



Sri Lanka Institute of Information Technology

Information Technology Project (IT2080)

Activity 03

BATCH ID: Y2.S2.WE.IT.02.02

ITP WE ITP_B2_W10

Hospital Management System

TBD

Details of the Group Members:

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DIAGRAMS OF COMPONENTS

Medicine Inventory Management System IT22515612

The system can add new inventory, add drug suppliers, update drug unit price, view tables displaying all inventory including expired drugs, search drugs by expiration date, delete stocks and generate reports. managers.

The Medicine Inventory Management System section provides functions for hospital users to familiarize themselves with the Innobot system and streamline their work within the hospital environment. There are three main user categories within this section. The system allows for the addition of new inventory, inclusion of drug suppliers, updating of drug unit prices, viewing tables displaying all inventory, including expired drugs, searching for drugs by expiration date, deleting stocks, and generating reports.

Use Case Scenario of Medicine Inventory Management System

Name	Medicine Inventory Management System	
Summary	The system manages the inventory of medicines, including adding new inventory, adding medicine suppliers, updating medicine unit prices, viewing tables displaying all inventory including expired medicines, searching for medicines by expiry date, deleting stock, and generating reports.	
Priority	High	
Pre-conditions	The user has access to the system. Given the relevant permissions for inventory management.	
Post-conditions	Inventory records are updated based on user actions. Reports are generated and available for viewing.	
Primary Actors(s)	Inventory In change Officer, Employee (User)	
Trigger	The Employee accesses the drug inventory management system.	
Main Scenario	Step	Action
	1	User enters drug inventory management system.

	2	The user moves to the "Add Inventory" section.
	3	User input details like drug name, quantity, expiry date etc.
	4	Presents the user form to add new inventory.
	5	The user moves to the "Add Provider" section.
	6	User input details like provider name, contact details etc.
	7	User submits form to add new supplier.
	8	User moves to "Update Drug Price" section.
	9	User selects a drug and updates its unit price.
	10	Saves user changes.
	11	The user moves to the "View Inventory" section.
	12	The user views the table displaying all inventory items, including expired medications.
	13	The user uses the search function to find medicines that expire on a specific date.
	14	The user moves to the "Delete Stock" section.
	15	The user selects the sections to be deleted (expired or unnecessary).
	16	Confirms the user deleted action.
	17	The user selects the type of report to be generated (e.g., inventory summary, expired medication report).
Extensions	Step	Action
	4a	If the user encounters an error while adding inventory due to incomplete or incorrect information, an error message is displayed, and the user is prompted to correct the input.
	8a	If the user tries to update the drug price but enters an invalid price, an error message will be displayed, and the user will be prompted to enter a valid price.
	14a	If the user attempts to delete partitions but an error occurs (e.g., insufficient permissions), an error message is displayed.
	17a	If the user attempts to generate a report but an error occurs (e.g., no data), an appropriate message is displayed.

Major Components

User Interface: This component allows users to interact with the system, input data, and view reports.

Database: Stores information such as inventory records, supplier details, and user credentials.

Business Logic Layer: Processes user inputs, performs validations, and updates the database accordingly.

Reporting Module: Responsible for generating various reports based on user requests.

Authentication and Authorization: This controls user access to different functionalities based on their roles and permissions.

Data Model:

Entities: Medicine (name, quantity, expiry date, unit price), Supplier (name, contact information), User (username, password, role), Inventory Record (links medicine to quantity), Report (type, parameters).

Relationships: Medicine has a one-to-many relationship with inventory records. The supplier may have a one-to-many relationship with the inventory record. The user has a one-to-many relationship with permissions.

Database Schema: Tables for Medicine, Supplier, User, Inventory Record, and Report. Foreign keys establish relationships between these tables.

Non-Functional Requirements:

Scalability: The system should handle more users and data volume. This can be achieved through techniques such as horizontal scaling, efficient database indexing, and caching mechanisms.

Security: Implement secure authentication mechanisms (e.g., using hashed passwords), role-based access control, and encryption of sensitive data (e.g., user credentials, supplier details). Regular security audits and updates to address vulnerabilities are necessary.

Performance: The system should have low response times, especially for critical functionalities like adding inventory and generating reports. Techniques such as query optimization, caching frequent.

Third-Party Components:

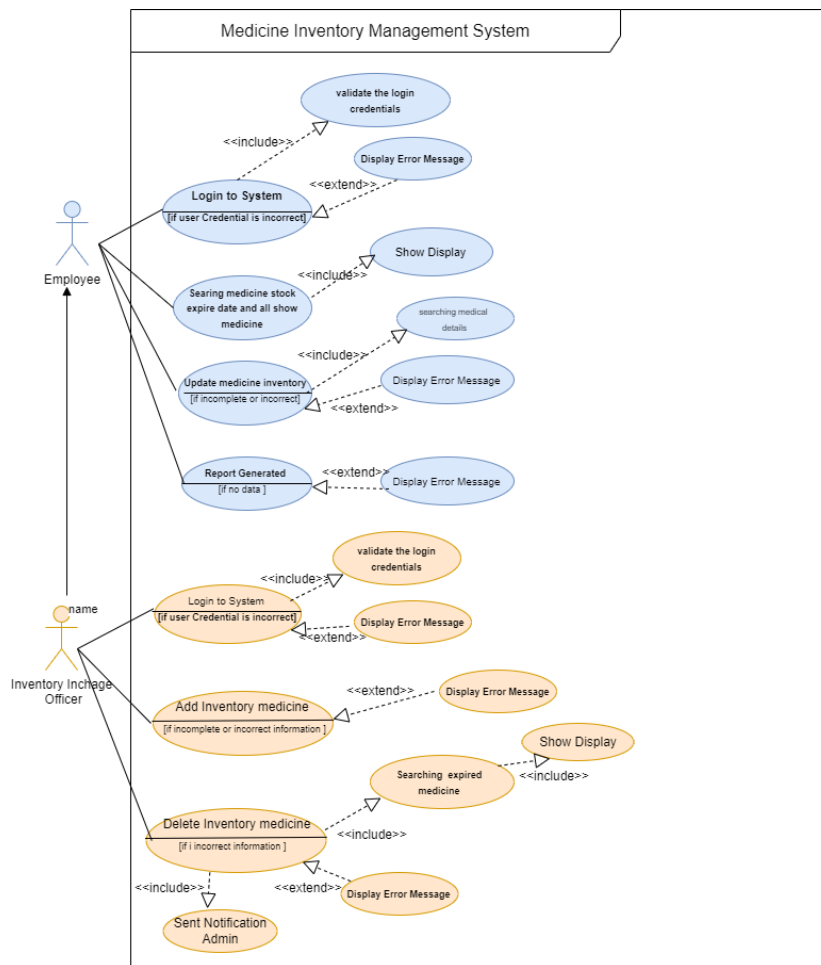
- **Database Management System (DBMS):** MongoDB for storing and managing data.
- **Frontend Frameworks and Libraries:** React.js for building responsive user interfaces.
- **Backend Frameworks:** Spring Boot for building the application logic.
- **Reporting Tools:** Libraries use itextpdf for generating visually appealing reports.

- Security Libraries: For implementing secure authentication and authorization, such as bcrypt for password hashing and JSON Web Tokens (JWT) for session management

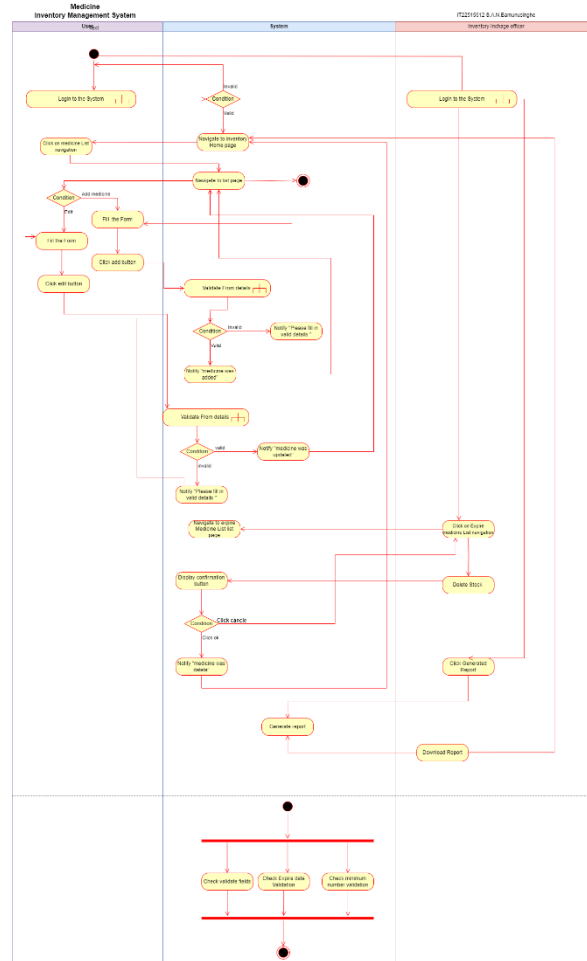
Use case diagram

IT22515612 S.A.N. Bamunusinghe

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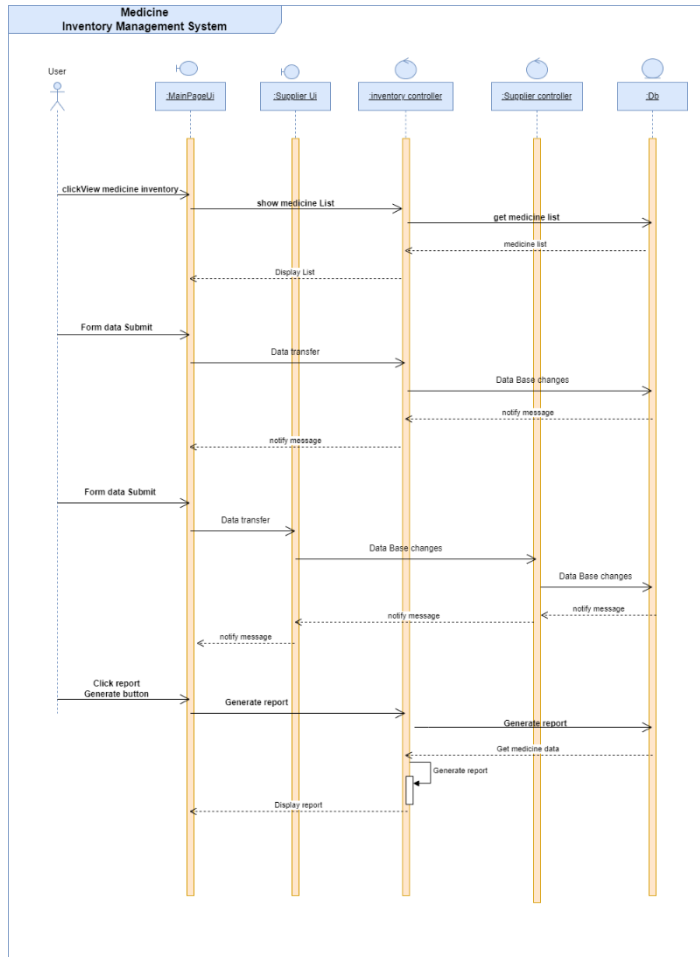
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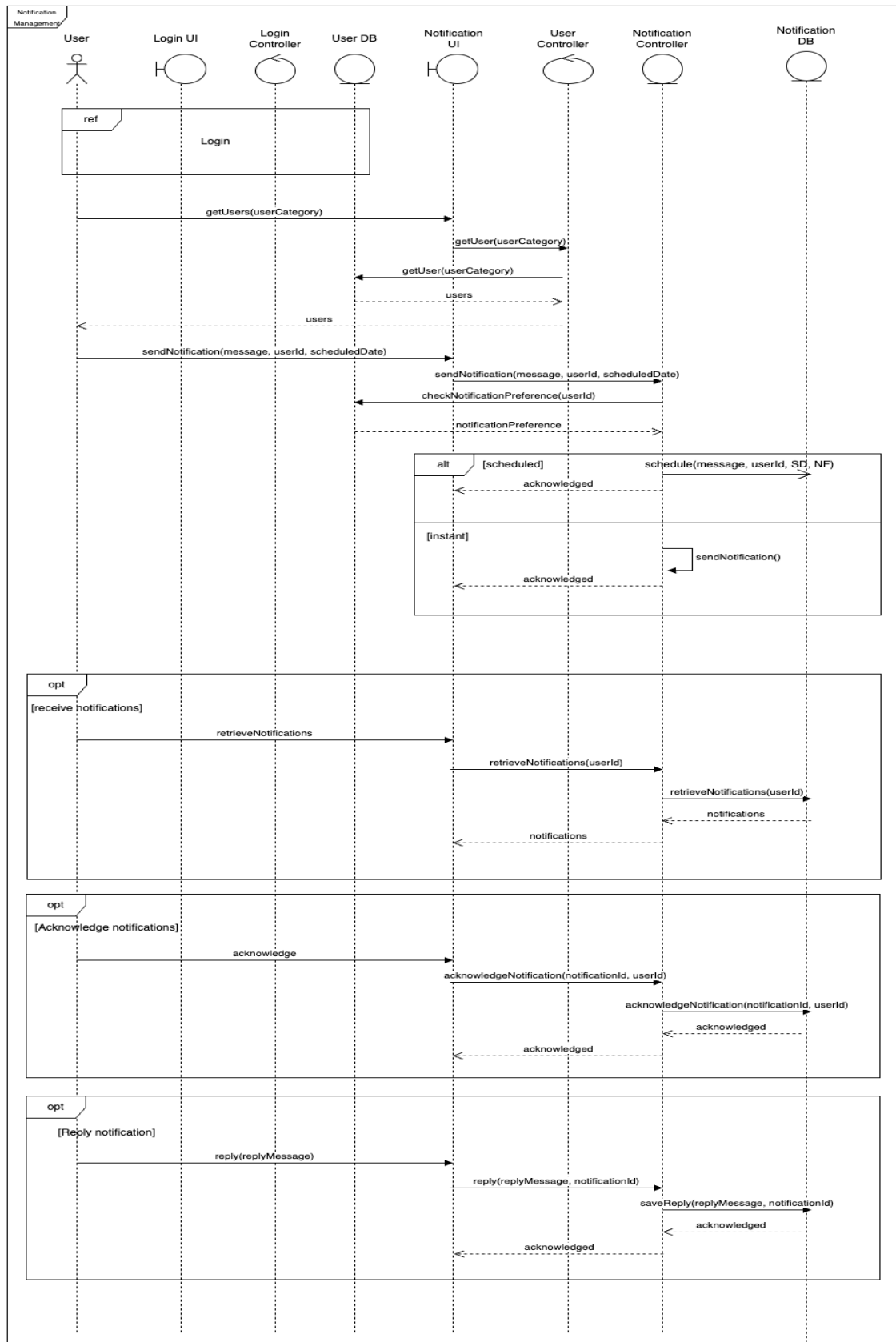


