Bahir Dar University

Bahir Dar Institute of Technology (BiT)

Faculty of Computing

Department of Information System

Final Year Project on:

Web Based Pharmacy Management System for Kidanemhiret Pharmacy

Submitted to the Faculty of Computing in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Information System

Group members:

Name	ID No.
1. Mastewal Alene	0701020
2. Zenebech Getachew	0701153
3. Tadess Tedla	0701095

Advisor: Nigusu

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Bahir Dar University, Bahir Dar Institute of Technology

Declaration

The Project is our own and has not been presented for a degree in any other university and all the sources of material used for the project have been duly acknowledged.

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Name **Signature**

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Faculty: Computing

Program: _____

Project Title: _____

This is to certify that I have read this project and that in my supervision and the students' performance, it is fully adequate, in scope and quality, as a project for the degree of Bachelor of Science.

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Name of Advisor **Signature** **Date**

Examiner committee members	**Signature**	**Date**
1. Examiner 1: _____	_____	_____
2. Examiner 2: _____	_____	_____

It is approved that this project has been written in compliance with the formatting rules laid down by the faculty.

Acknowledgment

First of all we would like to thank the almighty God for his unforgettable help in all direction. Then we would like to thank our institute of technology for give us this chance to improve our knowledge. Also we thankful to Kidanemihret pharmacy employees who provide us requirements and some information and also appreciation concerning the project importance. Finally we would like to thank our advisor Mr. Ngusu he advices us what we include in our project friendly.

List of acronyms

- Admin-Administrator
- ID No – Identification number
- GUI-Graphical user interface
- HTML-Hyper Text Markup Language
- MySQL – My Structured Query Language
- PHP-Hypertext Preprocessor
- REQ – Requirement
- UC – Use Case
- UI-User Interface
- UML – Unified modeling language
- CSS-Cascaded Style Sheet
- DBMS_ Database Management System
- HTTP_ Hyper Text Transfer Protocol
- SQL_ Structural Query Language
- CD_ compact Disk

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Abstract

This project concern about kidanemihret pharmacy management system, it is found Bahirdar town. Today the overall activities of the pharmacy are performed manually. There repetitive and bulky activities like registering drugs information, check expired date of drugs, update drugs information, generating reports, check availability of drugs, search drugs information and integrate data from different individual records are Difficult. Based on the above problem this project is to automate the existing manual system and producing an automated or web based pharmacy management system. This project works on drugs registration, check expired date of drugs, view availability of drugs in the store, and update drugs information. It will generate report in easy way. The administrator also manages user information. The manager order drugs online for suppliers. The system allow to the customers, to search drugs information in a fast mechanism and Customers able to post comments to the pharmacy.

CHAPTER ONE

1.1. Introduction

Technology is spreading its wing in almost every walks of human life activities. Now a day it is better if every activity is done using new technology in order to fulfil the need of human being, Organization and Enterprise. As today's world there are all organizations needs to be preferable, computable and work on fastest way in order to satisfy user's interest. i.e. they should have facilitate their activities in computerized way. Hence Pharmacy management system is a system that is designed to improve accuracy and to enhance the performance of the task in the pharmacy like, registration of drugs, searching drugs information, checking expired date of drugs, report and other tasks. It is a computer and web based system which helps employee's to facilitate the activity of the pharmacy in appropriate manner. The pharmacy has two places which the drugs are available. Those are stock and store. The stock is the place in which the drug that needs to be sold is stored. And the store is the place in which the new bought drug is stored. Currently all activities in the pharmacy performed manually. It requires the pharmacist monitor manually each drug that is available in the pharmacy or not. This usually leads to mistakes as the workload of the pharmacist increases.

1.2. Background

Kidanemhiret pharmacy is found in Bahirdar town it was established in 1998 E.C. It is found next to kidanemihret clinic. Now it gives a honorable service for the society by selling different medical drugs. Supply and demand of Kidanemhiret pharmacy is based on market needs of the society.Currently it uses manual system in order to manage the overall activity of the pharmacy, which lead to wastage of time, labour and material.

1.3. Statement of the problem

The major tasks of the pharmacy are purchasing drugs from suppliers and selling them for customers. Currently, all activities of Kidanemhiret pharmacy are going on manually, due to this a number of problems are occur. Currently they use paper based data recording system it is difficult to record drugs based on their categories and functions. During recording new drugs the drugs information does not stored in database because of this the most sensitive data are lost and redundant data also occur so; it is difficult to update, search and delete drugs information. The major problem in this pharmacy is checking expired date of drugs it is done by employees manually by seeing each expire date of drugs on the shelf and inside the store this leads wastage of time and inaccuracy. Updating and deletion of drugs information on existing system has risk, because of the current system have no integrated checking mechanism. Managing a very large pharmacy with records on papers will be tedious and difficult to keep track of inventory with regards to the drugs in the stock and store. Checking availability of drugs is done by scanning drugs manually inside the pharmacy this leads loosing time and resource of the pharmacy. The Manager also request purchase from supplier with formal paper based forms it consumes time and not confident. The pharmacist and the cashier face difficulties to prepare report.

Generally, the current manual system is difficult to record drugs information, check availability of drugs, search drugs information, update drugs information, delete expired drugs information, getting full information about drugs and identifying which drugs are out dated or expired.

1.4. Objectives

1.4.1. General Objectives

The main objective of this project is to develop a web based pharmacy management system for kidanemhiret pharmacy.

1.4.2. Specific Objectives

The specific objectives of the project are:-

- Reviewing how the current system works
- Gather requirements for the system

- Identify functional and nonfunctional requirements for the new system
- Develop the system documentation with detailed UML specifications
- Design and develop a new system that can overcome the problem of the current system
- Test and Implement the proposed system
- Deliver the new system to the user and Recommended further works.

1.5. Methodology and Development tools

1.5.1. Data collection method

- We gather required information by interviewing Kidanemihret pharmacy employees and customers
- Reading hard copy, softcopy ,books and searching internet for literature review
- We use brainstorming to share information between group members.

1.5.2. System Development tools

The implementation of the system can be user friendly and develop by using the following tools.

- HTML: to define the content of web pages
- CSS: to specify the layout of web pages/formatting.
- JAVASCRIPT: program the behavior of web pages.
- PHP- is a server scripting language,
- Database: MYSQL
- WAMP: to test each program.
- Development environment: APACHE WEB SERVER

1.6. System Design and analysis Techniques

1.6.1. Analysis tools

In the analysis of this project the following tools and techniques are used.

Unified modeling language (UML)

- Use case diagram: -represent the functionality of the system from a user point of view, they define the boundaries of the system.

- Sequence diagram: - represent the system behavior in terms of interactions among a set of objects.
- Activity diagram: -are flow diagram used to represent the data flow or the control flow through a system.
- Class diagram: -are used to represent the structure of the system in terms of object, their attribute, and operation (method).

1.6.2. Design tools

In the design phase of this project the following tools are used.

- Component diagram: -are used to describe software components and their dependencies to each other.
- Deployment diagram: - are used to show the physical relationship between hardware and software in a system.

1.7. Hardware and software Tools

Hardware Tools

- Laptop or desktop computer
- CD
- Flash disk

Software Tools

- Microsoft word 2010: it is software that we use to write our system documentation.
- Microsoft PowerPoint 2010: is software that we use for presentation.
- Microsoft Visio 2007: is software which we used to draw unified modeling diagram Such as sequence diagram, activity diagram
- Web browsers.
- Operating System: - Windows 8.1.

1.8. Scope

Pharmacy management system of kidanemhiret pharmacy has various tasks to be accomplished. All of these tasks are practiced using manual processing system. The pharmacy requires an

automated system to perform most tasks efficiently. Due to shortest time and system complexity, our web based pharmacy management system is performed the following services.

- Provide some basic information about drugs.
- System Admin can create, update and deactivate user count
- The store coordinator register drugs information, check expired date, delete expired drugs, and generate report
- The Pharmacist check expired date and register soled drugs information
- The cashier prepare bill and print receipt and generate report
- Customer can search drug information and provide comment online
- The manager, cashier and pharmacist can generate report
- Manager can sent order to the supplier
- The supplier can view, accept and reject order and, add comment
- All users can search drug information

1.9. Limitations

Due to shortest time and system complexity the proposed system has some limitations:-

- The system does not provide online drug shopping services
- The system does not manage human resource of the pharmacy

1.10. Significance of the project

After this project is accomplished and properly used it provides great benefits to the manager, pharmacist, cashier, customer and supplier. Some of the significant that the team has identified are listed out as follows:

- Reduce manual process and administrative cost to maintain existing system.
- Reduce time, cost and redundancy of information or data.
- Improving efficiency, control and security of existing system.
- Fasten and facilitate the strategy of processing of pharmacy management.
- Improve employee moral by eliminating burdensome and boring job tasks

1.11. Feasibility Analysis

"Feasibility Study" is a test of the system according to its workability, impact of the organization, ability to meet user needs and effective use of the resources. it is essential to evaluate the cost and benefits of the new system. On the basis of the feasibility study decision is taken on whether to proceed or to cancel the project. We can test our system by different type of feasibilities.

- **Operational feasibility**

The system to be developed will provide accurate, active, secured service and decreases labour of workers and also it is not limited to particular groups or body. And also it is plat form independent i.e. it run's in all operating system.

- **Technical feasibility**

The proposed system doesn't require much technical expertise. The system to be developed by using technologically system development techniques such as PHP, Java script, css and Mysql database without any problems and the group members have enough capability to develop the project. So the system will be technically feasible.

- **Schedule feasibility**

Since schedule feasibility is a process of assigning the degree to which the potential time frame and computation date for all major activities within a project meet organizational deadlines, so our project will be continued next.

	Time																							
	Sept 25-oct 5		Octo 06-			Octo 30	Nove 01-			Dec 30		Jan 25-					March 30	May 02-		May 25	June 09			
writing Proposal																								
Requirement Analysis and gathering																								
Design and prepare system documentation																								
Implementation & Coding																								
Testing																								
project presentation																								

Table 1 Time schedule

- **Political feasibility**

The system to be developed is not conflict with any government directives, because it gives services for the people effectively and efficiently, all the stakeholders also agreed before the system developed. So the government is profitable and the system will be politically feasible.

- **Economic Feasibility**

This stage determines the cost or value analysis. It can be software, hardware, and the people. The new proposed system will be economically feasible because it takes less capital as compared as the existing system.

1.12. Organization of the project

The project document is divided into four chapters for better understanding these are:

Chapter	Content
Chapter 1	focuses on introductory part of the project
Chapter 2	Focus on all about the features of the system including description of existing and proposed system, requirements like functional and nonfunctional requirements, the analysis models like use cases, state chart, sequence, activity diagram, analysis class model and CRC.
Chapter 3	On this chapter we discussed what the system design should look the user interface, deployment, design class diagram and algorithm design.
Chapter 4	Recommendation and conclusion

Table 2 Organization of the project

CHAPTER TWO

System Features

2.1. Existing system study

The current pharmacy management system is time taking, unqualified, costly and not satisfactory. Pharmacist spend much time to search drugs location on the shelf and check expired date of drugs in the store, remembering the selling price of the drugs is very difficult for cashiers because of the selling price of drugs is prepared manually by paper-based method, and the manager face difficulties to know the amount of soled drugs and available drugs. The major functionalities and the scope of the existing system are listed below.

- Purchasing drugs from the supplier and Selling for customers
- Register drugs information by using paper
- The pharmacist check expired date of drugs manually
- The cashier prepare receipt for customers
- Cashiers and pharmacists prepare report and submit to the manager by using hard copy
- Manager request purchase by using telephone or paper based method

The existing system compromises different players to carry out its job. Among those different actors (players), the most common are:

- **Pharmacist:** The customer comes with the ordered prescription then the pharmacist looks that order of drug and gives the drug accordingly. The customer gets his/her requested service from the pharmacist.
- **Pharmacy manager:** The manager gets reports from the pharmacist, store coordinator, and cashier. The reports help the manager to see how services are given to the client.

- **Store coordinator**: Store coordinator is responsible to register the drugs that buy from the private sectors or from the governmental association, and also control the drug that are goes out to the stock.
- **Cashier:** The cashier receives the cost of the drug from the customer ordered by the pharmacist and prepare bill.
- **Supplier:** the supplier is responsible to supply drugs to the pharmacy

Work in the Pharmacy will be done in the following way:

1. The Drugs will come in the store.
2. Store coordinator will record the information of the drugs on paper
3. Some drugs move from store to stock and place on the shelf
4. The customer will come and provide written prescription for the pharmacist
5. The pharmacist view prescription and takes drugs from the shelf and sell for customer
6. The cashier prepare bill
7. Customer will pay.
8. The cashier Print receipt for customer
9. All the drugs will be packed and delivered to the customer.

2.2. The Proposed System

Pharmacy is the backbone of the medical health sector. So it should be advanced and computerized to provide fast services for the community and also for other users of the system.

The system proposed to apply on pharmacy management is the automated and web based management system. The main objective of this system is to manage and control activities such as searching drugs information, prepare bill, registration of drugs information, checking expired date, delete expired drugs, order drugs and supplementary material along with to facilitate an efficient communication between the many participants in the pharmacy including: manager, pharmacist, cashier, store coordinator, supplier and customer. By using the proposed system the manager can view drugs information and manage them easily, cashier also can prepare bill, and generate report easily. The pharmacist also can search drugs information and location on the

shelf, register sold drugs information and check expired date of drugs. The web based pharmacy management system approach has a good mechanism to manage pharmacy activities with appropriate manner. Therefore after the implementation of the proposed system the existing system problem will be avoided. The proposed system concerns the requirements of the customer and the employees. It has the following qualities including the qualities of the existing system

- Reduction in processing cost
- Error reduction
- Improve reporting
- Automatic production drug information and Reports
- Ability to meet user requirements
- Improves resource uses
- Reduction in use of the paper
- Every work process activity is done by computer means no need of hardcopy

2.3. Requirement Analysis

2.3.1. Functional Requirements

Functional requirements are the main things that the user expects from the system. It describes what a system should do and the behavior of the system as it relates to the system's functionality. It also describes the interactions between the system and the user, and any other external system.

