SOFTWARE REQUIREMENTS AND DESIGN DOCUMENT

for

<eHospital>

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Introduction

Purpose

This Software Requirements Specification (SRS) document outlines the software requirements for the *eHospital* system, focusing on version 1.0 of the platform. The *eHospital* system is designed to streamline and manage hospital operations, catering to a wide range of actors, including Administrator, Doctor, Patient, Receptionist,

and Nurse. Each actor in the system has its own set of functionalities, with the Administrator in charge of basic activities such as handling employee records, while others focus on specific needs such as patient care, scheduling, invoicing, and communications.

This SRS document describes the whole system architecture of eHospital, including the functionalities and interactions required for each module to provide an efficient and unified experience. This SRS outlines both the front-end and back-end needs of eHospital, ensuring that the separate subsystems for each user management which handles their functionalities.

Product Scope

The eHospital software centralizes and automates essential tasks to improve patient care and simplifies hospital operations. It enhances productivity in areas including patient registration, appointment scheduling, billing, and employee management, supporting a range of jobs such as administrator, doctor, patient, receptionist, and nurse.

Key objectives of eHospital include:

- Reducing administrative workload by automating operations can improve workflow efficiency.
- Improving the Patient Experience: Making appointments and medical records easily accessible.
- Resource optimization is the effective administration of staff and infrastructure.

Title

eHospital

Objectives

- To automate manual tasks and to minimize errors.
- To efficiently manage patient records, and medical data and ensure quick recovery.
- To provide a user-friendly interface for doctors, patients, and nurses.
- To improve coordination among different departments within the hospital.

Problem Statement

The eHospital project was chosen primarily to address the fragmentation and inefficiencies that are frequently present in healthcare administration procedures. Many healthcare facilities still use outdated, manual, or semi-automated techniques for managing patient data, scheduling appointments, and facilitating departmental communication. Delays in patient care, higher operating expenses, improper data management, and decreased patient satisfaction are frequently the results of this. By offering a centralized, digital solution that can assist patients, administrative personnel, and healthcare practitioners via an integrated platform, the initiative seeks to address these problems.

The goal of the eHospital system is to provide a comprehensive healthcare management system that not only makes patient data administration easier but also boosts hospital communication and scheduling effectiveness. The system facilitates accurate and timely information sharing by guaranteeing safe and convenient access to medical records, which eventually improves patient outcomes and increases satisfaction levels.

Overall Description

Product perspective

The eHospital system being developed is a new, self-contained product aimed at streamlining hospital operations and improving patient care management. This system combines essential features including billing, appointment scheduling, patient administration, and medical record-keeping into a single platform made

especially for hospital environments. The eHospital system offers an effective digital solution that improves the experiences of both patients and providers by taking the place of manual or semi-digital operations.

Product functions

A **product function** refers to a specific feature or capability that is designed to provide. These functions align with the goals and purpose of the product, addressing the needs of its users and solving the problems it is meant to tackle.

Key Aspects of Product Functions:

- **Billing and Payments: Generate invoices for treatments, tests, and services. Support various payment methods.**
- **Staff Registration and Management**: Manage doctors, nurses, and other employees, including their schedules, working hours, and experience.
- **Staff Availability Tracker**: Track when doctors or nurses are available for appointments or emergencies.

List of Use Cases

1. Track Medication
2. Prescribe medication
3. Schedule follow-up
4. Discharge patient
5. Follow-up and appointment reminders
6. View patient records
7. Update patient record
8. Pay bills
9. Schedule appointment
10. View prescription
11. Register patient
12. Manage inventory
13. Manage employees

Extended Use Cases

USE-CASE 1 - [Written by Noor Fatima]

Use case name: Prescribe medications

Scope: eHospital

Level: user goal

Primary actor: Doctor

Stakeholders and interests

- Doctor
    - ○ **Interest:** efficiently prescribe correct medication to the patient with access to their medical records and current medication to avoid any adverse reactions.
- Patient
    - **Interest**: to receive correct medications that are safe, effective and on their health condition with no side effects.
- Nurse
    - **Interest:** to have access to up-to-date medication prescriptions in case they need to administer or assist with patient medication.

Preconditions

- Patient is already registered in the system.
- Patient has been diagnosed.
- Doctor has viewed patient records.
- Select patient from records.

Postconditions

- Patient record updated.
- Patient receives a prescription and can view it.

Main success scenario:

User Action	**System Action**
1. Check out the patient's existing medications.	
	2. Show list of all existing medications and their dosage.
3. Doctor enters details of the medication.	
	4. System updates the patient's prescription in records.
5. Repeat step 3 and 4 for all the medicines.	

Extensions

1. System fails to display the existing medication list.

a. Patient records are inaccessible due to system error such as no connectivity to the database server.

2. The system shows incomplete records for medication.
3. Doctor enters wrong data of medication such as wrong dosage.
4. System fails to update the patient’s record, so no new medications is added.

USE-CASE 2 - [Written by Noor Fatima]

Use case name: Discharge patient

Scope: eHospital

Level: user-goal

Primary actor: Doctor

Stakeholders and interests

- Patient
    1. **Interest:** wants a smooth discharge with clear instructions for follow-up care.
- Nurse
    1. **Interest:** to be able to update the status of patient. ● Doctor

○ **Interest:** ensure the patient is ready for discharge and ensure their treatment has been completed.

Preconditions

- Patient is admitted and registered in the system.
- Patient has completed their treatment.

Postconditions

- Patient record updated.
- Patient received instructions about follow-up care.
- Patient received a prescription and billing details.
- Patient is discharged from the hospital.

Main success scenario:

User Action	System Action
1. Doctor reviews patient records.	
	2. Show list of all previous medications.
3. Doctor enters discharge instructions for the patient.	
	4. Discharge Summary is saved and updated in the patient record.

Extensions

1. System fails to display the existing medication list.

a. Patient records are inaccessible due to system error such as no connectivity to the database server.

2. The system shows incomplete records for medication.
3. Instructions are incomplete
4. System encounters an error while saving the discharge summary.

a. Patient's record is locked or inaccessible.

a. System saves only a portion of the discharge summary due to an unexpected issue.

USE-CASE 3- [Written by Noor Fatima]

Use case name: Pay bills

Level: user-goal

Primary actor: Patient

Stakeholders and interests

- Patient

○ **Interest**: wants to clear all bills of the hospital.

- Administrator
    - **Interest**: ensure all bills are collected and payment information is accurate.

- Doctor
    - **Interest**: Ensure the patient is accurately billed for the medical services they received.
- Receptionist
    - **Interest**: facilitates billing process in case the patient needs help.

Preconditions

- Patient is already registered in the system.
- Doctor has viewed patient records.
- Patient has logged in.

Postconditions

- Patient record updated.
- Patient receives a prescription and can view it.

Main success scenario:

User Action	**System Action**
Patient reviews bill details.	
	System displays a list of all the bill payments for each appointment.
Patient selects the bill they wish to pay.	
Patient chooses the method of payment.	
	System generates receipts and updates patient records

Extensions

1.The bill details are missing for some appointments or are unavailable.

2. The bills are incorrect or are missing details and accuracy.

    a. The list fails to load due to technical errors.

3. Patient selects bill that is already paid

4. Payment method fails due to error

    a. User select both methods by mistake

5. System fails t save the record and hence no receipt generated.

USE-CASE 4 - [Written by Noor Fatima]

Use case name: Manage Inventory

Scope the system under design: eHospital

Level: user-goal

Primary actor: Admin

Stakeholders and interests:

- **Admin (Primary Actor):** Wants to efficiently manage the inventory of medical equipment, ensuring all equipment is accounted for, properly maintained, and compliant with regulatory standards.
- **Healthcare Providers (Doctors/Nurses):** Need reliable access to medical equipment for patient care. They expect that the equipment is well-maintained and readily available when needed.
- **Suppliers/Vendors:** Interested in timely communication regarding equipment needs, maintenance schedules, and replacement orders to maintain supply chain efficiency.
- **Patients:** Indirectly benefit from well-managed medical equipment, as reliable and available equipment contributes to effective and timely healthcare services.

Preconditions:

- The admin must be logged into the system with valid credentials to access the management functionalities.
- There must be an existing inventory of medical equipment in the system to manage (add, update, or remove).
- Any existing data about the medical equipment should be current to facilitate accurate management and decision-making.
- System is operational.

Postconditions:

- Equipment inventory is successfully updated.
- The integrity of the overall management system is preserved, ensuring that no errors or conflicts arise from the changes made.

Main success scenario

Actor Action	System Responsibility
1. The admin selects the action to perform (e.g., add new equipment, update existing records, read records of equipment or remove equipment).	
	2. The system updates the inventory according to the selected action and displays a success message.

Extensions:

1. Invalid Action Selection:

a. The admin selects an invalid action or an option not available in the system.

b. System is unable to operate on the action selected by user.

2. Error within the database

a. The system is unable to update the database after the CRUD operation.

b. The system is unable to load all data from the database when performing the read operation of CRUD.

USE-CASE 5 - [Written by Anoosha Ali]

Use case name: Follow-up Reminder

Scope: eHospital

Level: User Goal **Primary Actor:**
Patient

Stakeholderd Interests:

- Nurse:
  - **Interest:** needs reminders to ensure timely administration of medications or treatments.
- Patient:
  - **Interest:** receives reminders for self-administered medication or scheduled treatments.
- Doctor:
  - **Interest:** interested in monitoring the patient's adherence to prescribed treatment.

Preconditions:

- A patient's medication schedule must be entered into the system.
- The patient must be associated with the treatment plan.

Postcondition:

The system logs the reminder notification.

- The system is updated with the actor's response to the reminder.

Main Success Scenario:

User Action	System Action
1. The patient requests the system for the pending appointments/follow-ups.	
	2. The system displays the follow-up schedule.

3. The patient marks the follow-up as done.	
	4. The system updates the patient record.

Extensions:

2a. No follow-up schedule of the patient is present.

4a. The system fails to update due to technical issues.

USE-CASE 6 - [Written by Anoosha Ali]

Use case name: Schedule Follow-Up
Scope the system under design:
eHospital **Level:** user-goal

Primary actor: Receptionist

Stakeholders and interests:

- **Receptionist**: Wants to efficiently schedule appointments and ensure patients receive confirmations.
- **Patient**: Seeks timely reminders and convenient, confirmed follow-up appointments through their preferred communication channels.
- **Doctor**: Needs a well-organized schedule with sufficient time for follow-ups, avoiding overbooking and conflicts.

Preconditions:

- Receptionist is authenticated and verified.
- Follow-Up is recommended by the doctor/nurse.
- Doctor (who recommended the follow-up) is registered in the system.
- System is fully functional.

Postconditions:

- Follow-Up appointment is scheduled successfully without conflicts.
- The Patient receives the notification.
- The System is updated.

Main success scenario

Actor Action	System Responsibility
1. The Receptionist selects the patient Id.	
2. The Receptionist selects the doctor Id and chooses a date and checks for the availability of the doctor on the specified	

day.	
	3. The System responds with the availability of the doctor.
4. The Receptionist selects from the available time slots of the doctor on that day.	
5. The receptionist confirms the appointment and books that slot for the patient.	
	6. The system saves the appointment in patient record and doctor schedule and generates the bill.

Extensions:

1a. Patient ID not found:

- 1a1. Receptionist verifies ID.
- 1a2. If entry error, re-enter, else Register Patient.

3a. No Available time slots:

- 3a1. The system informs the patient that there are no available time slots for the follow-up.
- 3a2. The patient is given the option to choose another time frame

USE-CASE 7 - [Written by Anoosha Ali]

Use case name: Register Patient

Scope the system under design: eHospital

Level: user-goal

Primary actor: Receptionist, Patient

Stakeholders and interests:

- **Receptionist:** Wants to efficiently and accurately register patients.
- **Patient:** Seeks a quick and convenient registration process, including self-registration via phone or app, and timely confirmations through their preferred communication channels.
- **Healthcare Provider (Nurse/Doctor):** Needs complete patient information for effective care.
- **Admin (Clinic Management):** Aims to maintain accurate patient records, monitor registration efficiency, and ensure compliance with regulatory standards**.**

Preconditions:

- If the receptionist is registering the patient, he/she is authenticated and verified.
- The patient (or their guardian) is available to provide the necessary information for registration.
- If the patient chooses to register via the app or phone, the self-registration feature must be functional.
- System is operational.

Postconditions:

- The patient is registered successfully.
- The patient receives the confirmation notification.
- The system is updated.

Main success scenario

Actor Action	**System Responsibility**
1. The user requests the system to register a new patient.	
	2. The system prompts the user for patient details.
3. The user enters the necessary details into the system.	
	4. The system validates the information and searches the existing patient records to avoid duplication.

	5. The system saves the information.

Extensions:

3a. Patient information is incomplete or invalid:

- 3a1. The system detects missing or invalid fields (e.g., incorrect format for phone number or missing required details).
- 3a2. The system displays an error message to the user, requesting correction of the specific fields.
- 3a3. The user provides the corrected information, and the process continues from Step 4.

4a. System detects that the patient is already registered:

- 4a1. The system finds an existing record for the patient.
- 4a2. The system notifies the user that the patient is already registered and asks if they would like to update existing details.
    - If yes, the system allows updating the patient's details and continues from Step 5.
    - If no, the process terminates, and no changes are made.

5a. System cannot save patient information due to technical issues:

- 5a1. The system fails to save the patient data due to technical issues (e.g., database error, system crash).
- 5a2. The system informs the user of the issue and suggests retrying after a brief delay.
- 5a3. The receptionist or patient attempts to save the information again once the issue is resolved.

