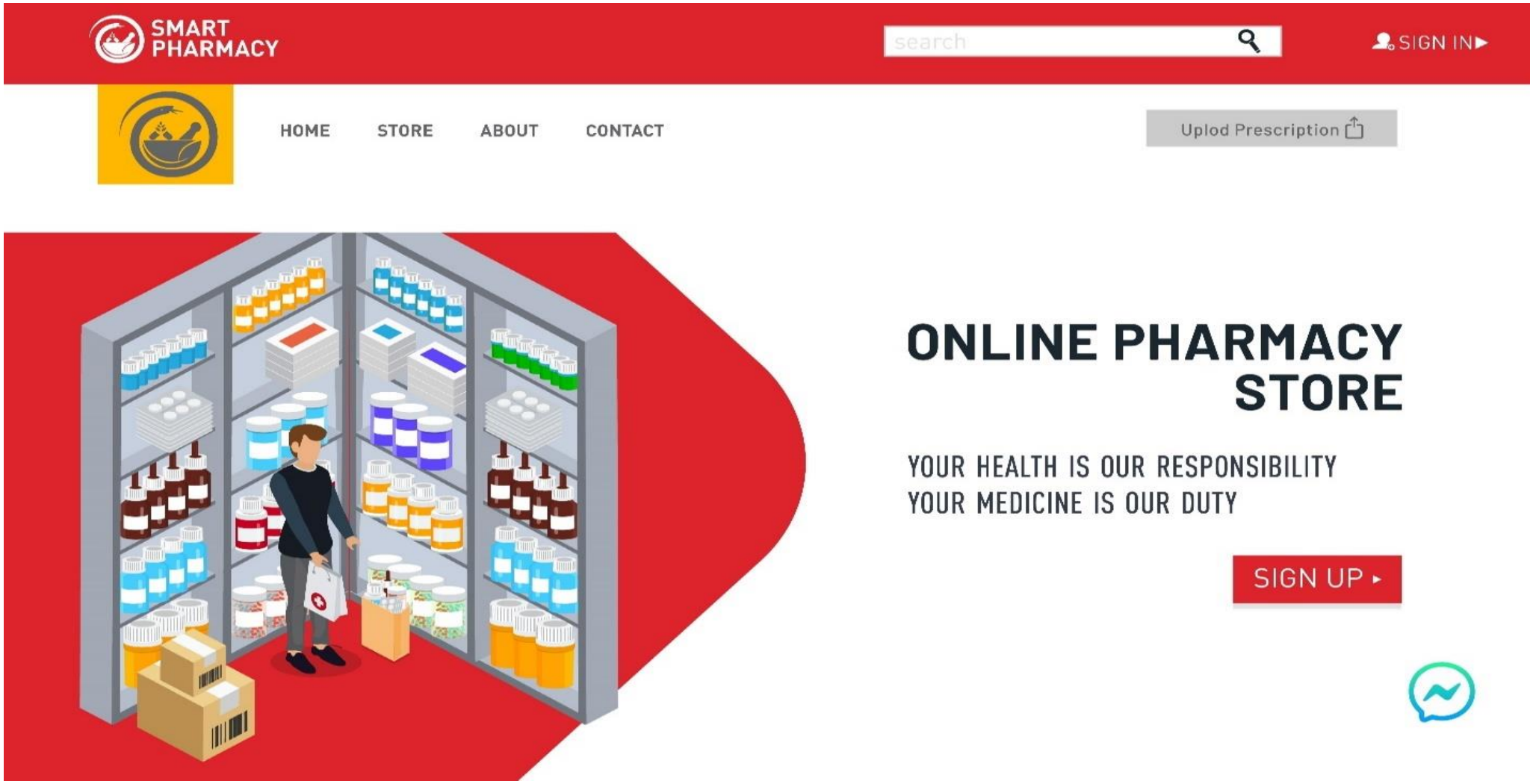
	. Pharmacy Bot is only allowed to answer medical questions and health questions and is not qualified to do more than that.
Success end Condition	. Customer can communicate with the pharmacist successfully by two means txt or call. . customer can successfully chat with pharmacy bot by one mean chat. . customer can successfully report to customer service for problems. . pharmacist can successfully contact suppliers and request and redeem and return products successfully and vice versa.
Failed end Condition	Pharmacy Bot fail to answer customer correctly. . Customers fail to contact pharmacist. . pharmacists fail to communicate with supplier and vice versa.
Primary Actor	Customer
Secondary Actor	Pharmacy bot, supplier and pharmacist
Trigger	Customer use website chatting to chat with pharmacy Bot and pharmacist and customer service. Customer is provided with mobile phone of the pharmacist so he could use to call. Pharmacist can use chat and call provided in website to communicate with supplier and vice versa.

Interaction Scenario for Contact use case:

Actor intentions:	System Responsibility:
1.Actor (Pharmacist) selects the supplier to order a medicine	
	2.System receives the medicine and add it to the inventory which will be visible to pharmacist to see while updating stock statues then sends a report to the admin
3.Actor(Pharmacist) wants to return a medicine for being expired or because its not good enough to be sold so he sends it to the supplier	
	4.System first receives from Pharmacist names of medicines and remove it from inventory and sends it to supplier then confirms to pharmacist that the transaction is complete while updating stock statues making it visible for pharmacist to see what was removed then sends a report to the admin
5.Actor(User) use contact technique while using system tools such as pharmacy bot to answer a question or explain a problem that the bot doesnot understand .	
	6.System use user's ID to get his telephone number while having pharmacist number and links them together and proceed with the calling process

Test requirement for contact use case:

- Validate that customer send message to pharmacist successfully.
- validate that pharmacist receive message of customer.
- validate customer call with pharmacist successfull.
- validate pharmacist receive call successfully from customer.
- validate that customer can’t reach the pharmacist.
- validate that pharmacist can’t reach customer.
- Validate that pharmacy bot answer customer.
- validate that pharmacy bot lags or is not available.
- validate pharmacist reaching supplier.
- validate supplier reaching pharmacist.
- validate the customer and supplier:(Redeem, request, return) items thus its condition successfully.

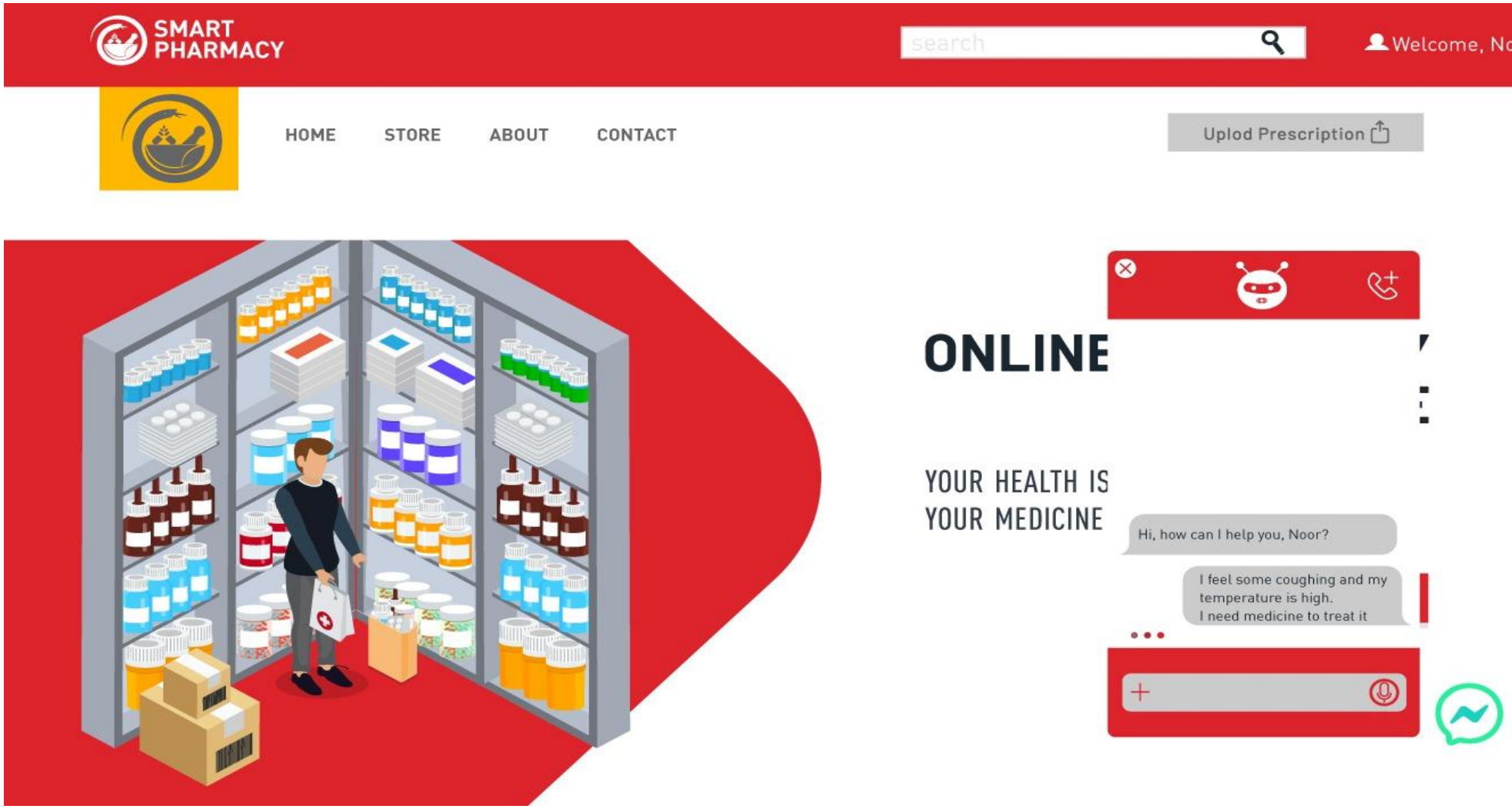


This is the outer page of the website:

. Contain login and signup buttons for registration purposes.

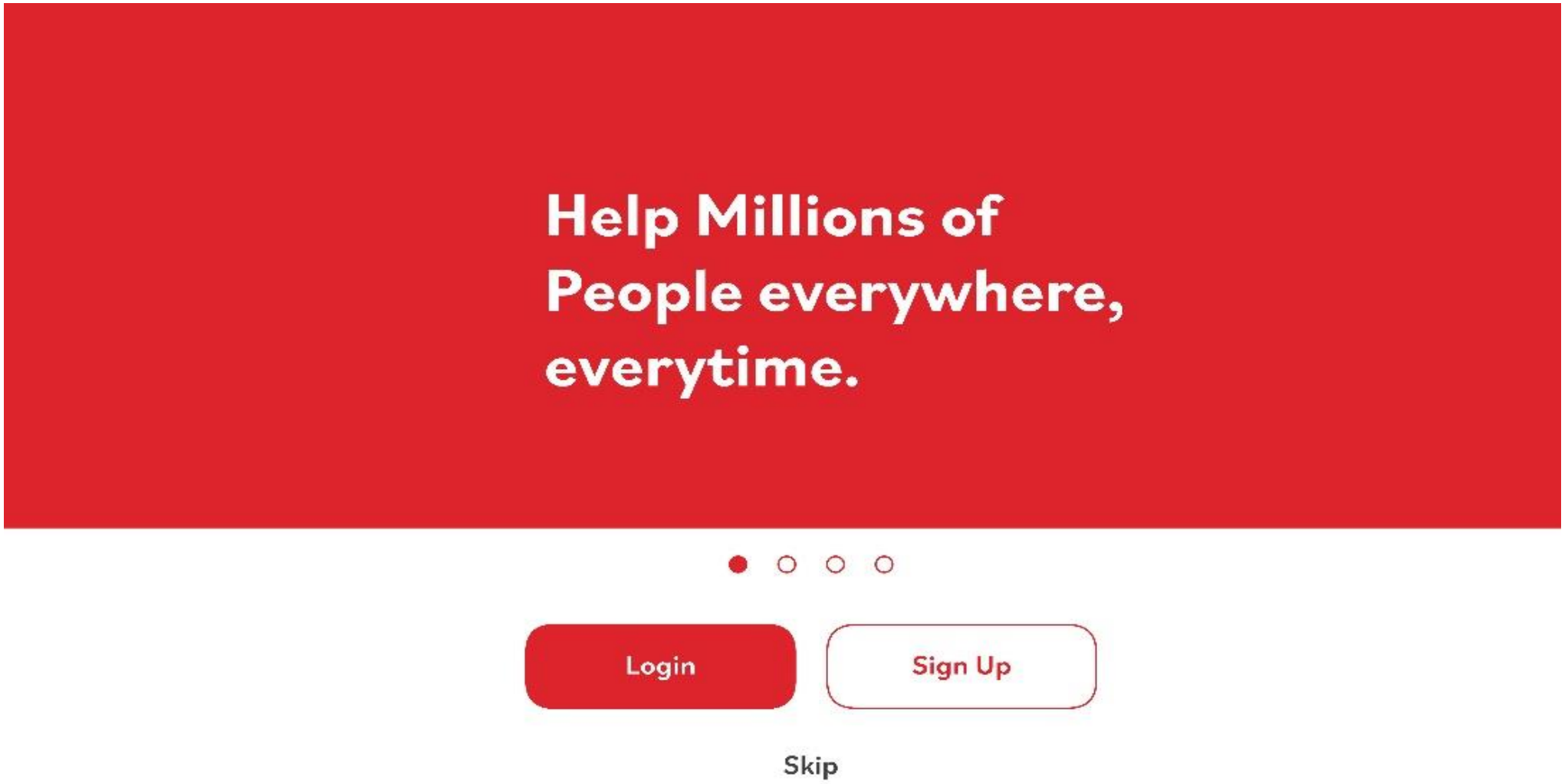
. Also contain at the far below the pharmacy bot icon to help user and serve him as an assistant it can suggest alternate medicines and answer questions from customers.