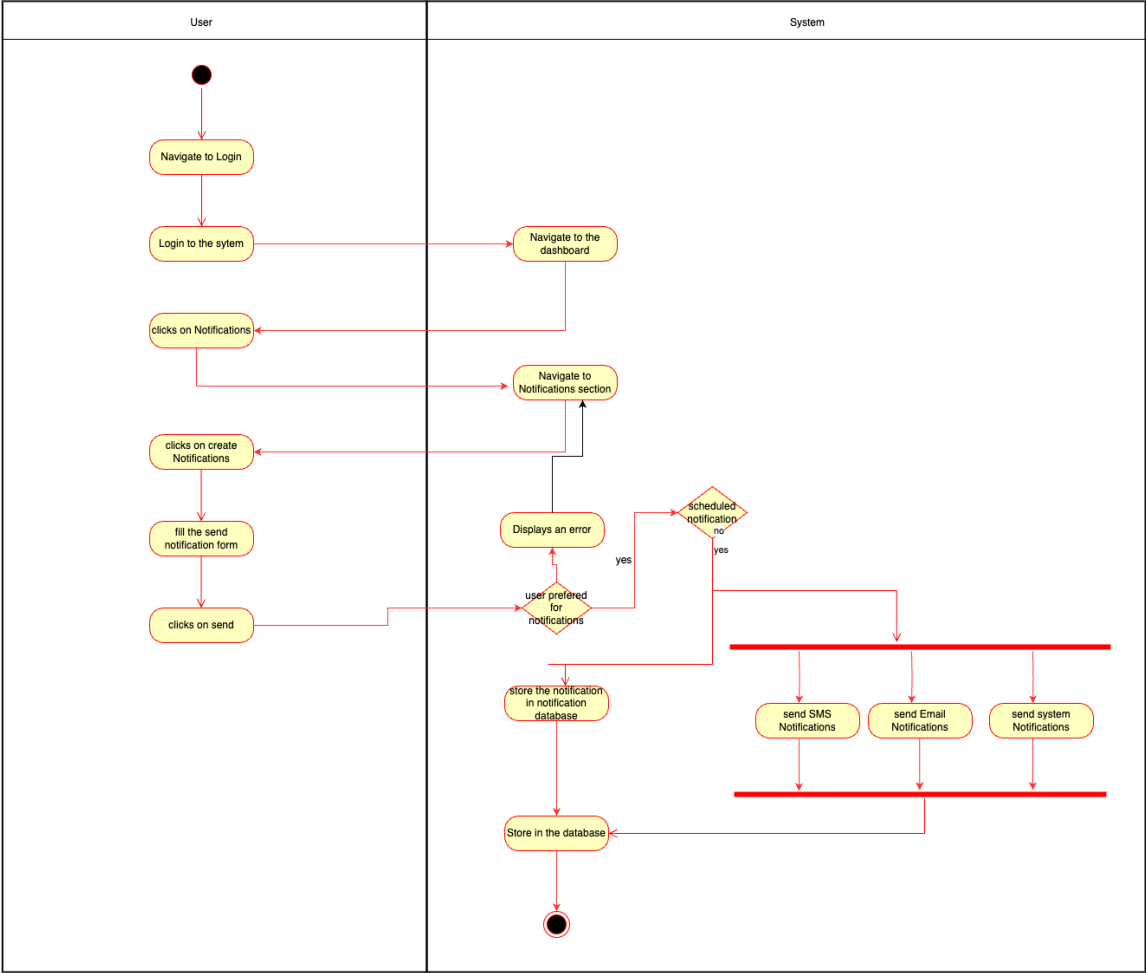
Sequence diagram

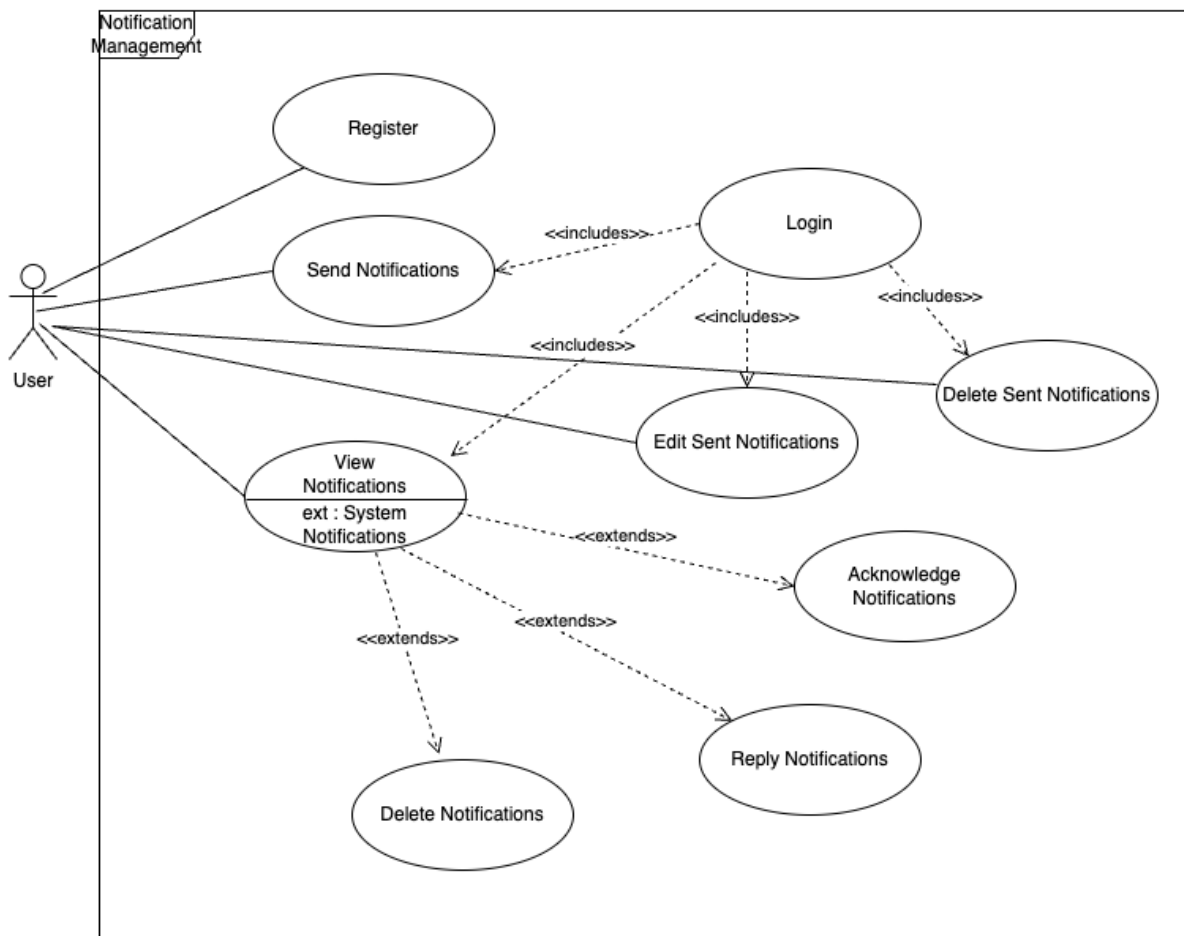
IT22515612 S.A.N. Bamunusinghe

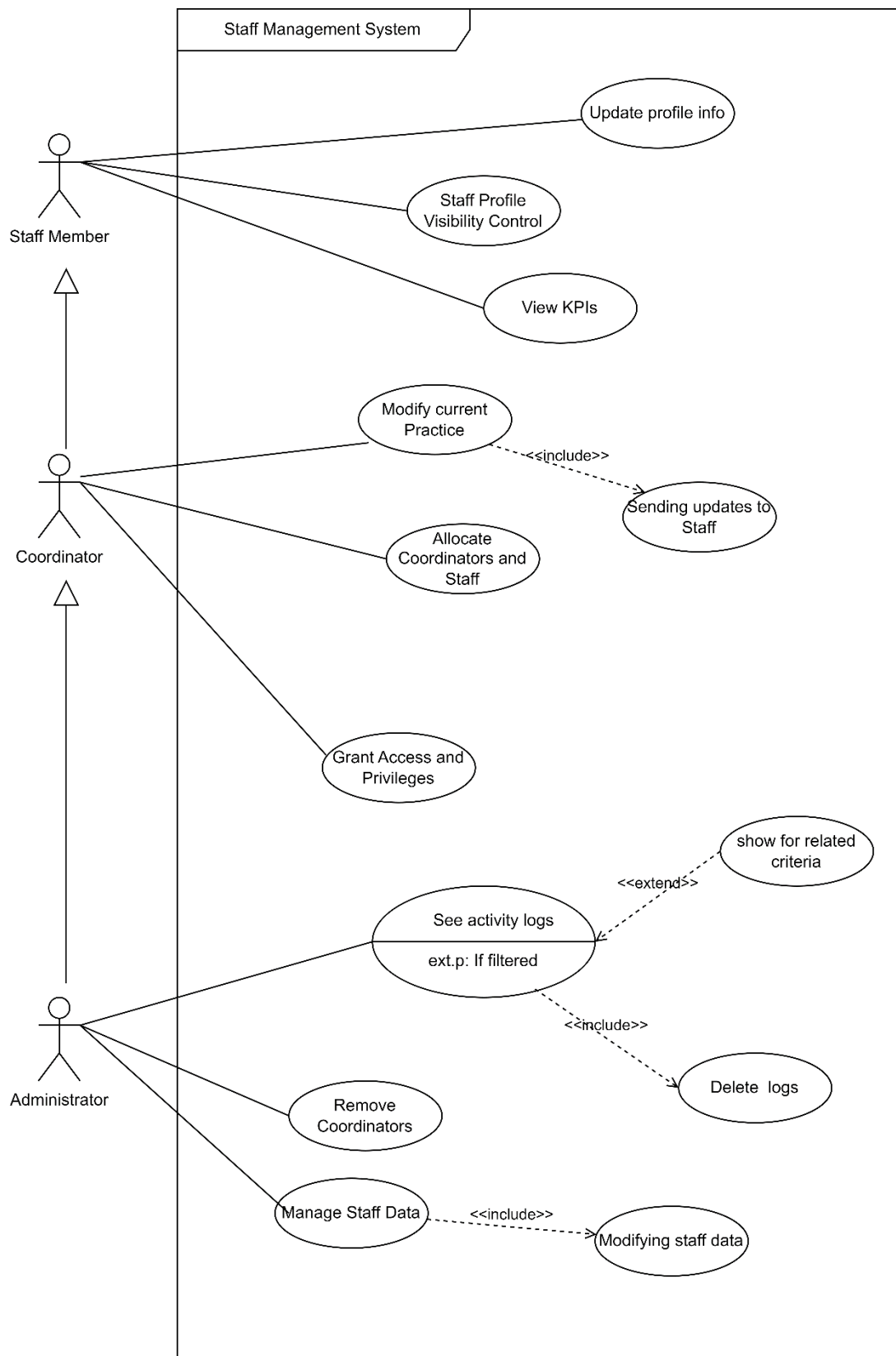
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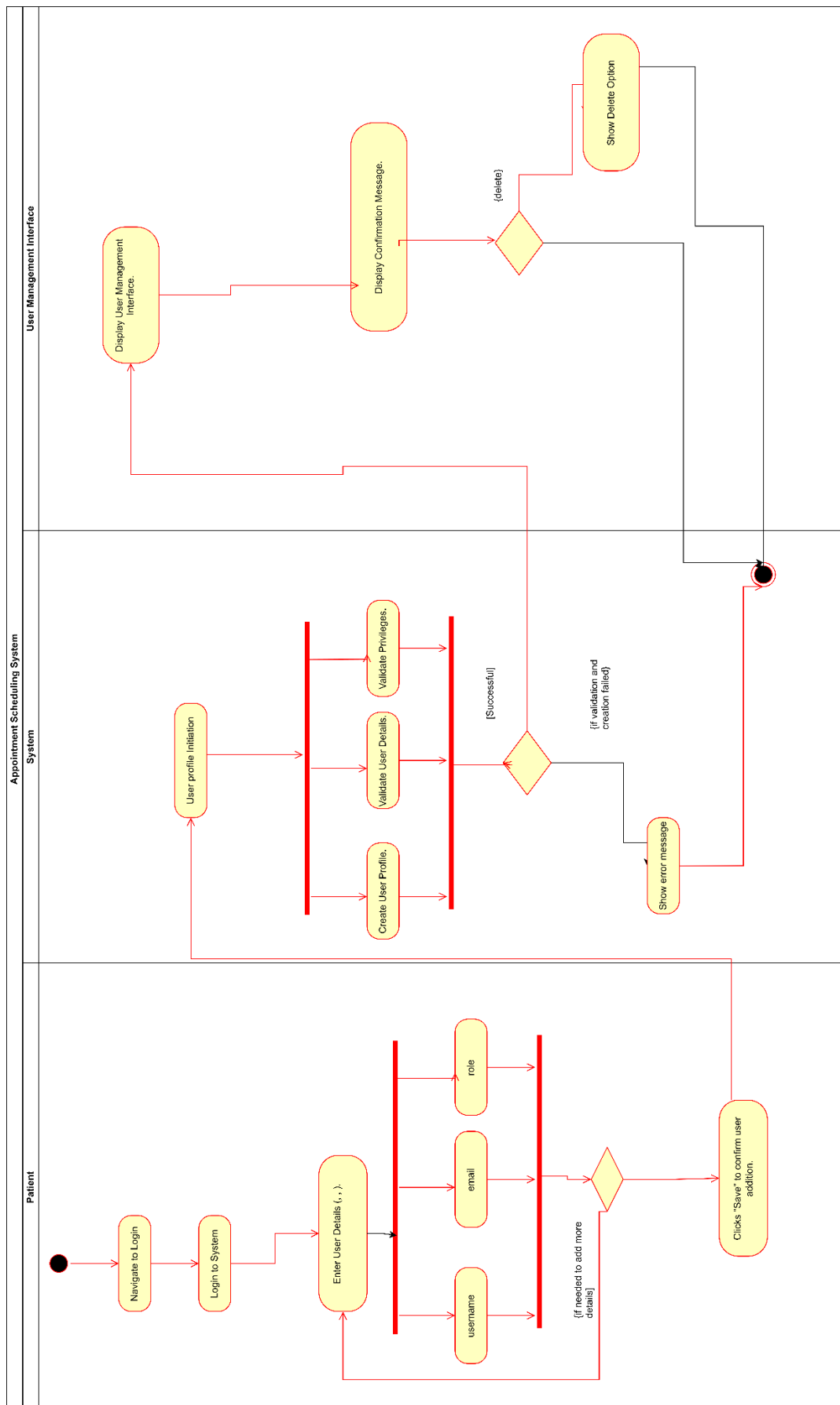