Pharmacy manager:

- View available drugs in the store
- View soled drugs information
- View available drugs in the stoke
- Send order for suppliers
- Generate report
- View comment

Pharmacist:

- Search drugs information
- Check Expired date
- Register sold drugs information

- View Available drugs found in the stock
- Generate report

Cashier:

- prepare bill for the customer
- Generate report
- Print receipt

Store coordinator:

- Register new drugs information
- View available drugs in the store
- Update drugs information
- View available drugs in the stoke
- Generate report
- Check expired date of drugs

Supplier:

- View Order
- Accept Order
- Reject Order
- Add comment about the pharmacy

Customer:

- Search drugs information online
- Add comment about the pharmacy

System Admin:

- Create, update and deactivate users account

The system:

- Notify Expired drugs information

2.3.1.1. Functional Requirements Description

Requirement id	REQ-1
Source	Admin, Manager, Cashier, Pharmacist, Supplier, Store coordinator
Requirement	The system shall allow user to log in to the system.
Description	If users need to perform tasks on the system they must be logged in to the system.
Category	Login
Priority	High

Table 3 functional requirement description

Requirement id	REQ-2
Source	Admin
Requirement	The system shall allow admin to create account for user
Description	Users must create account before use the system
Category	Create
Priority	High

Table 4functional requirement description for create account

Requirement id	REQ-3
Source	Admin
Requirement	The system shall allow admin to update recorded data.
Description	To change users information
Category	Update
Priority	High

Table 5functional requirement description for update Account

Requirement id	REQ-4
Source	Admin, Manager, Cashier, Pharmacist, Supplier, Store coordinator
Requirement	The system shall allow admin to logout from the system
Description	Enable to leaves to the system for security
Category	Logout
Priority	High

Table 6functional requirement description for logout

Requirement id	REQ-5
Source	Manager, Store coordinator
Requirement	The system shall allow user can view available drugs information
Description	Enable user to get drugs detail information
Category	Display
Priority	High

Table 7functional requirement description view available drugs

Requirement id	REQ-6
Source	Store coordinator
Requirement	The system shall allow store coordinator register new drugs information.
Description	Store coordinator can able to register new drugs information by using this system
Category	Register
Priority	High

Table 8functional requirement description for register drugs information

Requirement id	REQ-7
Source	Users
Requirement	The system shall display available drugs information by name after searching.
Description	Available drug information is displayed from the system after searching.
Category	Search
Priority	Medium

Table 9functional requirement description for search drugs

Requirement id	REQ-8
Source	Store coordinator
Requirement	The system shall allow Store coordinator update recorded drugs information.
Description	To change recorded drugs information.
Category	Update
Priority	High

Table 10functional requirement description for update drugs information

Requirement id	REQ-9
Source	Supplier
Requirement	The system shall allow Supplier view purchase request
Description	Supplier can be able to view order by using this system.
Category	View
Priority	High

Table 11 functional requirement description for view order

Requirement id	REQ-10
Source	Manager
Requirement	The system shall allow manager view comment about pharmacy
Description	Manager able to view comment using this system.
Category	View
Priority	High

Table 12functional requirement description for view comment

Requirement id	REQ-11
Source	Supplier
Requirement	The system shall allow supplier accept order
Description	If the requested drugs are available the supplier shall allow accept order
Category	Accept
Priority	High

Table 13 functional requirement description for Accept order

Requirement id	REQ-12
Source	Supplier
Requirement	The system shall allow supplier reject order
Description	If the requested drugs are not available the supplier shall allow reject order
Category	Reject
Priority	High

Table 14functional requirement description for reject order

Requirement id	REQ-13
Source	Pharmacist
Requirement	The system shall allow pharmacist register soled drugs information.
Description	pharmacist can able to register sold drugs information by using this system
Category	Register
Priority	High

Table 15 functional requirement description for register sold drugs

Requirement id	REQ-14
Source	Cashier
Requirement	The system shall allow Cashier prepare bill
Description	Cashier can able to prepare bill for customers by using this system
Category	Prepare
Priority	High

Table 16 functional requirement description for prepare bill

Requirement id	REQ-15
Source	Pharmacist
Requirement	The system shall allow pharmacist check expired date of drugs.
Description	pharmacist can able to check expired date of drugs found in the stock
Category	Check
Priority	High

Table 17 functional requirement description for check expired date

Requirement id	REQ-16
Source	Pharmacist, manager, store coordinator, cashier
Requirement	The system shall allow users generate report about drugs.
Description	users can able to generate needed report about drugs
Category	Generate
Priority	High

Table 18 functional requirement description for generate Report

Requirement id	REQ-18
Source	Store coordinator
Requirement	The system shall allow store coordinator delete expired drugs information.
Description	Store coordinator can able to delete expired drugs information by using this system
Category	Delete
Priority	High

Table 19 functional requirement description for delete expired drugs information

2.3.2. Nonfunctional requirement

Nonfunctional requirement describes user visible aspects of the system that are not designed to the functional behavior of the system. Some of the nonfunctional requirements are:

- **Performance**
  - ✓ The system will function fast.
  - ✓ Very short response time.
  - ✓ The system must be operationally all over the year.
- **User interface**
  - ✓ The system shall allow user-friendly and interactive user interface.

- ✓ The user can easily retrieve information about drugs.
- ✓ The user interacts with the system properly.

- **Security and access permission**
  - ✓ The system should allow login to only authorized users.
- **Storage requirement**
  - ✓ The system should allow store all the data related with all the tasks performed into the database

2.3.3. System Use case

System use case refers sequential activities that to be done by system for each system features. It is the structural representation of textual user requirements stated into diagrammatic and more understandable format. This shows that how the system performs these user requirements.

2.3.3.1. Use case Diagram

A use case diagram is a representation of a user's interaction with the system that shows the relationship between users and the different use cases in the system.

- **Use Case:** A use case describes a sequence of actions that provide a measurable value to an actor
- **Actor:** An actor represents a person, organization or any external system that interacts with the system

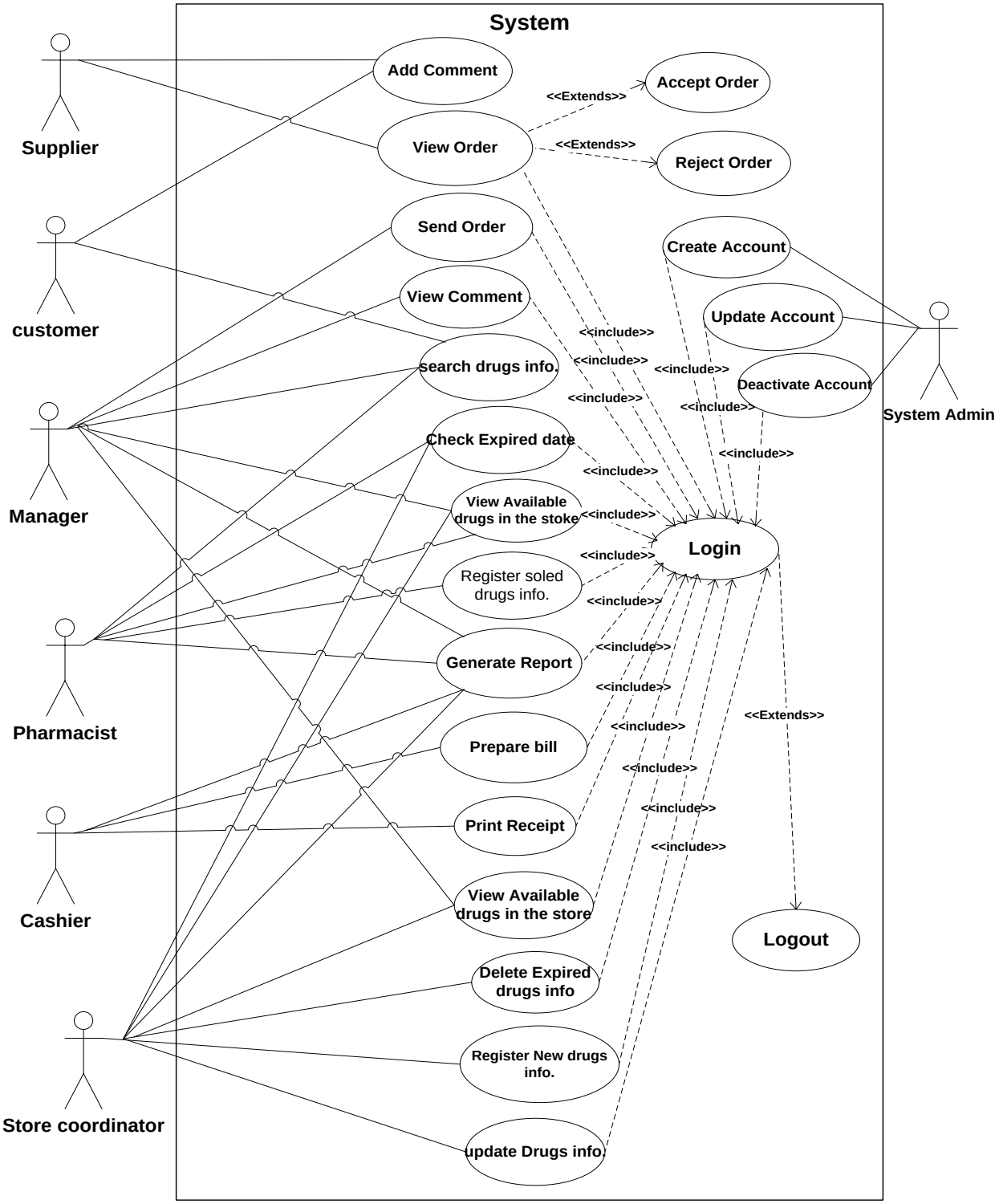

Figure 1 use case diagram

2.3.3.2. Use case documentation

The following consecutive tables show the use case description for each of the use cases that has identified in the above use case diagram. Each table contains the use case name, short description, pre-condition, post condition, Basic subjects of action and alternative subject of action the actor initiates and interacts with the use case, description of the use case and typical subject of events that show the interaction between the actor and the use case which enable the team to easily depict the functions of the proposed system

Use case number	**UC 01**	
Use case name	Login	
Priority	High	
Actor	Manager, Cashier, Pharmacist, supplier, Store coordinator and system admin	
Description:	The user enters authorized username and password in order to access the system.	
Precondition	The user should create account and have user name and password.	
Post condition	The users successfully pass the login page and perform their task on the system.	
Basic course of action	**User action**	**System response**
	1. Open home page. 2. click the Login link 4. Enter the authorized username and password in the login form. 5. Click on **LOGIN** button 8. End use case.	3. Display the login page with login form. 6. Check the authorized username and password. 7. If the username and password is correct users can access the system based on their privilege.
Alternative course of action	8. If the username and password is incorrect	The system displays" please enter correct username and password t" message. and returns to basic course of action 3

Table 20 use case description for login

Use case number	UC 02	
Use case name	Create user account	
Actor	System admin	
Description	The system admin creates account for user in order to control activities on system.	
Pre-condition	The system admin must login to the system by using his/her username and password, and fill users information	
Post-condition	The user can get username and password to access the system.	
Basic course of action	**User action**	**System response**
	1. The system admin login to the system. 2. The admin select create account link. 4. The administrator fills the required information and click on **submit** button. 8. Use case end.	3.The system display create account page with form 5. The system validate user inputs. 6.The system registers the users into the database 7. Display user account successfully created.
Alternative course of action	If the information is invalid, The system display error message and go to step 3	

Table 21 use case description for create user account

Use case number	UC 03	
Use case name	Update user account	
Priority	Medium	
Actor	System admin	
Description	The system admin update user account for user in order to control activities on system.	
Pre-condition	The system admin must login to the system by using his/her username and password, and update users information	
Post-condition	The user account updated successfully	
Basic course of action	**User action**	**System response**
	1. The system admin login to the system. 2. The system admin click on Update link. 4. The administrator selects the user and click on **Update** button. 7.The system admin update the users account and click on save button	3.The system display combo box 5. The system validates inputs. 6.The system display the users information 8. Display "user account updated successfully" message. 9. Use case end.
Alternative course of action	If the information is invalid, The system display error message and go to step 3	

Table 22 use case description for update user account

Use case number	UC 04	
Use case Name	Register new drugs information	
Priority	High	
Actor	Store coordinator	
Description	The store coordinator register drugs information when new drugs come in to the store	
Precondition	The store coordinator must login with his/her own username and password.	
Post condition	The drugs information registered.	
Basic course of action	User Action	System Response
	1. The store coordinator login to the system. 2. click the **Register new drugs** link 4. Fill the drugs information on the form. 5. Click on **Register** button	3. The system displays the form. 6. The system verifies validation of inputs. 7. The system displays "registered successfully" message. 8. Use case end.
Alternative Course of action	If the inputs are invalid	The system displays" please enter correct input" message. and returns to basic course of action 4

Table 23 use case description for Register new drugs information

Use case number	UC 05	
Use case Name	Register sold drugs	
Priority	High	
Actor	Pharmacist	
Description	After the drugs are sold the pharmacist register soled drugs information	
Precondition	The pharmacist must login to the system with his/her username and password.	
Post condition	Soled drugs information are registered.	
Basic course of action	User Action	System Response
	1. The pharmacist login to the system. 2. The pharmacist click register soled drugs button. 4. The pharmacist fills the form and click save button.	3. The system displays the form. 5. The system verifies validation of inputs. 6. The system displays "registered successfully" message. 7. Use case end.
Alternative Course of action	If the inputs are invalid	The system displays" please enter correct input" message. and returns to basic course of action 4

Table 24 use case description for Register sold drugs

Use case number	UC 06	
Use case Name	Generate Report	
Priority	High	
Actor	Manager, pharmacist, Cashier, Store coordinator	
Description	The Manager, pharmacist, Cashier and Store coordinator are generate report like, available drugs in the store and stock, sold drugs information.	
Precondition	The user must login to the system with his/her username and password.	
Post condition	Users can generate report and view available information	
Basic course of action	User Action	System Response
	1. The user login to the system. 2. The user click generate report link. 4. The user select report type from the combo box 5. click on **view** button	3. The system displays combo box. 6. The system Generate available report 7. Use case end.

Table 25 use case description for Generate Report

Use case number	UC 07	
Use case name	prepare bill	
Actor	Cashier	
Description	The Cashier calculate bill for customer during the customer buy drugs	
Pre-condition	The Cashier must login to the system by using his/her username and password	
Post-condition	The Cashier can calculate the bill for the customer	
Basic course of action	**User action**	**System response**
	1. The cashier login to the system. 2.click **prepare bill** link 4. The cashier fills the required information and click on **calculate** button. 6.the cashier generate receipt and click print button	3.The system display the form 5. The system calculates the bill and display. 7. the system print the receipt 8. Use case end.

Table 26 use case description for prepare Bill

Use case number	**UC 08**	
Use case name	Update drugs information	
Priority	High	
Actor	Store coordinator	
Description:	If there is any mistake during registration the store coordinator can update/modify drugs information	
Precondition	The Store coordinator should create account and have user name and password.	
Post condition	The drugs information updated successfully.	
Basic course of action	**User action**	**System response**
	1. The Store coordinator Login to the system. 2. The Store coordinator click the **Update** link 4.select the drug he/she wants to update and click **update** button 6. The Store coordinator modify the drugs information and click on **save** button	3. The system displays the combo box. 5. The system display drugs information 7. The system displays "Updated successfully" message. 8. End use case.
Alternative course of action	8. If the modified information is invalid	The system displays" please enter correct input" message. and returns to basic course of action 5

Table 27 use case description for Update drugs information

Use case number	**UC 09**	
Use case name	View Available Drugs in the store	
Priority	High	
Actor	Store coordinator and Manager	
Description:	Store coordinator and Manager can view available drugs in the store	
Precondition	The Store coordinator and manager should create account and have user name and password.	
Post condition	Store coordinator and Manager view available drugs information.	
Basic course of action	**User action**	**System response**
	1. The Store coordinator and manager Login to the system. 3. The users click on View Available drugs link	2. The system displays list of activities. 4. The system display Available drugs information 5. End use case.