. Above there is a store button that leads you to another screen of buying the medicine and a brief description of the website at about and contact the customer service button beside if you have faced any problems



. Upon opening the pharmacy bot icon it pops up a small screen like it seen in the picture that can answer the customer questions if he is feeling dizzy or sick .

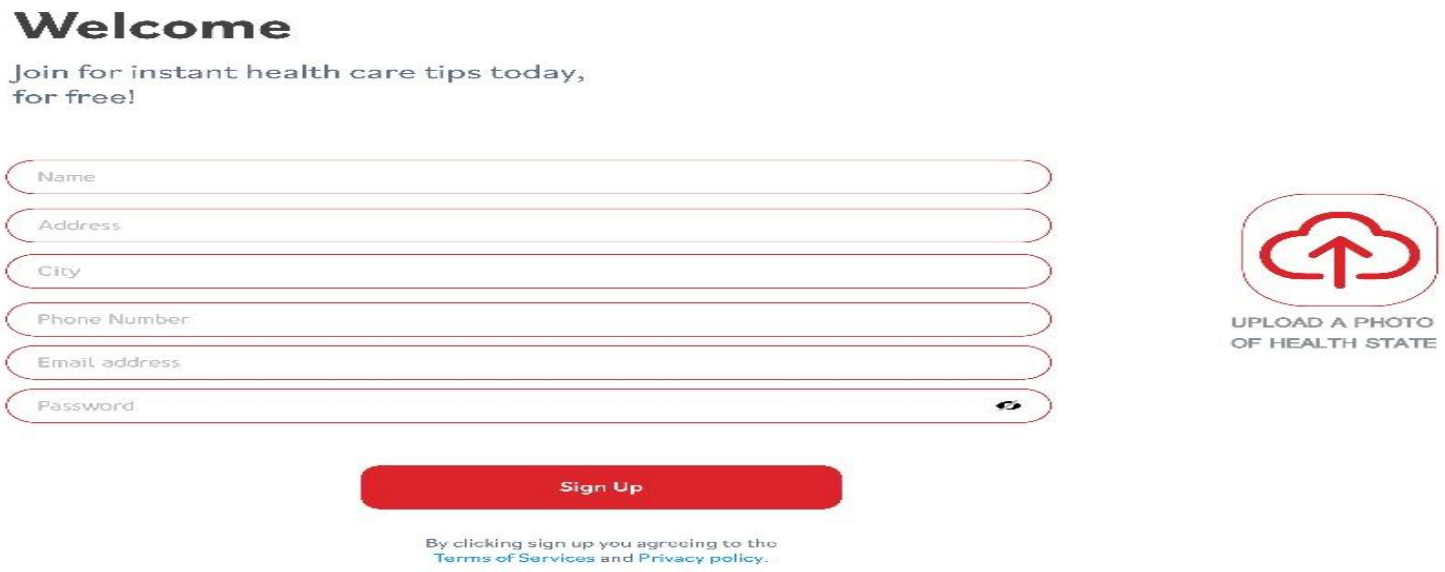
. It can suggest alternative medicines and is aware of patients with chronic diseases as it is aware for the patient or customer health record.



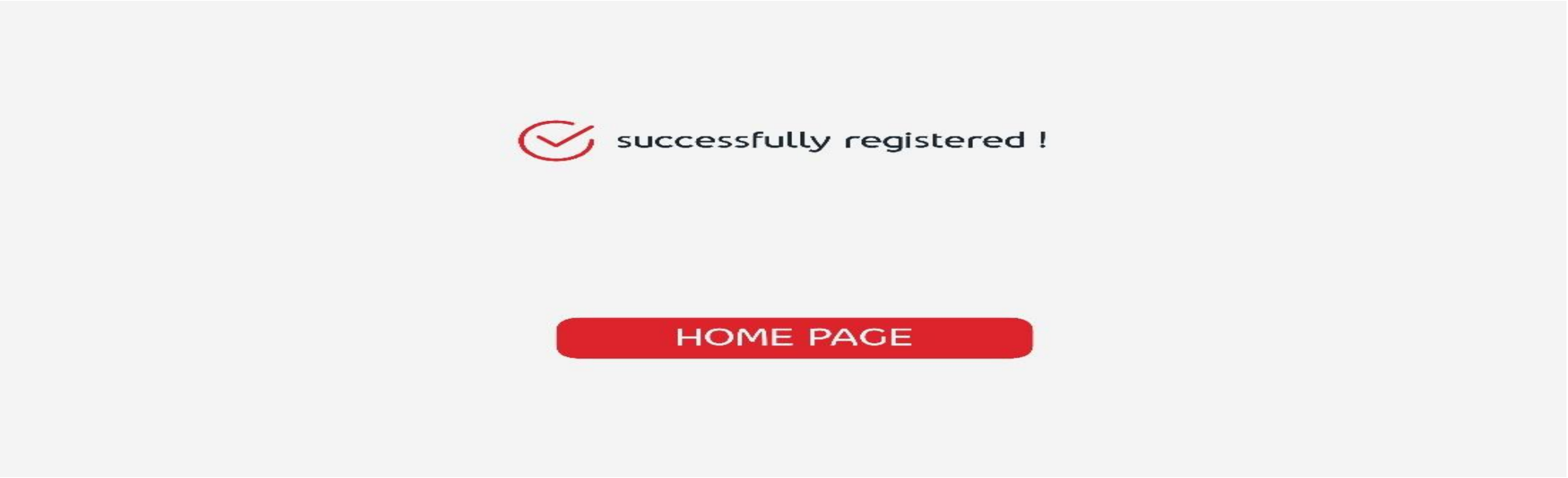
. The user is required upon entry to login if he already signed up before and have an id and a password given to him upon sign up to write when he login.

. Thus, signup is for the first-time users who must put all of their personal information to be stored in the database and give also their health record to be stored so the website is aware about what medicine suits or not fit with the customer

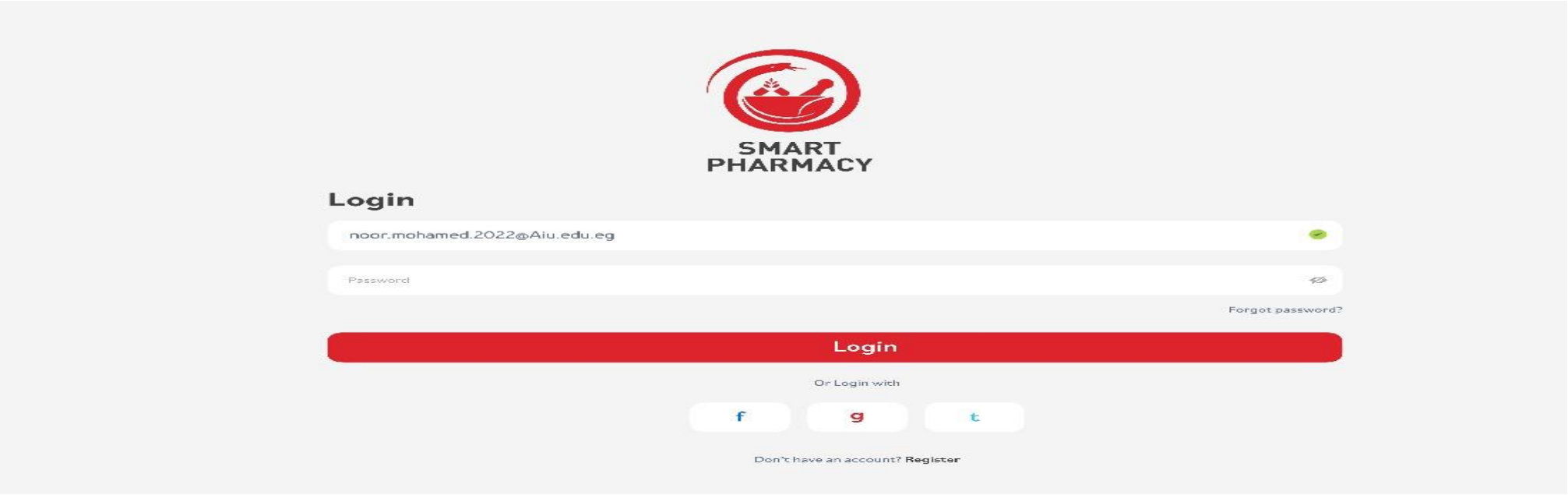
This is the signup of the pharmacist he should upload his university certificate among his personal info.



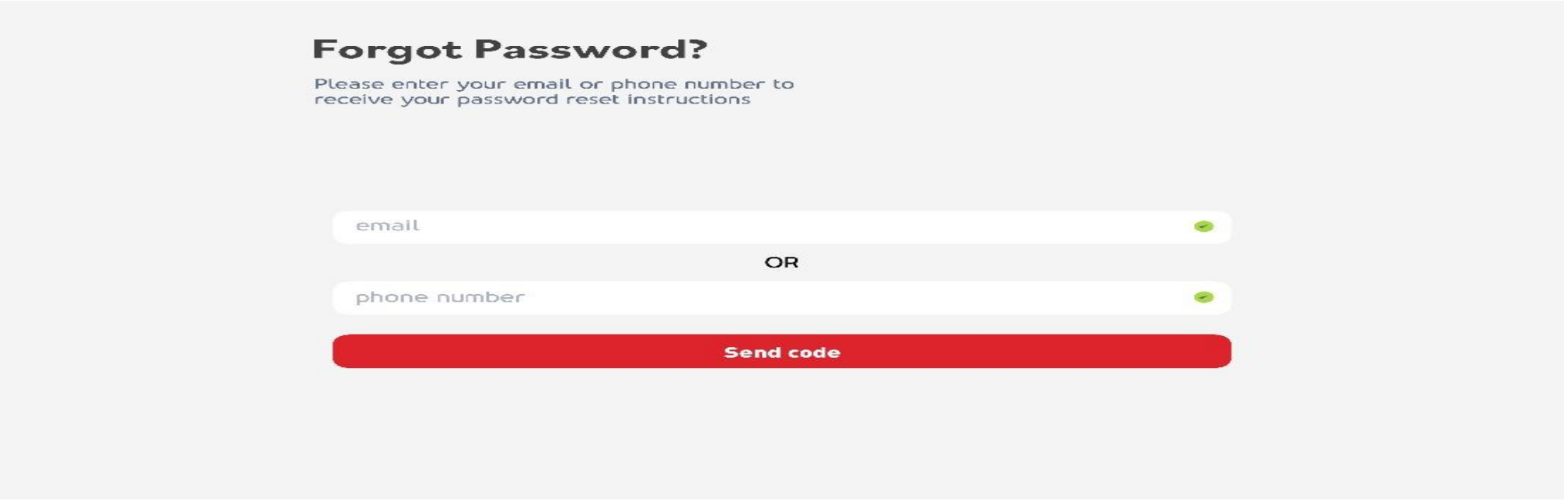
This is the signup of the normal user he should upload an optional photo of his health state and if he doesn’t have it, he can upload it later.



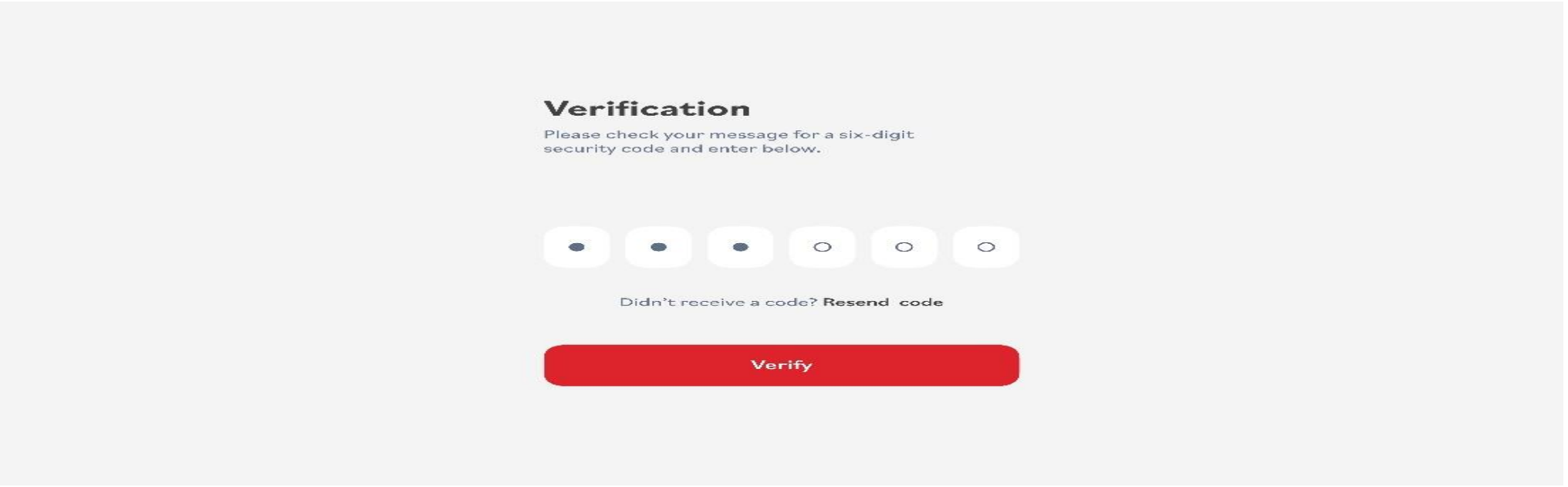
. After registration a successful message is shown if the information is correct