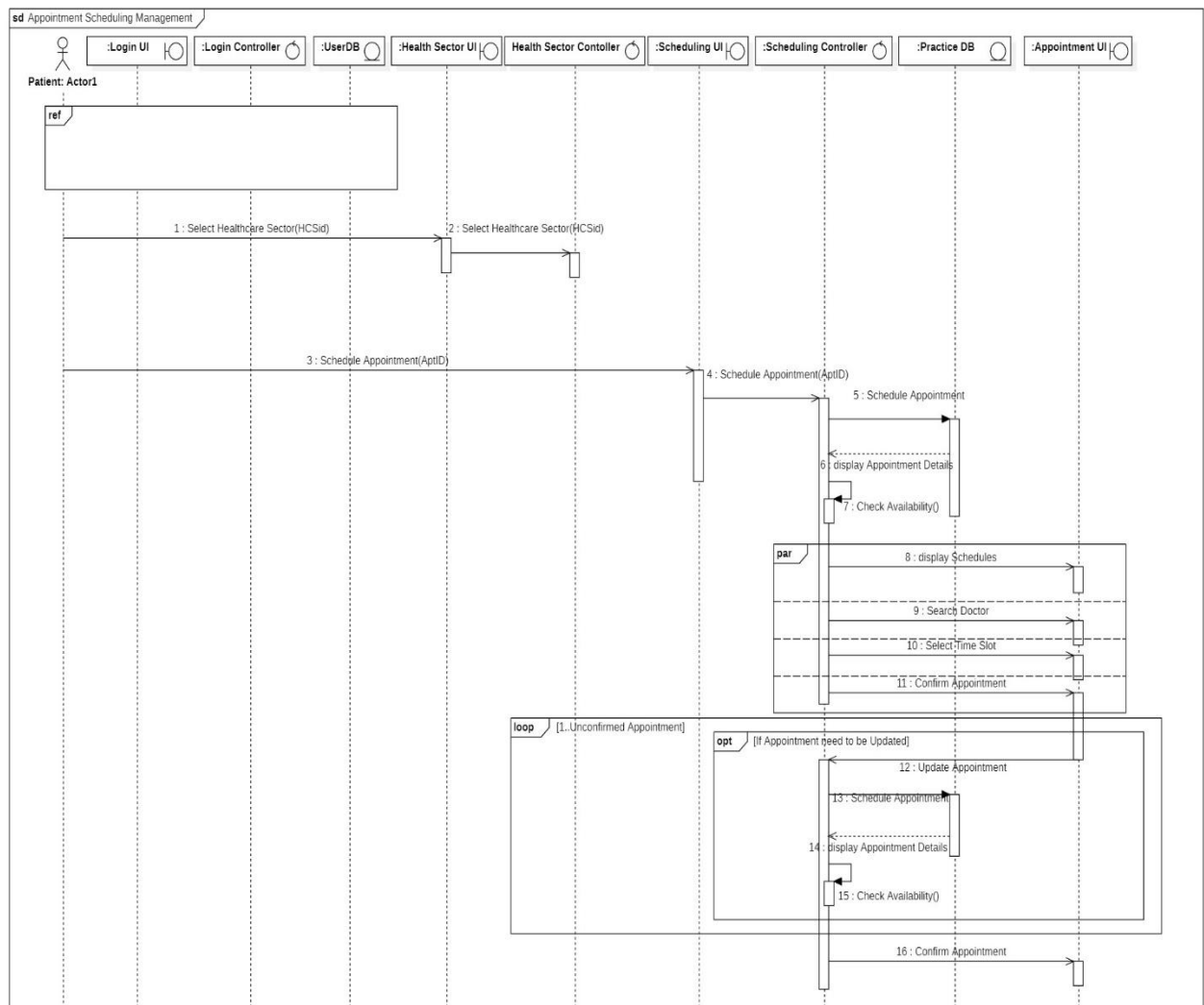


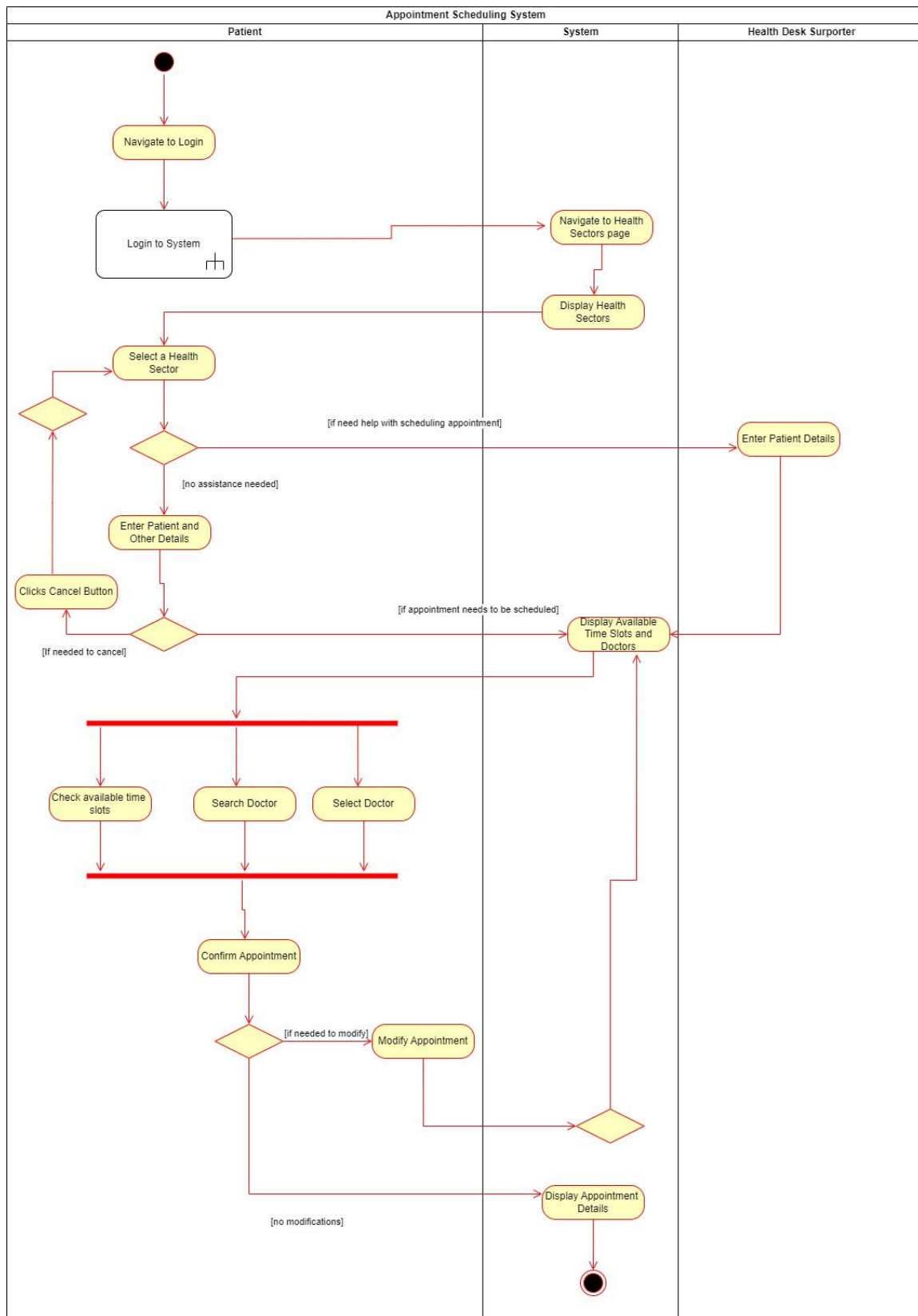


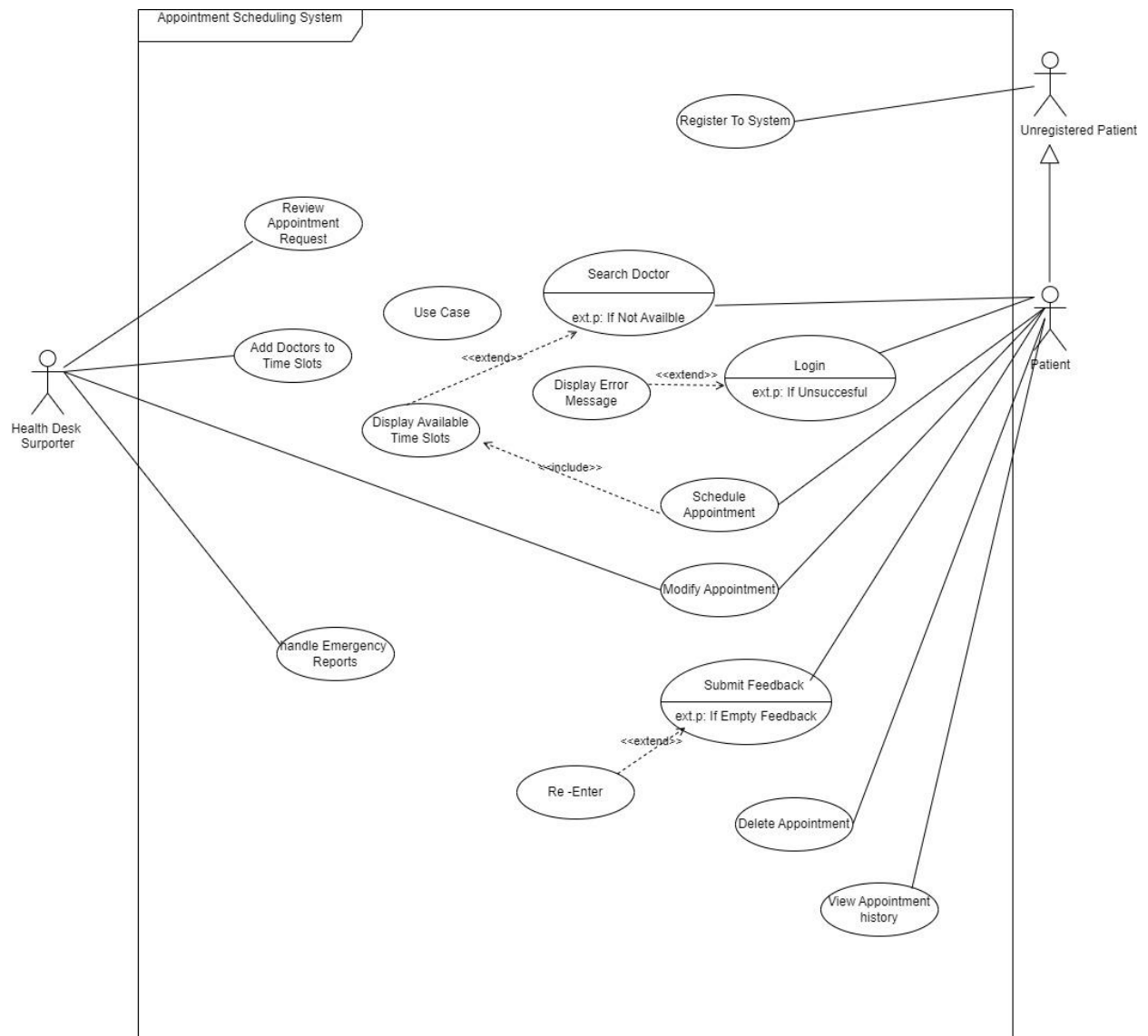


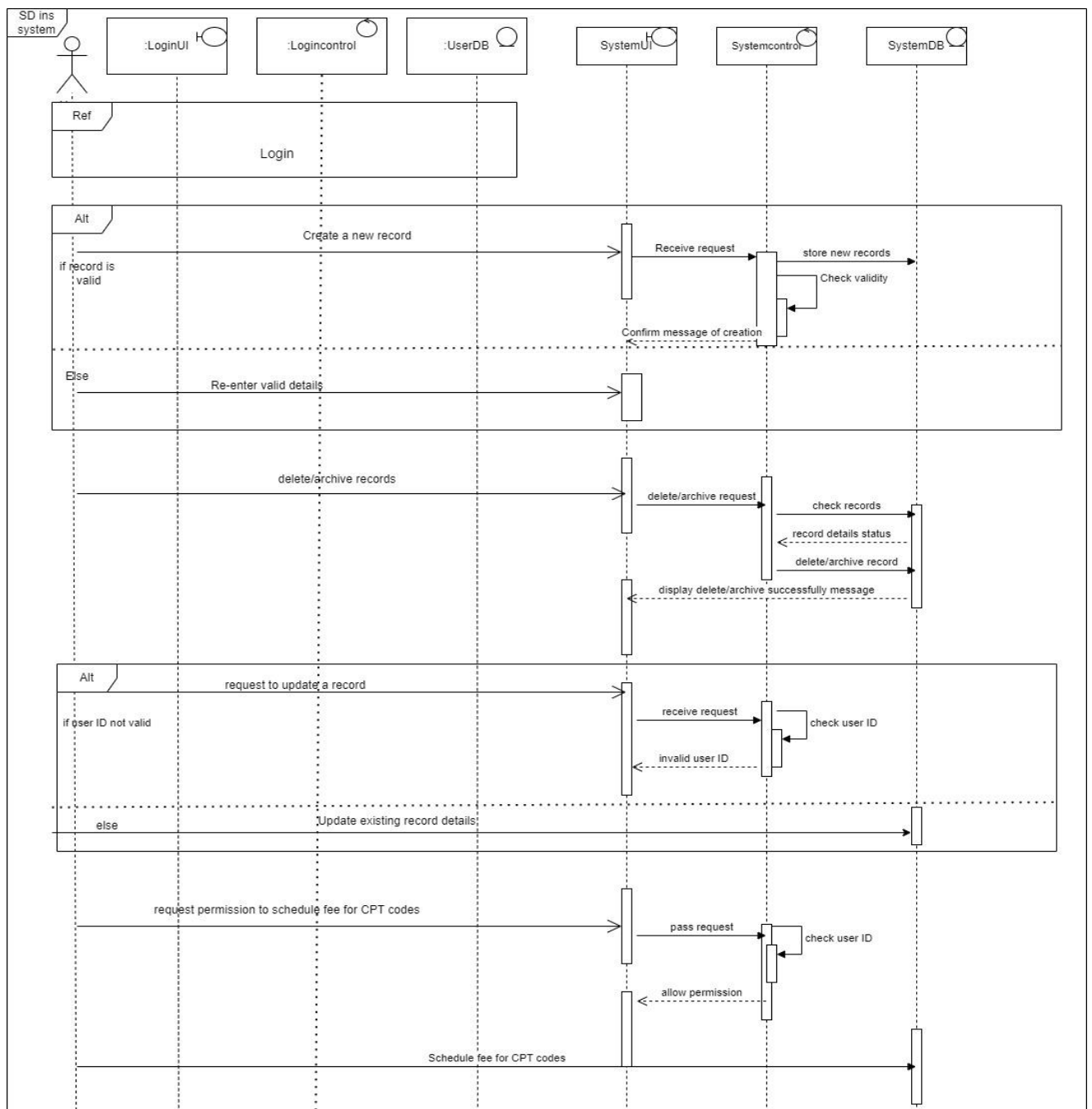


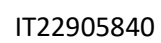