USE-CASE 8 - [Written by Anoosha Ali]

Use case name: Schedule Appointment
Scope the system under design:
eHospital **Level:** user-goal

Primary actor: Receptionist, Patient

Stakeholders and interests:

- **Receptionist:** Wants to efficiently schedule appointments, ensuring no conflicts in the doctor's schedule.
- **Patient:** Seeks a quick and convenient appointment scheduling process, with options for self-scheduling via phone or app, and timely confirmations through their preferred communication channels.
- **Healthcare Provider (Nurse/Doctor):** Needs a well-organized schedule with complete patient information to prepare for appointments effectively.
- **Admin (Clinic Management):** Aims to maintain accurate appointment records, monitor scheduling efficiency, and ensure compliance with regulatory standards.

Preconditions:

- If receptionist scheduling the appointment, he/she is authenticated and verified.
- The patient (or their guardian) is available to provide the necessary information for

registration.

- The patient is registered.
- Doctor's schedule is accessible by the system.
- If the patient chooses to schedule via the app or phone, the self-scheduling feature must be functional.
- System is operational.

Postconditions:

- The appointment is successfully scheduled.
- The patient receives the confirmation notification.
- Patient's record is updated.
- The doctor's availability is updated.
- The system is updated.

Main success scenario

Actor Action	System Responsibility
1. The user requests the system for scheduling an appointment.	
	2. The System prompts the user to enter the necessary details.
3. The user selects the doctor Id and chooses a date and checks for the availability of the doctor on the specified day.	
	4. The System responds with the availability of the doctor.
5. The user selects an available appointment slot on that day.	

6. The user confirms the appointment and books that slot for the patient.	
	7. The system saves the appointment in patient record and doctor schedule and generates the bill.

Extensions:

2a. System detects that the patient is not registered:

- 2a1. The system detects that the patient is not registered.
- 2a2. The system prompts the user to Register Patient.
- 2a3. Once registration is complete, the process continues from Step 4.

4a. No available appointment slots:

- 4a1. The system displays that no suitable appointment slots are available for the selected doctor and time frame.
- 4a2. The receptionist or patient is prompted to select an alternative time slot or doctor, or to schedule the appointment at a later date.
- 4a3. The system re-checks availability and proceeds from Step 6 once a slot is selected.

7a. System fails to save the appointment:

- 7a1. The system encounters a technical issue while trying to save the appointment.
- 7a2. The system notifies the receptionist or patient that the appointment could not be scheduled due to technical difficulties.
- 7a3. The receptionist or patient is prompted to retry, and the system attempts to save the appointment again once the issue is resolve

USE-CASE 9 - [Written by Anoosha Ali]

Use case name: View Patient Record
Scope the system under design:
eHospital **Level:** user-goal

Primary actor: Patient, Doctor, Nurse.

Stakeholders and interests:

- **Patient:** Seeks easy access to their medical history, treatment plans, and test results to stay informed about their health.
- **Healthcare Provider (Nurse/Doctor):** Needs complete and accurate patient records to provide effective care, make informed decisions, and prepare for appointments.
- **Admin (Clinic Management):** Aims to ensure that patient records are maintained accurately and securely, while monitoring access and compliance with regulatory standards.

Preconditions:

- The patient is registered.
- The user(doctor, nurse, patient) is logged in to the system.
- System is operational.

Postconditions:

- The user(doctor, patient, nurse) successfully viewed the patient's record.
- No modifications are made to the patient's record

Main success scenario

Actor Action	System Responsibility
1. The user navigates to the patient records section.	
	2. System asks the user to select a patient: ○ If the user is a doctor or nurse, the system prompts them to search for and select the specific patient whose records they wish to view. ○ If the user is the patient, then system moves to step 3.

	3. The system retrieves and displays patient records.
4. The user reviews the patient's record.	
	5. The system ensures that no modifications are made.
6. The user logs out or navigates away.	

Extensions:

3a. System fails to retrieve patient's record:

- 3a1. Due to technical issues , the system is unable to retrieve the patient's records.
- 3a2. The system notifies the user of the failure and suggests retrying later. 3b. Patient has no records available:
- 3b1. The system retrieves no records for the selected patient (e.g., a newly registered patient).
- 3b2. The system notifies the user that there are no medical records available for the patient yet.

4a. User attempts to modify patient record:

- 4a1. The system detects that the user is attempting to make modifications.
- 4a2. The system blocks any modifications and displays a warning that the patient records are view-only.

USE-CASE 10 - [Written by Anoosha Ali]

Use case name: Manage Medical Equipment **Scope the system under design:** eHospital **Level:** user-goal

Primary actor: Admin

Stakeholders and interests:

- **Admin (Primary Actor):** Wants to efficiently manage the inventory of medical equipment, ensuring all equipment is accounted for, properly maintained, and compliant with regulatory standards.

- **Healthcare Providers (Doctors/Nurses):** Need reliable access to medical equipment for patient care. They expect that the equipment

is well-maintained and readily available when needed.

- **Suppliers/Vendors:** Interested in timely communication regarding equipment needs, maintenance schedules, and replacement orders to maintain supply chain efficiency.

- **Patients:** Indirectly benefit from well-managed medical equipment, as reliable and available equipment contributes to effective and timely healthcare services.

Preconditions:

- The admin must be logged into the system with valid credentials to access the management functionalities.
- There must be an existing inventory of medical equipment in the system to manage (add, update, or remove).
- Any existing data about the medical equipment should be current to facilitate accurate management and decision-making.
- System is operational.

Postconditions:

- Equipment inventory is successfully updated.
- The integrity of the overall management system is preserved, ensuring that no errors or conflicts arise from the changes made.

Main success scenario

Actor Action	System Responsibility
1. The admin navigates to the medical equipment management section of the system.	
	2. The system displays the current inventory of medical equipment, including details like equipment ID, name, status, and maintenance schedules.

3. The admin selects the action to perform (e.g., add new equipment, update existing records, or remove equipment).	
	4. The system updates the inventory according to the selected action and displays a success message.
5. The admin logs out of the system after completing the management tasks.	

Extensions:

2a. Empty Inventory:

- 2a1. The system checks the inventory and finds no medical equipment records.
- 2a2. The system notifies the admin that the inventory is currently empty.
- 2a3. The system prompts the admin to add new equipment.

3a. Invalid Action Selection:

- 3a1. The admin selects an invalid action or an option not available in the system.
- 3a2. The system displays an error message, indicating the action is invalid.
- 3a3. The admin is prompted to select a valid action (e.g., add, update, remove).

4a. Update Failure:

- 4a1. The admin tries to update the inventory, but the system encounters a database or network error.
- 4a2. The system displays an error message, notifying the admin that the update failed.
- 4a3. The system prompts the admin to retry the update or return to the equipment list.

USE-CASE 11- [Written by Sara Akbar]

Use case name: Track Medication

Scope: eHospital

Level: User
Goal Level

Primary Actor: Nurse

Stakeholders and Interests:

- Nurse:
  - **Interest:** requires up-to-date medication records to administer proper dosages at scheduled times.
- Doctor:
  - **Interest:** wants to monitor the patient's medication history and adjust treatment plans as needed.
- Patient:
  - **Interest:** expects correct medication and dosage on time.

Preconditions:

- The patient must be registered in the system.
- A doctor has prescribed medication.

Postcondition:

- Medication is recorded and administered.
- The patient's medication log is updated.

Main Success Scenario:

User Action	System Action
1. The nurse enters the user's details to get their medication details.	
	2.The system displays the user's medication details.
3.The nurse checks or updates the medication.	
	4.The system saves the log of medication.

Extensions:

1a. The nurse enters invalid details.

USE-CASE 12 - [Written by Sara Akbar]

Use case name: Update Patient Record.

Scope: eHospital

Level: User Goal Level

Primary Actor: Nurse

Stakeholders and Interests:

- Nurse:
  - **Interest:** requires accurate and up-to-date records for medications and treatments.
- Patient:
  - **Interest:** relies on accurate records for continuity of care and correct diagnosis.
- Doctor:
  - **Interest:** needs to examine the patient and prescribe medication

Preconditions:

- The patient must be registered in the system.
- The patient's medical record must exist.

Postcondition:

- The patient's record is successfully updated with new information.

Main Success Scenario:

User Action	System Action
1. The nurse enters the details of the patient.	
	2. The system displays the record of the patient.

3. The nurse enters the new record of the patient.	
	4. The system updates the medical record of the patient.
5. The nurse saves and logs out.	
	6. The new record has been saved.

Extensions:

1. The user doesn't exist.

USE-CASE 13- [Written by Sara Akbar]

Use case name: View Prescription

Scope: eHospital

Level: User Goal
Level **Primary Actor:**
Nurse, Patient

Stakeholders and Interests:

- Nurse:
  - **Interest:** needs to view prescriptions for administering medications.
- Doctor:
  - **Interest:** wants to verify or update the patient's current prescription.
- Patient:
  - **Interest:** expects accurate information about their prescribed medications.

Preconditions:

- The patient must have a prescription recorded in the system.
- The nurse or the patient must be lo

Postcondition:

- The prescription details are retrieved and displayed to the actor.

Main Success Scenario:

User Action	System Action
1. The user enters the details of the patient.	
	2. The system displays the record of the patient.
3. The user now navigates to the prescription tab.	
	4. The system displays the prescription of the patient.
	2. The system displays the record of the patient.
3. The user now navigates to the prescription tab.	
	4. The system displays the prescription of the patient.

Extensions:

1.The user doesn't exist.
3. Prescription doesn't exist.

USE-CASE 14 - [Written by Sara Akbar]

Use Case Name: Manage employees

Scope: eHospital

Level: User-goal

Primary Actor: Administrator

Stakeholders and interests

- Administrator
  - **Interest:** wants to add, update, remove and store employee information accurately.
- Doctor

- **Interest:** wants accurate information about the role and access privileges with the role.

- Nurse
  - **Interest:** needs accurate job information along with shift timings.
- Receptionist
  - **Interest:** wants up-to-date information about all employees to be able to correctly schedule appointments.

Preconditions:

- Admin is part of the system.
- Admin has appropriate permissions to access employee data.

Postconditions:

- Employees record updates accurately.
- Employees are removed or added to the system.

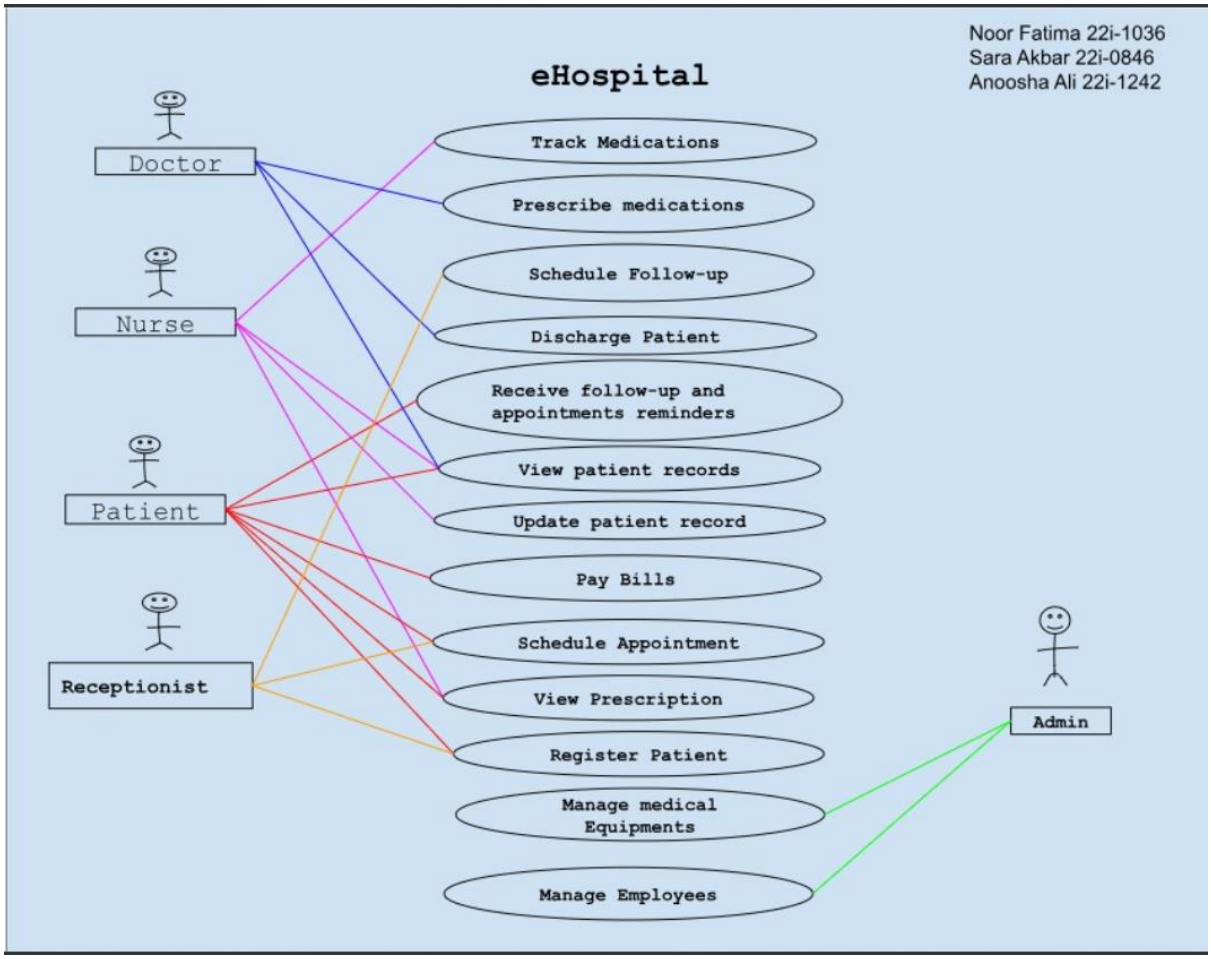
Main success scenario

User action	System action
1. Admin navigates to the employee management page.	
	2. System loads page.
3. Admin selects the option to add, update, or remove employees.	
	4. System open appropriate page.
5. Admin enters or modifies details.	
	6. Changes are validated and saved by the system.
	7. System generates confirmation message.
8. Admin verifies that the changes are updated successfully.	