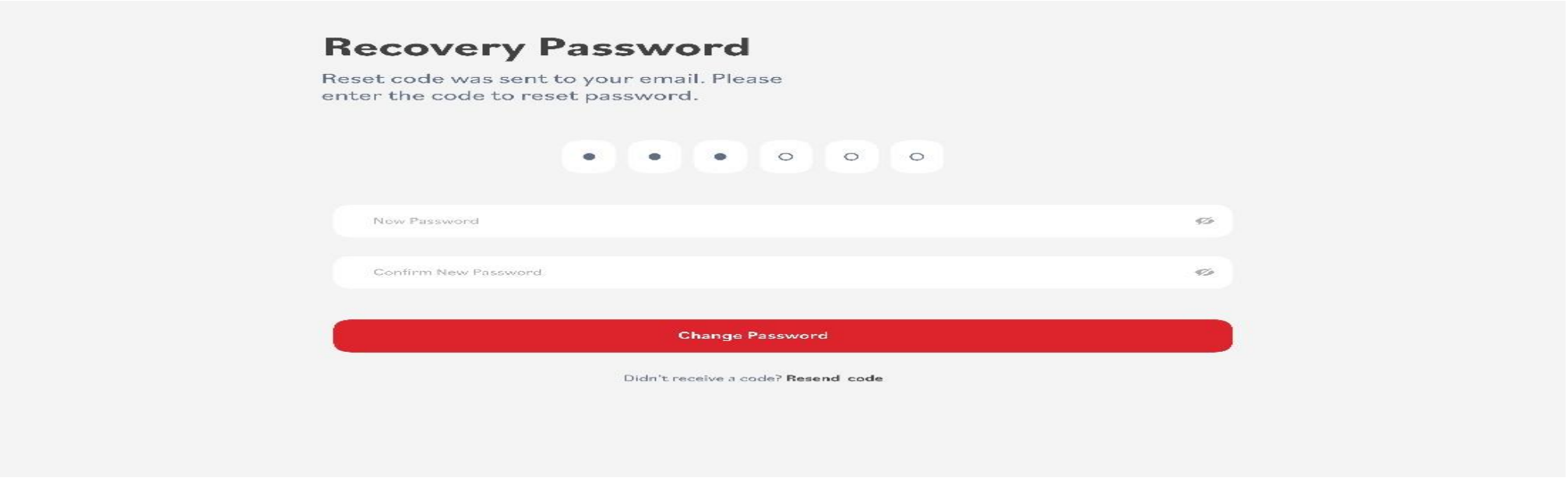
. In case you have made an account here you can login with your unique id and password you made upon signup



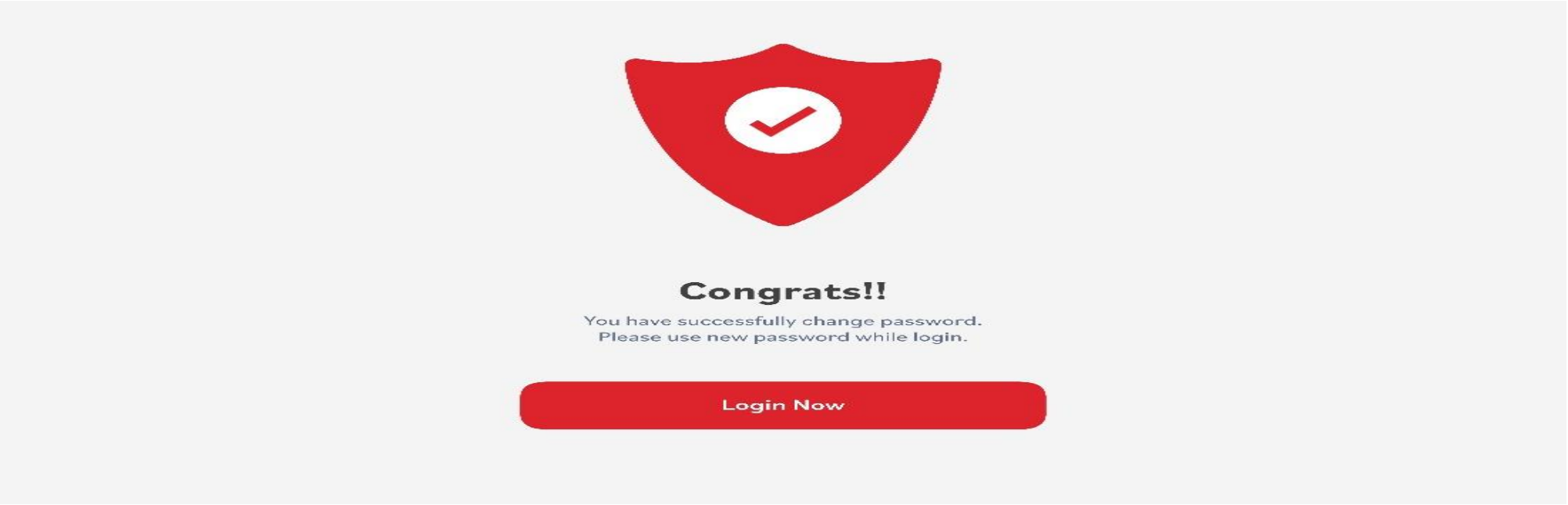
. In case the customer forgot his password an email will be sent to verify identity and reset his password.



. Here it verifies a code to make sure it's the correct customer identity.

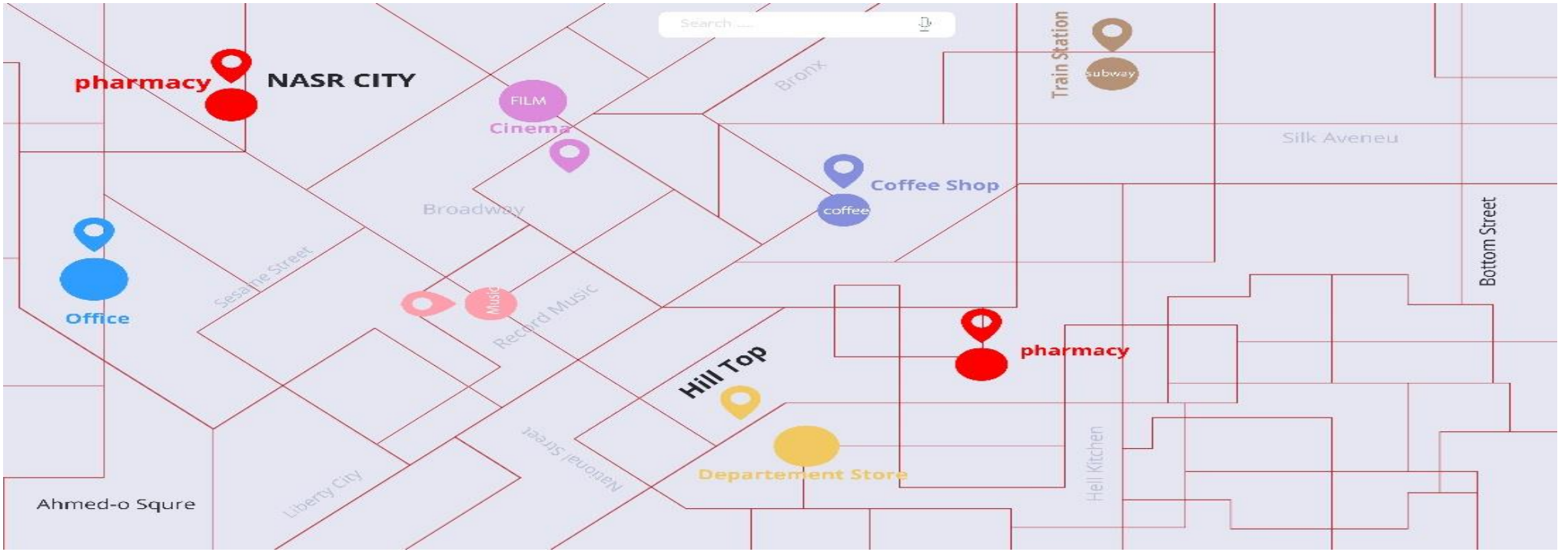


. Here is the reset code to reset password among password reset steps.



. If all passwords reset steps is successful it sends a congrats! Message to ensure correction.

. For Delivery purposes and accessing the nearest pharmacy the user is required to approve location permission



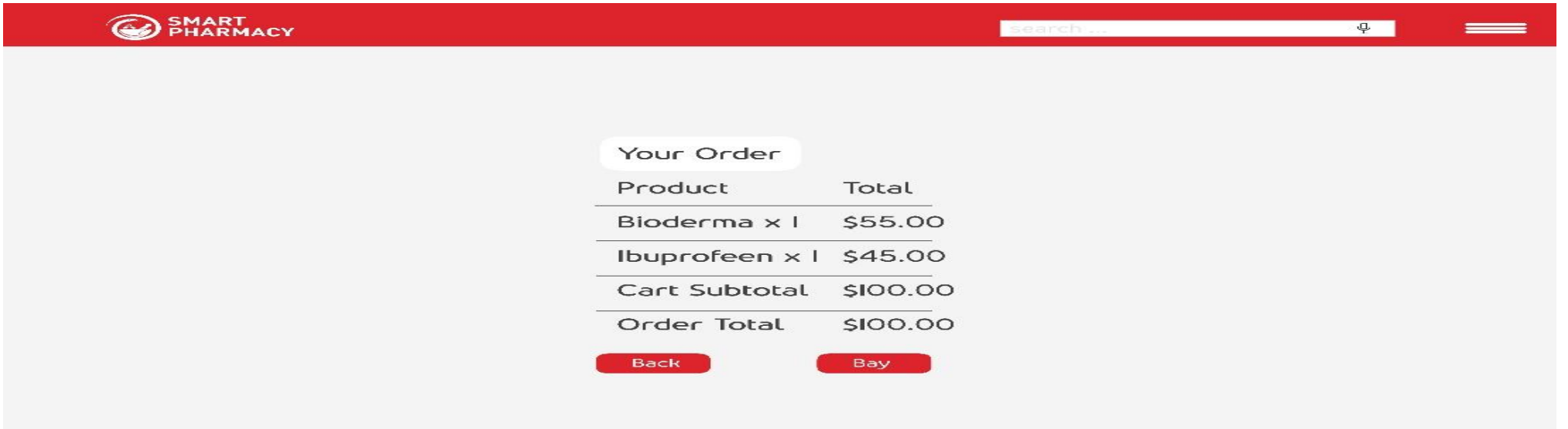
. Here is a sample of how the location should work here as seen a sample of all available pharmacies in the area.

. This screen is for the customers who can choose to buy medicines and choose from a variety or a category of medicines that suits their needs and the below button for the checkout.

. Inside every category as shown a sample of what medicines should look like and price written under it and if clicks on specific medicine it opens a new screen.

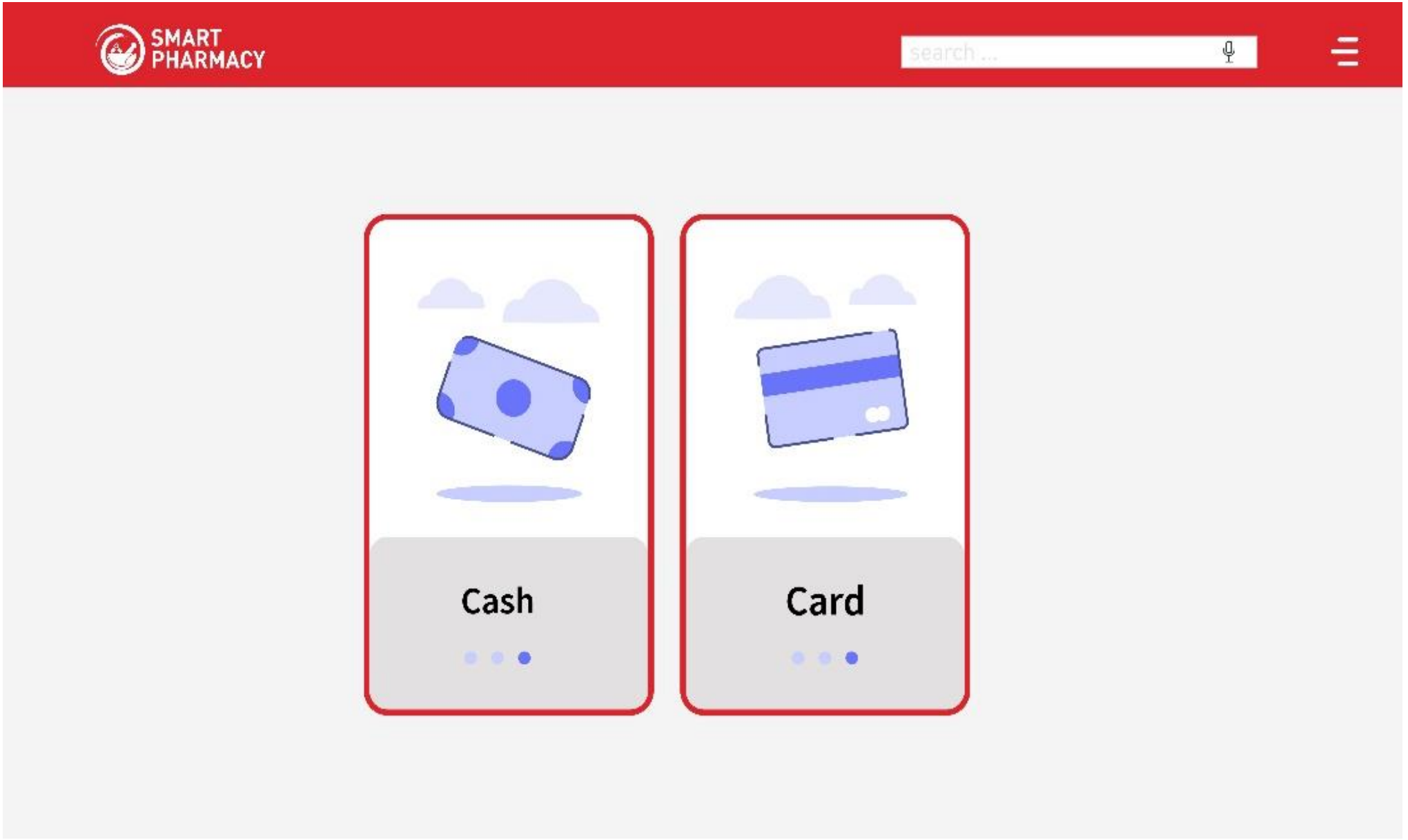
. When the specific medicine screen opens a description of the medicine is shown and the user can choose as much quantity as wanted and then select add to cart so it's added to the cart of items that is going to be bought.