Table 28 use case description for View Available Drugs in the store

Use case number	UC 10	
Use case name	Search Drugs information	
Priority	High	
Actor	Customer, manager, pharmacist store coordinator, cashier	
Description	The user can search information about drugs by using drugs name	
Pre-condition	The user must know the name of the drug, they want to search	
Post-condition	The user can get full information about drugs	
Basic course of action	**User action**	**System response**
	1. The users open the home page of the system. 3. The user enter the name of the drug and click the search button	2.The system display a searching box 4.The system display the drug information 5. Use case end.
Alternative course of action	If the drug is not available,	The system display “this drug is not available” message and go to step 2

Table 29 use case description for search drugs information

Use case number	UC 11	
Use case name	Delete Expired drugs information	
Priority	High	
Actor	Store coordinator	
Description	If the drugs are expired, they must be deleted from the system	
Pre-condition	The Store coordinator must check the expired date of the drugs	
Post-condition	The Store coordinator can delete drugs information from the system	
Basic course of action	**User action**	**System response**
	1. The Store coordinator login to the system. 2. The Store coordinator check expired date of the drugs 4. click on Delete button	3.The system display expired drugs information 4.The system delete the drug information from the system and display "deleted successfully" message 5. Use case end.

Table 30 use case description for delete expired drugs information

Use case number	UC 12	
Use case name	Send order	
Priority	High	
Actor	Manager	
Description	If there is no enough drugs in the store, the manager request purchase for supplier	
Pre-condition	The manager must know the suppliers name and ID number	
Post-condition	The Manager sent purchase order to suppliers	
Basic course of action	**User action**	**System response**
	1. The Manager login to the system. 2.Click on request purchase link 4. the manager fill the form and click on **Send** button	3.The system display the form 5.The system validate the input and sent to the supplier and display "sent successfully" message 5. Use case end.
Alternative course of action	If the inputs are invalid	The system display error and back to step 3

Table 31 use case description for send order

Use case number	UC 13	
Use case name	View Order	
Priority	High	
Actor	Supplier	
Description	If the manager sent purchase request for the supplier, the supplier can view purchase request	
Pre-condition	The supplier must have user account on the system	
Post-condition	The Supplier view request and accept or reject	
Basic course of action	**User action**	**System response**
	1. The Supplier login to the system. 2.Click on view purchase request link 4. The Supplier click on the request list and accept or reject	3.The system display list of requests 5.The system validate the input and sent to the supplier and display "sent successfully" message 5. the system sent message for the manager 6. Use case end.

Table 32 use case description for view order

Use case number	UC 14	
Use case name	Add comment	
Priority	Medium	
Actor	Customer, Supplier	
Description	Customers and Suppliers can provide comment about the pharmacy	
Pre-condition	The suppliers and customers open the home page	
Post-condition	The suppliers and customers write the comment and send to Manager	
Basic course of action	**User action**	**System response**
	1. The user open the home page 3.Click on Add comment link 5.The user write the comment and click on Send button	2.The system display Add comment link 4.The system display text box 6.The system display ”sent successfully” 7. Use case end.

Table 33 use case description for Add comment

Use case number	UC 15	
Use case name	View comment	
Priority	Medium	
Actor	Manager	
Description	The manager view comments sent from customers and suppliers	
Pre-condition	The suppliers and customers provide comment on the system	
Post-condition	The Manager read the comment	
Basic course of action	**User action**	**System response**
	1. The Manager login to the system. 2.Click on View comment link 4.The manager open the comment and read it 5. Use case end.	3.The system display list of comments
Alternative course of action	If there is no any comment	The system display "there is no comment" message and back to step 2

Table 34 use case description for View comment

2.3.4. State chart Diagrams

State chart diagram is used to model the dynamic nature of a system. They define different states of an object during its lifetime and these states are changed by events. State chart diagram describes the flow of control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. The most important purpose of state chart diagram is to model lifetime of an object from creation to termination. The main purposes of using state chart diagrams −

- To model the dynamic aspect of a system.
- To describe different states of an object during its life time.

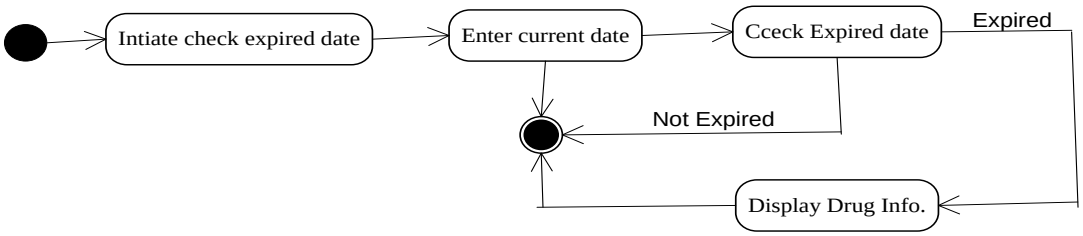

Figure 2 state chart for check expired date

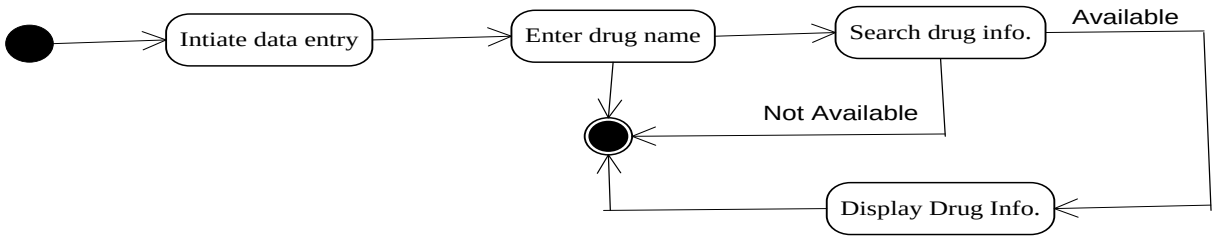

Figure 3 state chart diagram for search drugs information

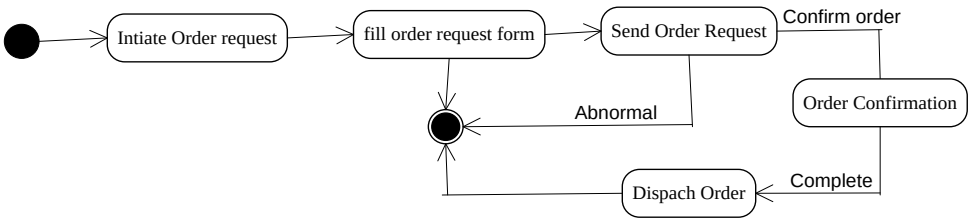

Figure 4 state chart diagram for send order

2.3.5 Activity Diagram

Activity diagrams are used to show how different workflows in the system are constructed, how they start and the possibly many decision paths that can be taken from start to finish. They may also illustrate where parallel processing may occur in the execution of some activities.