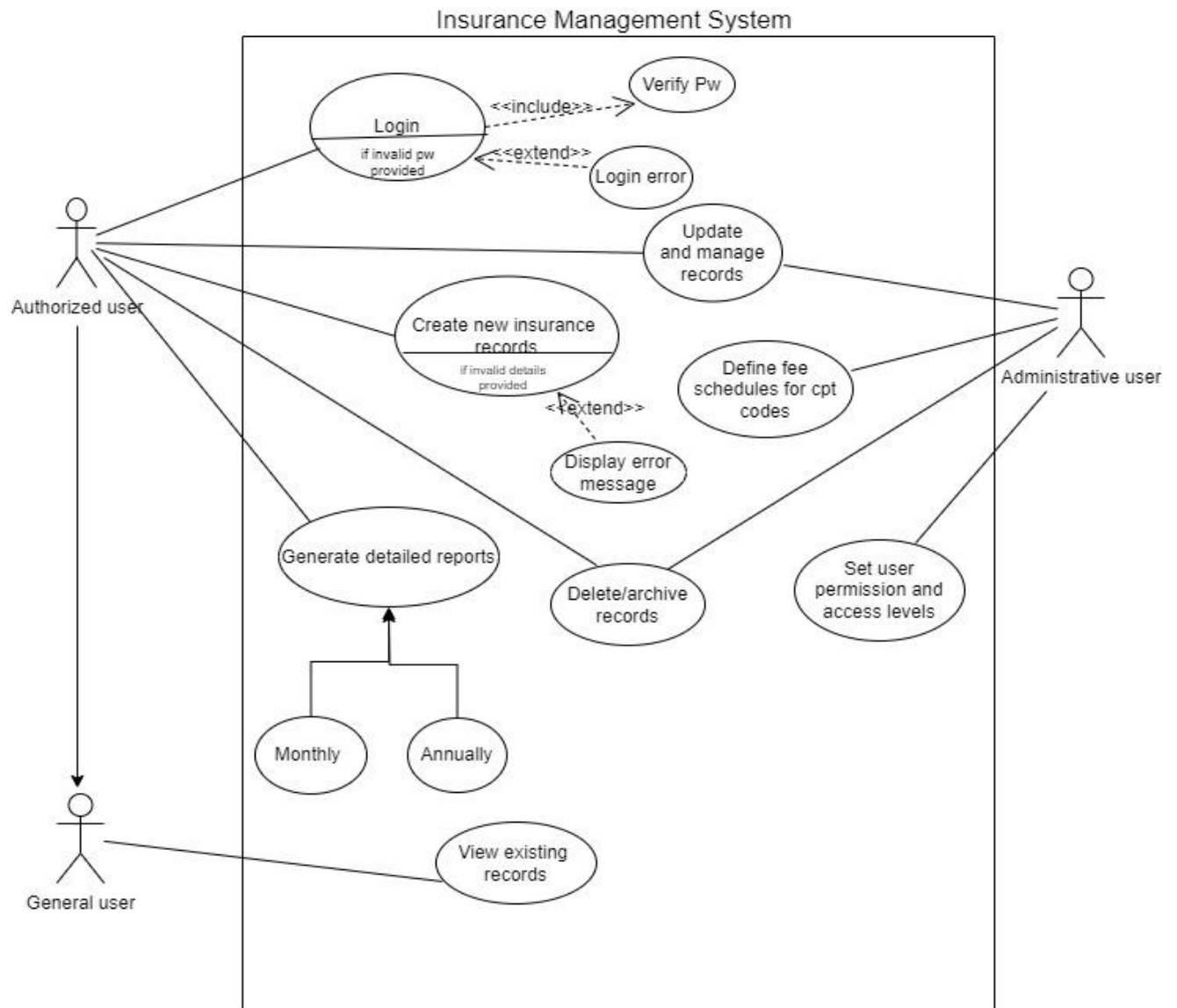


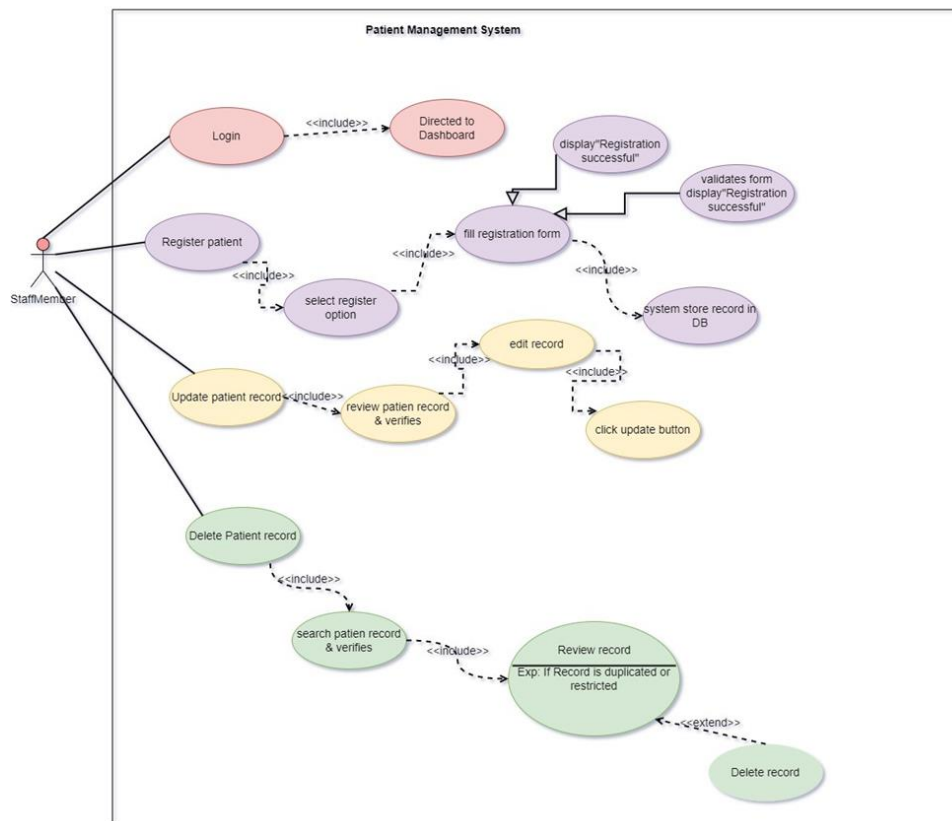




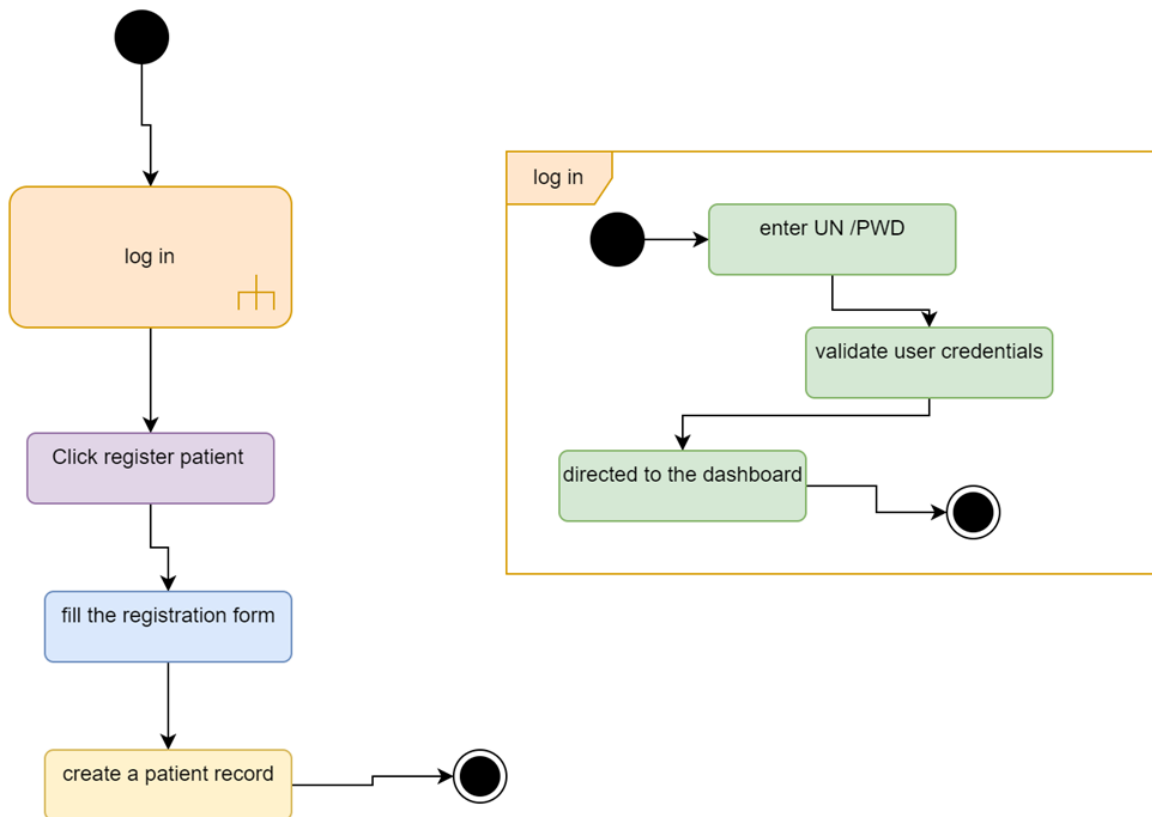




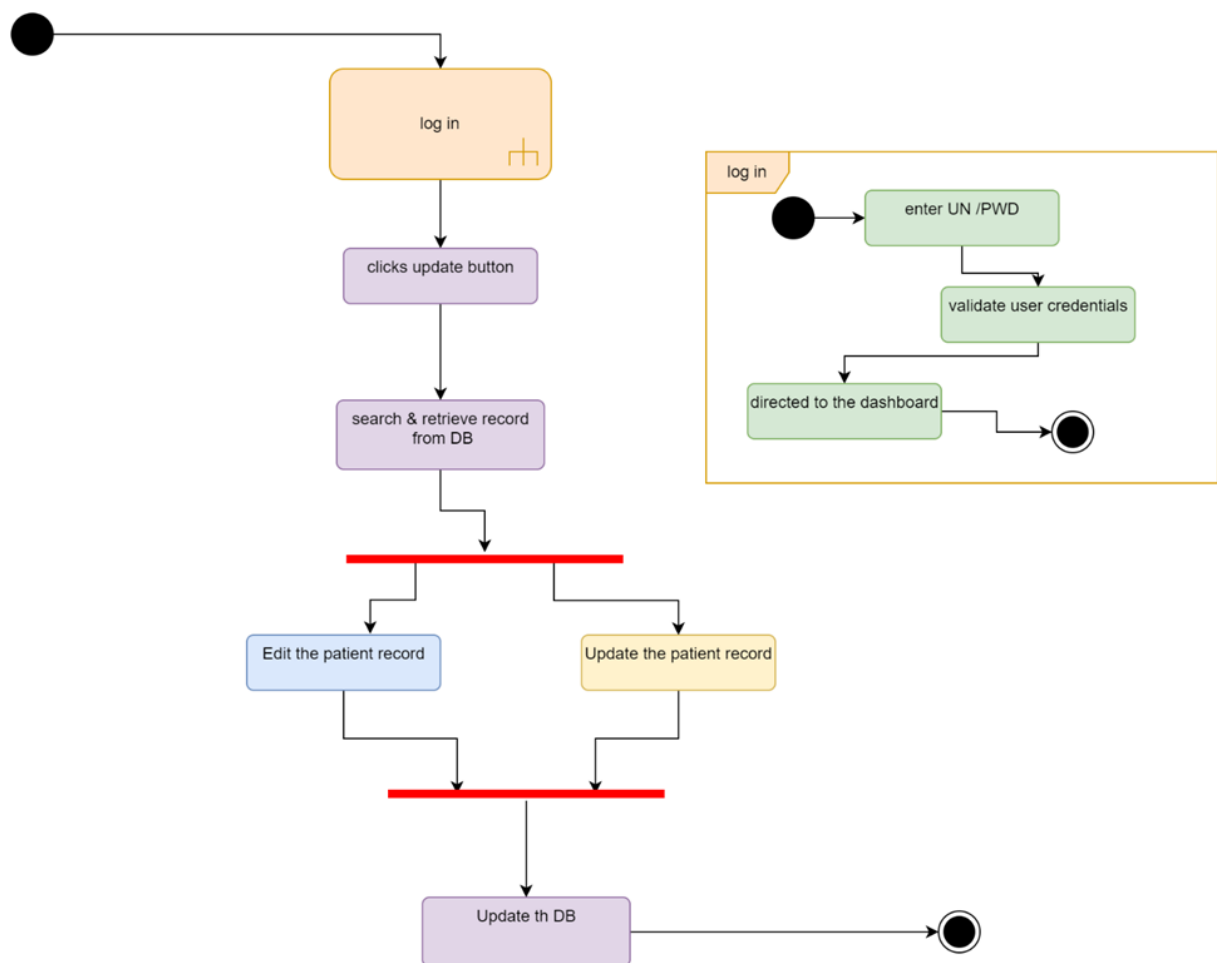




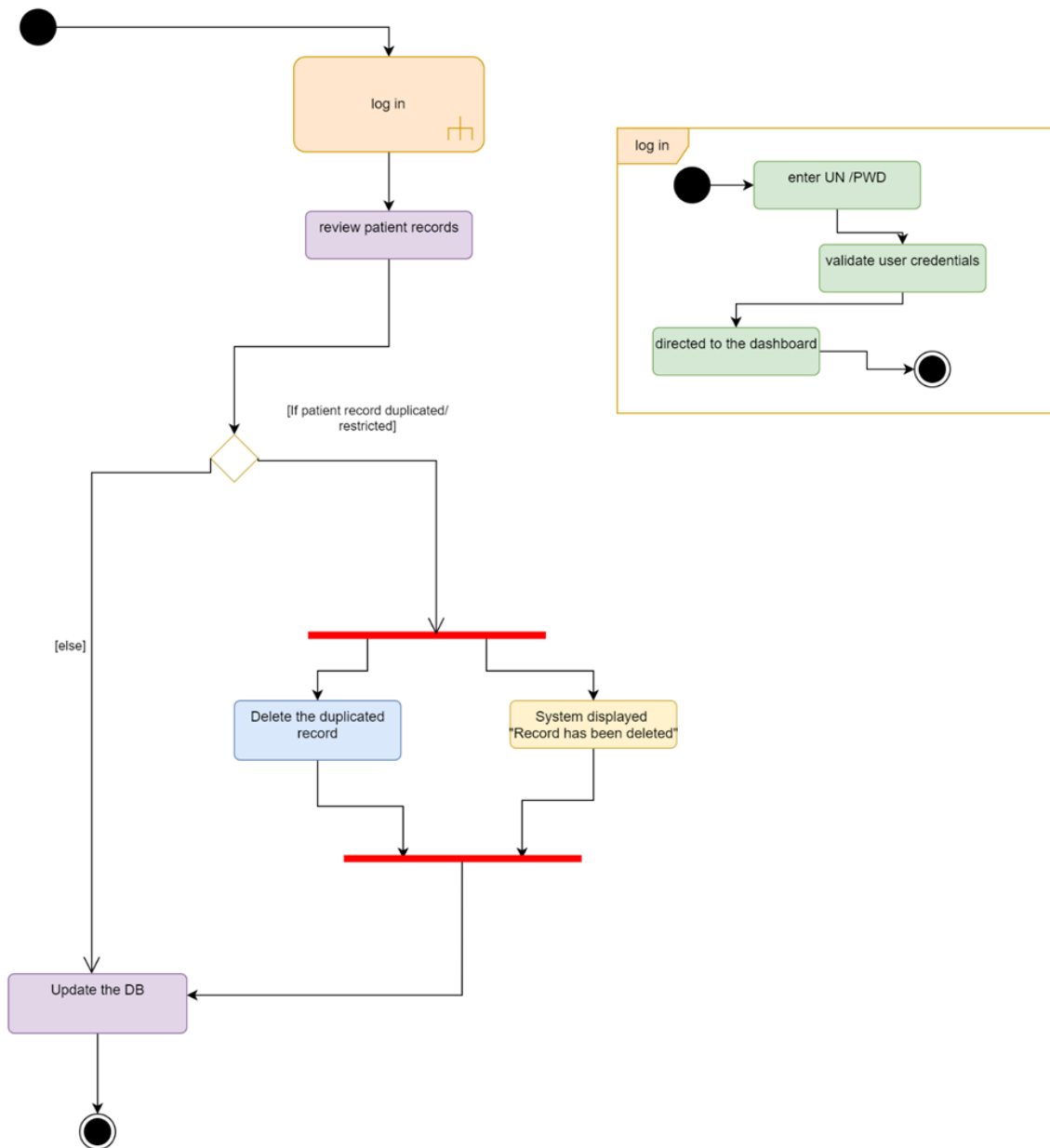
Register a new patient.