Extensions

2. Unable to load employee management page.
3. Employee record doesn't exist when trying to update or remove an employee.
5. Invalid format of data entered or incomplete information entered.
6. System fails to validate, an error occurred.
9. Changes were not updated in the system.

Use Case Diagram



Other Nonfunctional requirements

Performance Requirements

- The system must handle concurrent users without a significant drop in performance.
- Responses to user actions should occur within 3 seconds.
- The database should support records without compromising query execution time.
- Appointment scheduling operations should not take more than 3 seconds.

Safety Requirements

- Access to critical functionalities must be restricted to authorized users to prevent misuse.
- In the event of power failure, the system should retain its last stable state when rebooted.

Security Requirements

- Passwords must adhere to strong passwords.
- The system should log all access attempts, with logs retained for at least one year for audit purposes.

Software Quality Attributes

- **Reliability**: The system must have 99.9% uptime to ensure availability.
- **Scalability**: The architecture must support future expansion, accommodating 10,000 users if required.
- **Usability**: The interface should adhere to user-friendly standards, requiring no more than three clicks to perform any core operation (e.g., appointment booking).
- **Maintainability**: The system should use modular architecture to ensure that updates and patches can be implemented without affecting the entire system.

Business Rules

- Only authorized hospital staff can discharge patients and close their case files.
- Medical staff must record consultations within 24 hours of the appointment.

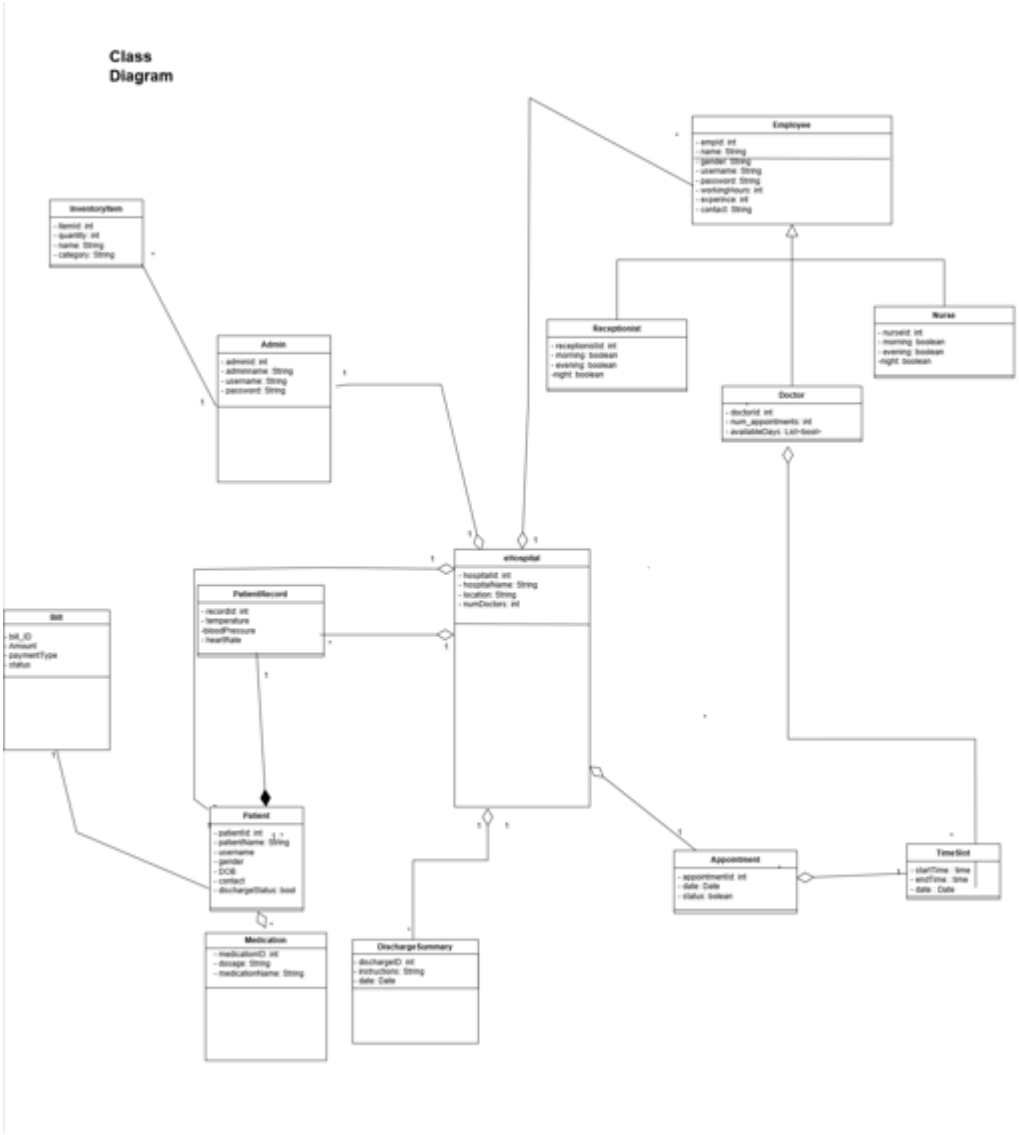
Operating Environment

- The eHospital system must run on Windows Server 2019+ and Linux (Ubuntu 20.04 LTS or newer).
- Supported browsers include Chrome (version 100
- Database systems supported: SSMS.

User Interfaces

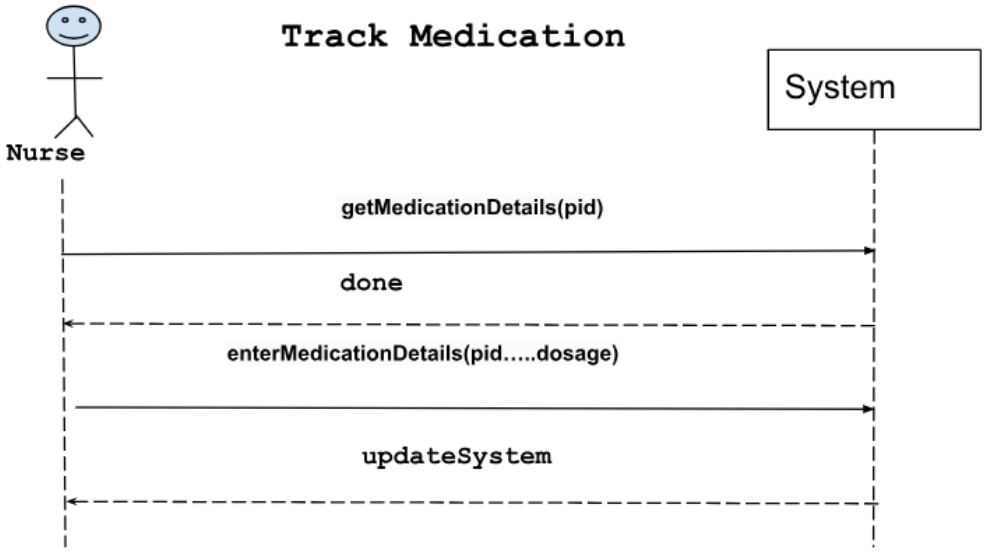
- **Login Page**: A secure interface with email/username and password fields/
- **Patient Records**: A detailed view with tabs for medical history, ongoing treatments, prescriptions, and billing.
- **Appointment Booking**: An interactive calendar with drag-and-drop functionality for rescheduling.
- **Billing Interface**: An invoice generator supporting multiple payment methods (cash, credit/debit card, online).