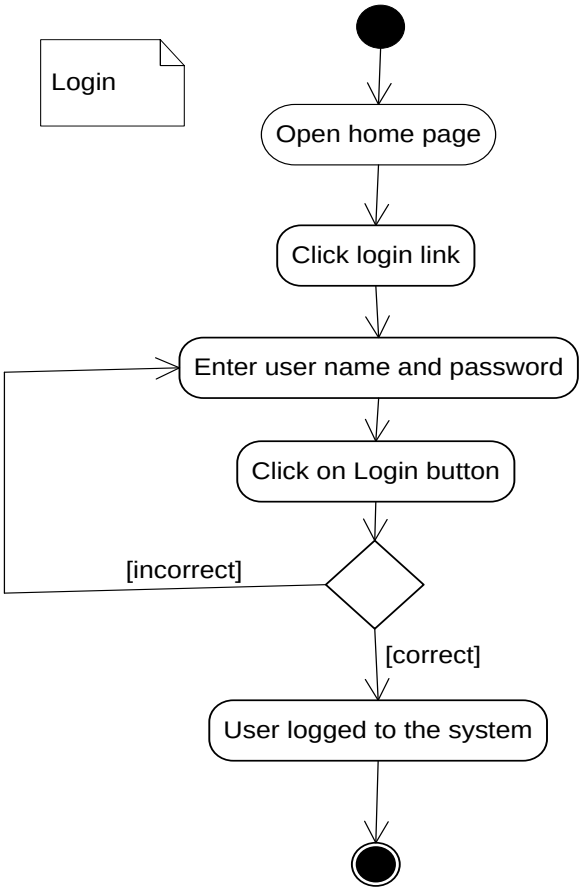

Figure 5 Activity diagram for login

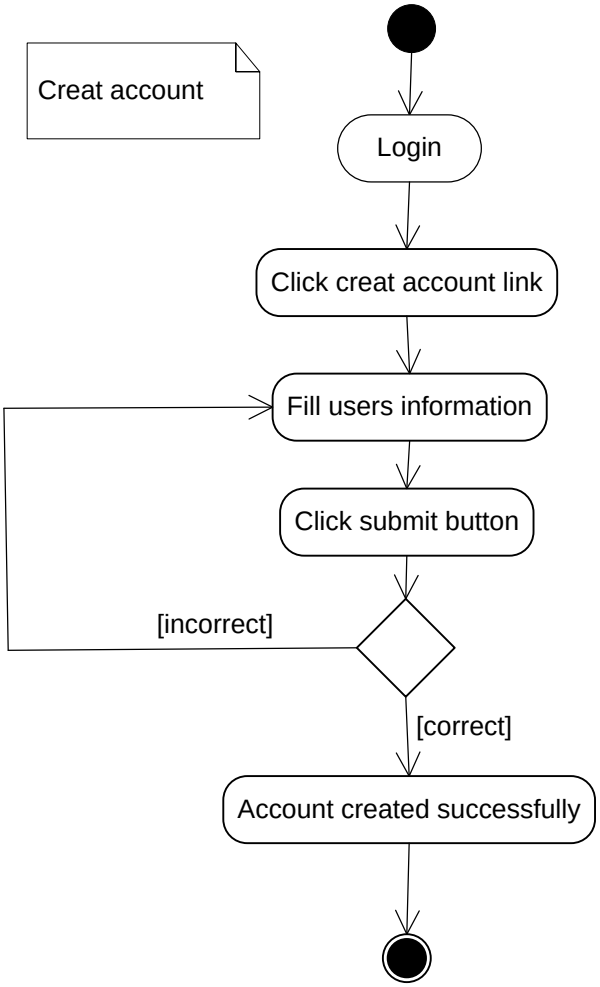

Figure 6 Activity diagram for Create Account

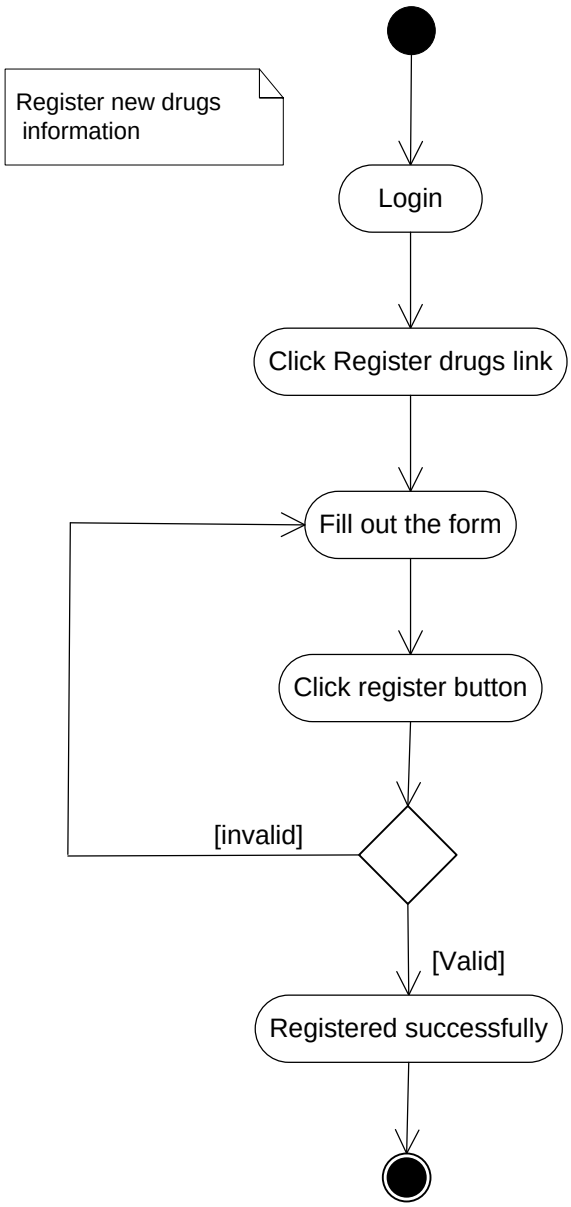

Figure 7 Activity Diagram for Register new drugs information

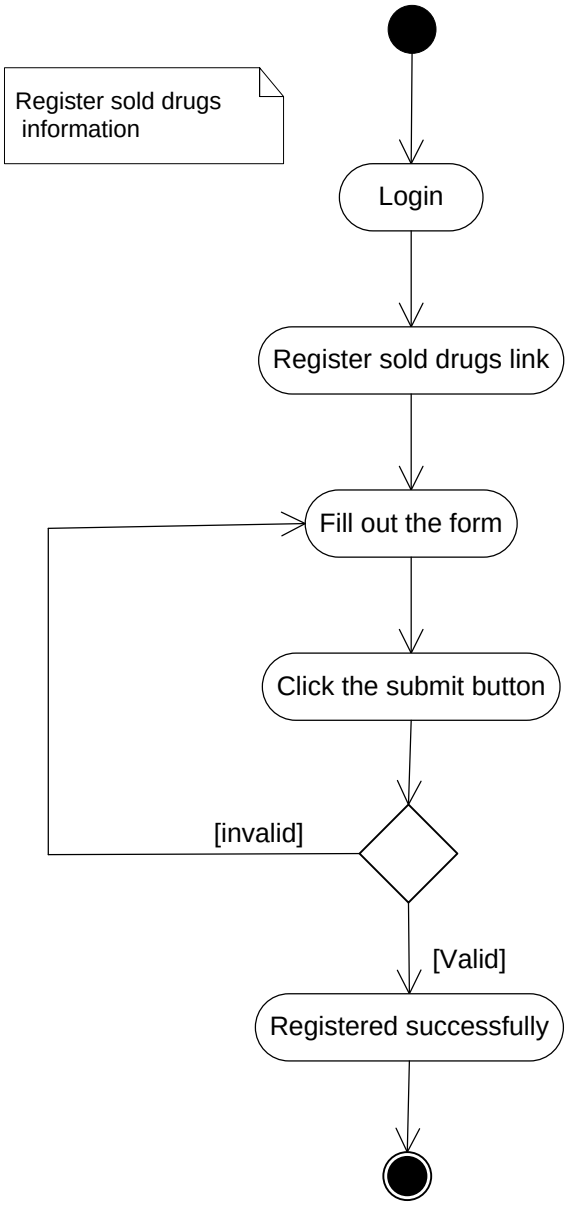

Figure 8 Activity Diagram for Register sold drugs information

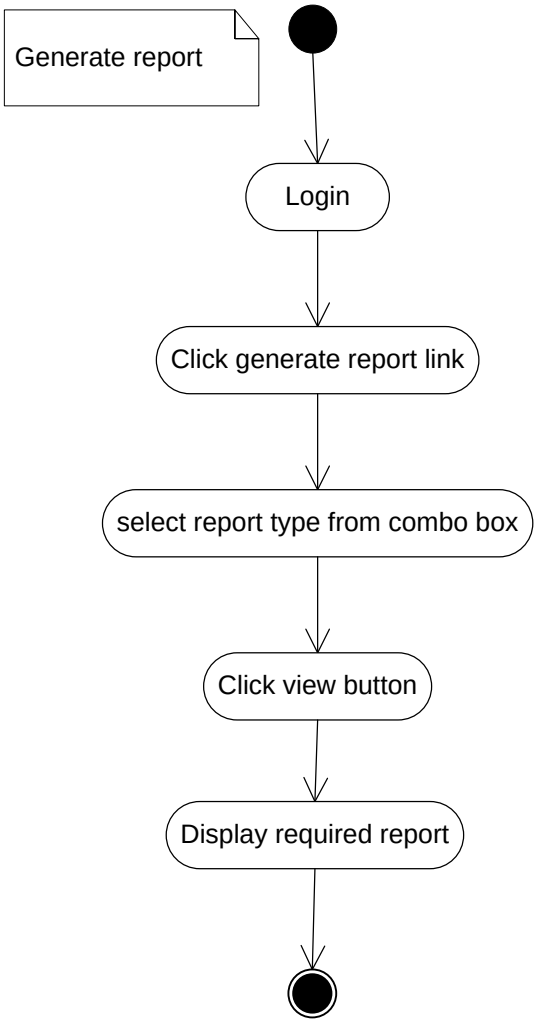

Figure 9 Activity Diagram for Generate report

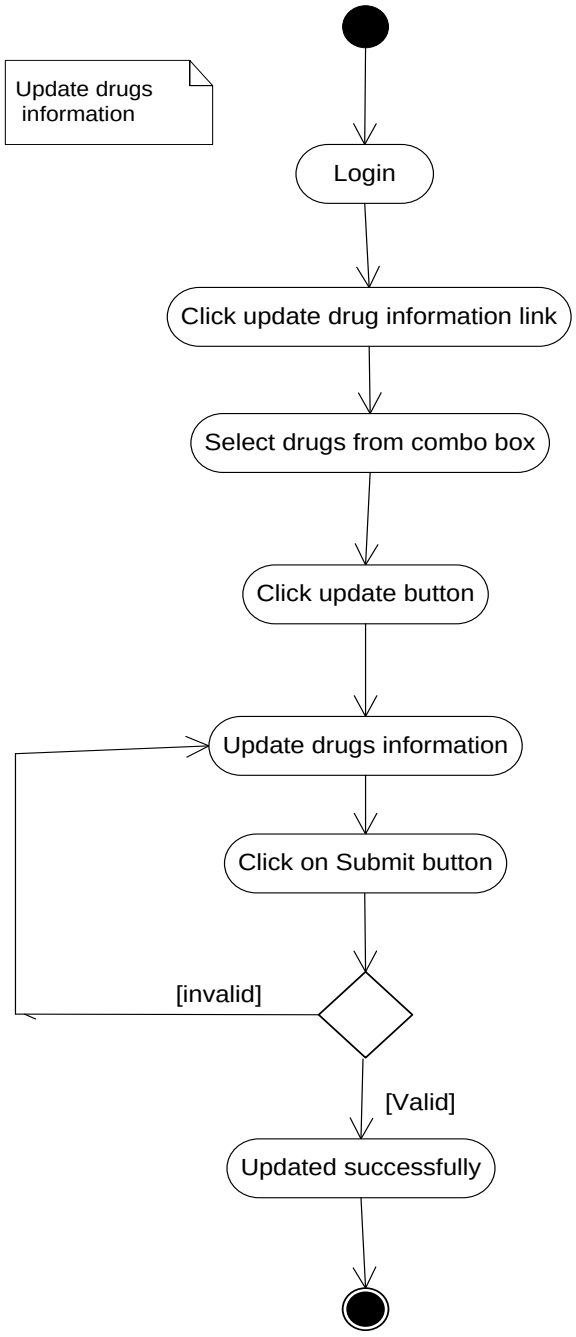

Figure 10 Activity Diagram for update drugs information

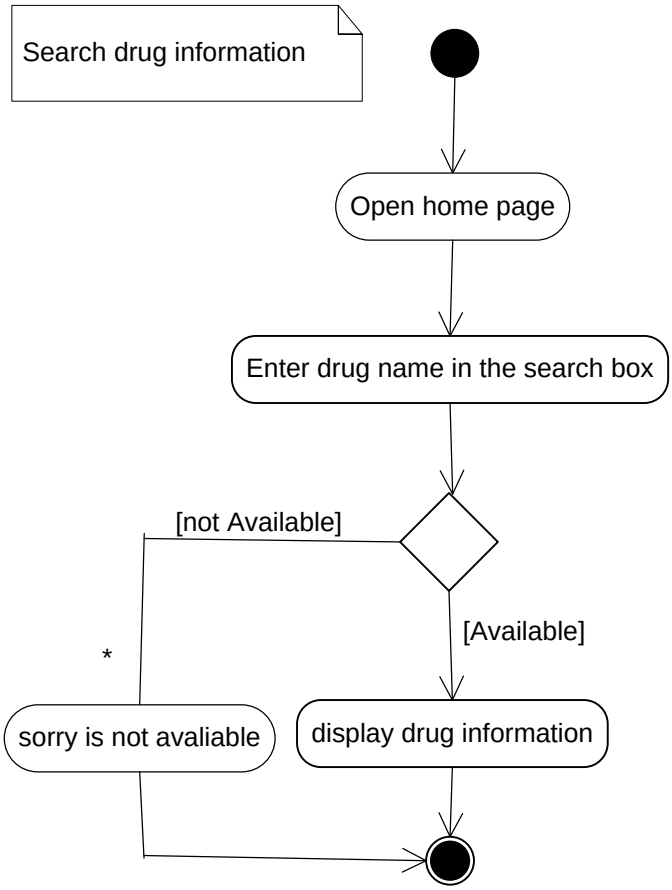

Figure 11 Activity Diagram for Search Drugs Information

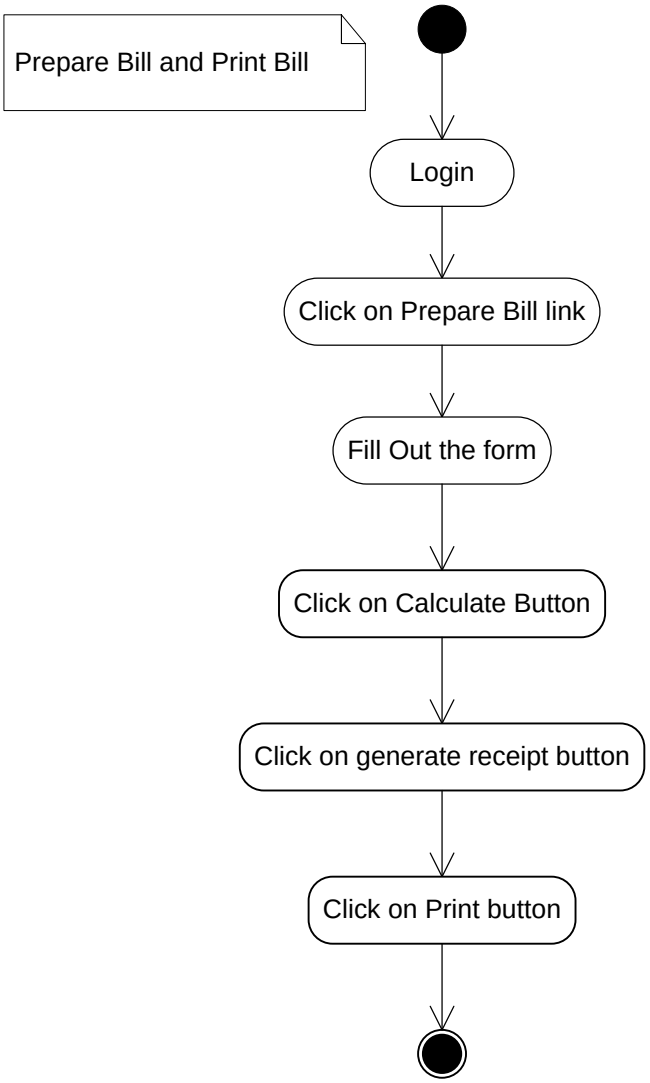

Figure 12 Activity Diagram for prepare bill

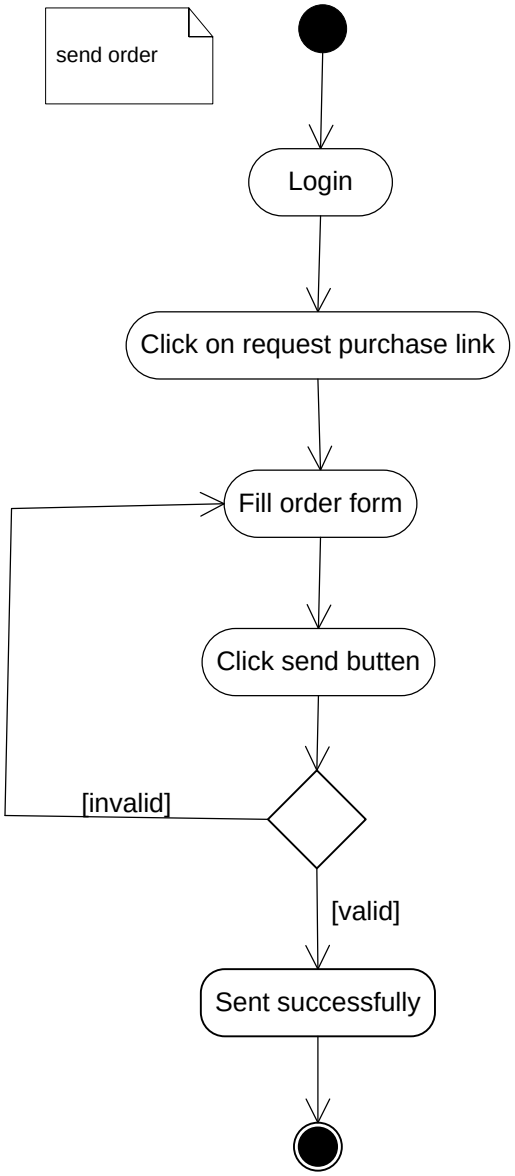

Figure 13 Activity Diagram for Send Order

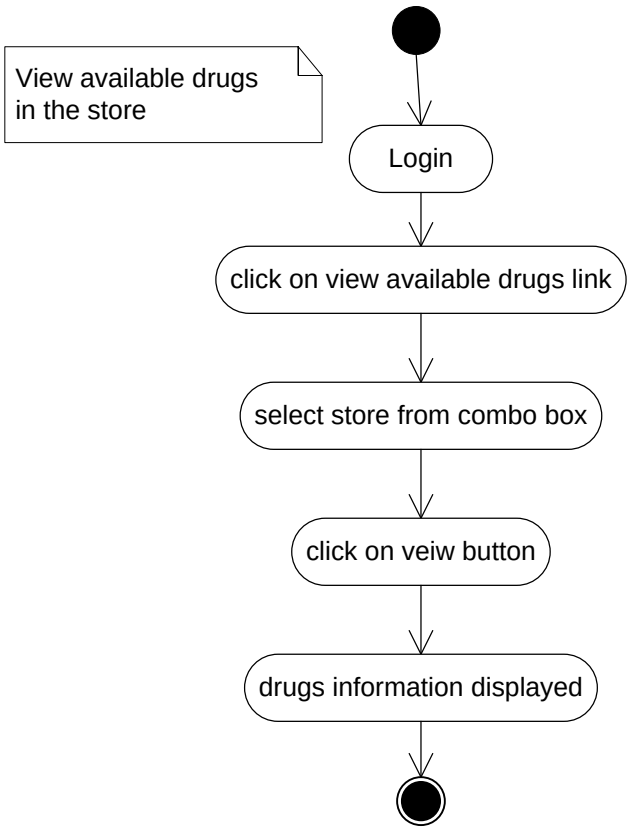

Figure 14 Activity Diagram for view available drugs in the store

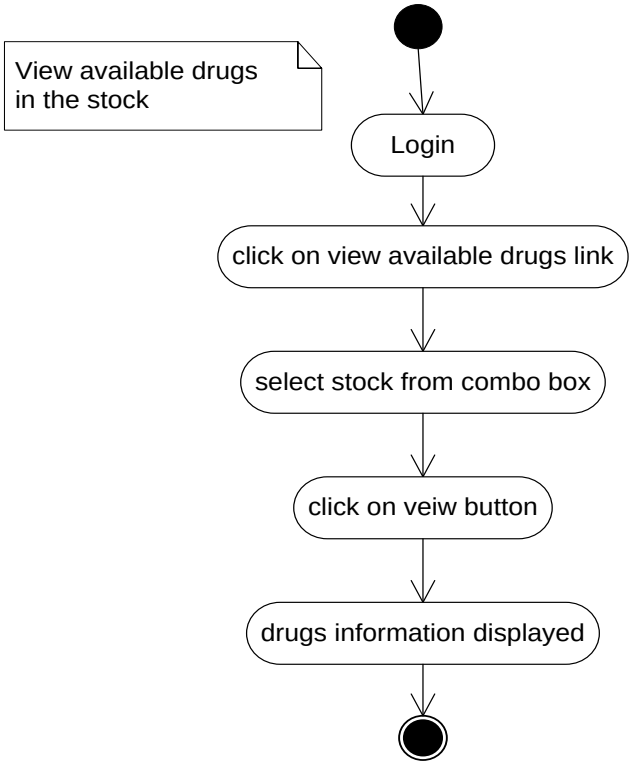

Figure 15 Activity Diagram for view available drugs in the stock

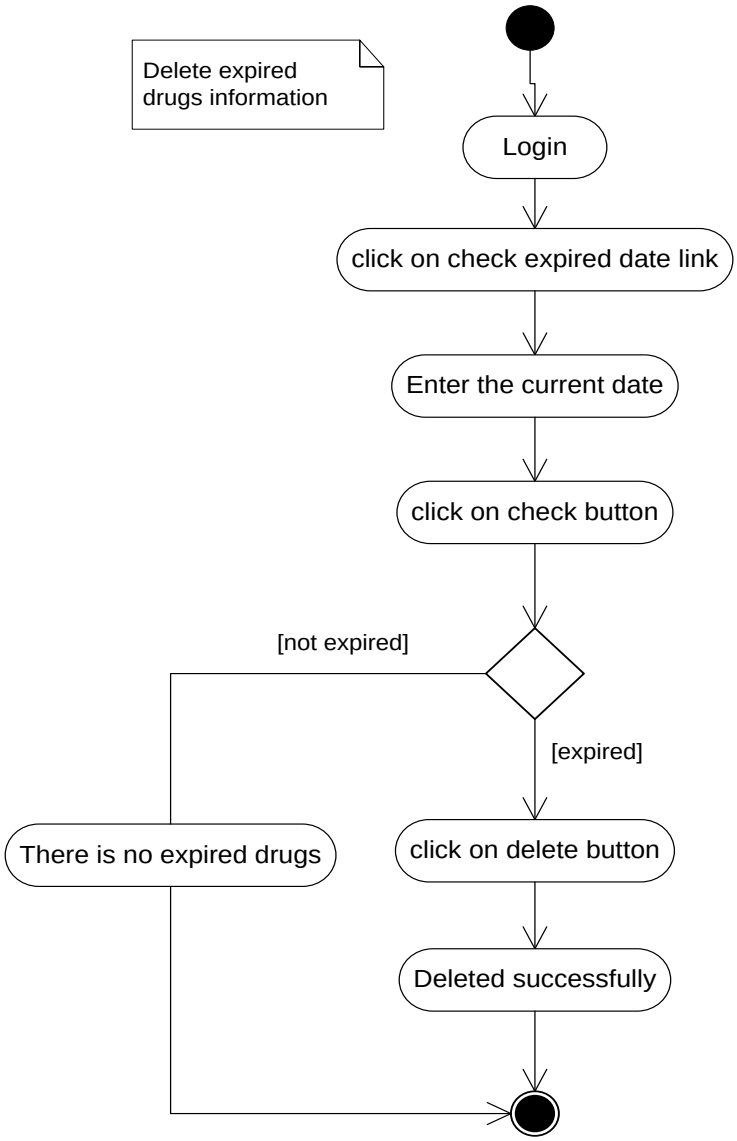

Figure 16 Activity Diagram for delete expired drugs

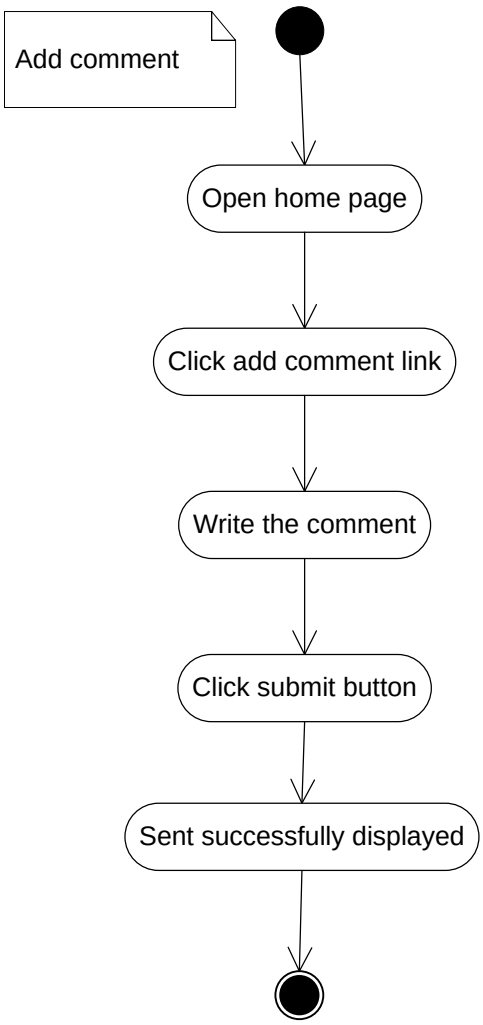

Figure 17 Activity Diagram for add comment

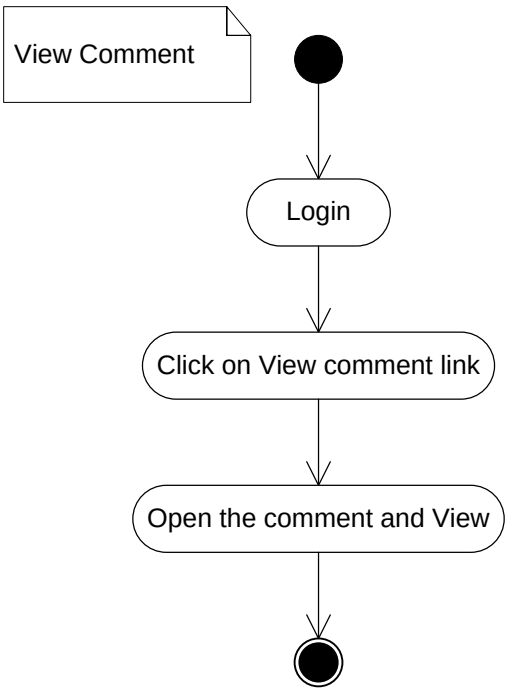

Figure 18 Activity Diagram for view comment

2.3.6. Sequence Diagram

Sequence diagrams show the interaction between participating objects in a given use case. They are helpful to identify the missing objects that are not identified in the analysis object model. To see the interaction between objects, the following describe the sequence diagram of each identified use cases.