. A cart contains not only one type of medicine it can contain as much medicine based on the user choice.



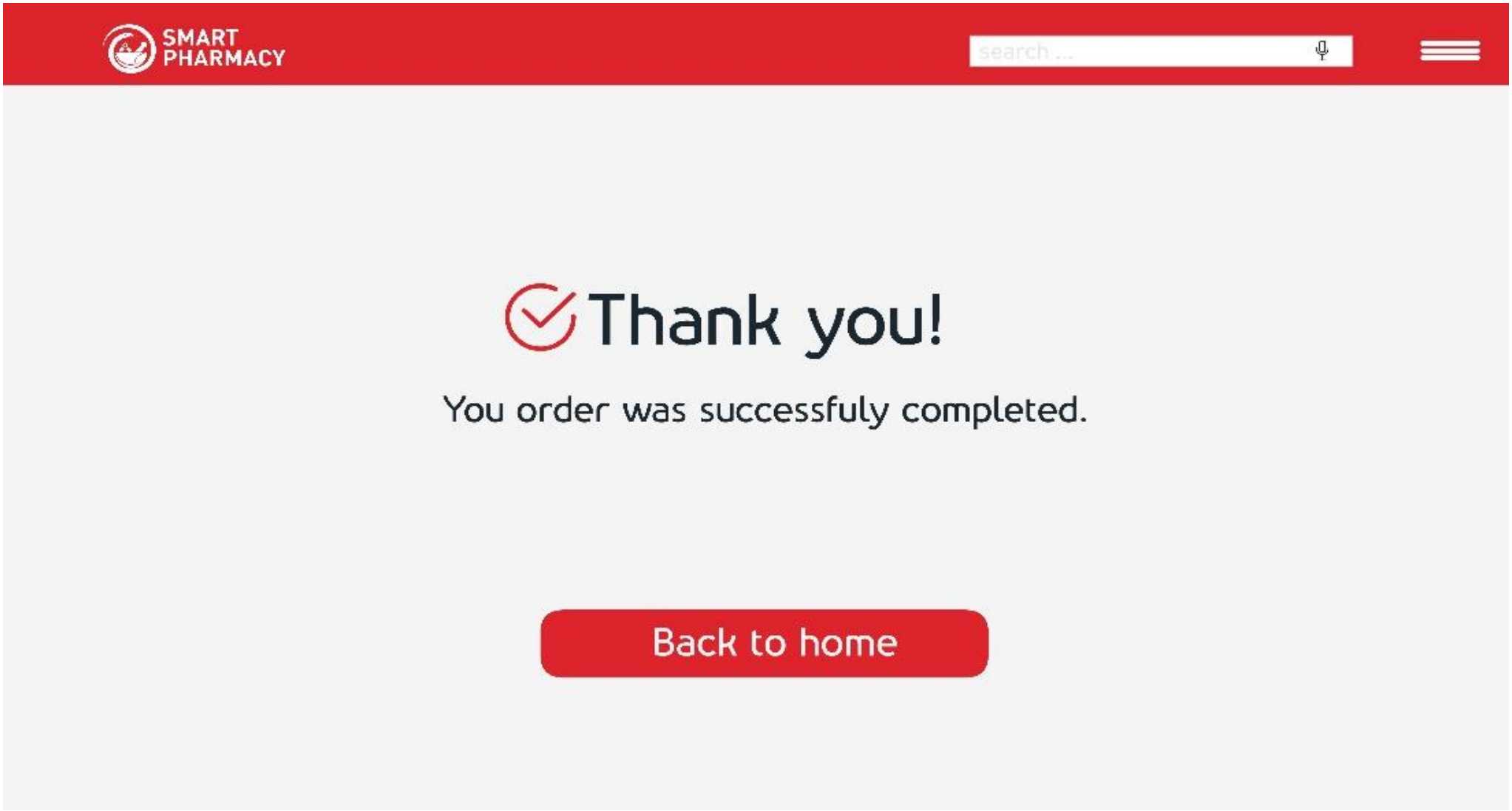
. As the user proceed to view the cart, he finds the items the user puts and the quantity and the price with total price only.

. Then the user is free to go back and continue his buying or to click buy and opens the screen of payment.



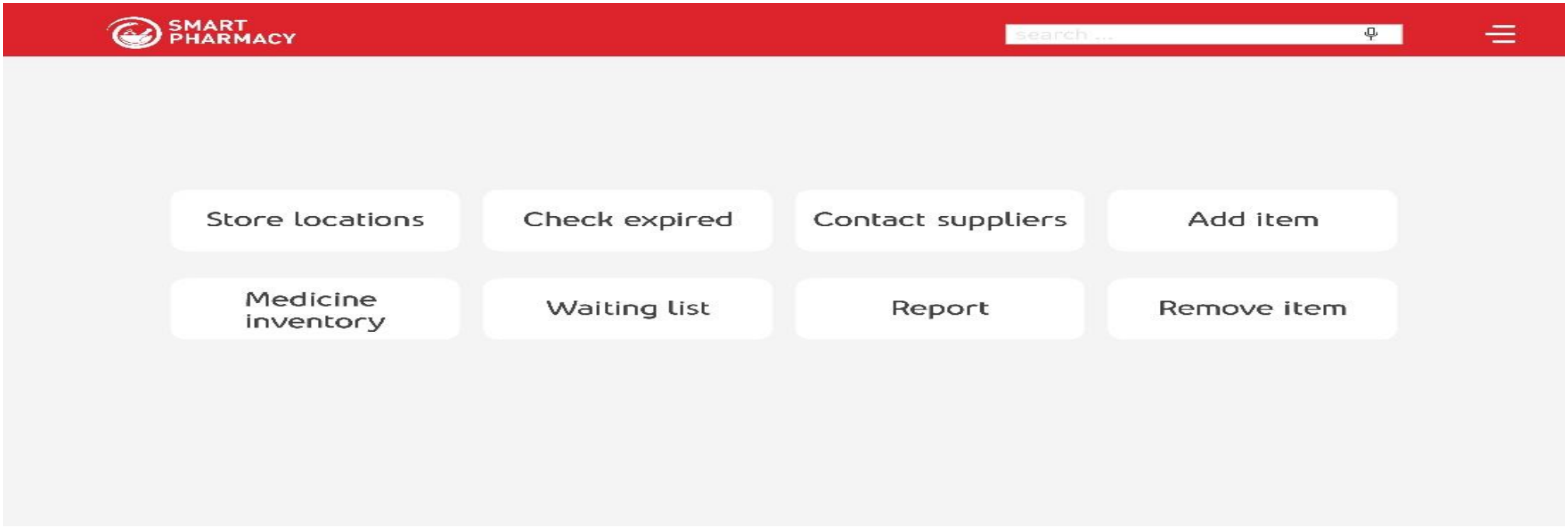
. Here in the screen of payment the user chooses whether to buy using a credit card that will require his credit card number and password or buy cash on delivery.

. In both situation the website already now the location of the user and the items will be successfully brought to the users' address using our delivery services as soon as possible.



. If the payment proceed correctly with no problem and the delivery service will be announced for a new delivery a Thank You message will appear.

. There is a Back to home button for the user if he wants to make a new purchase or use pharmacy bot or even choose a new medicine.



. Here is the admin or the pharmacist screen.

. Store location of the medicine according to classification standards.

. check expired if there is any expired product so it can be returned to supplier.

. contact supplier for a new purchase or returning an expired product or see outgoing transactions or ask for a certain product.

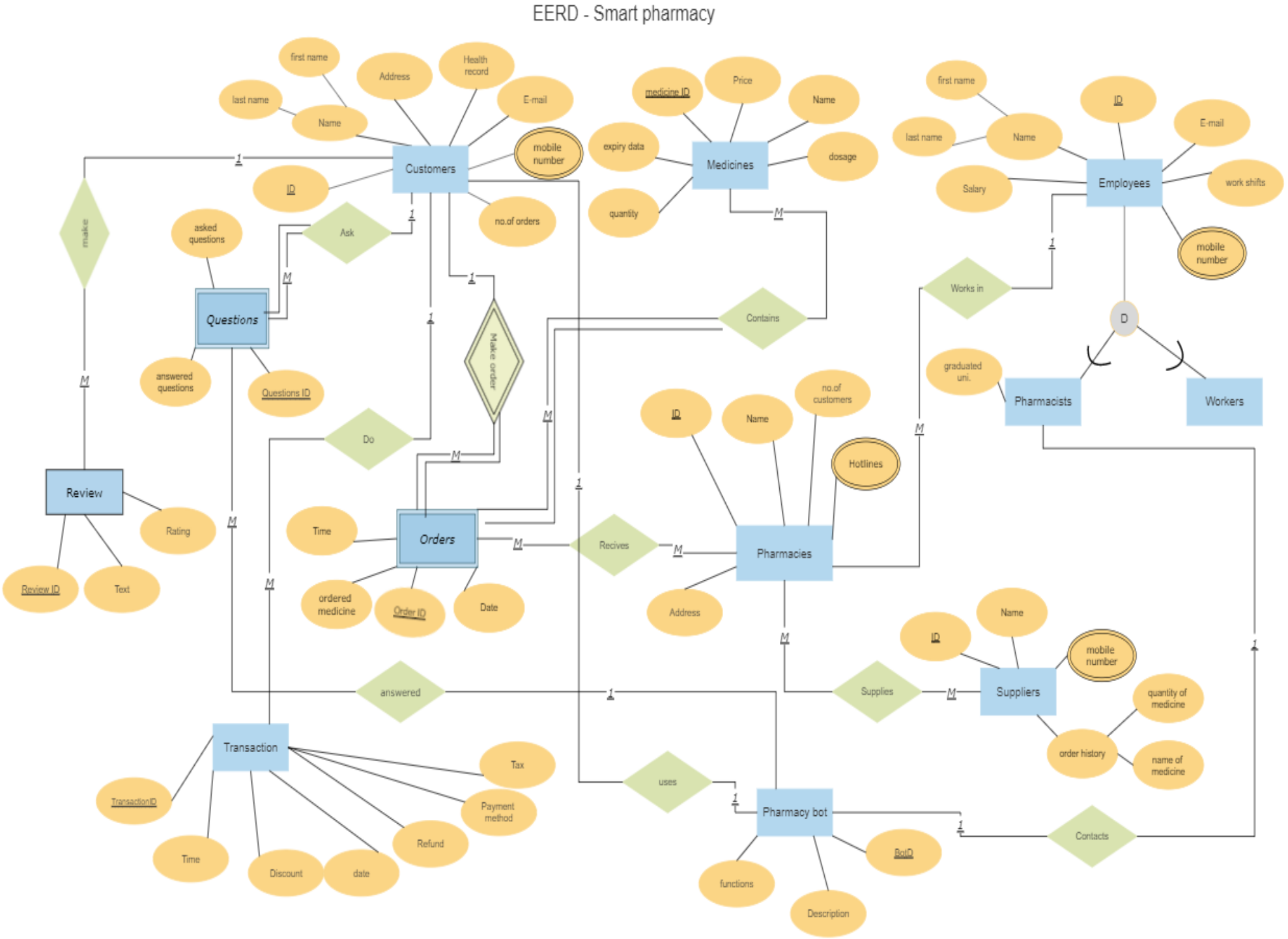
. A privilege to add a medicine or remove.

. Medicine inventory sees all the medicines with their kinds and can update their statues and seek the out-of-stock ones.

. The waiting lists see the waiting list of orders.

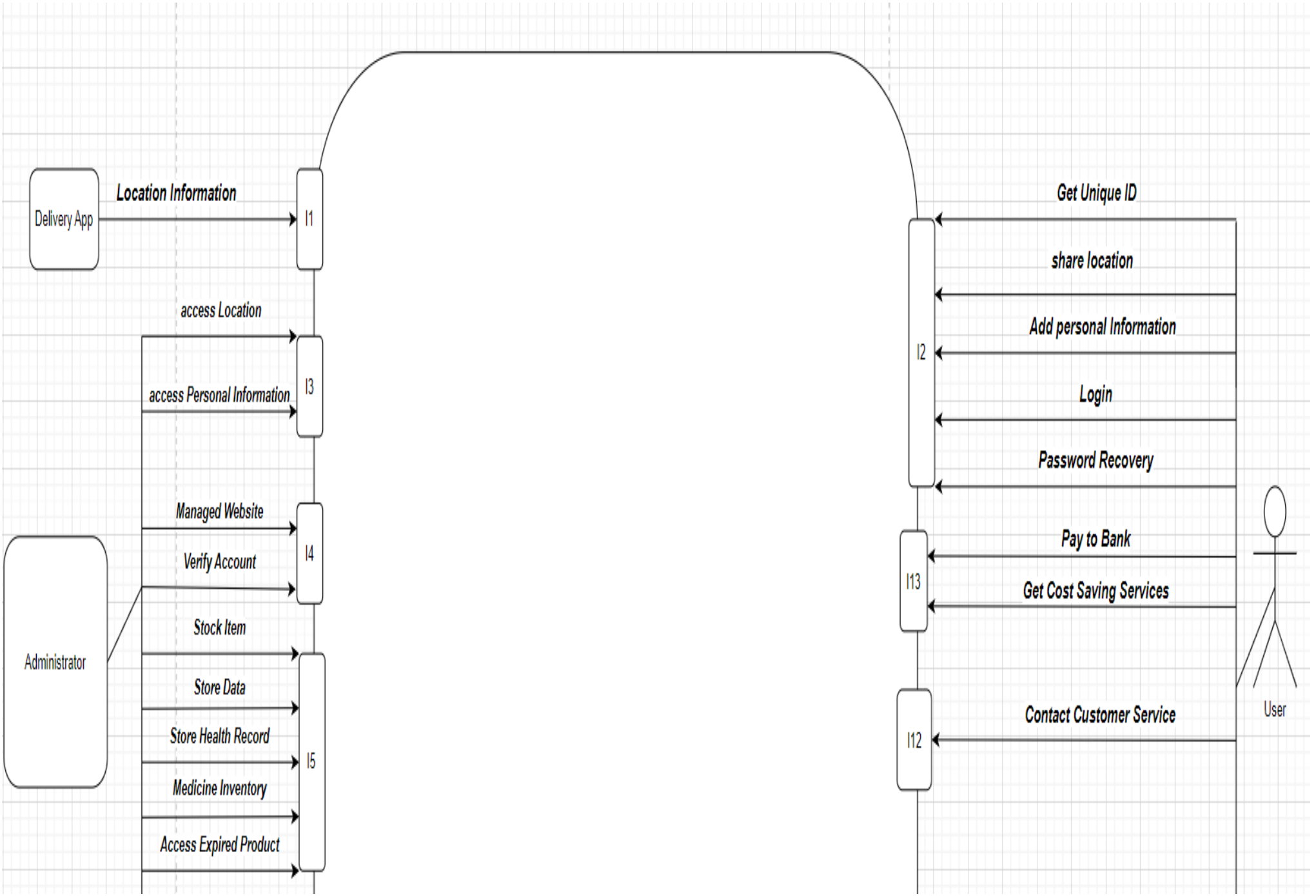
. Report: view reports of the pharmacist, pharmacy and work shifts and workers.