Domain Model

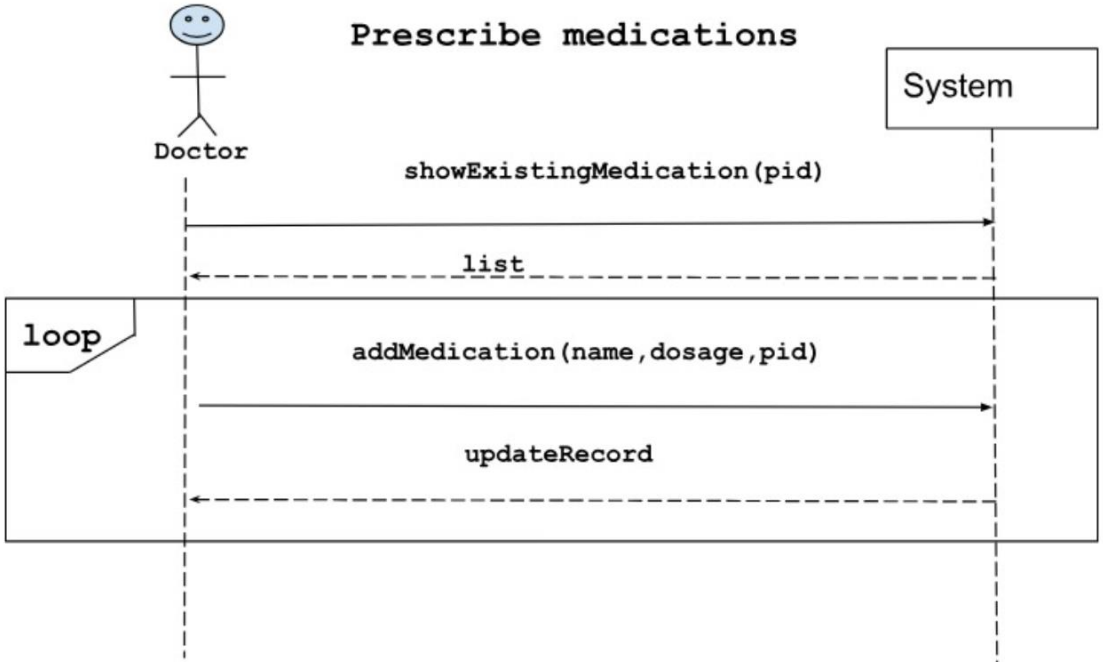


System Sequence Diagram

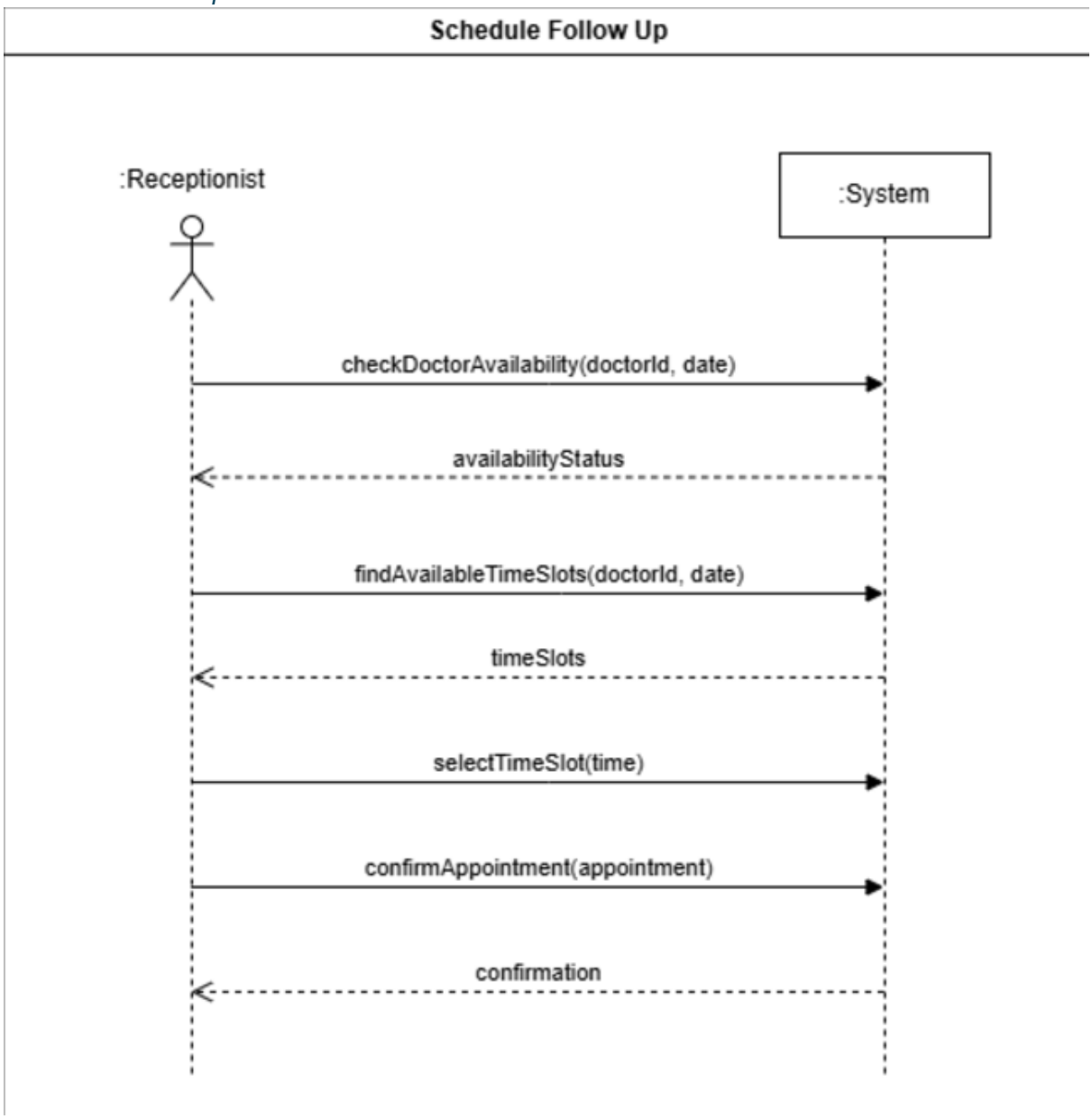
Track Medication



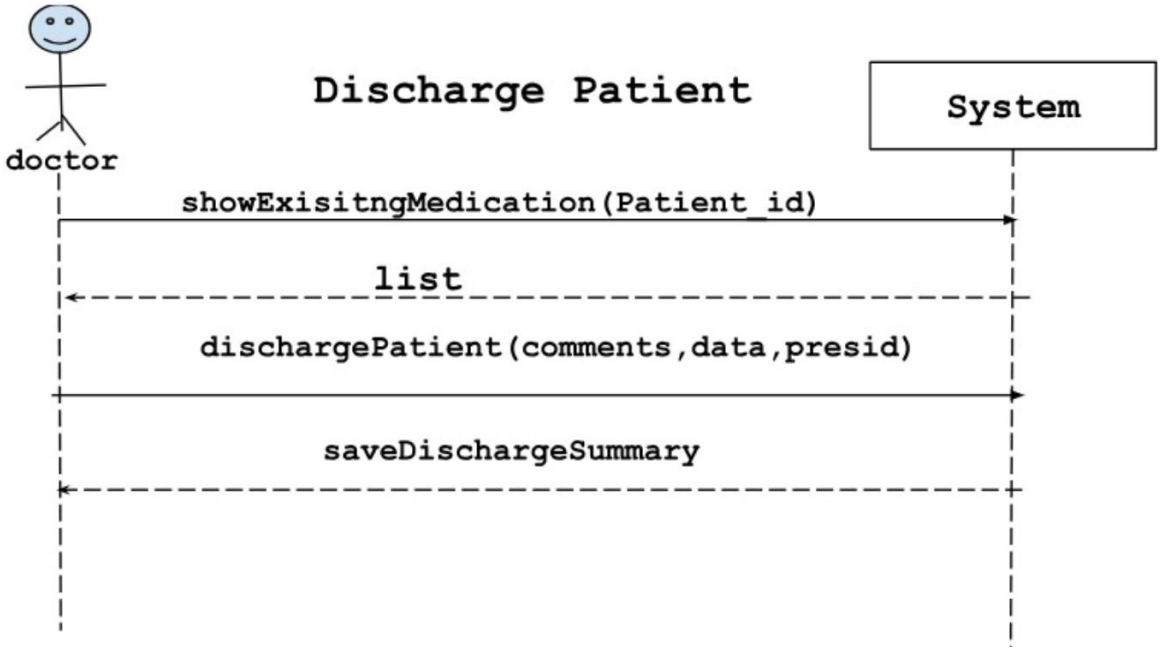
Prescribe medication



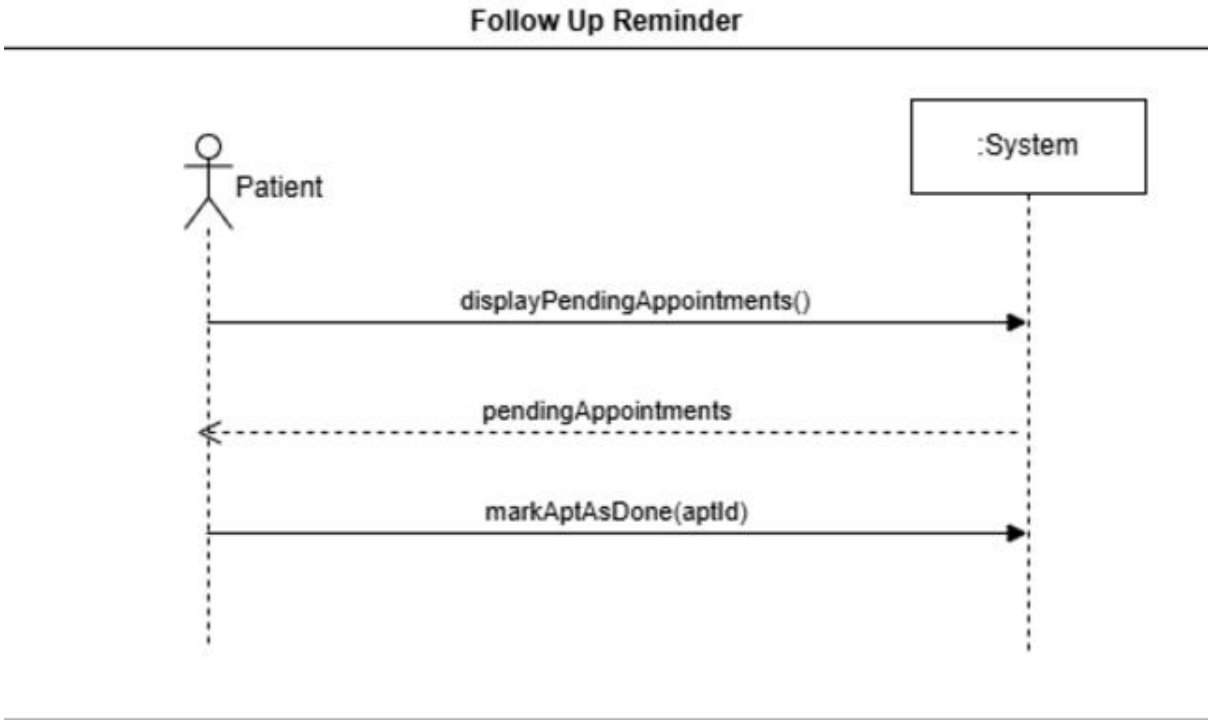
Schedule follow-up



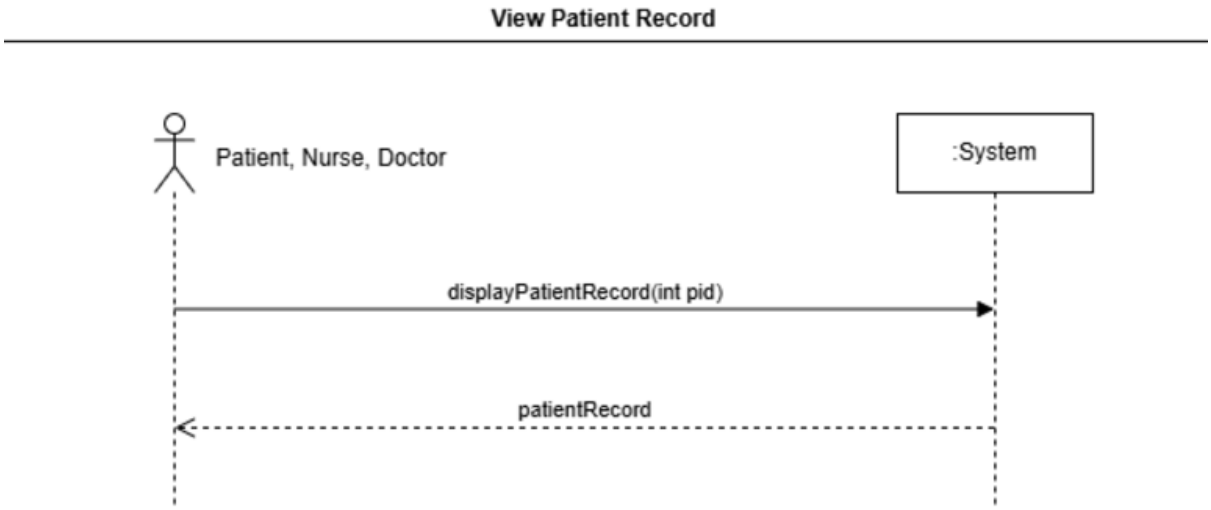
Discharge patient



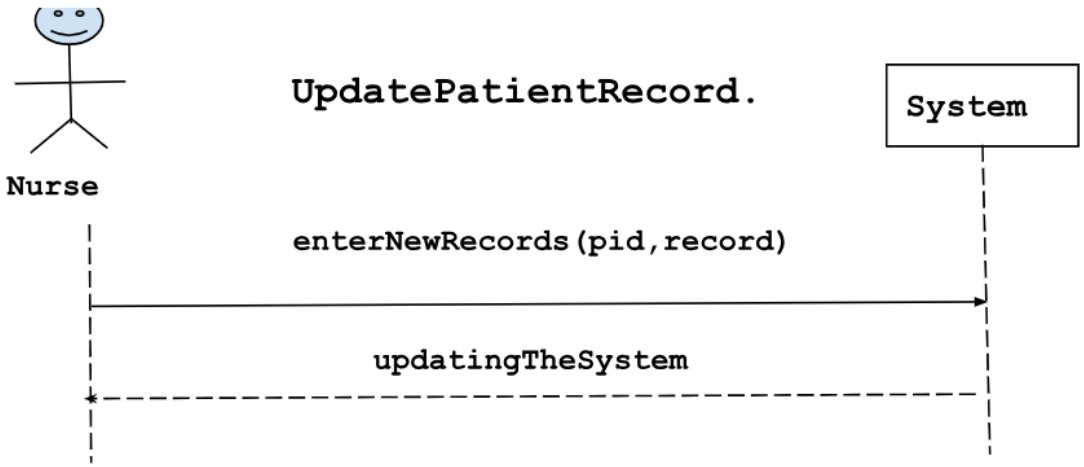