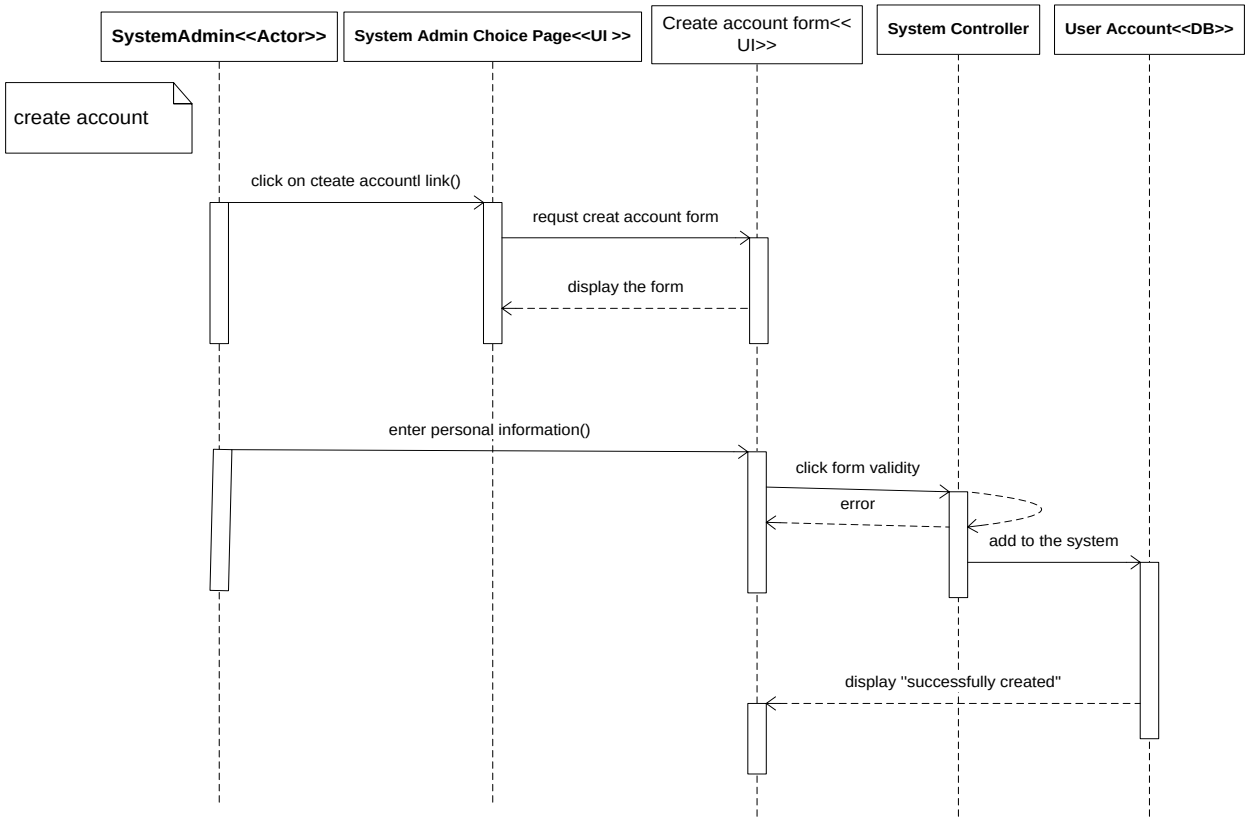

Figure 19 sequence diagram for create account

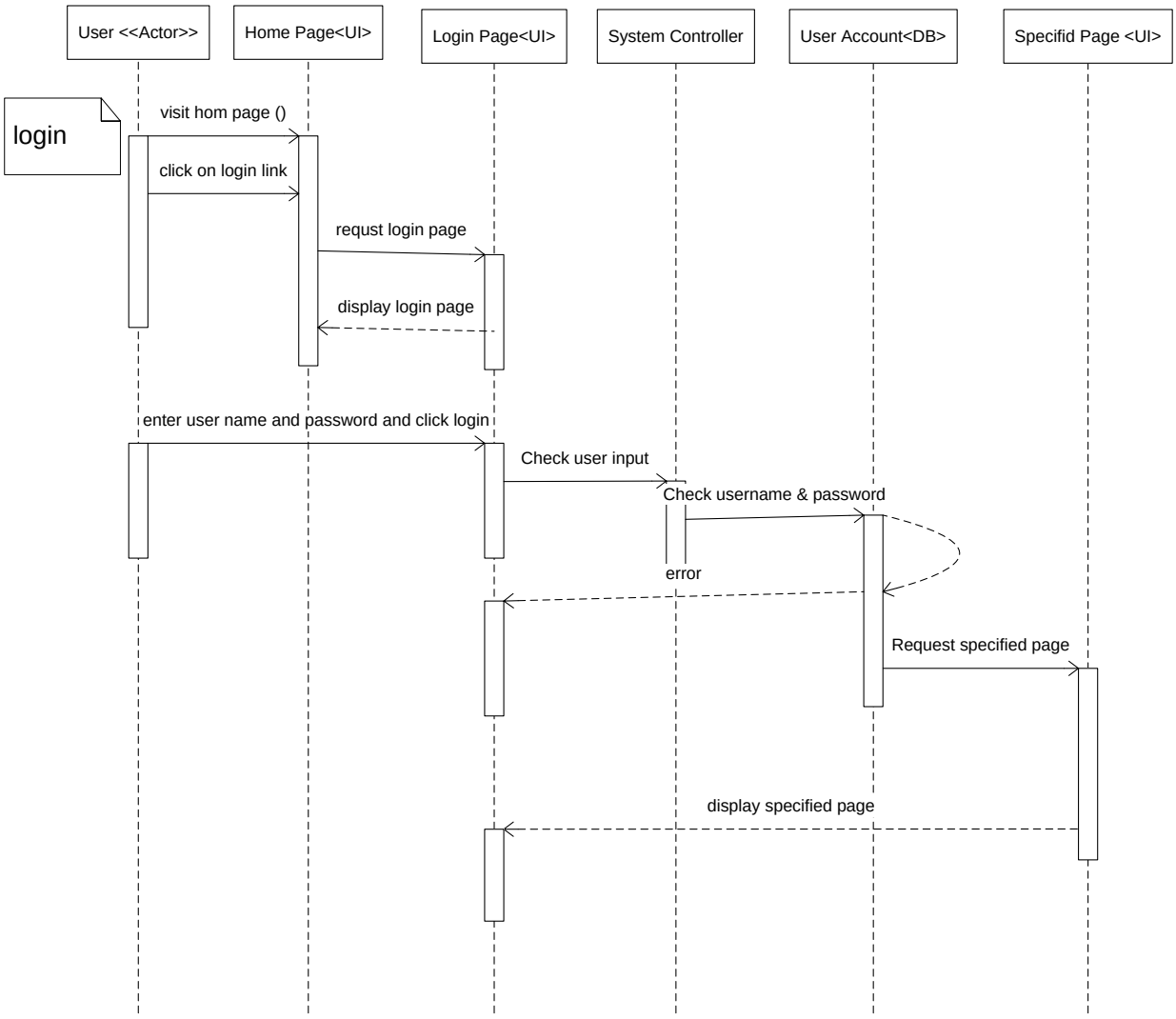

Figure 20 sequence diagram for login

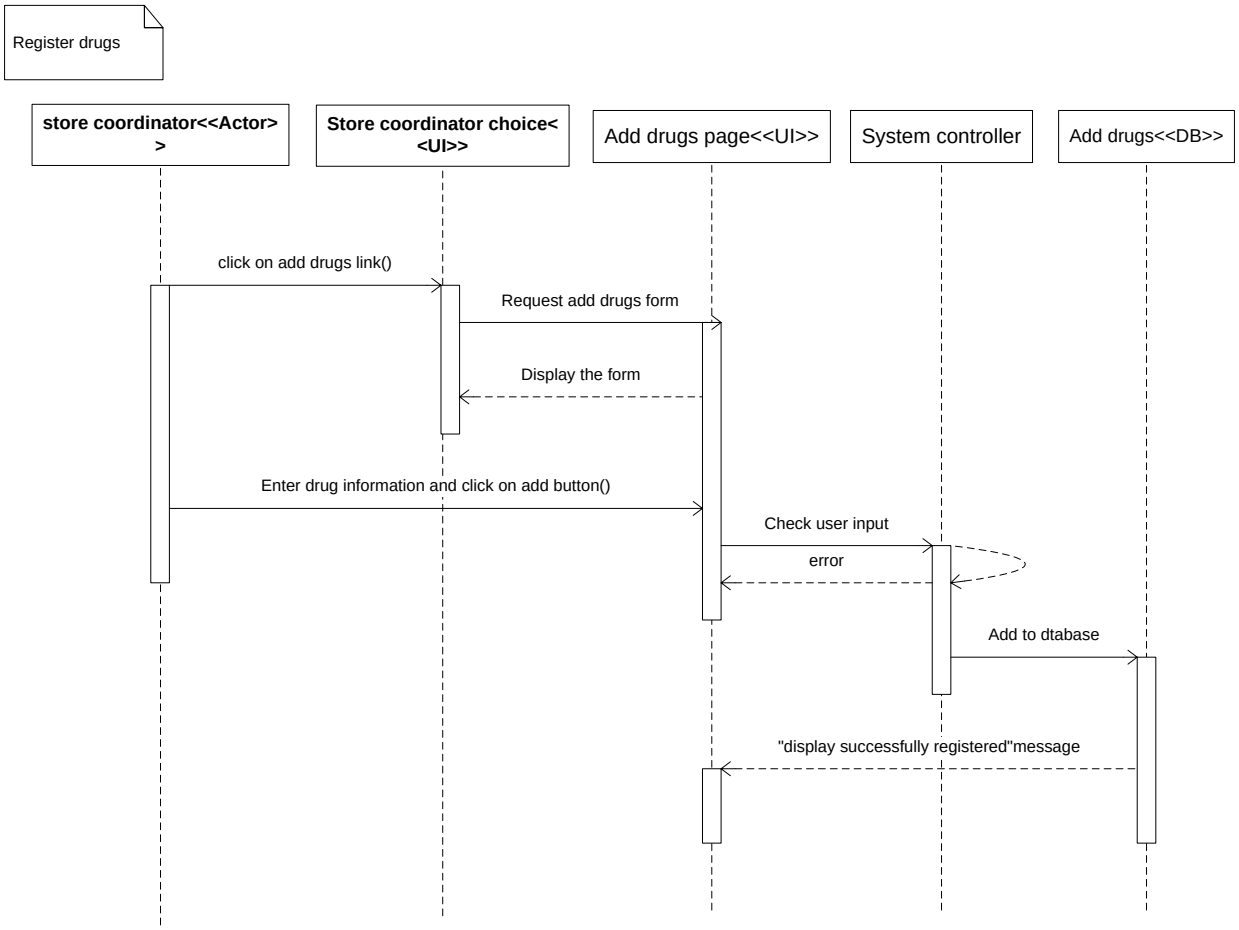

Figure 21 sequence diagram for register drugs

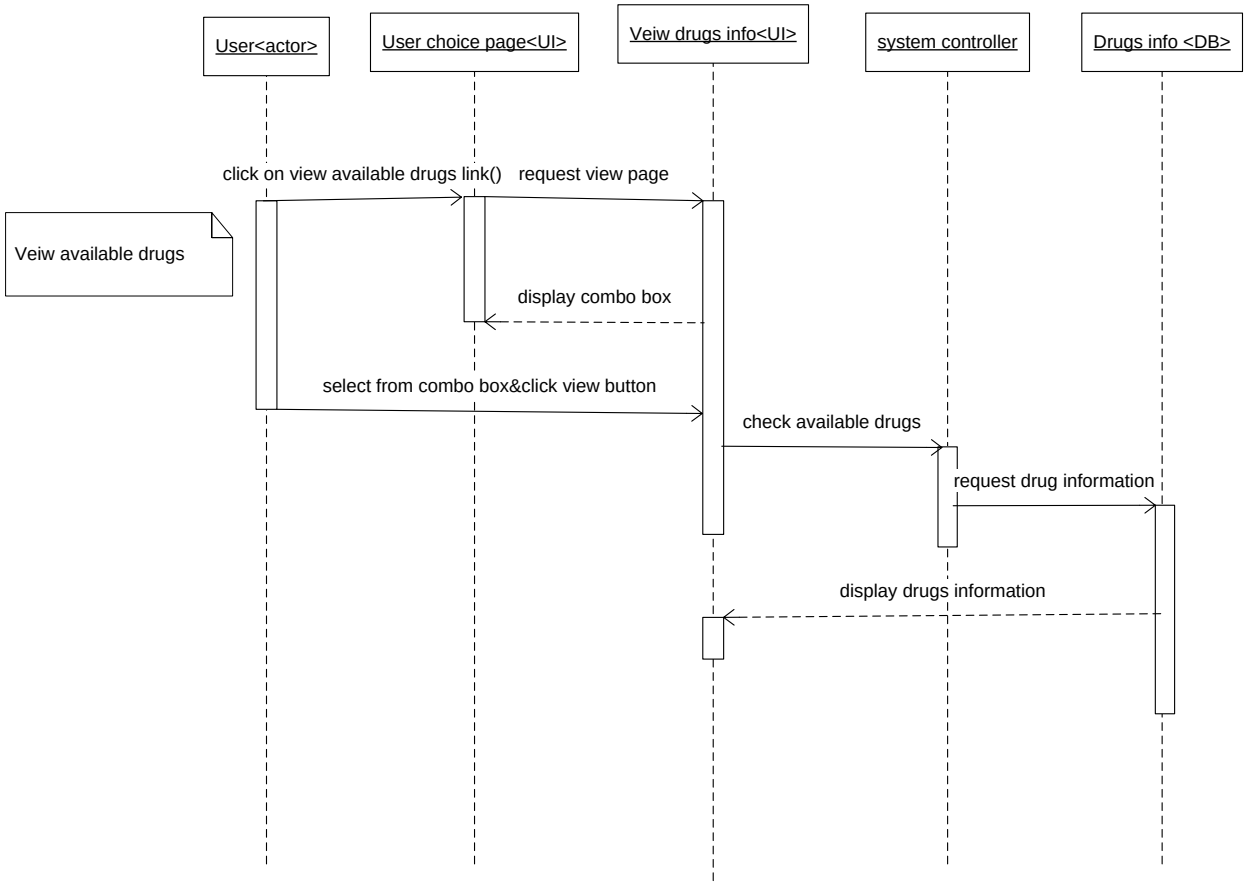

Figure 22 sequence diagram for view Available drugs

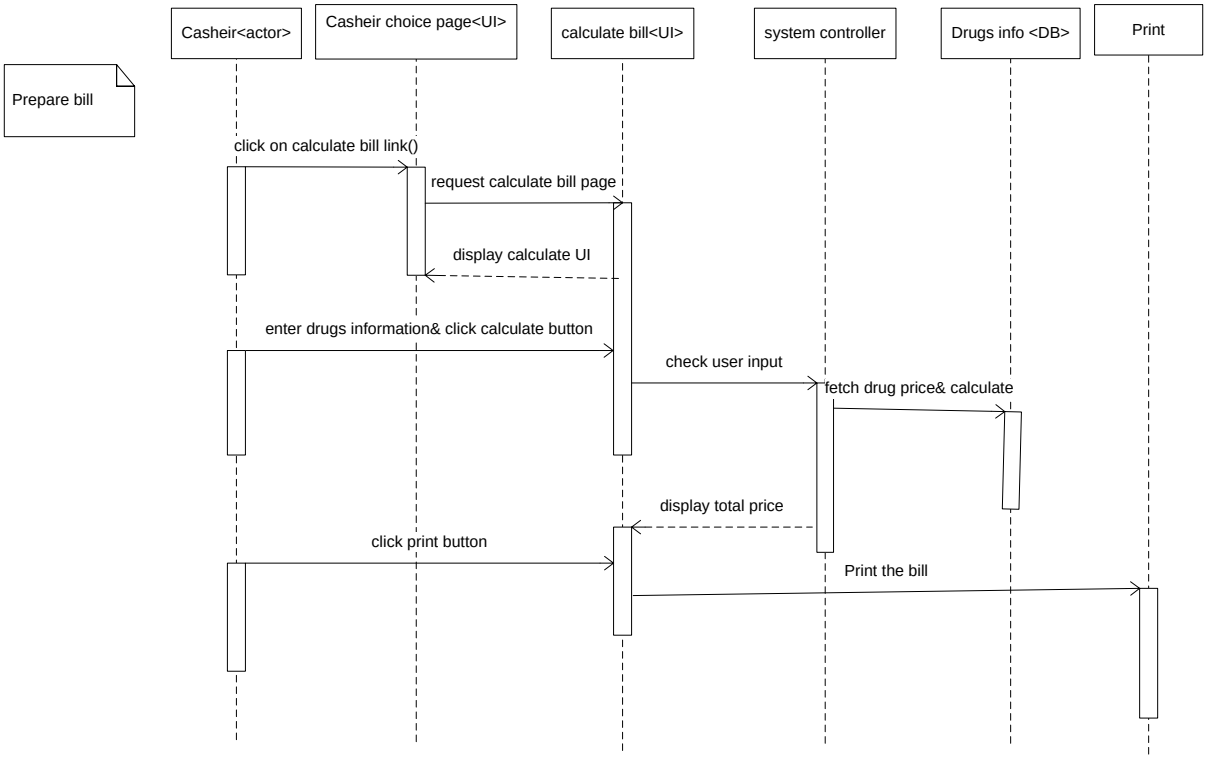

Figure 23 sequence diagram for prepare bill

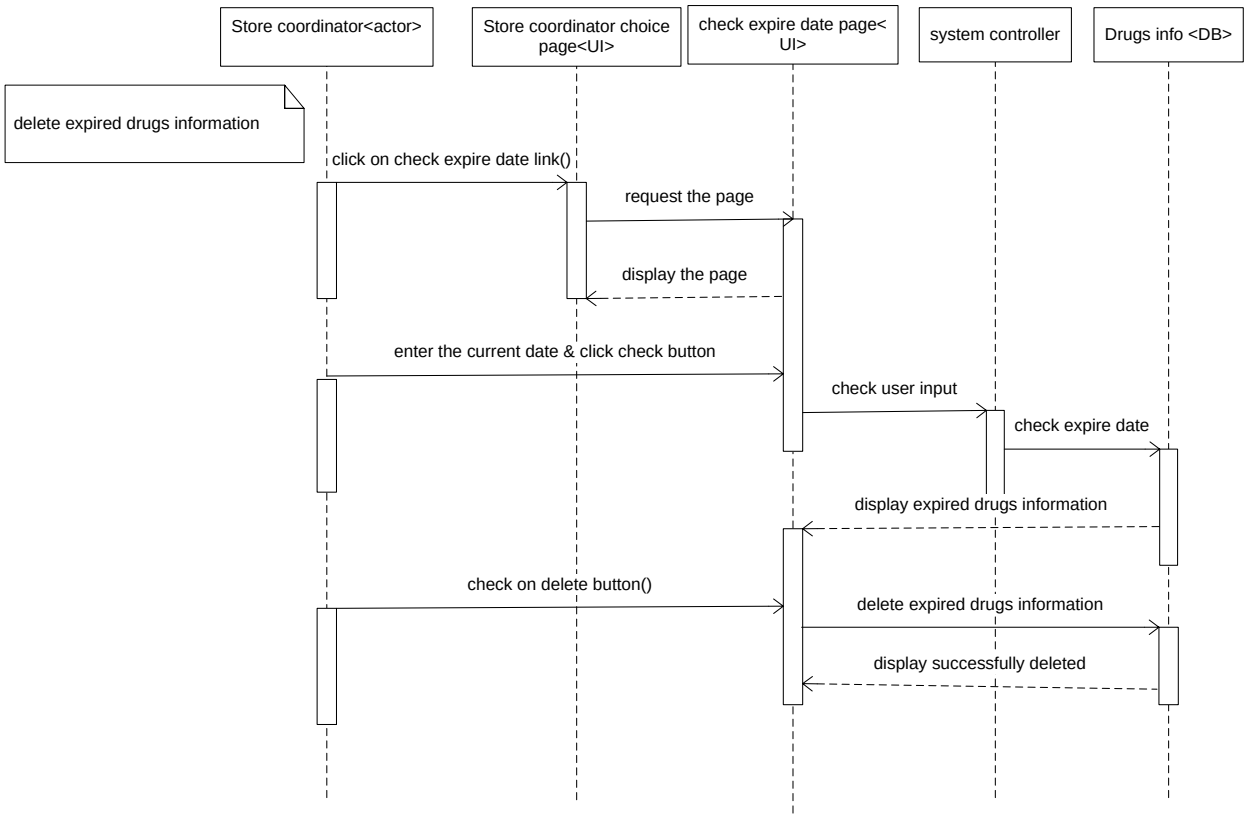

Figure 24 sequence diagram for delete expired drugs