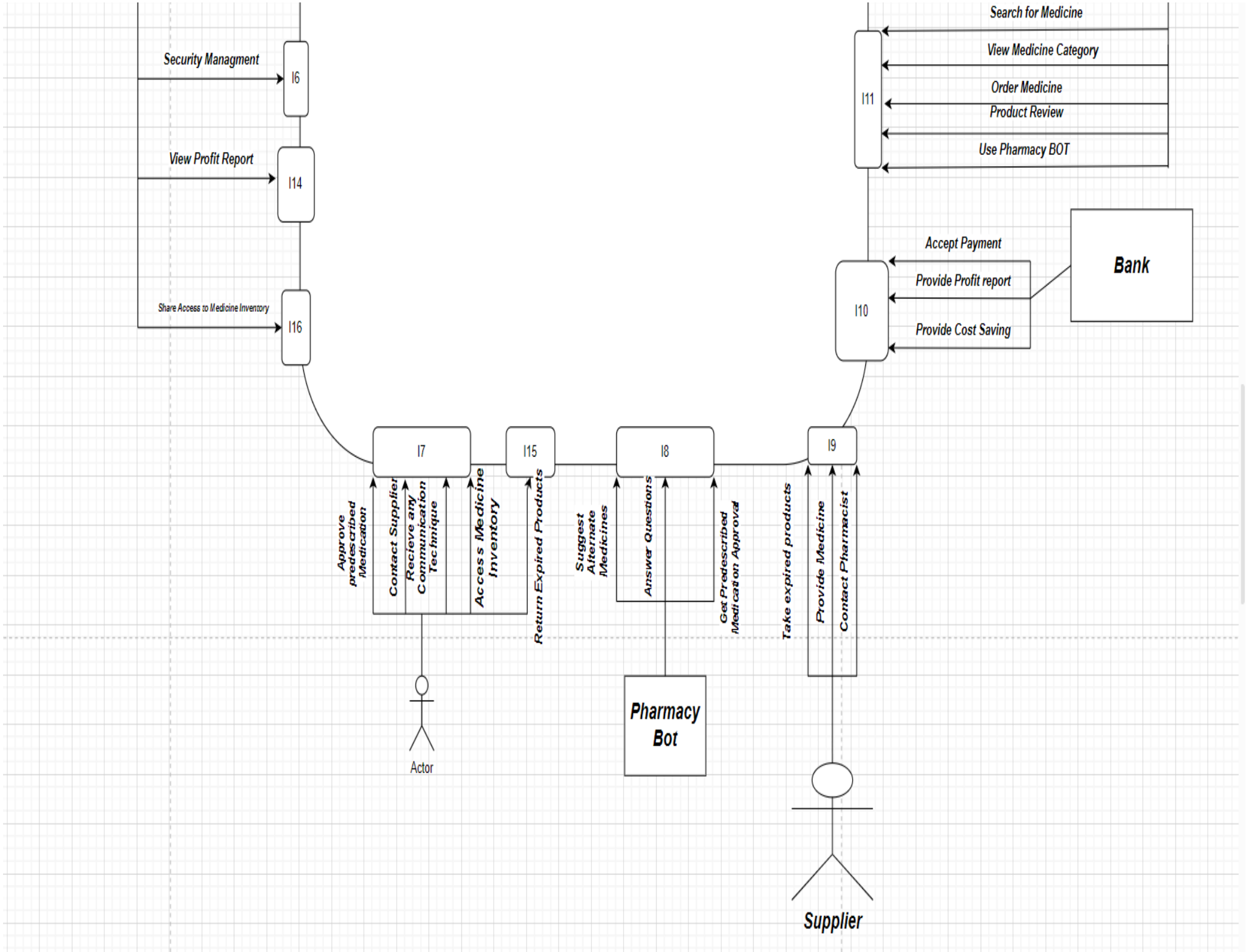
EERD:


EERD - Smart pharmacy
Customers
first name
last name
Name
Address
Health record
E-mail
mobile number
ID
no.of orders
make
Ask
asked questions
Questions
answered questions
Questions ID
Make order
Do
Review
Review ID
Rating
Text
Time
Orders
ordered medicine
Order ID
Date
Contains
Medicines
medicine ID
Price
Name
dosage
expiry data
quantity
Recives
Pharmacies
ID
Name
no.of customers
Hotlines
Address
Employees
first name
last name
Name
ID
E-mail
Salary
work shifts
mobile number
Works in
D
graduated uni.
Pharmacists
Workers
answered
Transaction
TransactionID
Time
Discount
date
Refund
Payment method
Tax
uses
Pharmacy bot
BotID
functions
Description
Supplies
Suppliers
ID
Name
mobile number
quantity of medicine
order history
name of medicine
Contacts

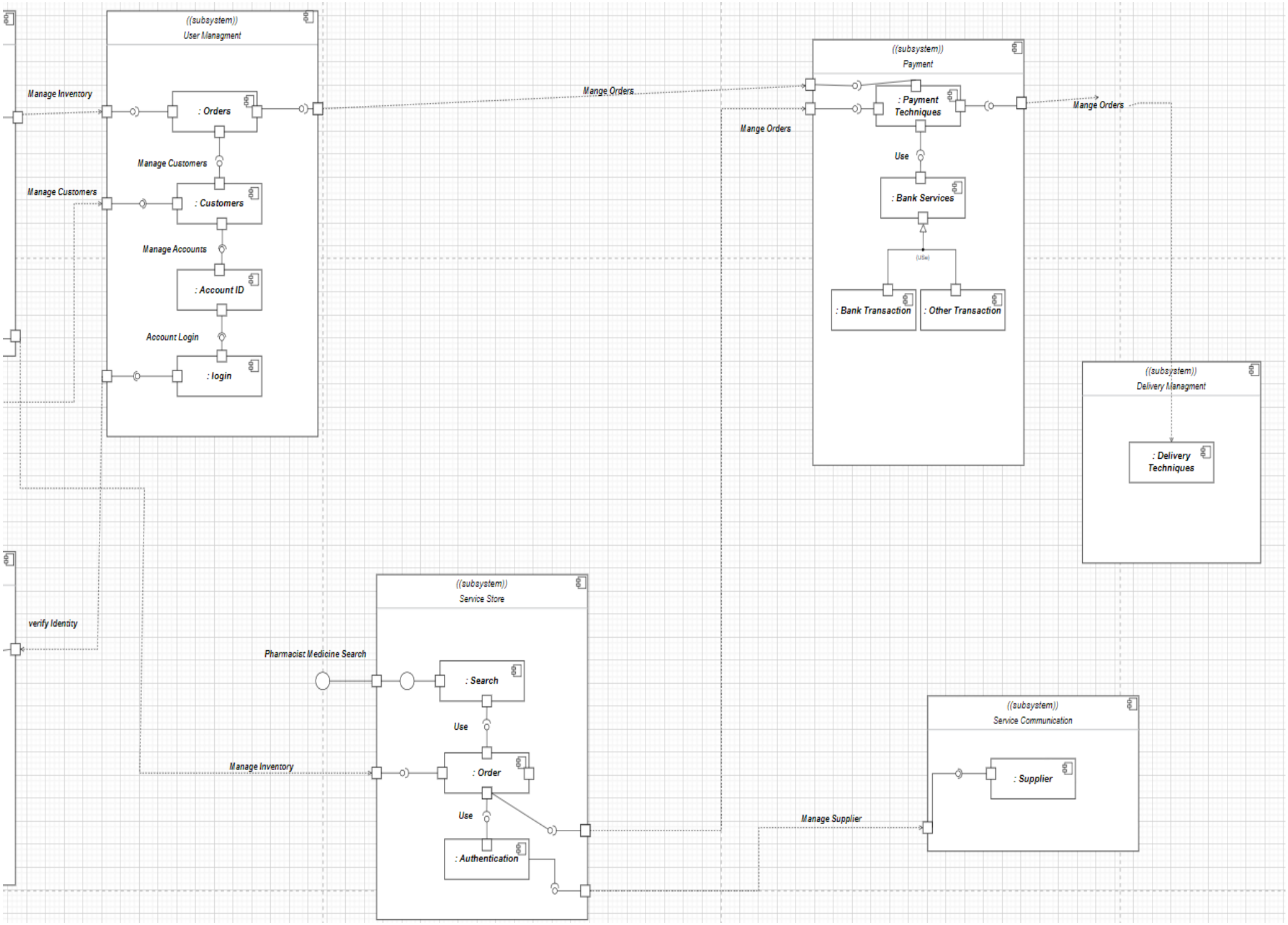
Architecture Diagrams (variation manager control style):

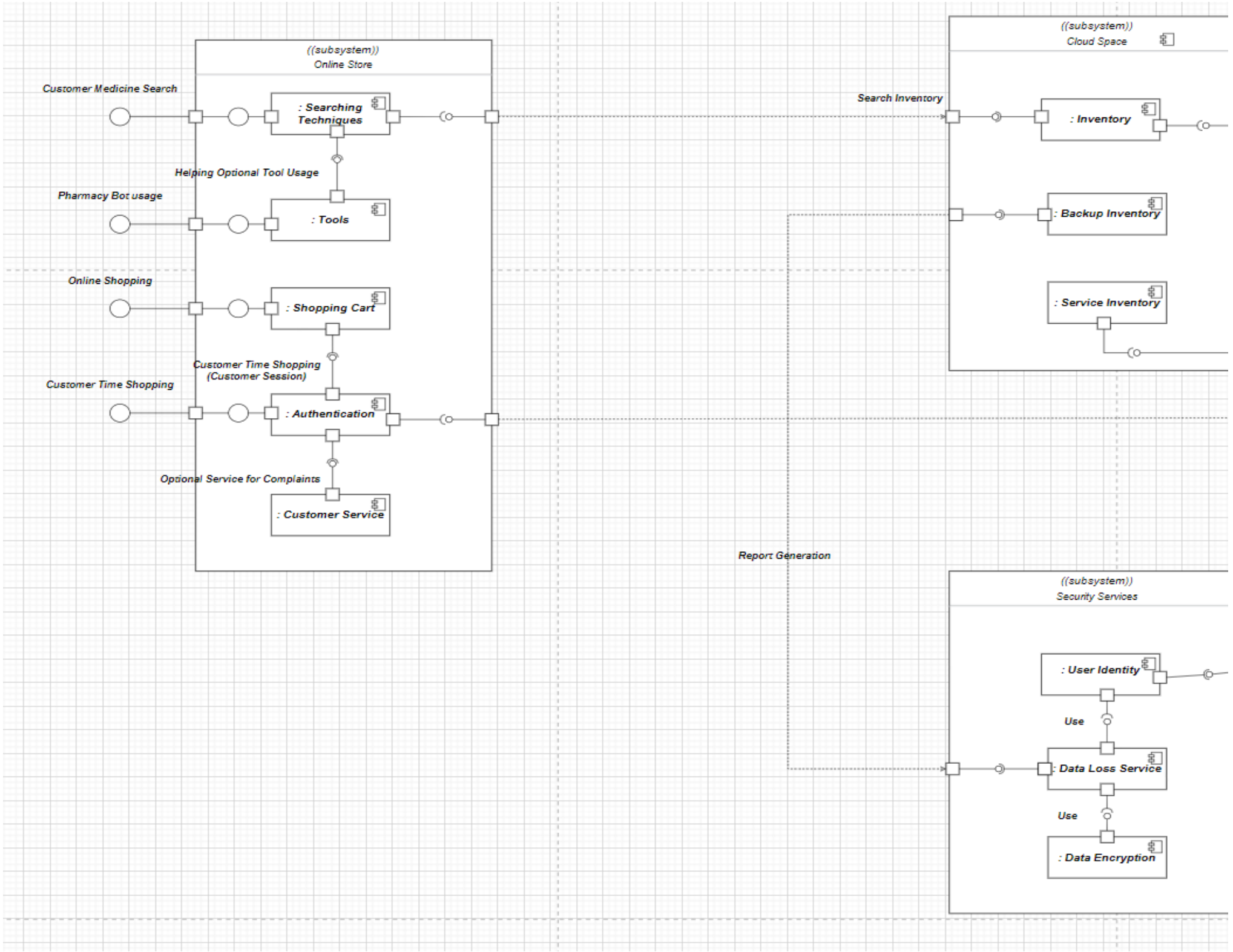
- Context Diagram (Level zero)