Follow up and appointment reminders



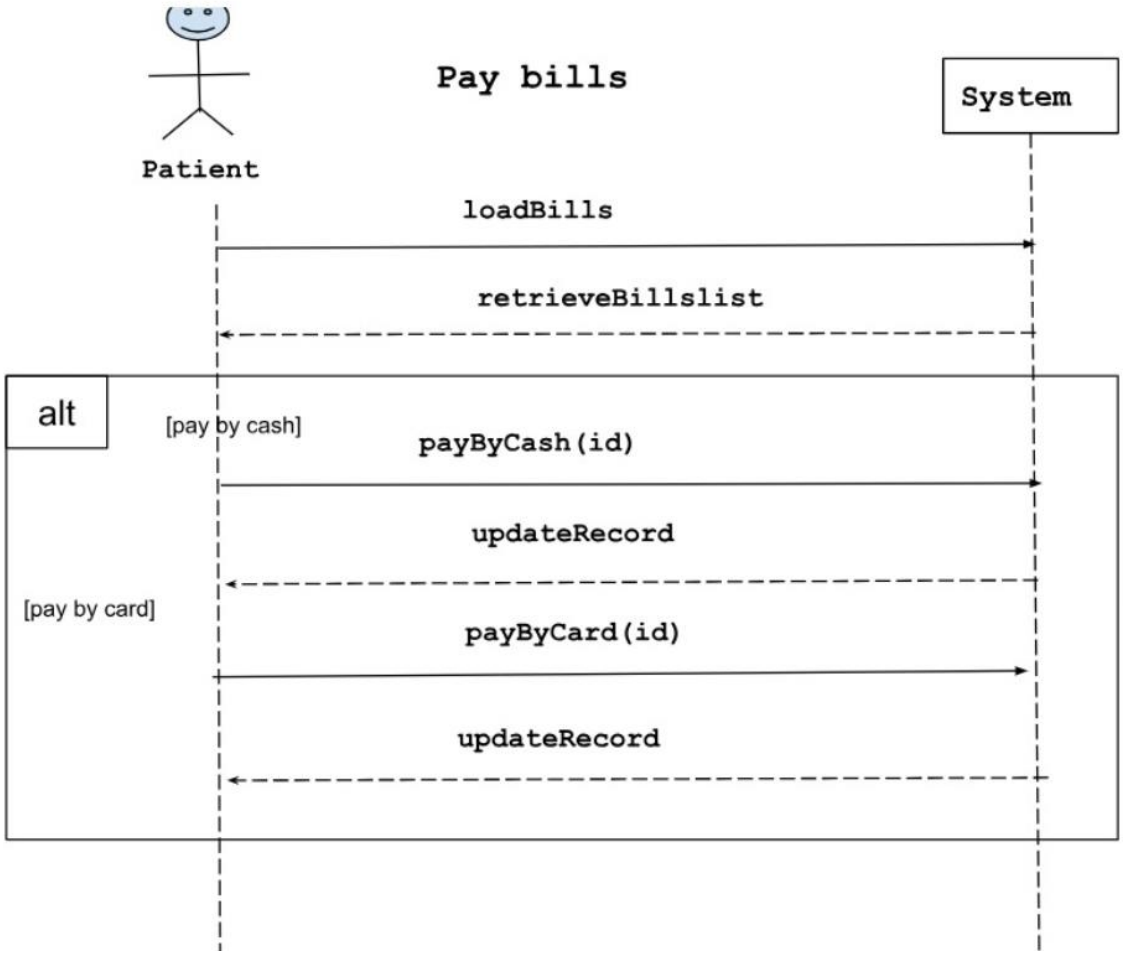
View patient records



Update patient record

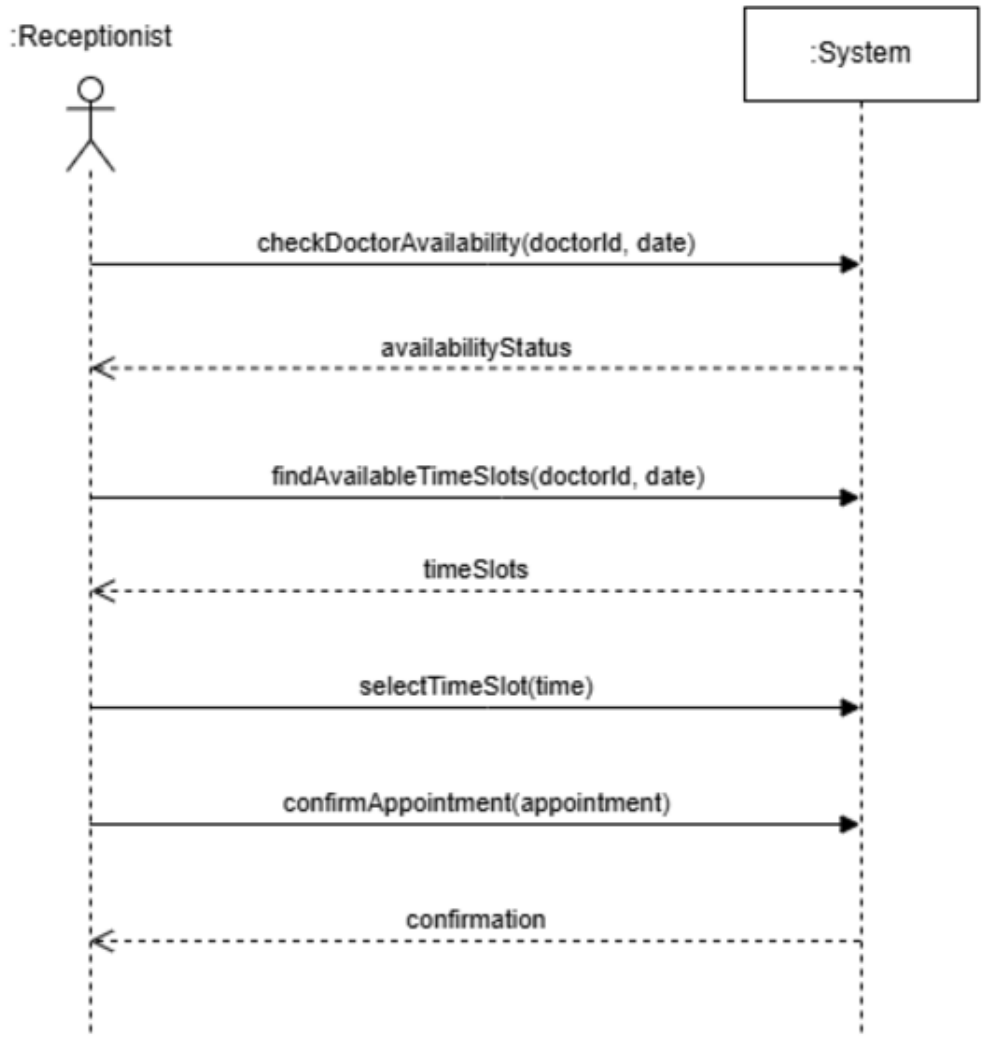


Pay bills

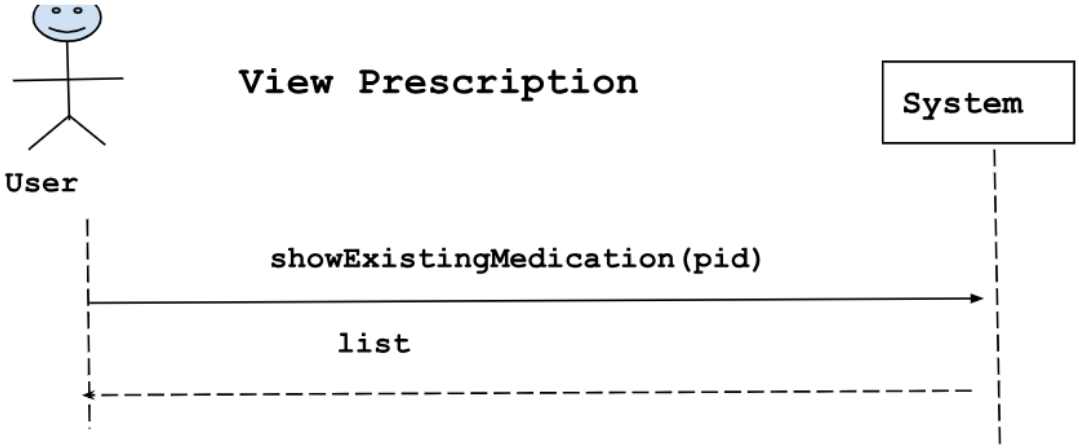

Pay bills
Patient
System
loadBills
retrieveBillslist
alt
[pay by cash]
payByCash(id)
updateRecord
[pay by card]
payByCard(id)
updateRecord