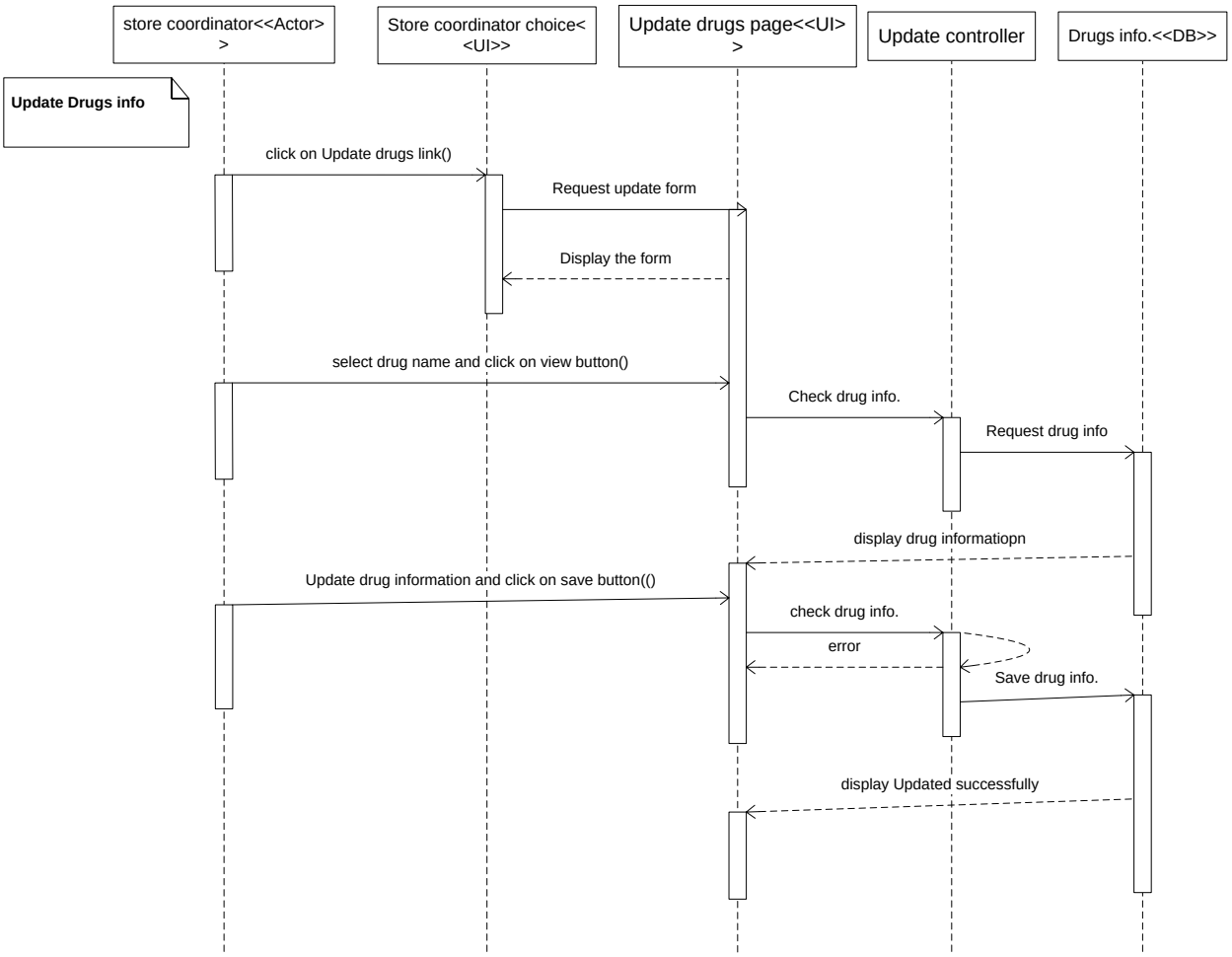

Figure 25 sequence diagram for update drugs information

2.3.7. Analysis Class Model

In software development, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (methods), and the relationships among objects, multiplicity and Role.

Class model Analysis

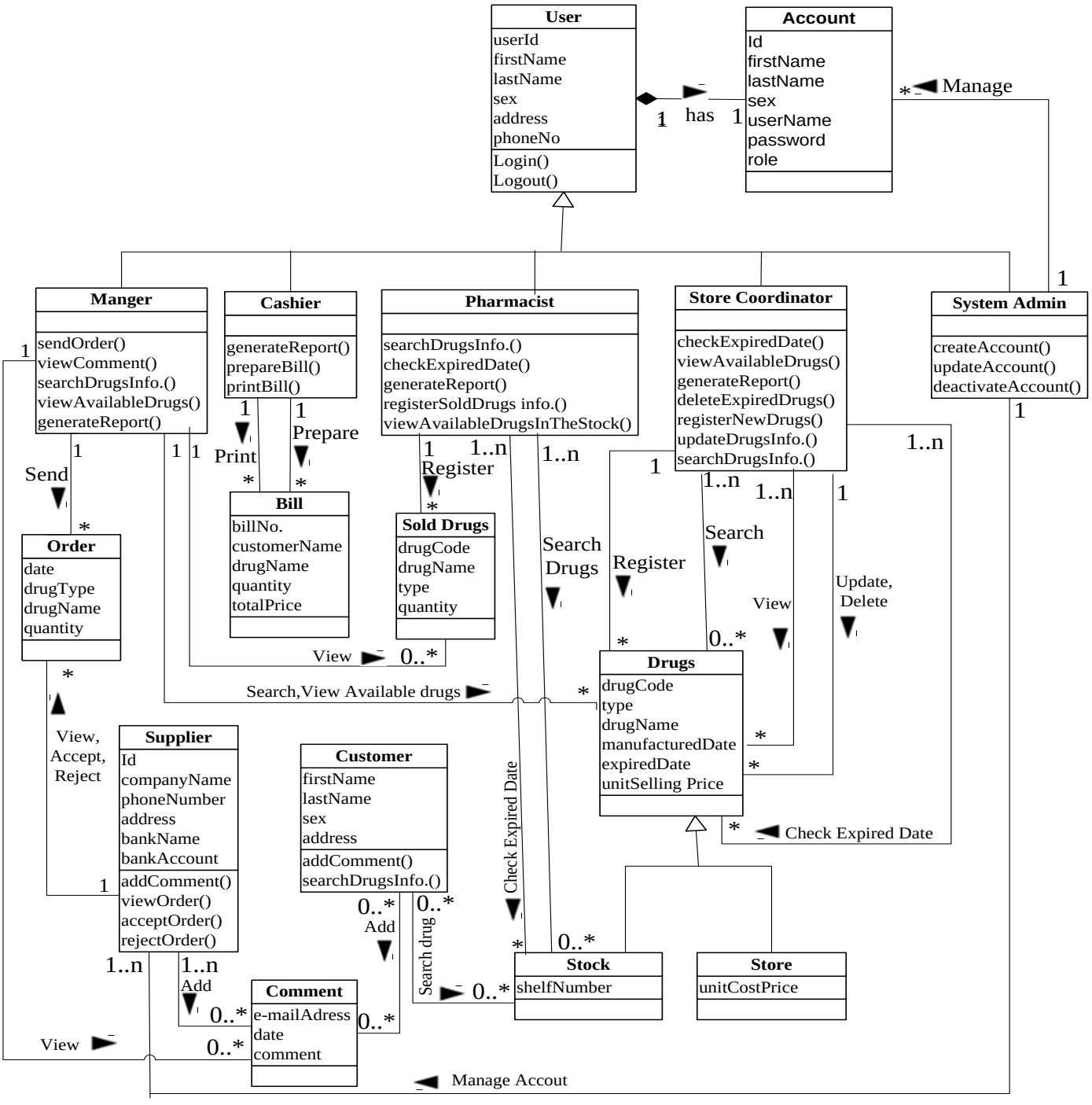

Figure 26 Analysis Class Model

2.3.8. Class Responsibility and Collaboration (CRC) Modeling

Class Responsibility Collaborator (CRC) Modeling is a collection of standard index cards that have been divided into three sections.