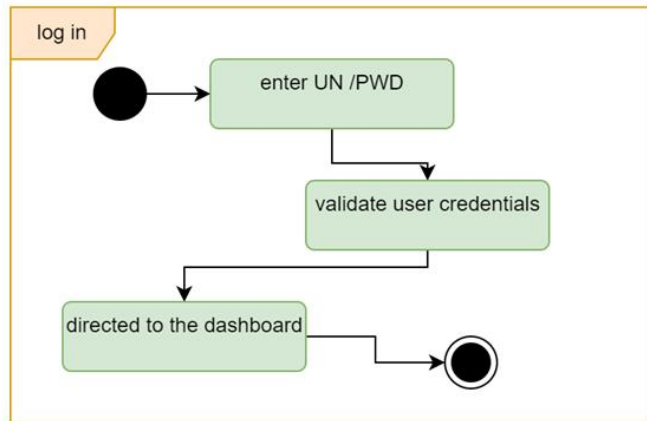
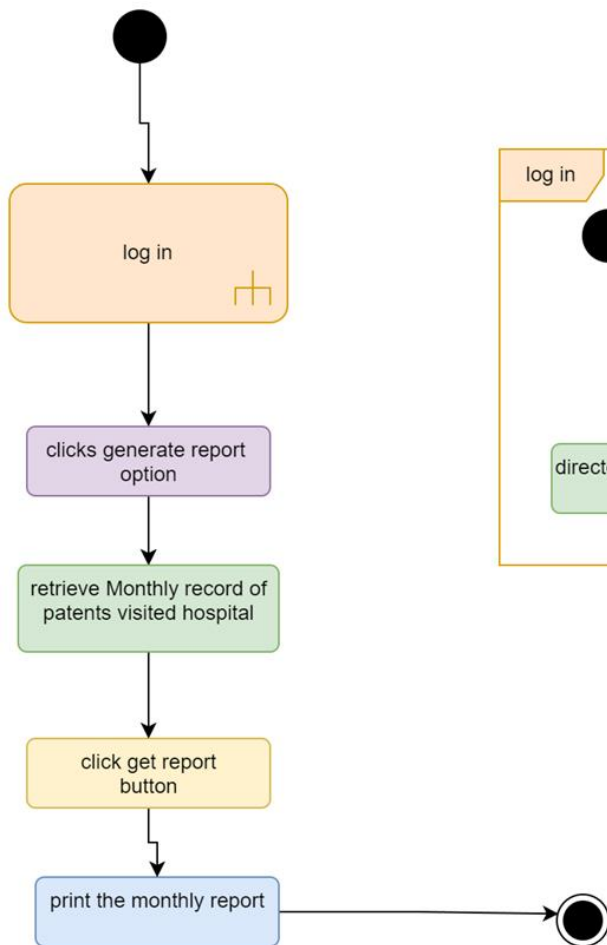
Update patient records.

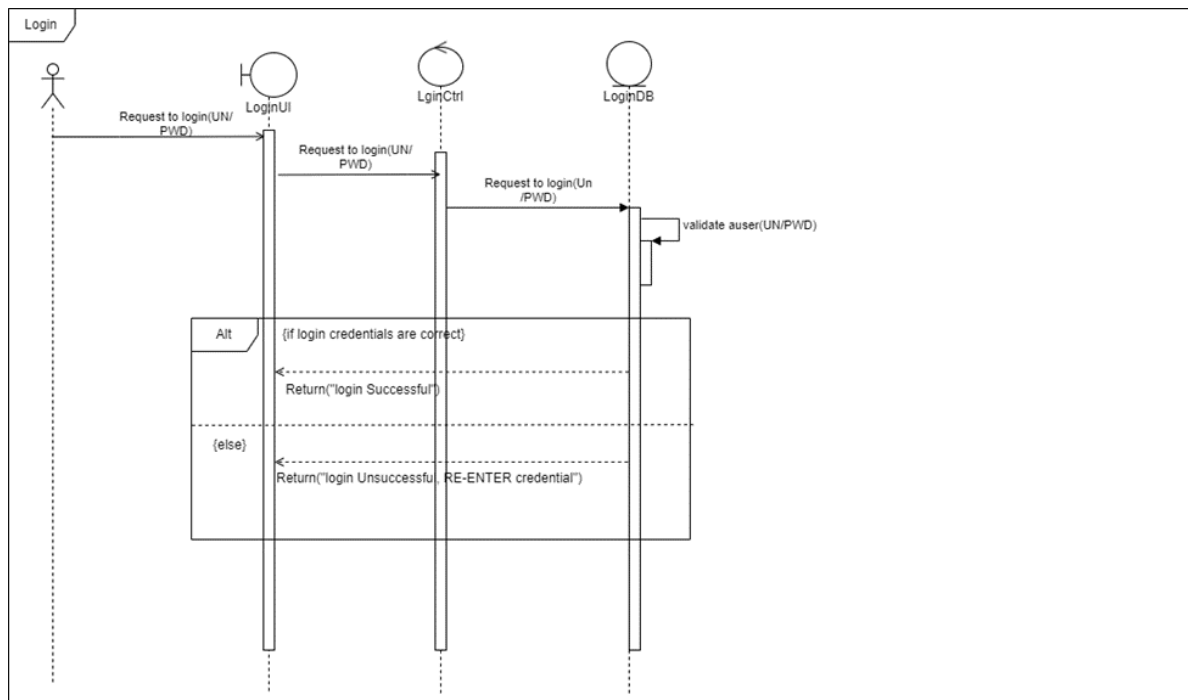


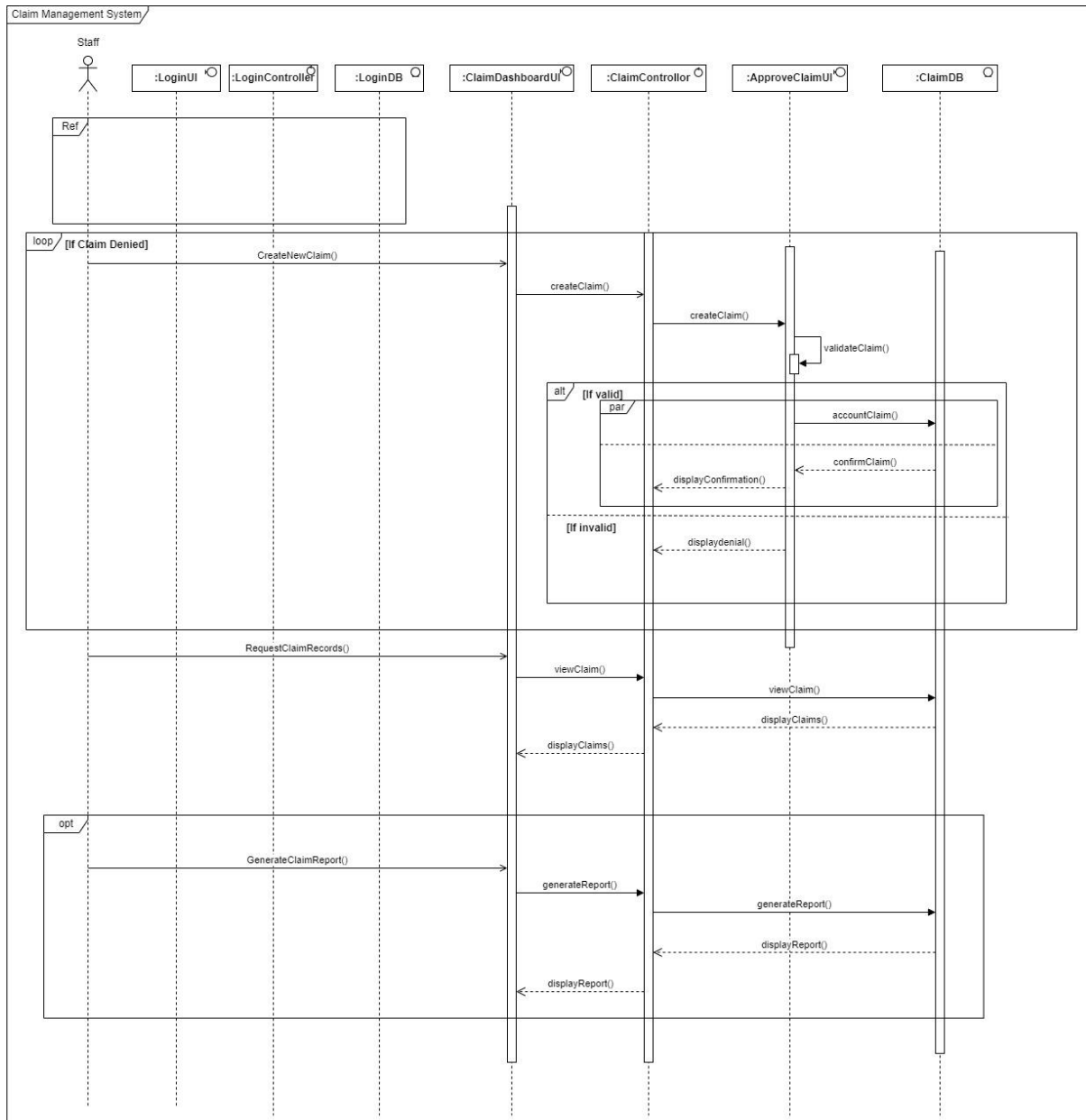
Delete patient records.