Schedule appointment

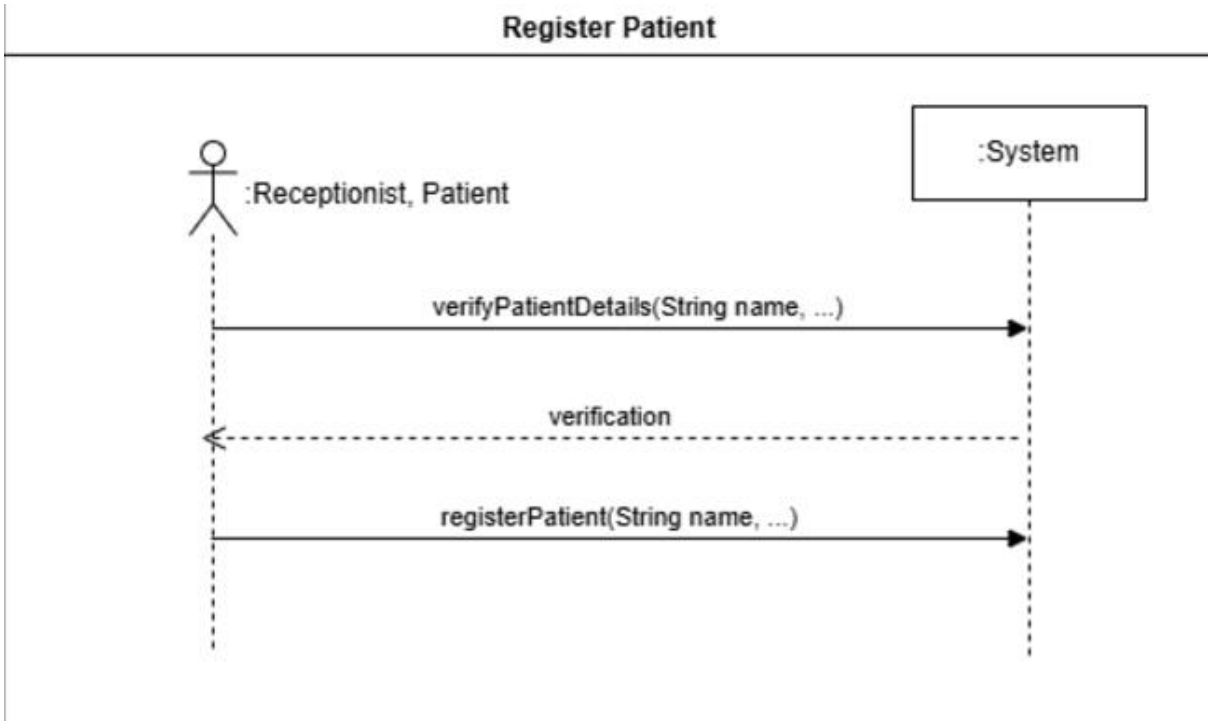
Schedule Appointment



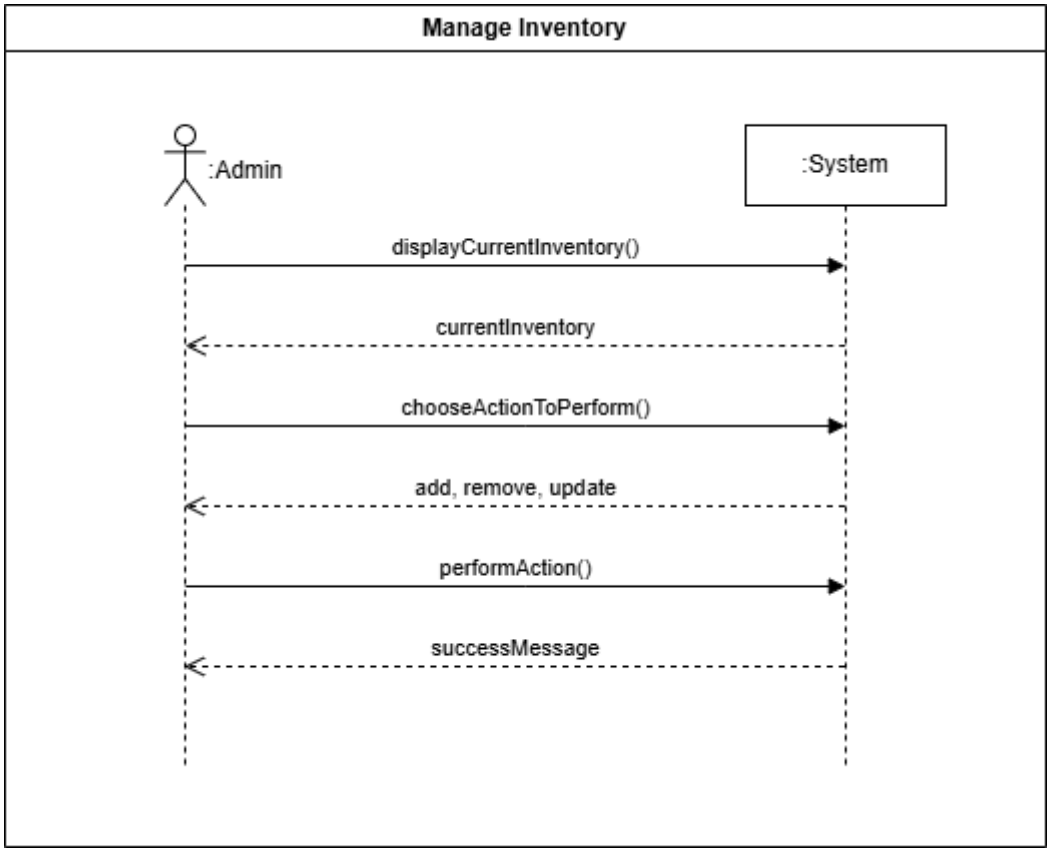
View prescription



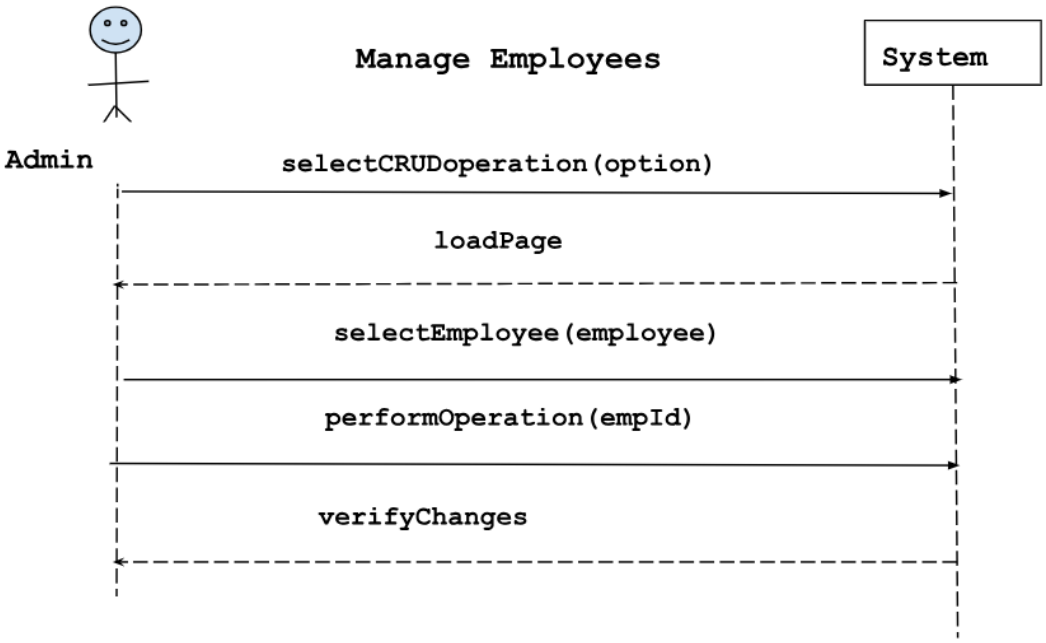
Register patient



Manage Inventory



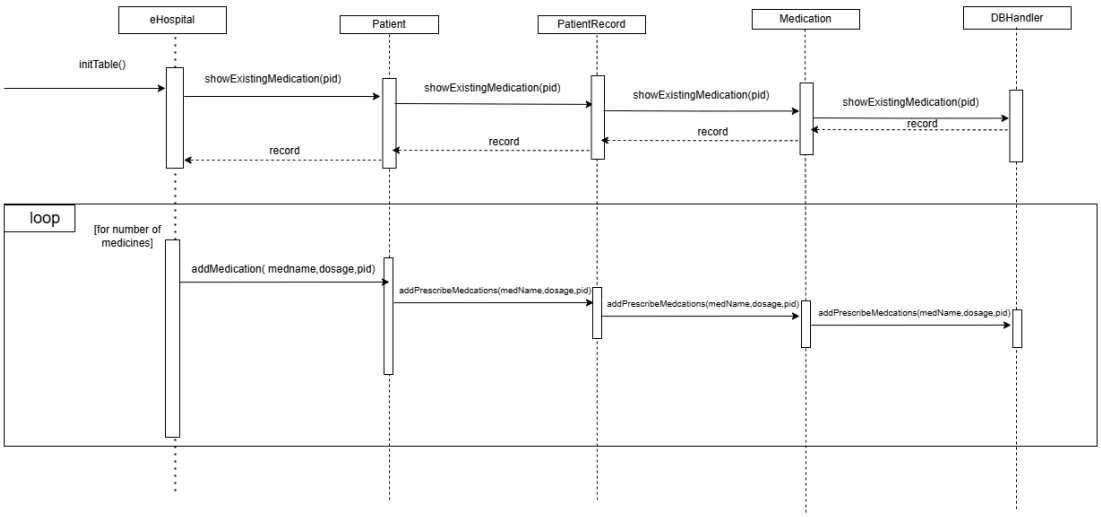
Manage employees



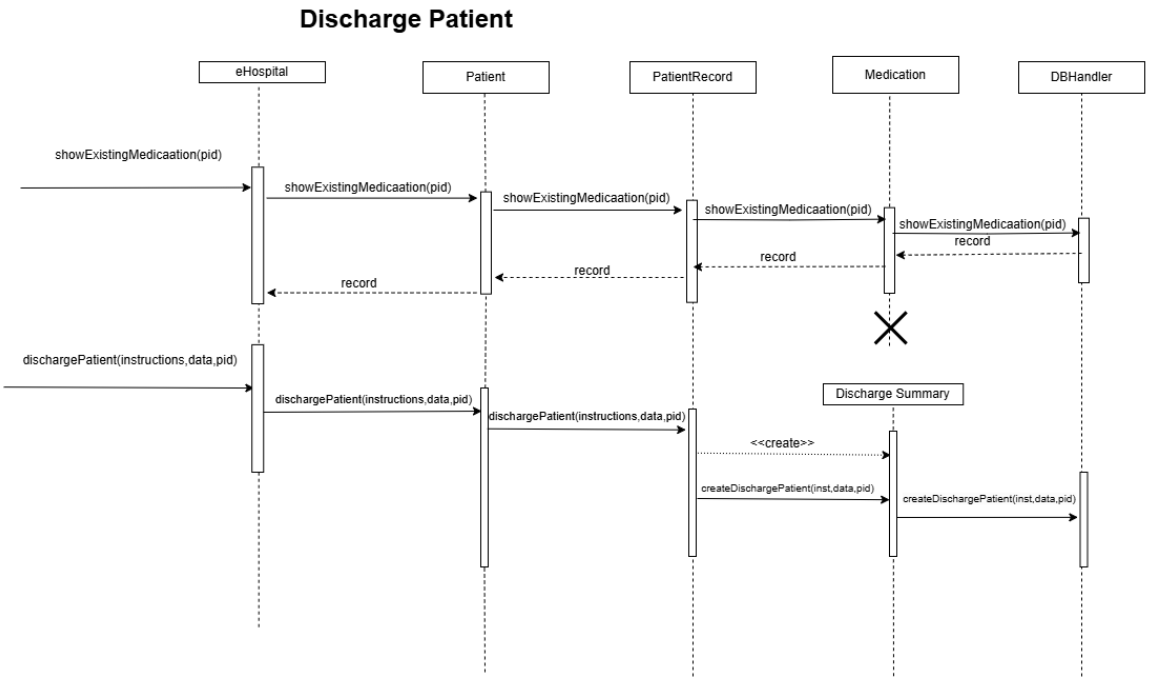
Sequence Diagram

Prescribe Medications

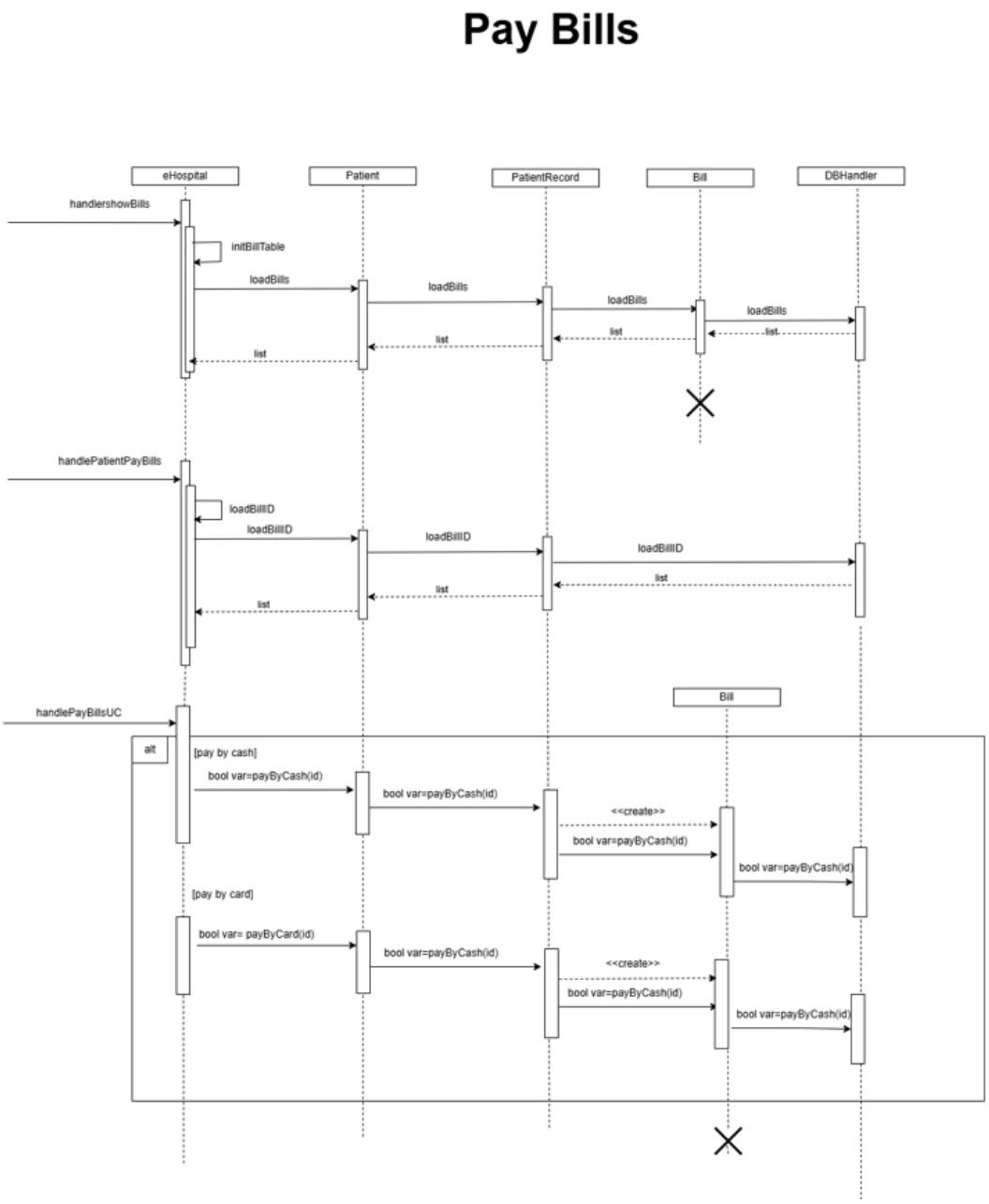
Prescribe Medicine



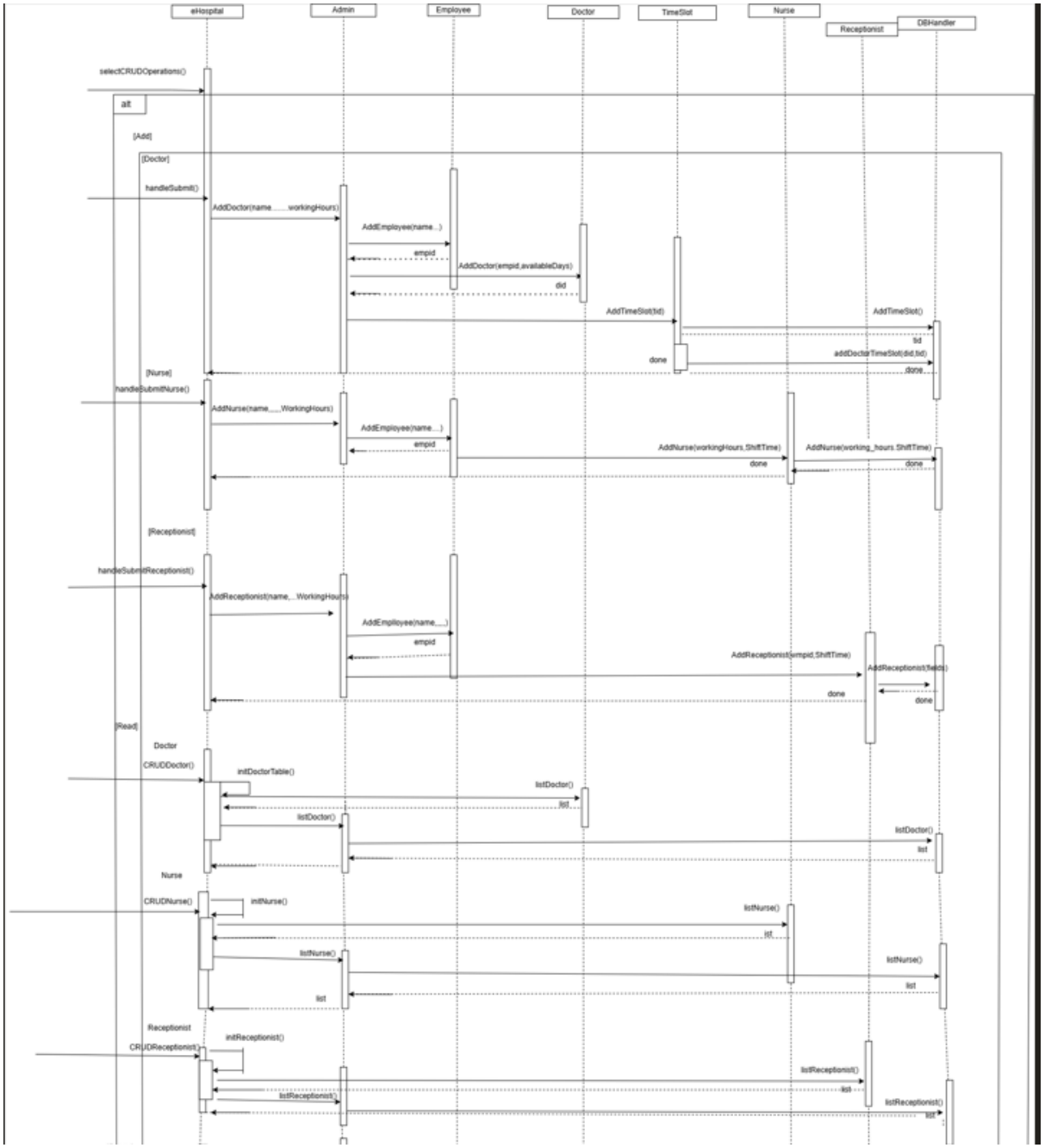
Discharge Patient

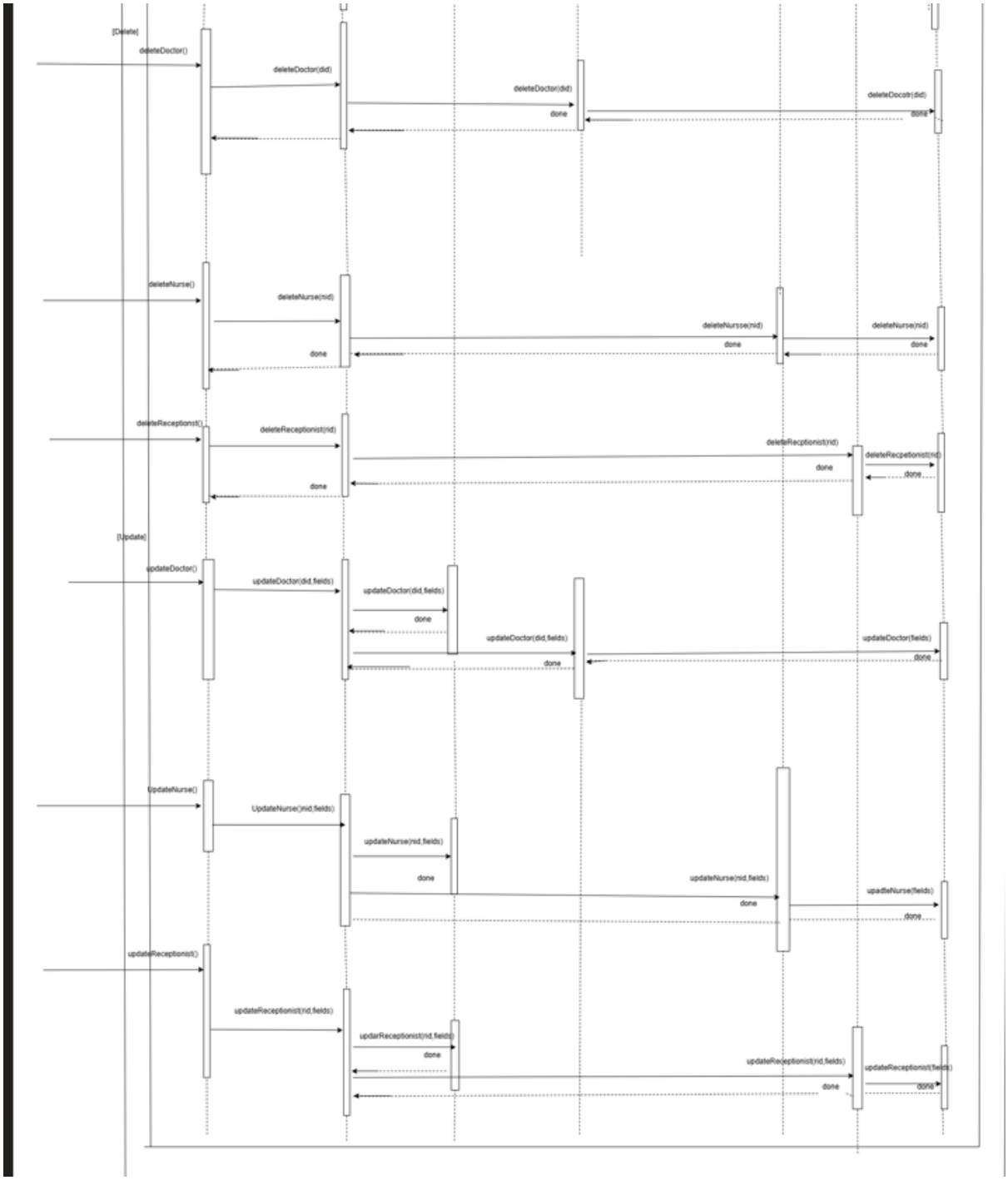