- ✓ On top of the card, the class name.
- ✓ On the left, the responsibilities of the class.
- ✓ On the right, collaborators with which this class interacts with.

Manager	
First Name	Order
Last Name	Supplier
Sex	Drugs
Phone no.	Sold Drugs
Address	Comment
Login()	
Logout()	
Send order()	
View Comment()	
Search Drugs info()	
View available drugs()	
Generate report()	

Table 35 CRC Diagram for Manager class

Pharmacist	
First Name	Sold Drugs
Last Name	Stock
Sex	
Phone no.	
Address	
Login()	
Logout()	
Search Drugs info()	
Check expire date()	
Generate report()	
Register Sold drugs info()	
View available drugs in the stoke()	

Table 36 CRC Diagram for Pharmacist class

Bill	
Bill No	Cashier
Customer Name	
Drug Name	
Quantity	
Total Price	

Table 37 CRC Diagram for Bill Class

Store Coordinator	
First Name	Drugs
Last Name	
Sex	
Phone no.	
Address	
Login()	
Logout()	
Check expire date()	
View available drugs()	
Generate report()	
Delete expired drugs()	
Register new drugs info()	
Update drugs info()	
Search drugs info()	

Table 38 CRC Diagram for store coordinator

System admin	
First Name	Supplier
Last Name	Account
Sex	
Phone no.	
Address	
Login()	
Logout()	
Create Account()	
Update Account()	
Deactivate Account()	

Table 39 CRC Diagram for System Admin

Order	
Date	Supplier
Drug type	Manager
Drug Name	
Quantity	

Table 40 CRC Diagram for Order class

Customer	
First Name	Comment
Last Name	Stock
Sex	
Address	
Add Comment()	
Search Drug Info()	

Table 41 CRC Diagram for customer class

Stock	
Drug Code	Customer
Type	Pharmacist
Drug Name	Manager
Manufactured Date	
Expired Date	
Unit Selling Price	
Shelf Number	

Table 42 CRC Diagram for Stock class

Store	
Drug Code	Manager
Type	Store Coordinator
Drug Name	
Manufactured Date	
Expired Date	
Unit Selling Price	
Unit Cost Price	

Table 43 CRC Diagram for store class

Casher	
First Name	Bill
Last Name	
Sex	
Phone no.	
Address	
Login()	
Logout()	
Generate report()	
Prepare Bill()	
Print Bill()	

Table 44 CRC Diagram for Cashier

Sold Drugs	
Drug Code	Pharmacist
Drug Name	Manager
Type	
Quantity	

Table 45 CRC Diagram for Sold drugs

Supplier	
ID number	Manager
Company Name	Order
Phone no	Comment
Address	System admin
Bank Name	
Bank Account	
Add Comment()	
View Order()	
Accept Order()	
Reject Order()	

Table 46 CRC Diagram for Supplier

2.4. Algorithm design

Method Name	**Login**
Class Name	User
Input	User Name, Password and Role
Return type	Void

Procedure	**Begin**
	enter user name
	enter password
	select Role
	If(entered user name, password and Role don't match with retrieved user name, password and role)
	{
	Display error message "Please check the inputs again"
	enter user name and password again
	}
	Take user to appropriate interface page
	End

Table 47 Algorithm design for login

Method Name	**Register drugs info.**
Class Name	Store coordinator
Input	Drug code, Type, Drug Name, Expired date, Manufactured Date, Quantity, Unit cost price, Unit Selling Price
Return type	Void

Procedure	**Begin**
	❖ Enter Drug code, Type, Drug Name, Expired date, Manufactured Date, Quantity, Unit cost price, Unit Selling Price
	If(fields are not filled){
	Display error message “all fields should be filled”
	Prompt the user the unfilled fields }
	If (entered data does not match with its data type){
	Display error message “the data type does not match”
	Prompt the user to enter data again }
	If (entered fields are correct){{
	Save successfully }
	saves all fields into the database
	End

Table 48 Algorithm design for Register drugs

Method Name	**Search drugs info.**
Class Name	User
Input	Drug Name
Return type	Void

Procedure	**Begin**
	enter Drug Name
	If(entered drug name is not available)
	{
	Display message “the drug is not available”
	}
	Else{
	Display drug information
	}
	End

Table 49 Algorithm design for search drugs

Method Name	**Generate Report**
Class Name	User
Input	Report type
Return type	Void

Procedure	**Begin**
	Select report type
	{
	Display Appropriate Report
	}
	End

Table 50 Algorithm design for generate report

Method Name	**Add Comment**
Class Name	Supplier, Customer
Return type	Void

Procedure	Begin;
	Write Comment or problem in its form;
	Check its validity;
	If (valid) {
	Display send Successfully;}
	Else {
	Display Try again;
	}
	}
	End;

Table 51 Algorithm design for Add Comment

Method Name	**View Comment**
Class Name	Manager
Return type	Void

Procedure	View comment () {
	Login ();
	Begin;
	Open or click view comment link;
	Display comment
	}
	End;

Table 52 Algorithm design for View comment

2.5. User interface Prototype

User interface requirements should be gathered with a prototype approach here and aligned with system use case documentation that shows the user interaction with the system

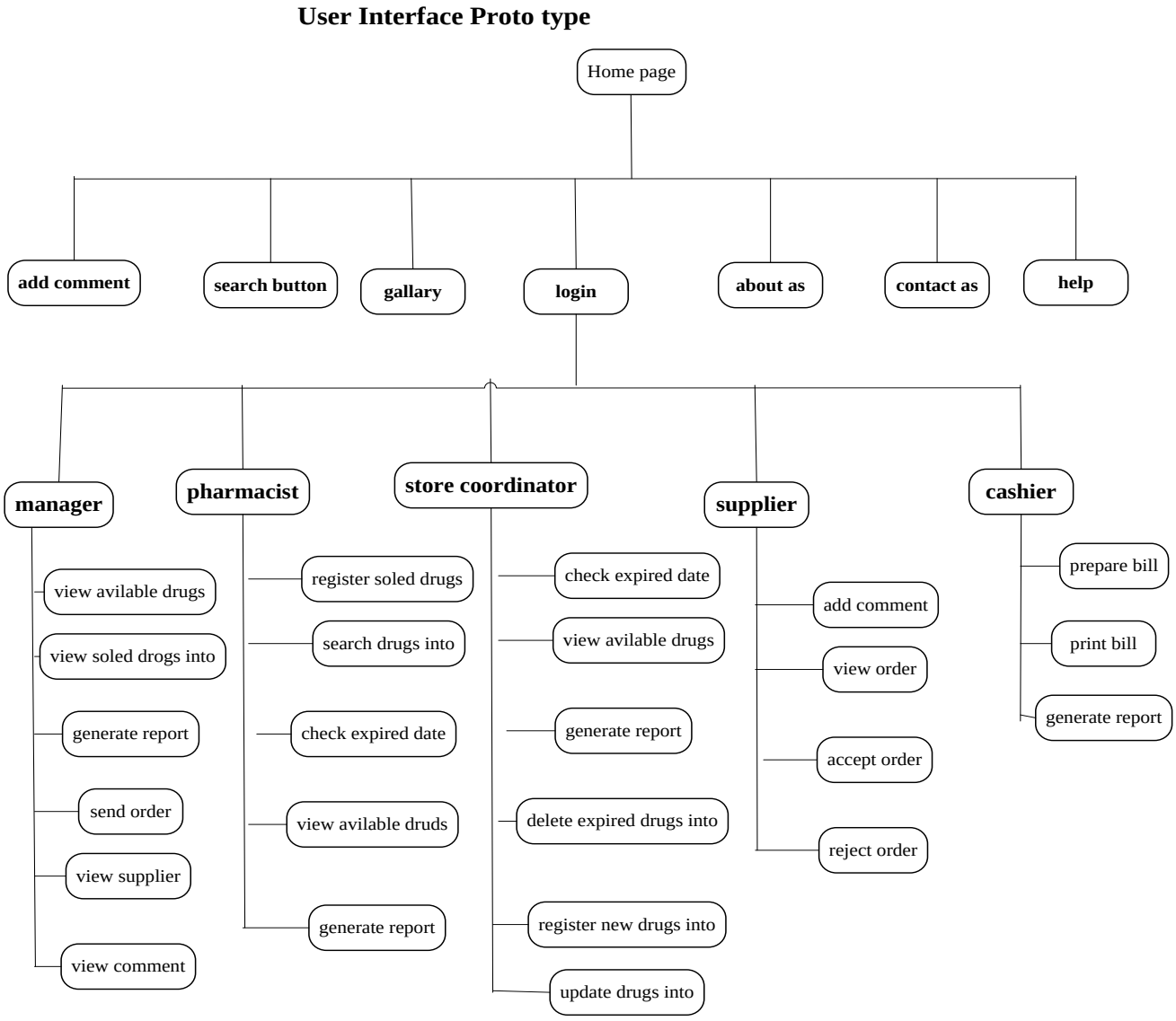

Figure 27 User interface Prototype

2.6. Business Rule of the organization

The existing system has its own mechanism in which its customers and employees are treated.

These include:

- The pharmacist must have knowledge about drugs and treat customers in good manner and should address customer's request.
- The cashier should receive the price of medicine honestly from customers and prepare receipt for customer
- Manager should control the entire activity in the pharmacy and should receive clear and appropriate report from the workers of the pharmacy.
- Drugs should order in their identifiable type to facilitate searching requested drug.
- Manager should control the overall information from any biases properly.
- Expired drugs must be removed from the pharmacy.
- Store coordinator should register drugs information
- The pharmacist and store coordinator check expired date of drugs
- The customer must have drug prescription paper from legal health sec

CHAPTER THREE

System Design

3.1. Architectural Design

A **software system** is a set of communicating entities that collaborates to perform task. The architecture used for the system is a three tier Client/Server Architecture. The client tier is the applications user interface containing data entry forms and client side applications. It displays data to the user. Users interact directly with the application through user interface. A web server is a program that runs on a network server (computer) to respond to HTTP requests. The most commonly used web servers is Apache. The web server used in this system is Apache. HTTP is used to transfer data across the Internet. The third tier, called the data tier, maintains the applications data. It stores these data in a database management system (DBMS).

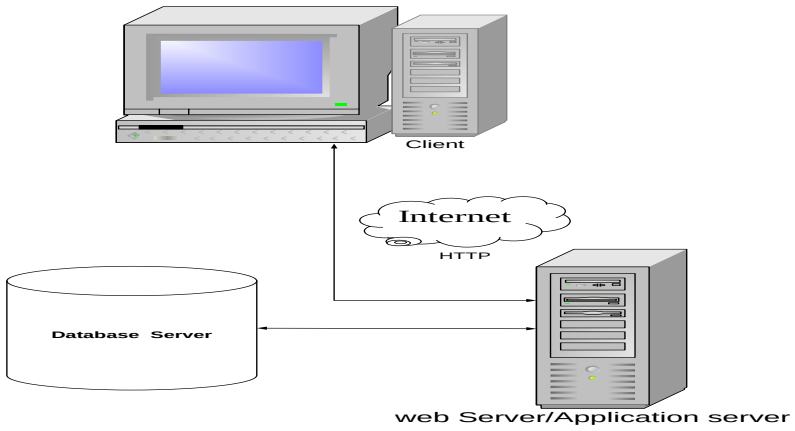

Figure 28 Architectural Design

3.2. Component Diagram

Component diagrams are often used to model high-level software components and how they interact. The interfaces between these components become clear as the model grows, which provides a much clear delineation of duties of each component. So from that point component diagrams are used to visualize the physical components in a system. Component diagrams can

also be described as a static implementation view of a system. Static implementation represents the organization of the components at a particular moment. It does not describe the functionality of the system but it describes the components used to make those functionalities.