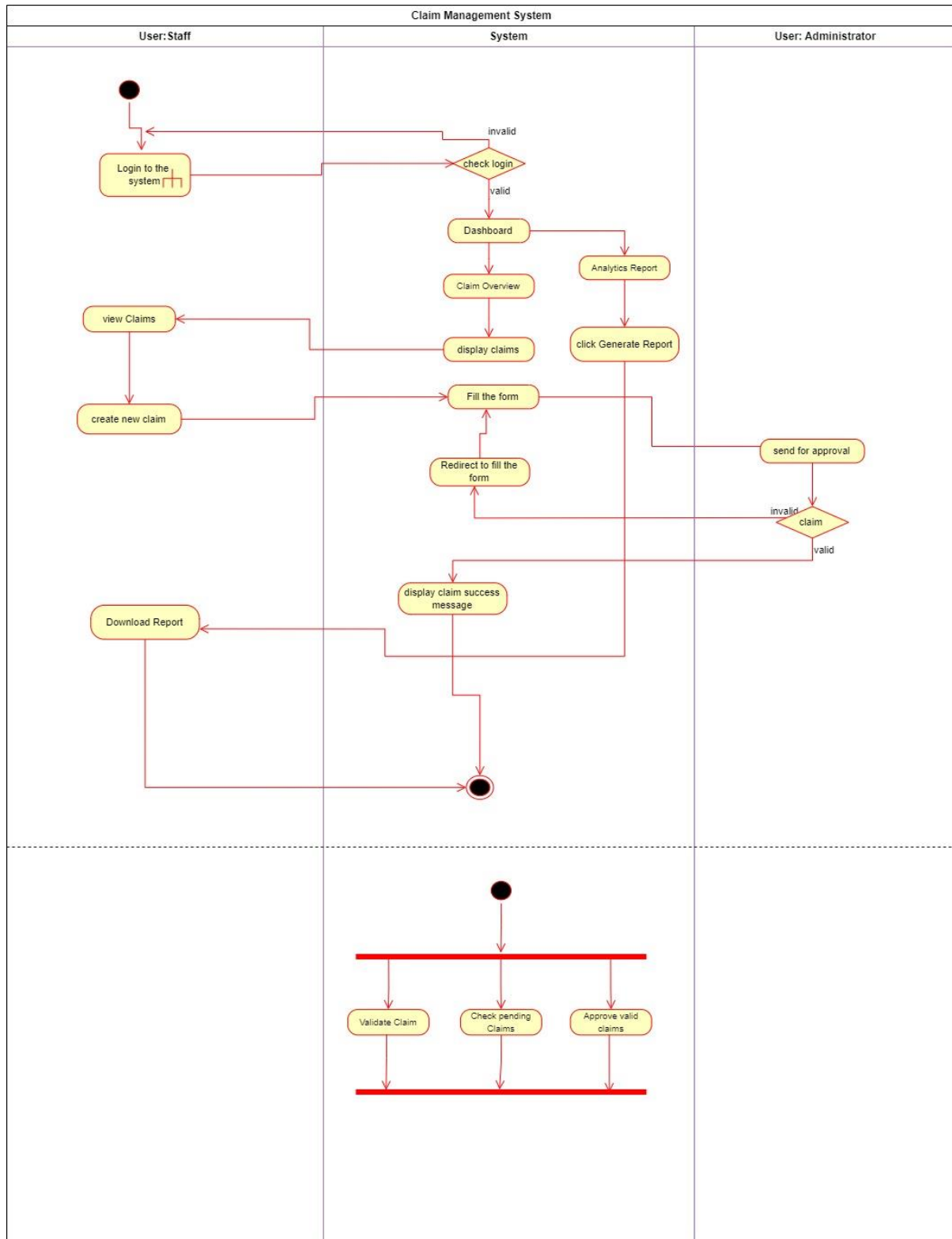


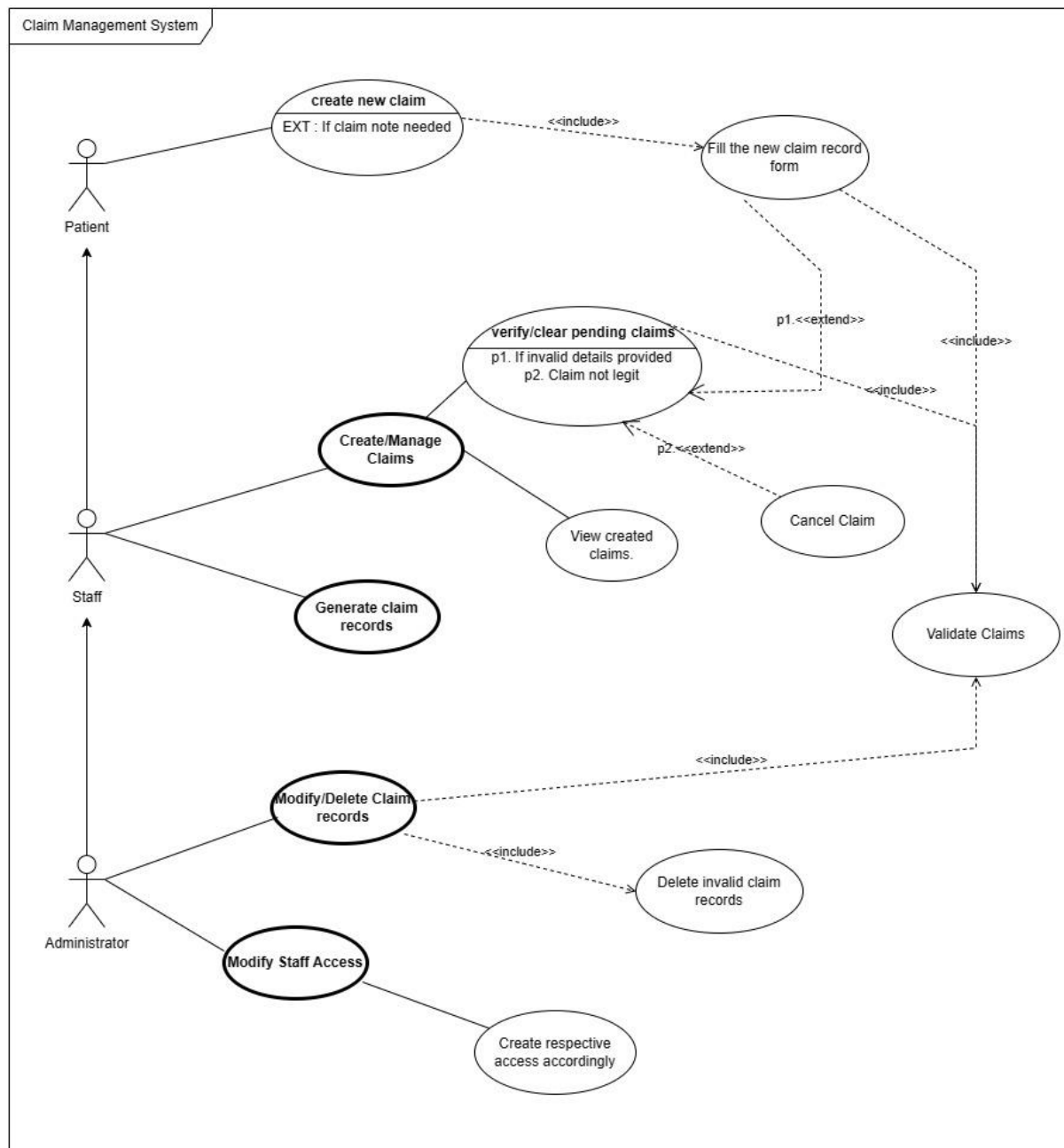
Generate monthly reports.