Pay Bills

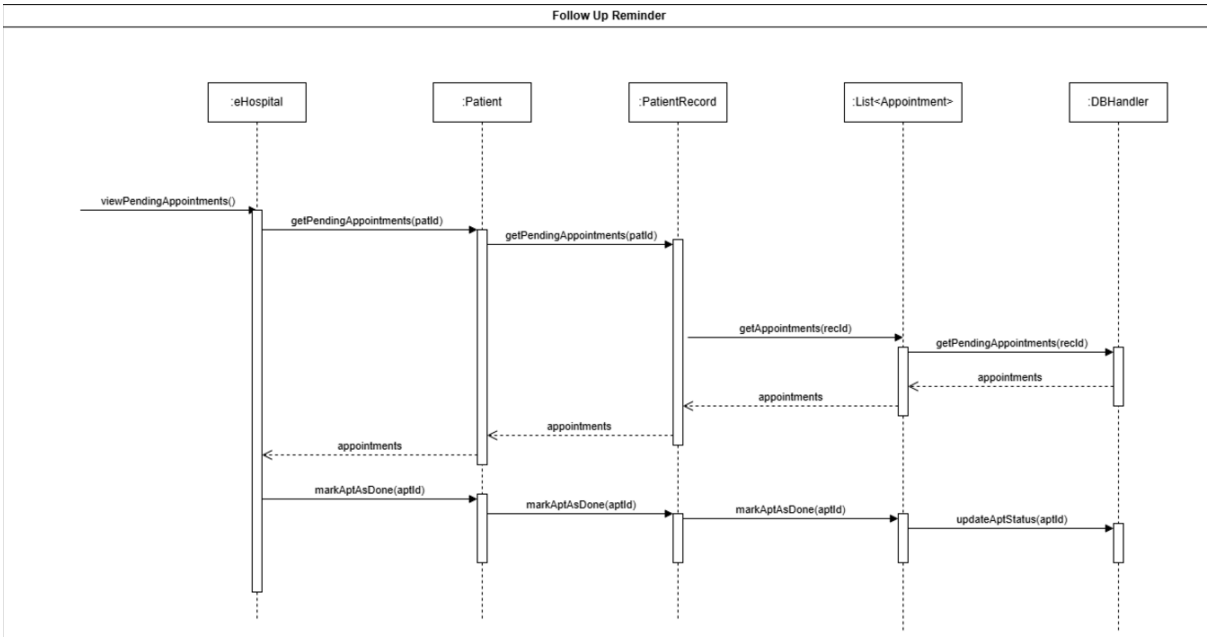

Pay Bills
eHospital
Patient
PatientRecord
Bill
DBHandler
handlershowBills
initBillTable
loadBills
loadBills
loadBills
loadBills
list
list
list
list
handlePatientPayBills
loadBillID
loadBillID
loadBillID
loadBillID
list
list
list
Bill
handlePayBillsUC
alt
[pay by cash]
bool var=payByCash(id)
bool var=payByCash(id)
<<create>>
bool var=payByCash(id)
bool var=payByCash(id)
[pay by card]
bool var= payByCard(id)
bool var=payByCash(id)
<<create>>
bool var=payByCash(id)
bool var=payByCash(id)