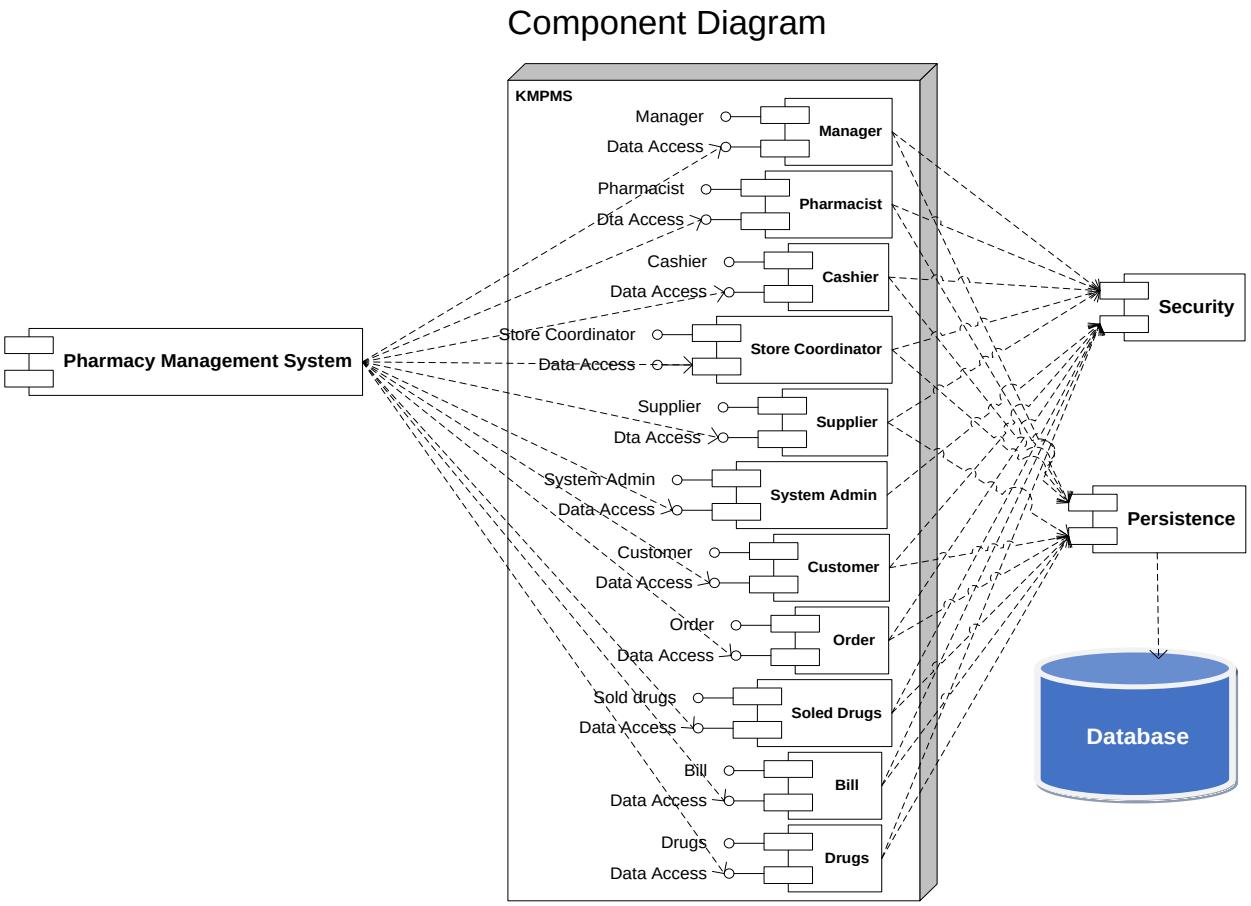

Figure 29 Component Diagram

3.3. Deployment Diagram

Deployment diagram shows all of the nodes on the network, the connections between them, and the processes that will run on each one. The client/server architecture of the system enables different clients to connect to the server remotely through Internet connection. Server side there is web server that is always connected with the internet for listening HTTP requests and accepts connection request and uses Apache HTTP server manipulates data from the database using PHP programs and answers user's request. The web server also has program the prints card numbers. There is a database server that has MYSQL program which enable to communicate with the web server using SQL server

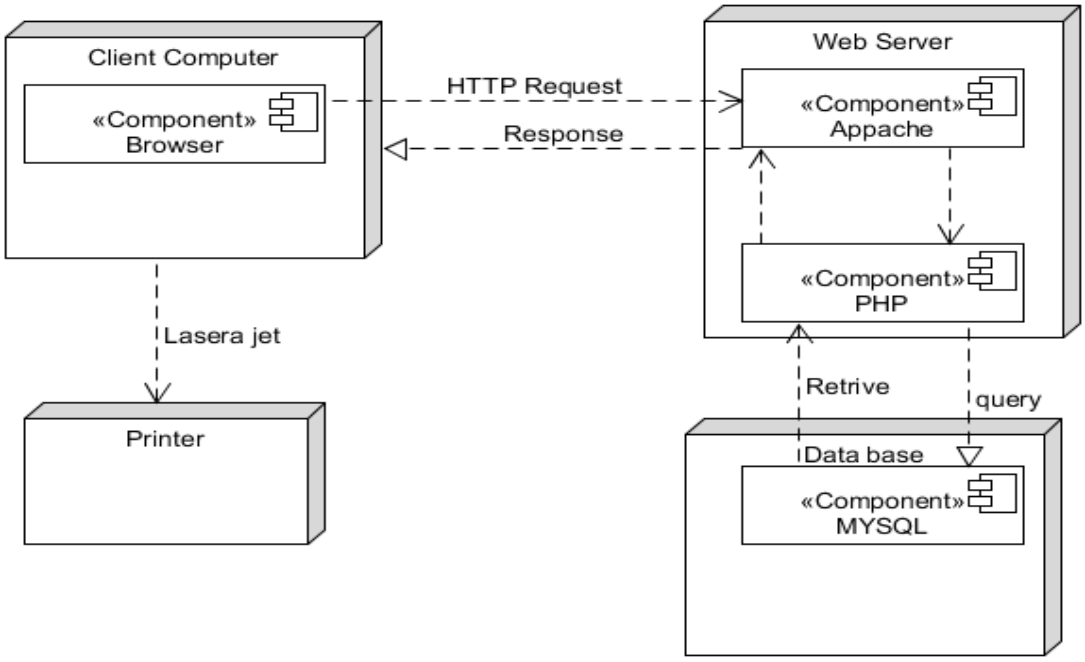

Figure 30 Deployment Diagram

3.4. Class diagram Design

Class diagram is a static diagram. It represents the static view of software. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software. Class diagram describes the attributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object-oriented systems because they are the only UML diagrams, which can be mapped directly with object-oriented languages. Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints. It is also known as a structural diagram. The purpose of the class diagram can be summarized as :

- Analysis and design of the static view of an application.
- Describe responsibilities of a system.
- Base for component and deployment diagrams.
- Forward and reverse engineering.

Class model Design

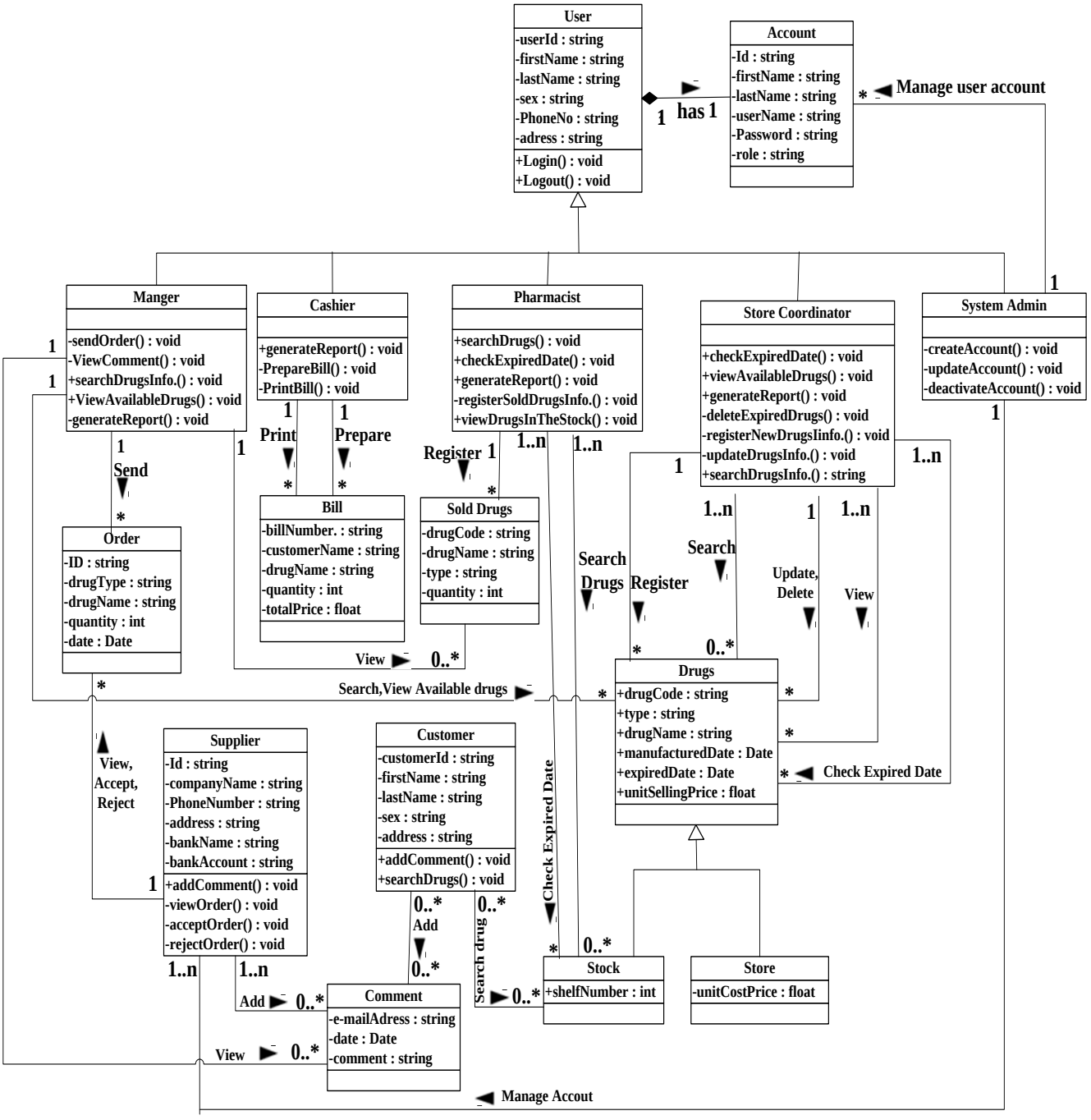

Figure 31 Class diagram Design

3.5. Persistent model

It shows the mappings and the relations of the tables. That is classes with their attributes, primary keys, foreign keys relationships and multicity.

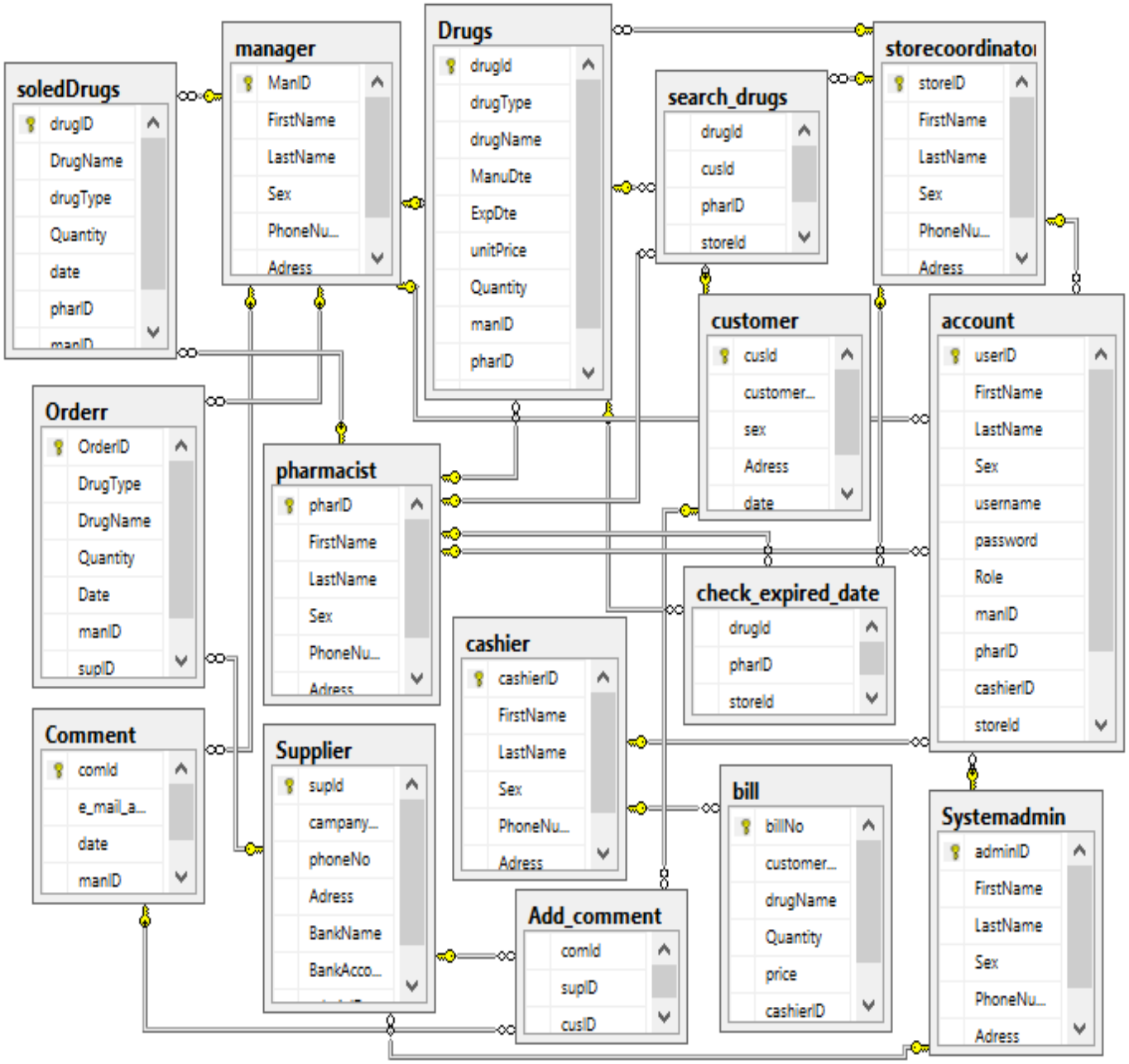

Figure 32 Persistent mode

3.6. User Interface Design

User Interface (UI) Design focuses on anticipating what users might need to do and ensuring that the interface has elements that are easy to access, understand, and use to facilitate those actions. We have designed basic user interfaces for the system.

Figure 33 User Interface Design for create account

Figure 34 User Interface Design for Login

Figure 35 User Interface Design for register drugs

Figure 36 User Interface Design for check expired date

3.7. Access control and security

Access control is a security technique that can be used to regulate who or what can view or use resources in a computing environment. In these systems, different actors have access to different functionalities and data. Therefore these privileges put off unauthorized users from accessing data's which they don't have privacy to access.

Authentication: The process of ascertaining that somebody really is who he claims to be. In these system users before entering into the system they must be authenticated as authorized users. This takes place by letting users to insert their username and password in the displayed login form.

Authorization: Permission to access a resource, rules that determine who is allowed to do what. After authentication users are granted for specific tasks. This takes place by preventing users from participating in specific tasks on which he/she doesn't have grant to access.

Actor	Class						
	Order	Stock	Store	Sold drugs	Bill	Account	Comment
Manager	send	View available drugs	View available drugs	View			View
Cashier					Prepare , Print		
Pharmacist		View available drugs, Search		Register			
Store coordinator		View available drugs, Search	View available drugs, Search				
Supplier	View						Add comment
Customer		Search drugs					Add comment
System Admin						Create, Update, Deactivate	

Table 53 Access control and security

CHAPTER FOUR

Conclusion and Recommendation

Conclusion

Lastly upon completion of the investigation and analysis of the manual Pharmacy management system we understand that the system has a number of constraints and hence improvements are inevitable. Thus, improvements on the system will speed up all activities in the pharmacy. Improve quick registration and retrieval of drugs information, checking expired date of drugs and will provide an effective and more efficient system that will enhance pharmacy management system. Pharmacy is the backbone of the medical health sector. So it should be advanced and computerized to provide fast services for the community and also for other users of the system like manager, pharmacist, store coordinator and cashier.

Recommendation

While doing this system the team members has faced different challenges. But by the cooperation of all the group members and the advisor the team is now able to reach to the final result. I.e. all the group members strongly fight these challenge and take the turn to the front. So, now all the group members strongly recommend the department that for the coming students, it has to provide them with better service than the present in better hard ware, guaranteed software's, giving orientations how to proceed, offering guest to provide them with more experienced work, support morally, manually, forming good relation with students, giving students description of each phases and so on. So that it will get what it expects from its students and satisfy with them.

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