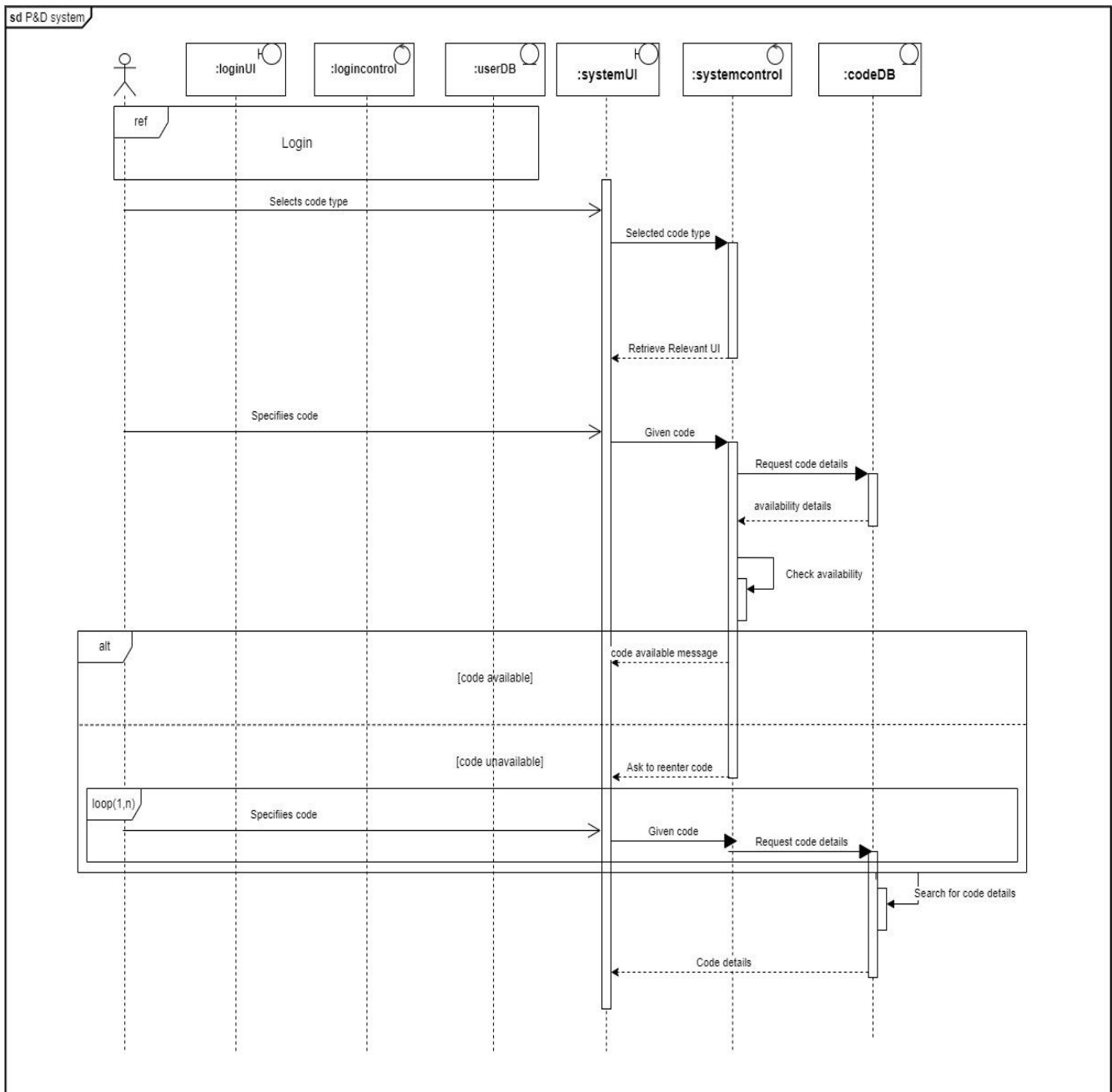


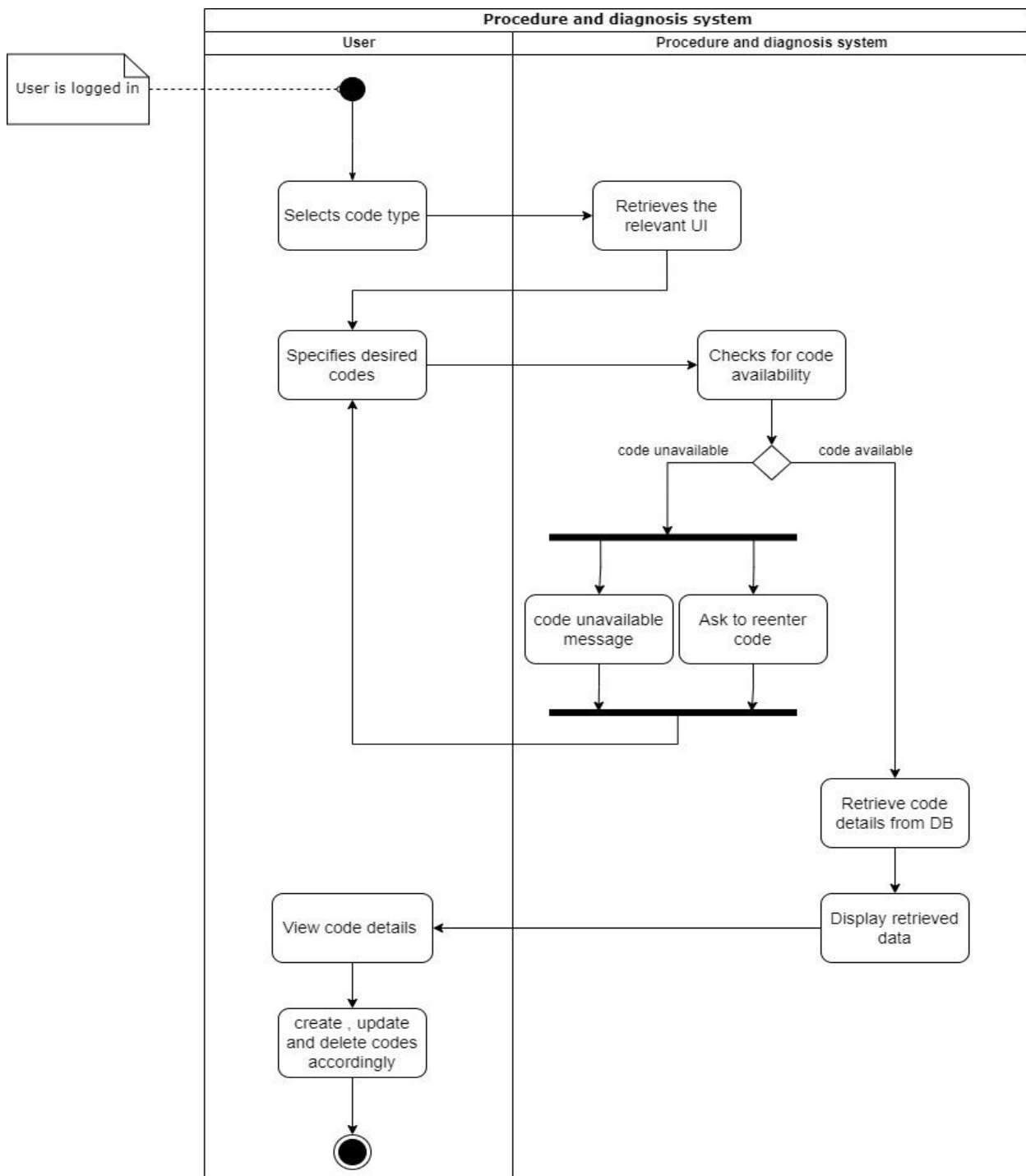


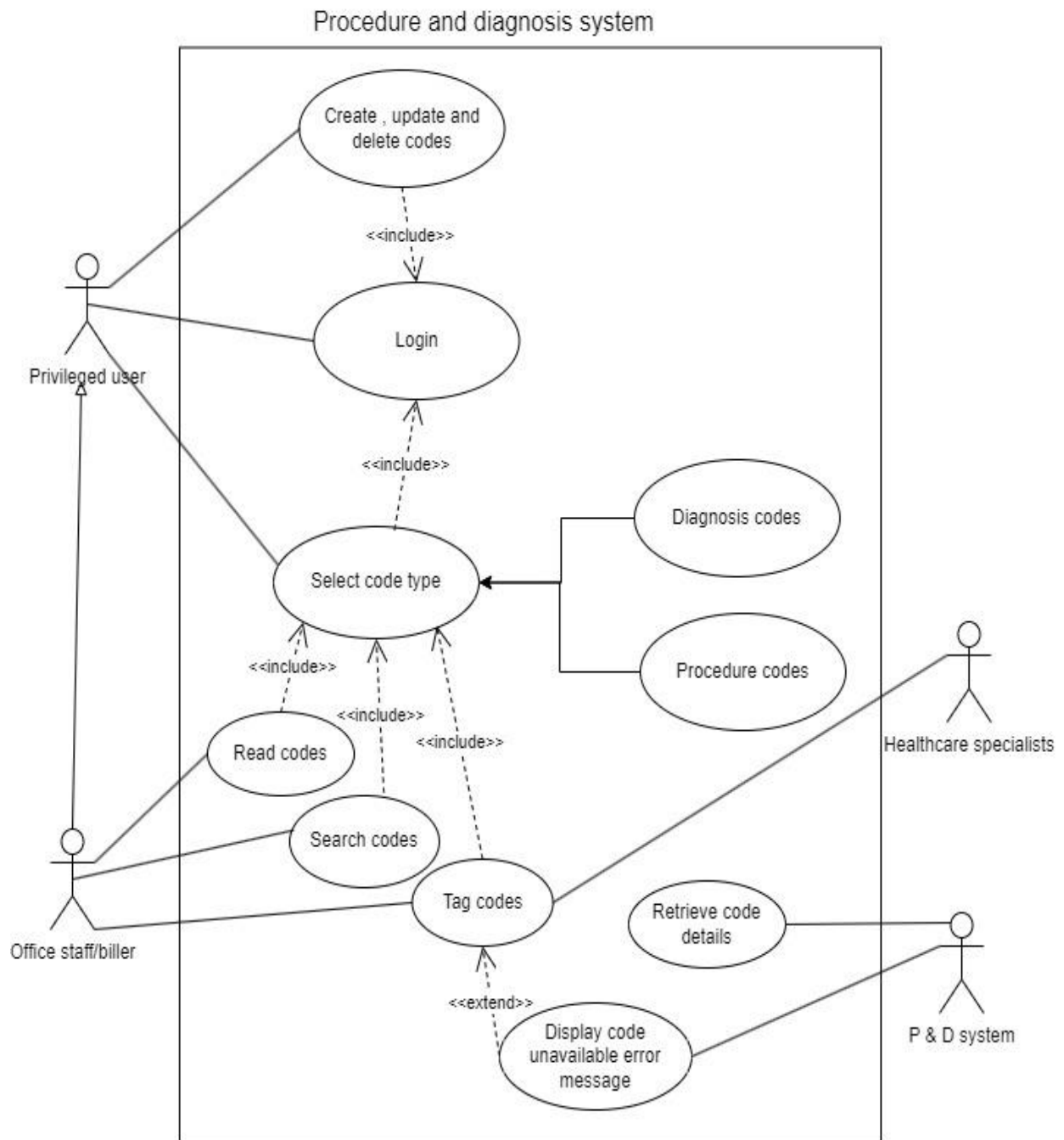












NON-FUNCTIONAL REQUIREMENTS

Functionality:

The system must meet the users' functional requirements, which may include specific features or capabilities that it must have to meet the user's needs.

Performance:

The system must be able to perform its intended functions in a timely and efficient manner, with fast response times and minimal downtime.

Scalability:

The system must be able to scale to handle increasing amounts of data, users, or transactions without sacrificing performance or stability.

Reliability:

The system must be reliable and able to operate continuously without failure or unexpected downtime.

Compatibility:

The system must be compatible with other systems or software that the user may use, with the ability to exchange data or integrate with other systems, as necessary.

Usability:

The system must be easy to use and navigate, with an intuitive interface that is accessible to users with varying levels of technical expertise.

Cost:

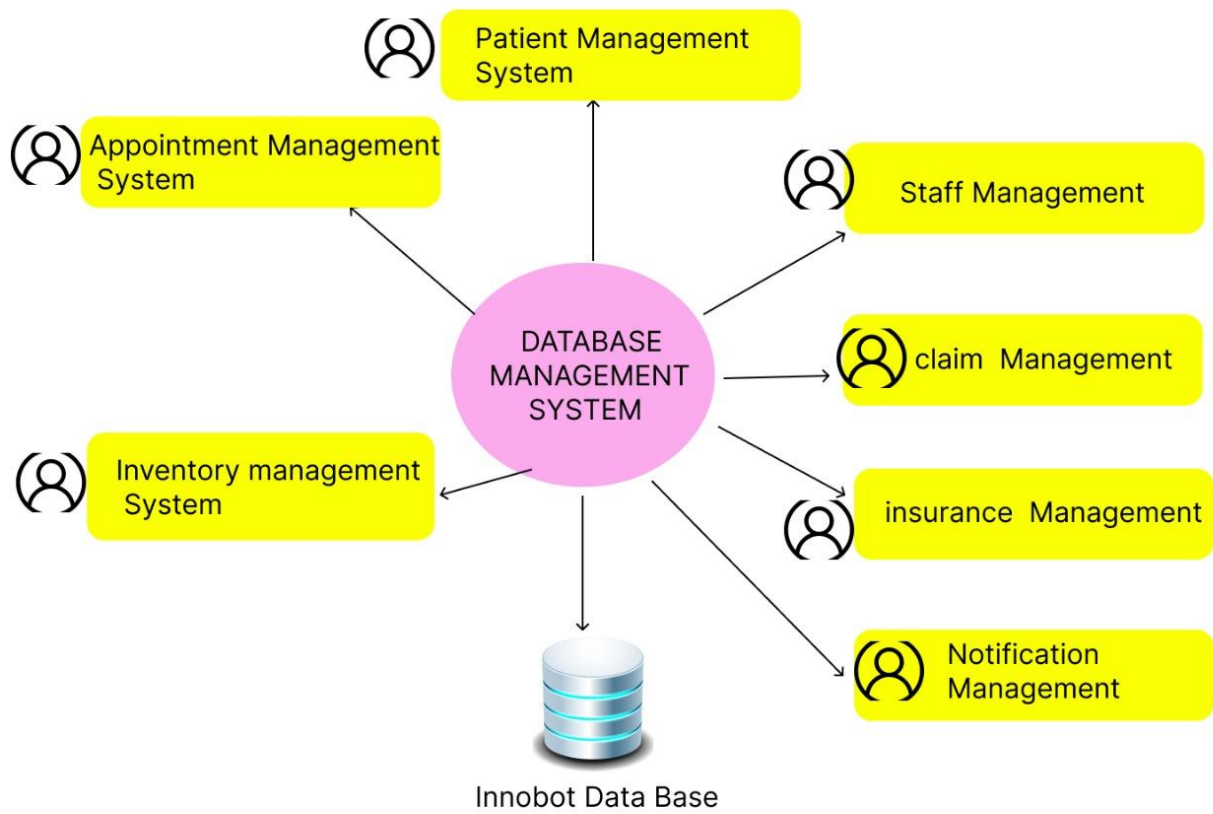
The system must be cost-effective, with a reasonable cost that is commensurate with the value that it provides to the user.

PERFORMANCE REQUIREMENTS

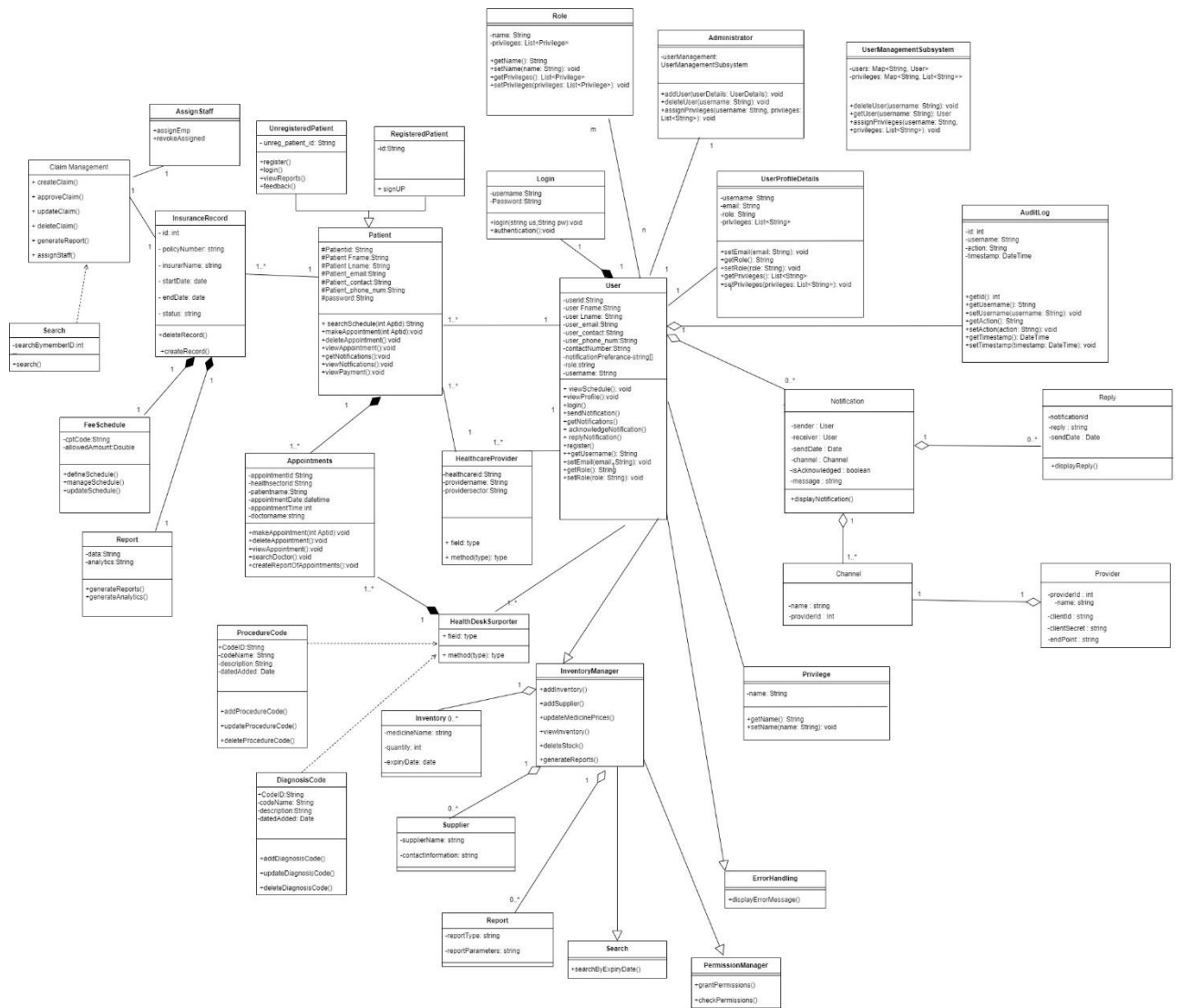
In performance requirements, we consider the request time and response time between the client side and other client-side functions that operate in the browser.