Search for Medicine
View Medicine Category
Order Medicine
Product Review
Use Pharmacy BOT
I11
Security Managment
I6
View Profit Report
I14
Share Access to Medicine Inventory
I16
Accept Payment
Provide Profit report
Provide Cost Saving
I10
Bank
I7
I15
I8
I9
Approve predescribed Medication
Contact Supplier
Recieve any Communication Technique
Access Medicine Inventory
Return Expired Products
Suggest Alternate Medicines
Answer Questions
Get Predescribed Medication Approval
Take expired products
Provide Medicine
Contact Pharmacist
Actor
Pharmacy Bot
Supplier

Component Diagram:




((subsystem))
Online Store
Customer Medicine Search
: Searching Techniques
Helping Optional Tool Usage
Pharmacy Bot usage
: Tools
Online Shopping
: Shopping Cart
Customer Time Shopping (Customer Session)
Customer Time Shopping
: Authentication
Optional Service for Complaints
: Customer Service
((subsystem))
Cloud Space
Search Inventory
: Inventory
: Backup Inventory
: Service Inventory
Report Generation
((subsystem))
Security Services
: User Identity
Use
: Data Loss Service
Use
: Data Encryption

Interface Definitions:

Interface 1: SystemLocationProvider

- Public static void getlocation (object deliverAppaccess, string neededlocation)

Interface 2: User registration

- Public static int GetID (Boolean UserVertification)
- Public static void shareLoc (Boolean locationAccess)
- Public static void Login (string email, int password)
- Public static void pharmacistSingUp (string email, string fullname, string address, int age, int phoneNumber, int password, Object university Certificate, int ConfirmationCode)
- Public static void NormalUserSingUp (string email, string fullname , string address , int age , int phoneNumber , int password , Object healtstatePdf , int ConfirmationCode)
- Public static Boolean forgetpassword (int phoneNumber, string email)
- Public static Boolean recoverPassword (int verificationCode)
- Public static void addInfo (object newInfo)

Interface 3: Admin approvment

- Public static Boolean approveLocation (object location)
- Public static Boolean approvePersonalinfo (object info)

Interface 4: Admin-Pharmacy Management

- Public static void manageWebsite ()
- Public static void verifyAccount (Object account)

Interface 5: Admin’s operations

- Public static void storeData (Object data)
- Public static void storeHealthrecord (Object healthRecord)
- Public static object stockitem(Object stockItemReport)
- Public static object accessExpireditem (Object expiredItemReport)
- Public static void ManageInventory(Object medicineReport)

Interface 6: manage security

- Public static void manageSecurity ()

Interface 7: Pharmacists’ operations

- Public static Boolean approveMedicine (Object medicines)
- Public static void ContactSuppliers (Object suppliers)
- Public static void RecieveAnyCommunicationTec ()
- Public static void AddMedicine (string newMedicine)
- Public static void RemoveMedicine (string removedmedicine)
- Public static void accessManageInventory(AddMedicine(string newMedicine),RemoveMedicine(string removedMedicine))

Interface 8: Pharmacy bot’s operations

- Public static string suggestAltmedicines (string outOfstockMedicine)
- Public static string answerQuestions (string askedQuestions)
- Public static void GetPredescribedmedicationApproval ()

Interface 9: Suppliers' operations

- Public static object provideMedicine (Object neededMedicine)
- Public static void TakeExpiredmedicines (Object takeExpMed)
- Public static void ContactPharmacists (Object pharmacists)

Interface 10: PaymentGateway

- Public static Boolean validatepayment (Object payment)
- Public static object provideProfitReport ()
- Public static object provideCostsaving ()

Interface 11: User's operations

- Public static object searchFormedicine (object medicine)
- Public static void ViewMedCategory ()
- Public static Object OrderMed (Objecr neededMed)
- Public static Object usePharmacybot()
- Public static void MakeReview()

Interface 12: ContactCustomerService

- Public static void ContactCustomerService()

Interface 13: User's payment

- Public static Boolean payTobank (int pay)
- Public static Boolean Promocodes (int PromoCodes)
- Public static Boolean Getdiscounts(Boolean Promocodes(),Boolean firsttimeUse)
- Public static Boolean Freeshipping(Boolean firsttimeUse)

Interface 14: Profit reports

- Public static void view profitReports

Interface 15: ReturnExpProd

- Public static Object ReturnExpProducts (Object ExpProducts)

Interface 16: AccessToMedInv

- Public static void GiveaccessToMedInv()

Interface 17: Customer session

- Public static void startSession()
- Public static void addItemToCart(sessionId, item)
- Public static void removeItemFromCart(sessionId, item)
- Public static void viewCart(sessionId)
- Public static void checkout(sessionId, paymentInfo)
- Public static void getOrderStatus(sessionId, orderId)

Interface 18: Optional Service (Complains)

- Public static void addComplain(String complain):
- Public static void viewComplains():
- Public static void updateComplain():
- Public static void deleteComplain(String complain):
- Public static String getComplainById(Int id):
- Public static void assignComplain():

Interface 19: Helping optional tool

- Public static String getHelp (String specificTopic)
- Public static boolean SearchHelp()
- Public static void requestAssistance()
- Public static void provideFeedback (String Comments , int rate)

Interface 20: search inventory

- Public static object searchByMedicationName(string name)
- Public static object searchByMedicationType(string MedicationType)
- Public static object searchByAvailability()
- Public static object searchByExpirationDate(int Date)

Interface 21: Manage Customers

- Public static void addCustomer(customer: Customer)
- Public static void removeCustomer(int customerID)
- Public static void updateCustomer(int CustomerID,Object Customer)
- Public static Object searchCustomers(string searchTerm)
- Public static Object getCustomer(int customerID)
- Public static boolean validateCustomer(Object Customer)
- Public static void notifyCustomer(Object Customer,String messages)

Interface 22: Verify Identity

- Public satic boolean verifyUsernamePassword(String username,String password)

Interface 23: Manage Inventory

- Public static void AddMedicine (string newMedicine)
- Public static void RemoveMedicine (string removedmedicine)
- Public static void StoreLocation (string location)
- Public static void ViewCount ()

Interface 24: Report Generation

- Public static void generateSalesReport()
- Public static void generateInventoryReport()
- Public static void generateCustomerReport()
- Public static void generateEmployeeReport()

Interface 25: Manage Accounts

- Public static void updateAccount(Object AccInfo)
- Public static void deleteAccount(Object AccInfo)
- Public static Object viewAccount(Object AccInfo)
- Public static Object searchAccount(Object AccInfo)
- Public static boolean authenticate (Object AccInfo)

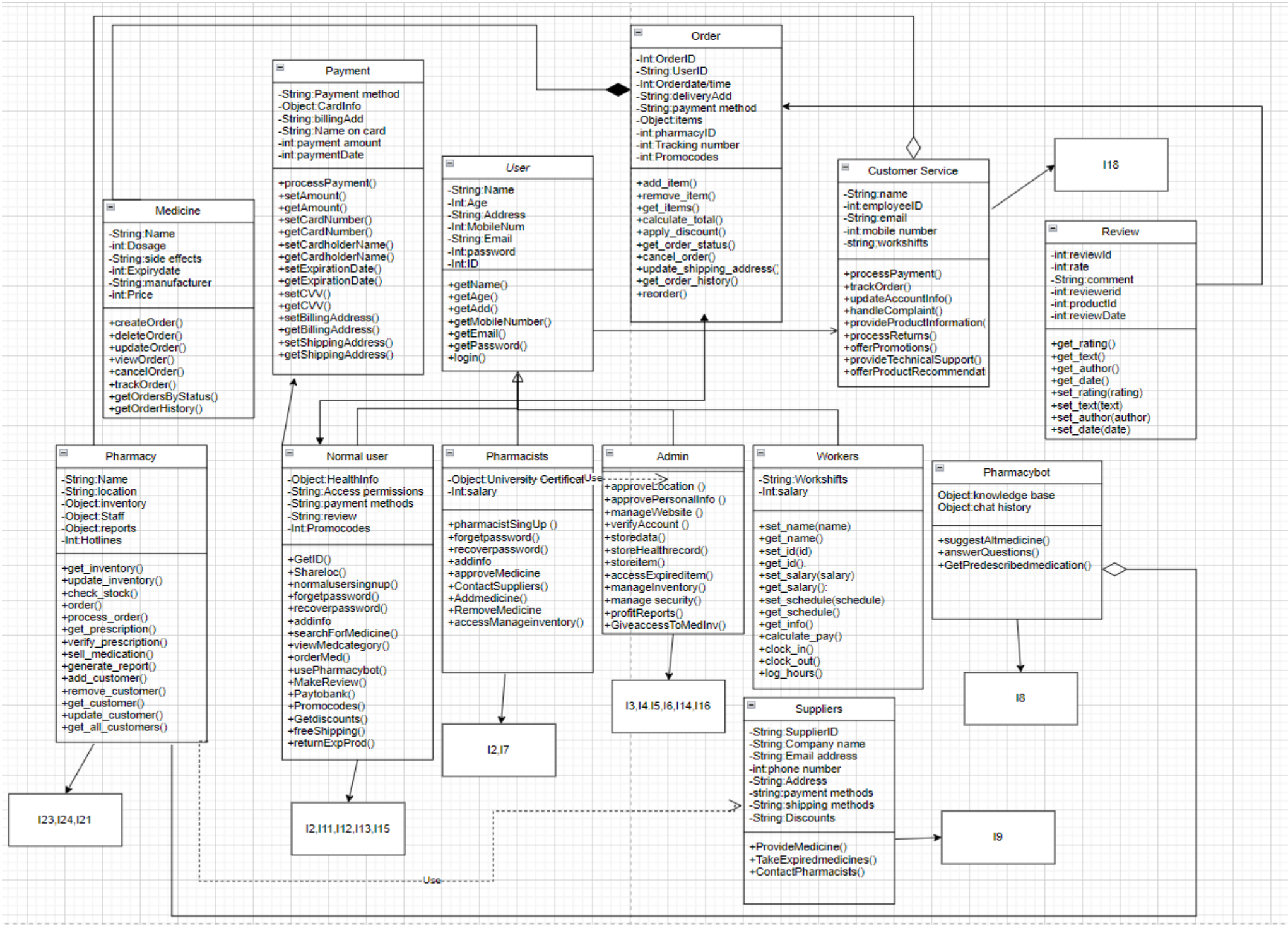
Interface 26: Manage Supplier

- Public static void addSupplier(Object Supplier)
- Public static void removeSupplier(Object Supplier)
- Public static void updateSupplier(Object Supplier)
- Public static Object getSuppliers()
- Public static Object searchSuppliers(Object Supplier)

Interface 27: Manage Orders

- Public static void createOrder(Object order)
- Public static void deleteOrder(Object order)
- Public static void updateOrder(Object order)
- Public static Object viewOrder(Object order)
- Public static void cancelOrder(Object order)
- Public static void trackOrder(int OrderID)
- Public static void getOrdersByStatus(String currentStatus)
- Public static void getOrderHistory(int orderID)

Class diagram:



Traceability matrix:

Required use Cases:

1: System Location Provider

2: User registration

3: Admin approvement

4: Admin-Pharmacy Management

5: Admin’s operations

6: manage security

7: Pharmacists’ operations

8: Pharmacy bot’s operations

9: Suppliers’ operations

10: Payment Gateway

11: User’s operations

12: Contact Customer Service

13:User’s payment

14: Profit reports

15: ReturnExpProd

16: Access To Medicine Inventory

Designed Classes

A: Medicine

B: Payment

C: User

D: Order

E: Customer Service

F: Review

G: Pharmacy

H: Normal User

I: Pharmacists

J: Admin

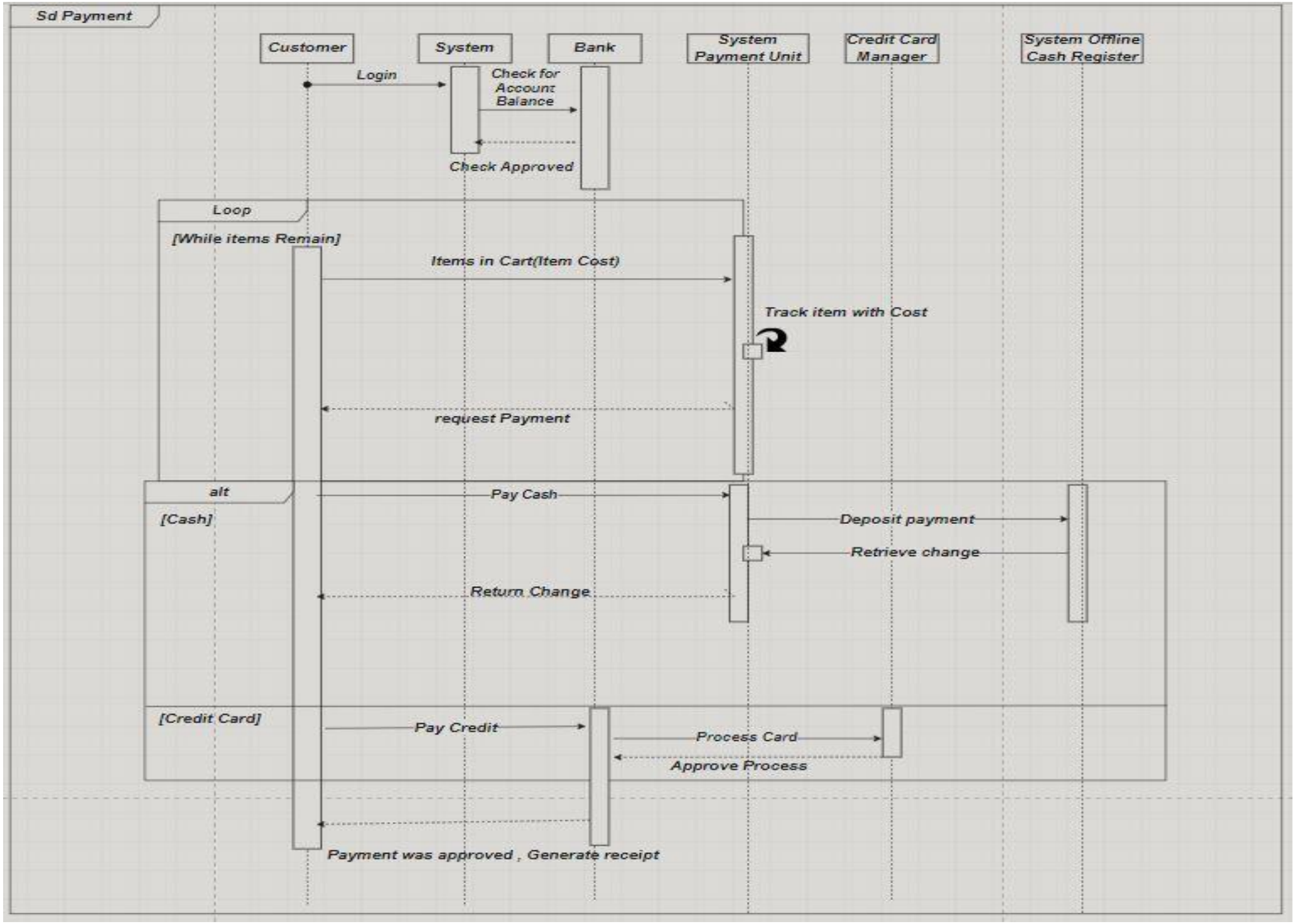
K: Workers

L: Pharmacy Bot

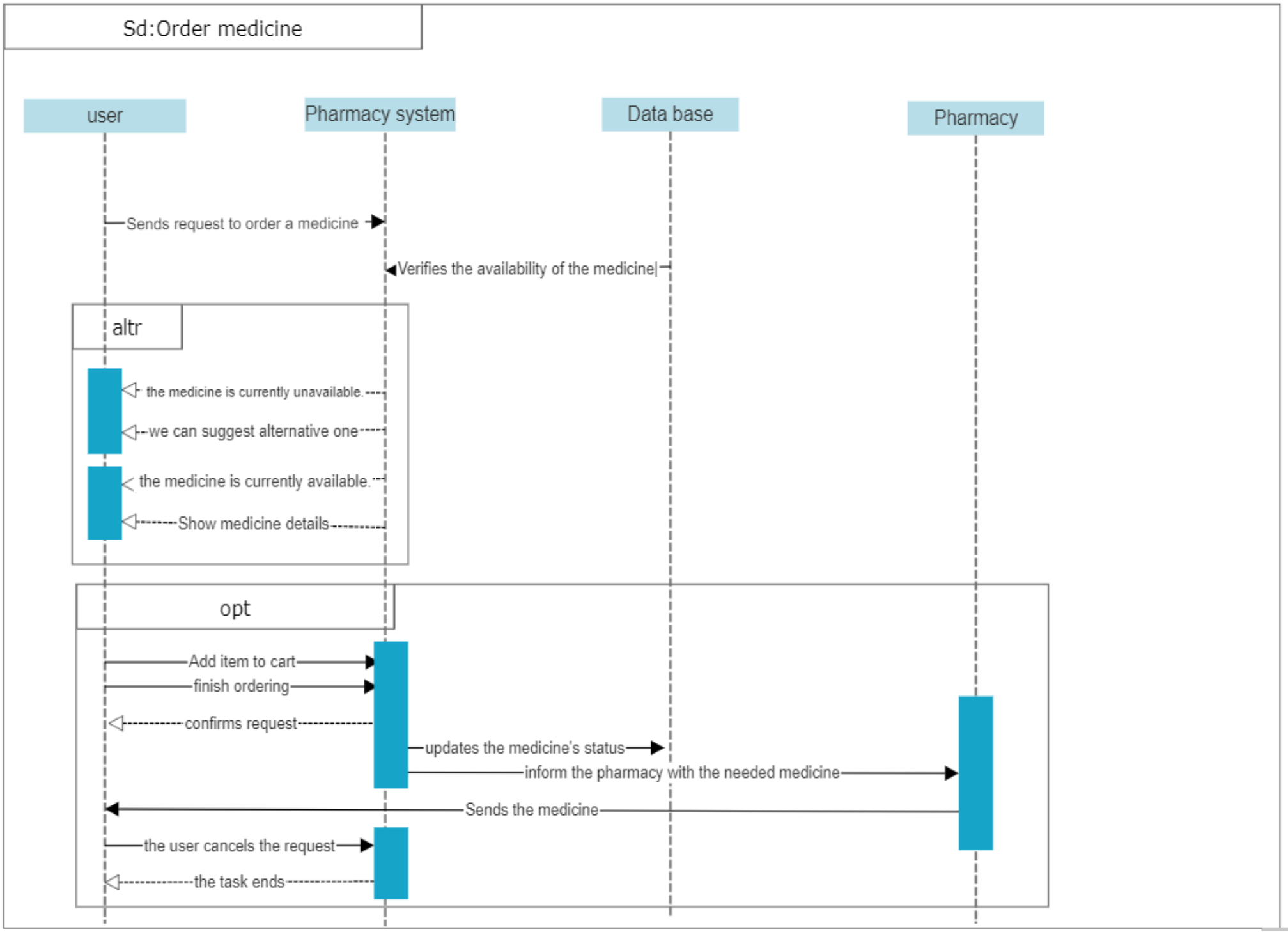
M: Suppliers

Use case Numbers	A	B	C	D	E	F	G	H	I	J	K	L	M
1	0	1	1	1	0	1	1	1	1	0	0	0	1
2	0	1	1	0	0	1	0	1	0	1	0	0	0
3	0	0	1	0	0	1	0	1	0	1	0	0	0
4	0	0	1	0	1	0	0	0	1	1	1	1	0
5	1	0	0	0	0	0	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	0	1	1	1	1	1	1	1	1
8	1	0	1	0	1	0	0	1	1	0	0	1	0
9	1	1	0	1	0	1	1	0	1	0	0	0	1
10	0	1	1	1	0	1	0	1	1	1	1	0	1
11	1	1	1	1	1	1	1	1	1	0	0	1	0
12	1	0	1	0	1	0	0	1	0	0	0	0	0
13	1	1	1	1	0	1	0	0	0	0	0	0	0
14	0	1	1	1	0	0	0	1	0	0	0	0	0
15	1	0	0	1	0	1	1	0	1	1	0	0	1
16	1	1	0	1	0	1	1	0	1	1	0	1	0

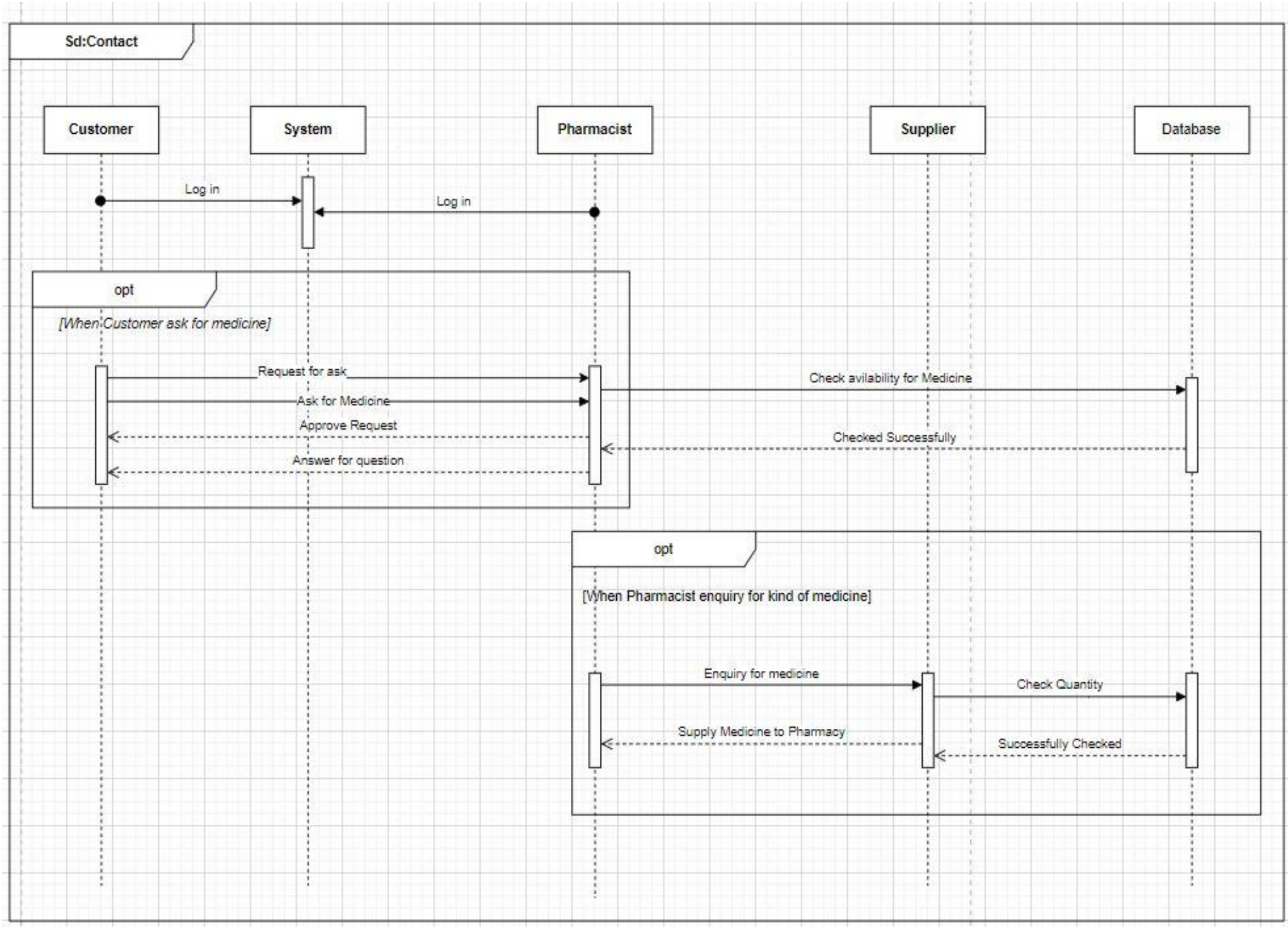
Sequence diagram for payment:



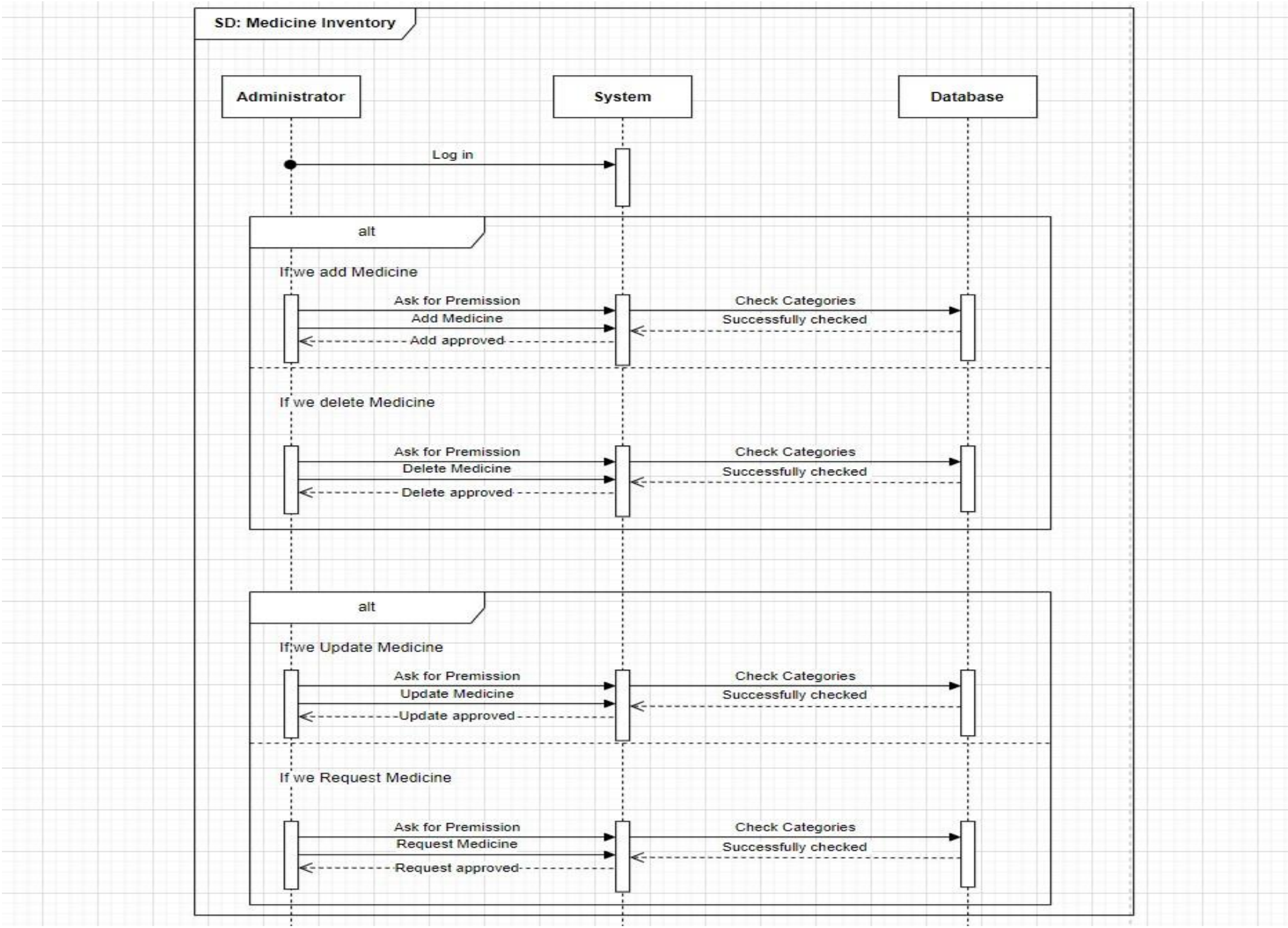
Sequence diagram for Order medicine:



Sequence diagram for Contact:

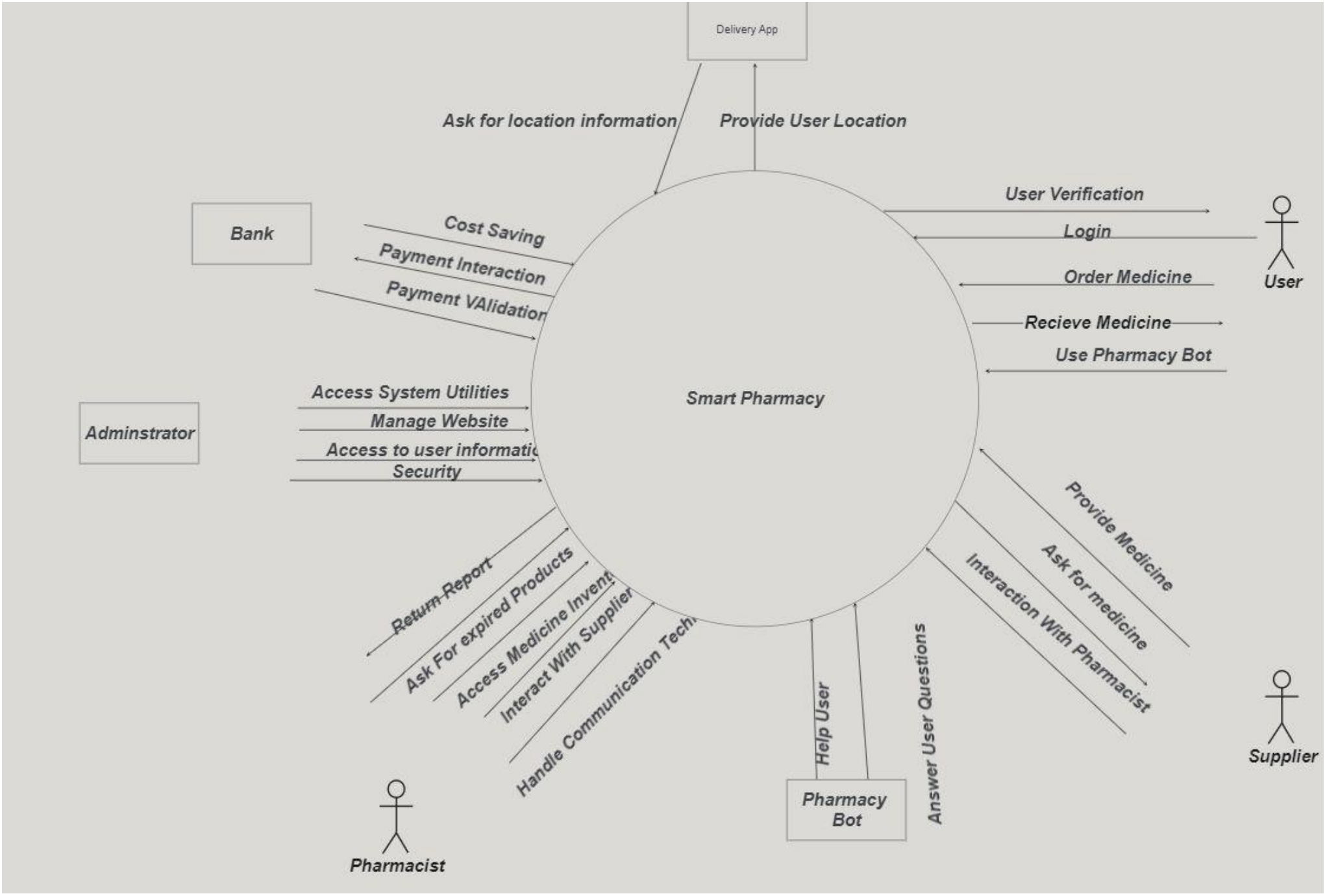


Sequence diagram for Medicine inventory:

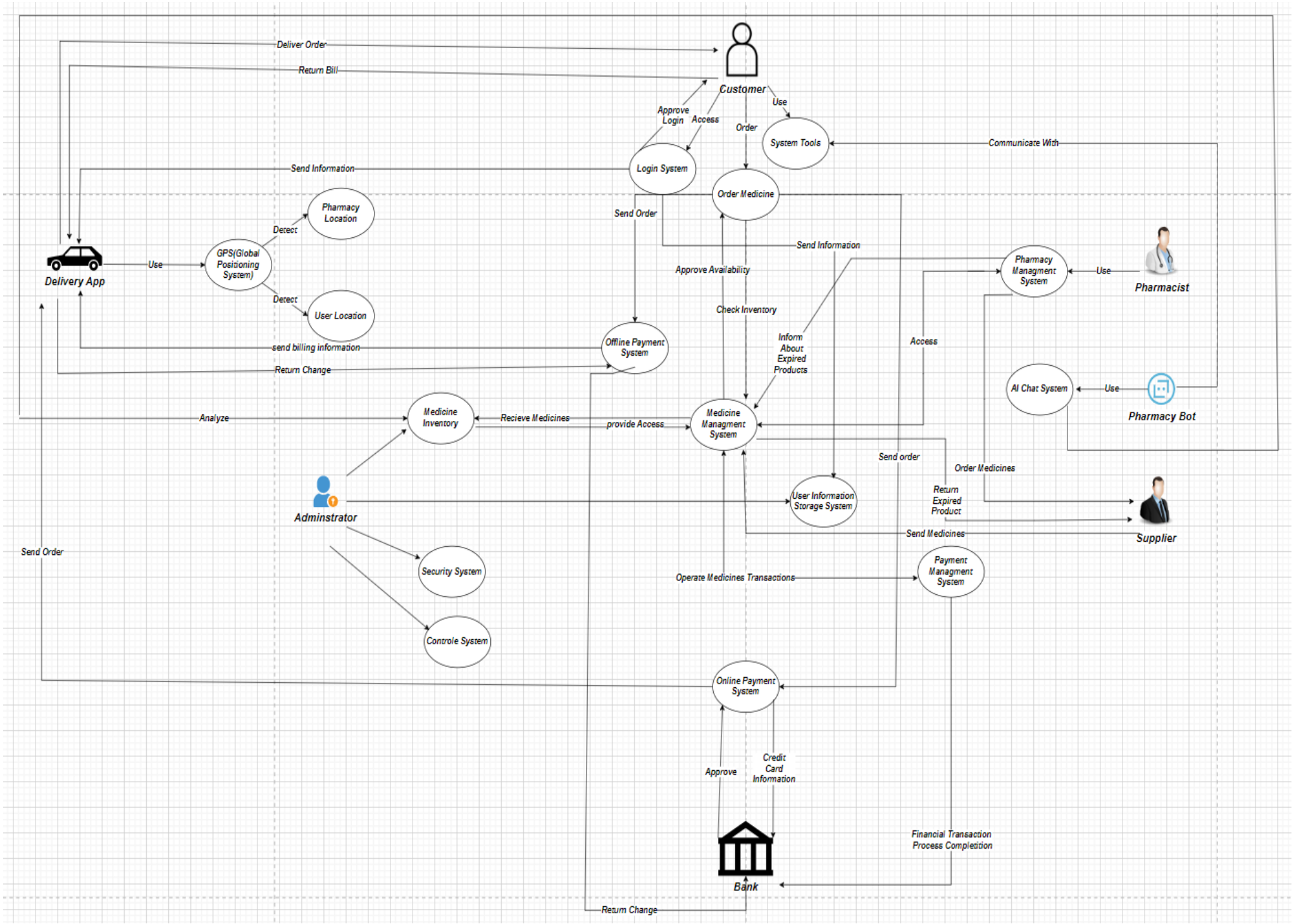


Data flow diagram:

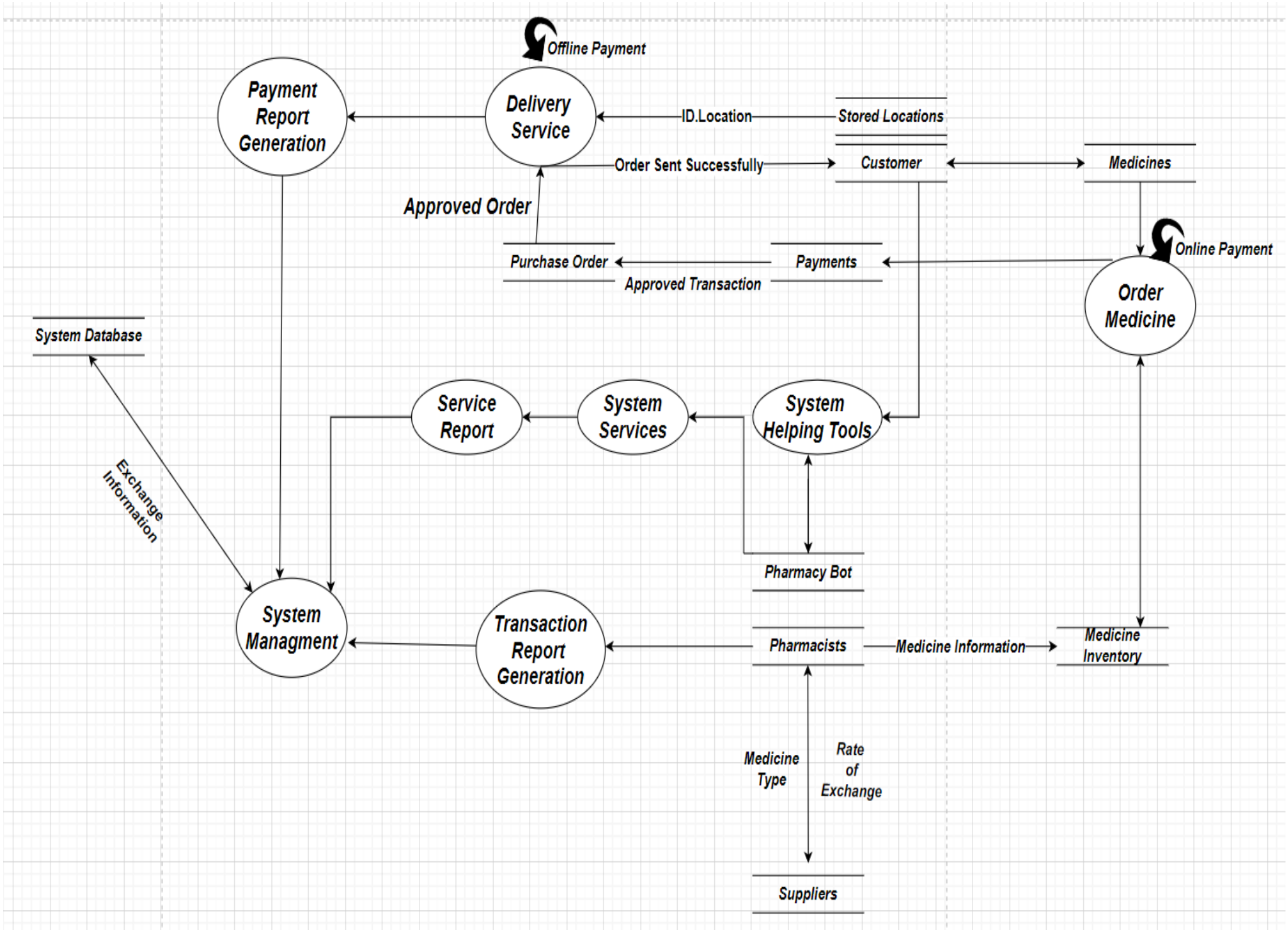
(Level 0):



(Level 1):


Deliver Order
Return Bill
Customer
Approve Login
Access
Use
Order
System Tools
Communicate With
Login System
Send Information
Order Medicine
Pharmacy Location
Detect
Send Order
Send Information
GPS(Global Positioning System)
Use
Delivery App
Detect
User Location
Approve Availability
Pharmacy Managment System
Use
Pharmacist
Check Inventory
Inform About Expired Products
Access
send billing information
Offline Payment System
Return Change
AI Chat System
Use
Pharmacy Bot
Analyze
Medicine Inventory
Recieve Medicines
provide Access
Medicine Managment System
Send order
Order Medicines
Return Expired Product
User Information Storage System
Adminstrator
Supplier
Send Medicines
Send Order
Security System
Operate Medicines Transactions
Payment Managment System
Controle System
Online Payment System
Approve
Credit Card Information
Financial Transaction Process Completion
Bank
Return Change

(Level 2):


Offline Payment
Payment Report Generation
Delivery Service
ID.Location
Stored Locations
Order Sent Successfully
Customer
Medicines
Approved Order
Online Payment
Purchase Order
Payments
Approved Transaction
Order Medicine
System Database
Service Report
System Services
System Helping Tools
Exchange Information
Pharmacy Bot
System Managment
Transaction Report Generation
Pharmacists
Medicine Information
Medicine Inventory
Medicine Type
Rate of Exchange
Suppliers

Thank you for reading!

***Your health is our* responsibility.**

Your medicine is our duty.