- Components should load within a second
- Database objects should retrieve the results within 2 seconds
- User authentications should be done in less than 2 seconds

High-level Architecture Diagram



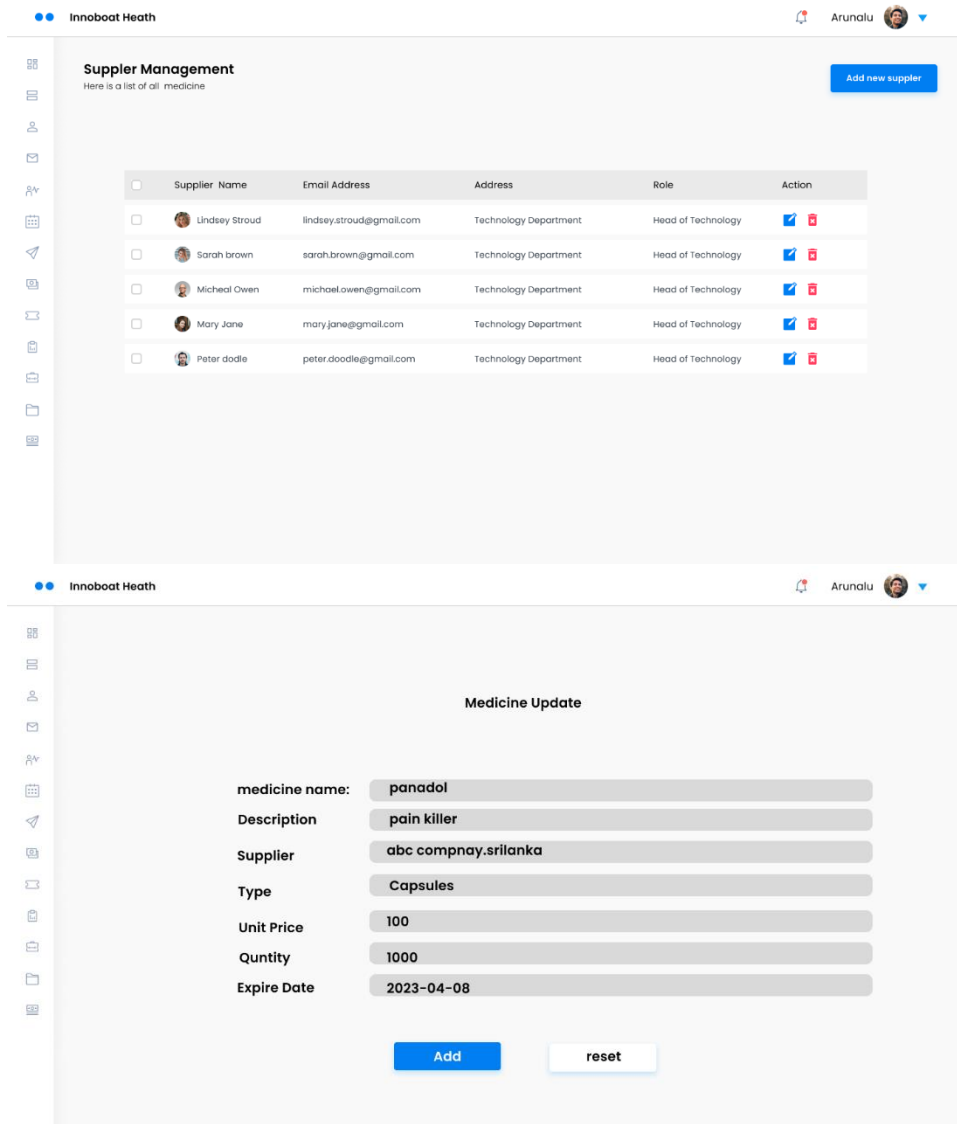
Class Diagram



User Interfaces

Arunalu

<https://www.figma.com/file/CVPBQNOX2V7QeEBhIJXe1/Untitled?type=design&node-id=0%3A1&mode=design&t=KLHXrkWz2DWQZf7n-1>



[illegible][illegible]

Inventory Management

Here is a list of all medicine

searching

Q


Expire Medicine

Add new stock





<input type="checkbox"/>	Medicine Name	Quantity	Expire Date	Types	Action
<input type="checkbox"/>	Panadol	100	2024-12-03	Capsules	✓
<input type="checkbox"/>	Aspirin	20	2024-12-03	Injections.	✓
<input type="checkbox"/>	Advil	500	2024-12-03	Drops.	✓
<input type="checkbox"/>	Allopurinol	1000	2024-12-03	Capsules	✓
<input type="checkbox"/>	Allopurinol	300	2024-12-03	Capsules	✓

Report Download

Dulanga



Search here...



Notifications

Sent Notifications

1.


2.

3.





+ Create New

+ Single Notification

+ Bulk Notification



Search here...



Notifications

Party

☒ Single

☐ Bulk

Search Name

☒ SMS

☐ Email

☐ System Notification






Notifications






Received NotificationS




☒






☒




☒



☒





MAIN MENU















- Dashboard
- Users
- Administrators
- Practice Manager
- Inventory Admin
- Staffs
- No Roles
- System Settings

System Administrator

Companies List of Staff

Show 10 entries

Search:

First Name	Last Name	Address	Email	Contact Number	Branch	Action
Ethan	Wilson	654 Pine St, Barangay Baliwasan, Z.C.	ethan.wilson@example.com	+(63) 922 345 6789	Fayeed Electronics Main	 
Noah	Hernandez	890 Pineapple St, Barangay San Roque,	noah.hernandez@example.com	+(63) 988 012 3456	Fayeed Electronics Main	 
Sophia	Martinez	321 Maple St, Barangay San Jose Cawa	sophia.anderson@example.com	+(63) 933 567 8901	Fayeed Electronics Main	 
James	Cruz	456 Elm St, Barangay Sinunuc, Z.C. 700	james.cruz@example.com	+(63) 911 234 5678	Fayeed Electronics 2	 
Ava	Torres	432 Mango St, Barangay Sta. Maria, Z.C.	ava.torres@example.com	+(63) 977 901 2345	Fayeed Electronics Main	 
Samuel	Hayes	123 Main St, Barangay Putik, Z.C. 7000	christopher.hayes@example.com	+(63) 966 890 1234	Fayeed Electronics 2	 
Matthew	Bennett	789 Oak St, Barangay Canelar, Z.C. 700	matthew.powell@example.com	+(63) 922 345 6789	Fayeed Electronics 2	 

Showing 1 to 7 of 7 entries

Previous

1

Next



MAIN MENU

- Dashboard
- Users
- Practices
- System Settings









System Administrator

Practice

Add Branch

Show 10 entries

Search:


Branch Name	Address	City	Email	Contact Number	Action
Practice 0	Tupperware Bldg. Veterans Avenue Ext	Zamboanga City	john_doe@gmail.com	+(63) 955 789 3456	   
Practice 1	456 Elm St, Brgy. Santa Lucia	Pagadian City	jane_doe@gmail.com	+(63) 906 784 5454	   

Showing 1 to 2 of 2 entries

Previous

1

Next



nnobot

Enabling Healthcare Through Automation

MAIN MENU

Dashboard

Users

Administrators

Practice Manager



Inventory Admin

Staffs

No Roles

System Settings

System Administrator



Add Staffs

Back


User Name





Email

Password

Confirm Password

Add User



[Check Eligibility for Insurance](#)

Appointment Scheduling

FIRST NAME

LAST NAME

INSURANCE

DOCTOR NAME

SELECT DATE

HEALTHCARE

ADD AN CLAIM ID

PHONE NUMBER

EMAIL

Cancel

See Appointments

Appointment Scheduling Interface








ID	Doctor Name	Available Time slots	Select
1	A. M D. Natasha	Wednesday 4 to 10 pm - July5th	confirm <input checked="" type="checkbox"/>
2	A. M D. Natasha	Tuesday 1 to 6am -July5th	confirm <input type="checkbox"/>
3	J. K. N Sophie	Wednesday 4 to 10 pm -July 5th	confirm <input type="checkbox"/>
4	J. K. N Sophie	Wednesday 4 to 10 pm -July 5th	confirm <input type="checkbox"/>
5	J. K. N Sophie	Wednesday 4 to 10 pm	confirm <input type="checkbox"/>
6	P . F . N Nonnis	Wednesday 4 to 10 pm	confirm <input type="checkbox"/>

Selection of Appointment UI

IT22332080

Obeyesekere A D

GUI

Overview of Appointment Scheduled				
ID	Doctor Name	Patient Name	Health Sector	
1.	A.M.D Natasha	Ellie Geners	Physician	<button>Update</button> <button>Delete</button>

Editing Scheduled Appointments

[Check Eligibility for Insurance](#)

Update Scheduled Appointment

FIRST NAME

LAST NAME

INSURANCE

DOCTOR NAME

SELECT DATE

HEALTHCARE


ADD AN CLAIM ID

PHONE NUMBER

EMAIL

See Appointments

IT22907516 Gamage D S I





Creating Real-World Data Through Automation


MAIN MENU

- Dashboard
- Users
- Codes
- System Settings

System Administrator












Procedure and Diagnosis codes




Show
10
entries

Search:

Code	Code Type	Title	Description	Action
99213	Procedure	Arthroscopy, Shoulder, Surgical...	This code is used when performing arthroscopic...	   
J45.909	Diagnosis	Unspecified Asthma...	This code is used for cases...	   

Showing 1 to 2 of 2 entries

Previous
1
Next


nnobot
Learning Robotics Through Simulation

MAIN MENU

Dashboard

Codes

Administrators

Practice Manager



Inventory Admin

Staffs

No Roles

System Settings

System Administrator



Add Codes

Back

Code Type


Code

Title

Description

Add Code

S



Overview

Insurance records

Create new record

Update existing record

Delete / Archive record

Fee schedule

Reports & Analytics

Create New Insurance Record

Insurer Name

Contact details

Email

Tel

Coverage Details

Effective Date


Expiry Date

Premium Amount

\$

Create

Reset



Overview

Insurance records

Fee Schedule


Fee Schedule Management

Fee Schedule Update

Reports & Analytics

Fee Schedule Management

CTP Code	Description	Current Fee	Action
99201	Colonoscopy, with or without biopsy	\$500	✓ ✗
99202	ECG, Tracing Only	\$300	✓ ✗
99203	Urinalysis, Auto Test	\$100	✓ ✗
99205	Injection, intra-articular/tenosynov	\$105	✓ ✗



Overview

Insurance records

Fee Schedule

Reports & Analytics

Reports

Fee Schedule Summary

From Date

To date

01/01/2023

31/03/2023

Generate

Send Admin

Download

W A M Haren – IT 22307576

User Interface

Innoboat Health

Malsha

Generate Report

Delete Patient

patient Add

Patient name:

Age

Gender

DOB

Country




Address

Email

Add

reset

[illegible]

 **Create Claim**  

Claim ID

Member ID

☐ I, the undersigned hereby declare that the information on below is true and complete and that reimbursement requested is for expenses made on me for the treatment of my medical condition.

Patient Information

Claim Type

First Name:

Last Name:

Date Of Birth:

Gender:

☐ Male

☐ Female

Phone Number:

Email:

Claim Information

Is the Claim covered by another Insurance

☐ Yes

☐ No

Is the Claim (partially) related to an accident?

☐ Yes

☐ No

☐ Yes, Work Related

Amount LKR:

Diagnosis:

Date:

Upload Receipt:



Filters

Claim Overview

Pending Claims

Approve Claims

Analytics Reports

Assign Staff

Create Claim

Claim Statistics


All Claims

Pending Claims

Approved Claims

Enter Search Keyword

Member ID	Claim Type	LastName, FirstName	Status	Action
INBOT8901	Cashless	Theekshana, Maheesh	Approved	
INBOT9903	Reimbursement	Karunaratne, Dimuth	Pending	



Farsith : Admin

Filters

Claim Overview

Pending Claims

Approve Claims

Analytics Reports

Assign Staff

Create Claim





Claim Statistics


All Claims

Pending Claims

Approved Claims

Enter Search Keyword

Member ID	Claim Type	LastName, FirstName	Status	Action
INBOT8901	Cashless	Theekshana, Maheesh	Approved	 
INBOT9903	Reimbursement	Karunaratne, Dimuth	Pending	 



Mohamed : Frontdesk

Patient Information

Member ID

First Name:

Last Name:

Member ID

First Name

Last Name

Phone Number:

+94 ### ### ####

Email:

name@sample.com

Date:

Select Date

Upload Receipt:

Image URL

Update Claim

Member ID : INBOT9903

Claim ID : ST001

Select Staff



Full Name : Dimuth Karunaratne

Date : 2024.03.17

Assign Staff

Receipt URL : Slips/Dimuth.17.03

Assigned Staff

Mohamed : Frontdesk

Revoke