Manage Employees

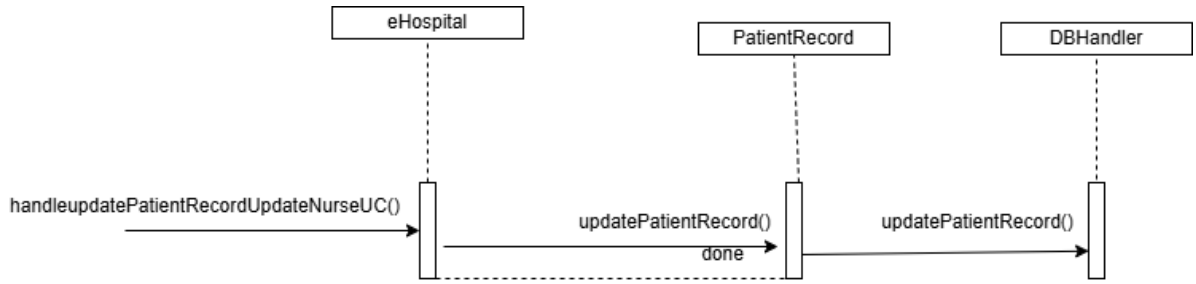




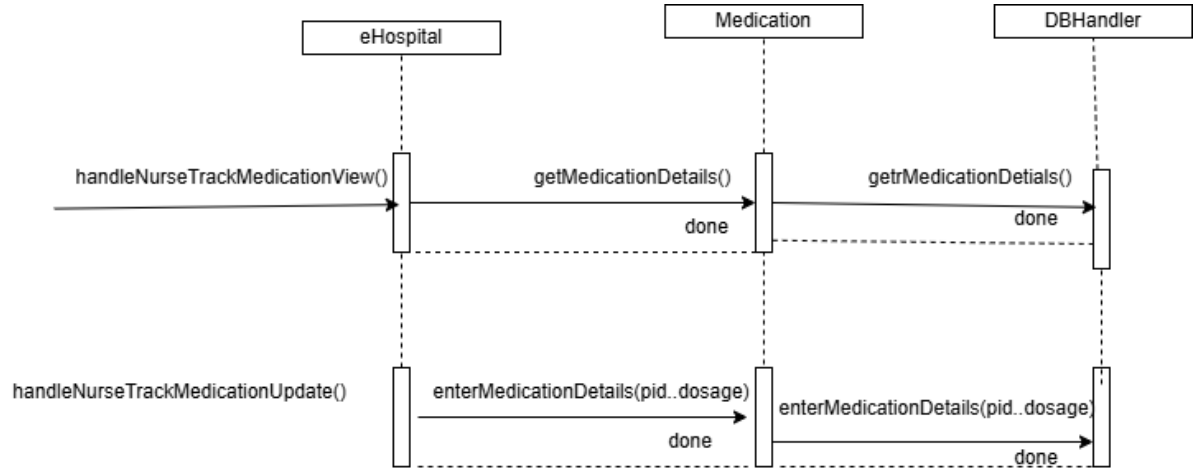
Follow up Reminder



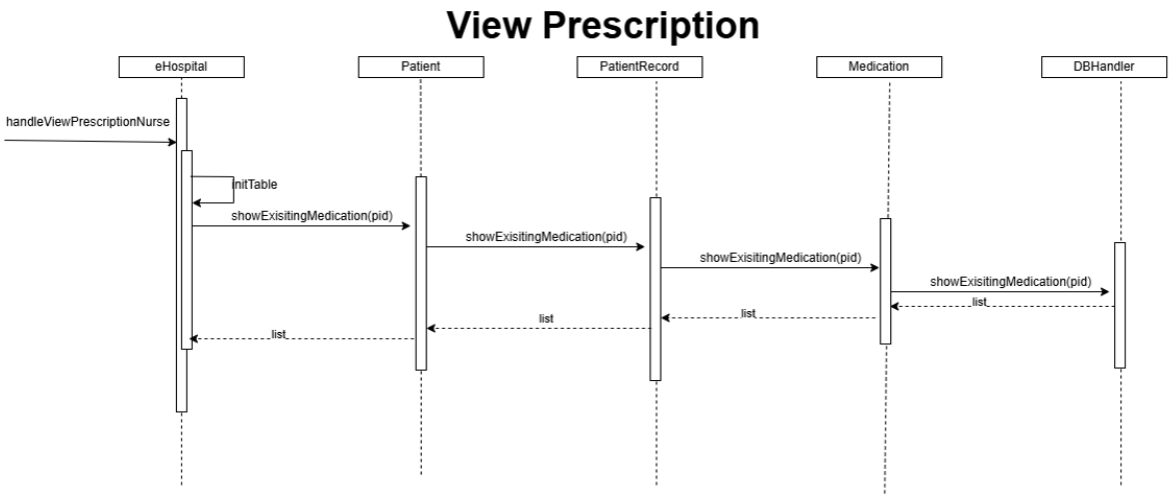
Update Patient Records

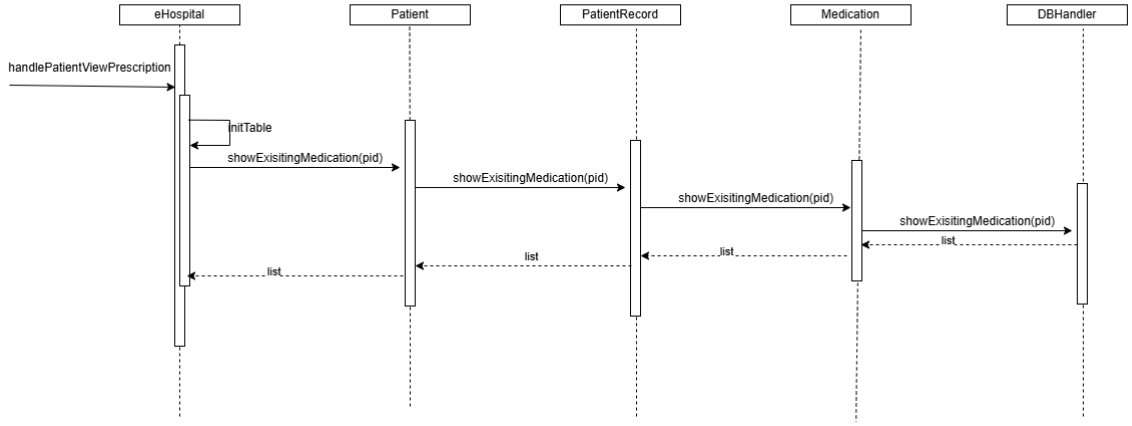


Track Medications

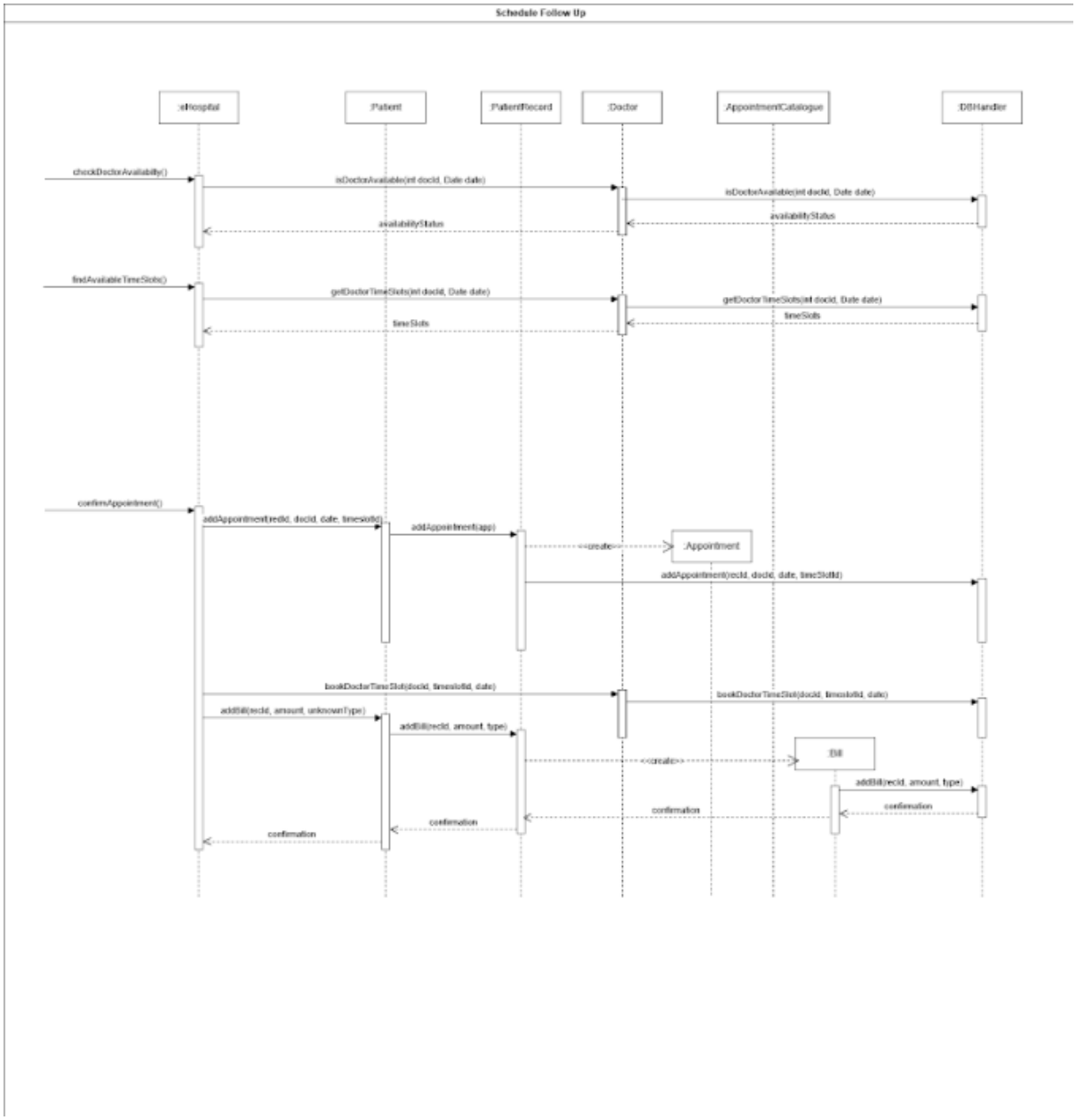


View Prescription



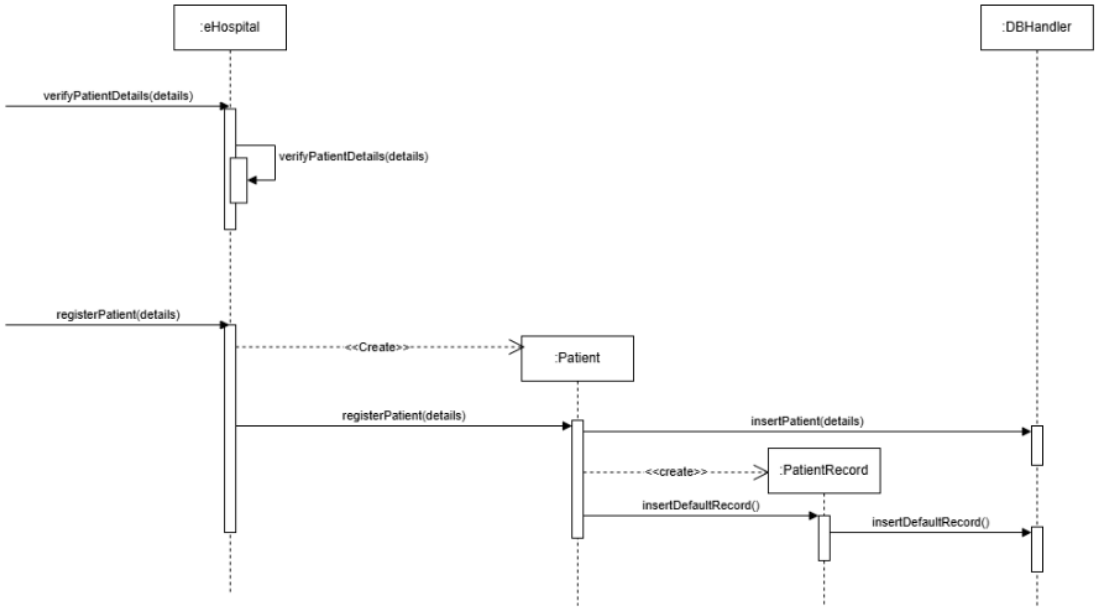


Schedule Follow Up

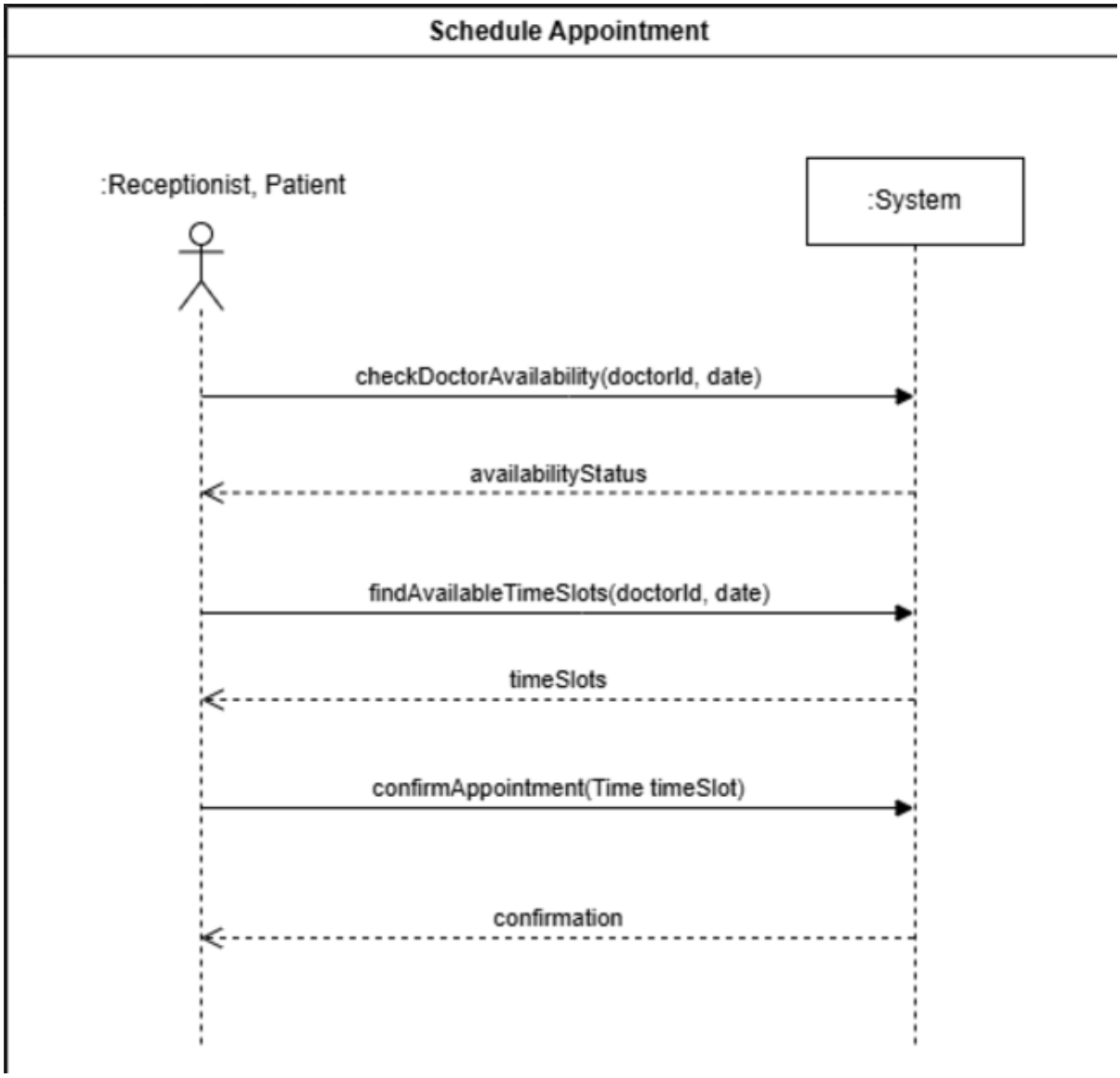


Register Patient

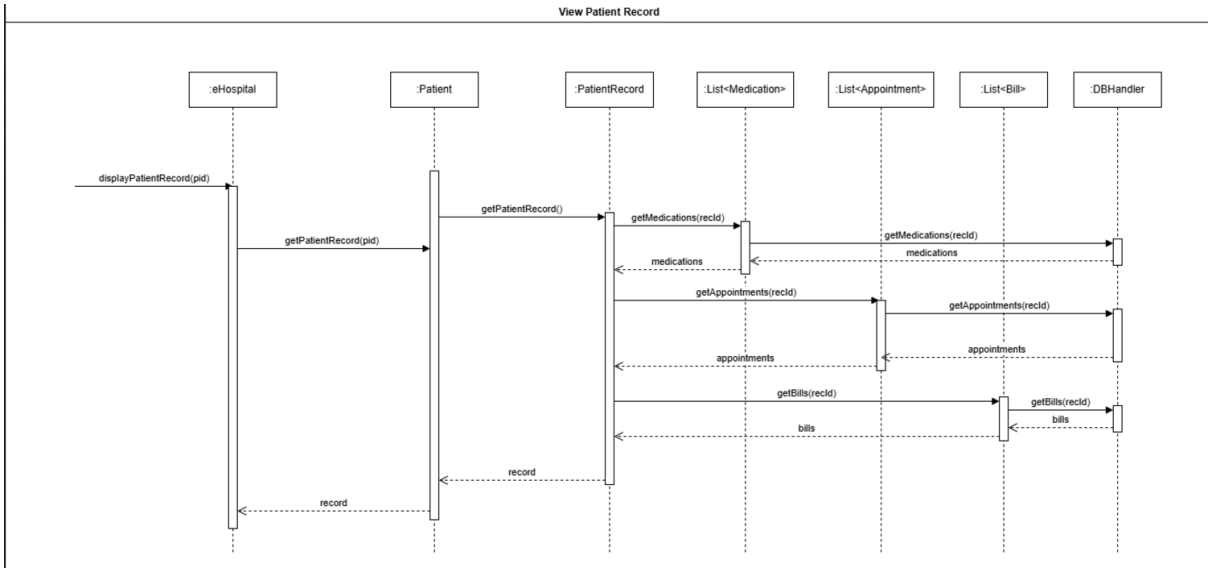
Register New Patient



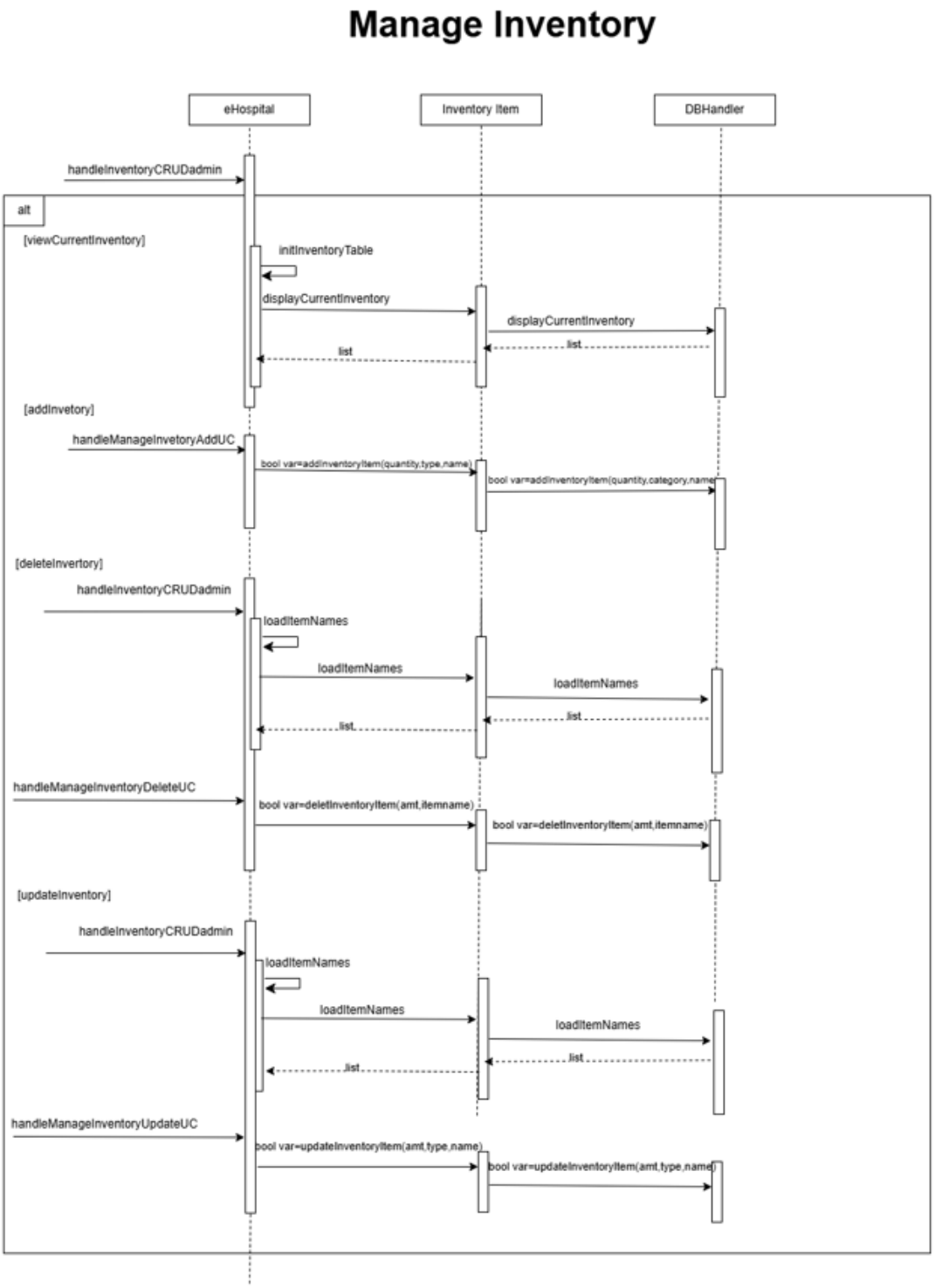
Schedule Appointment



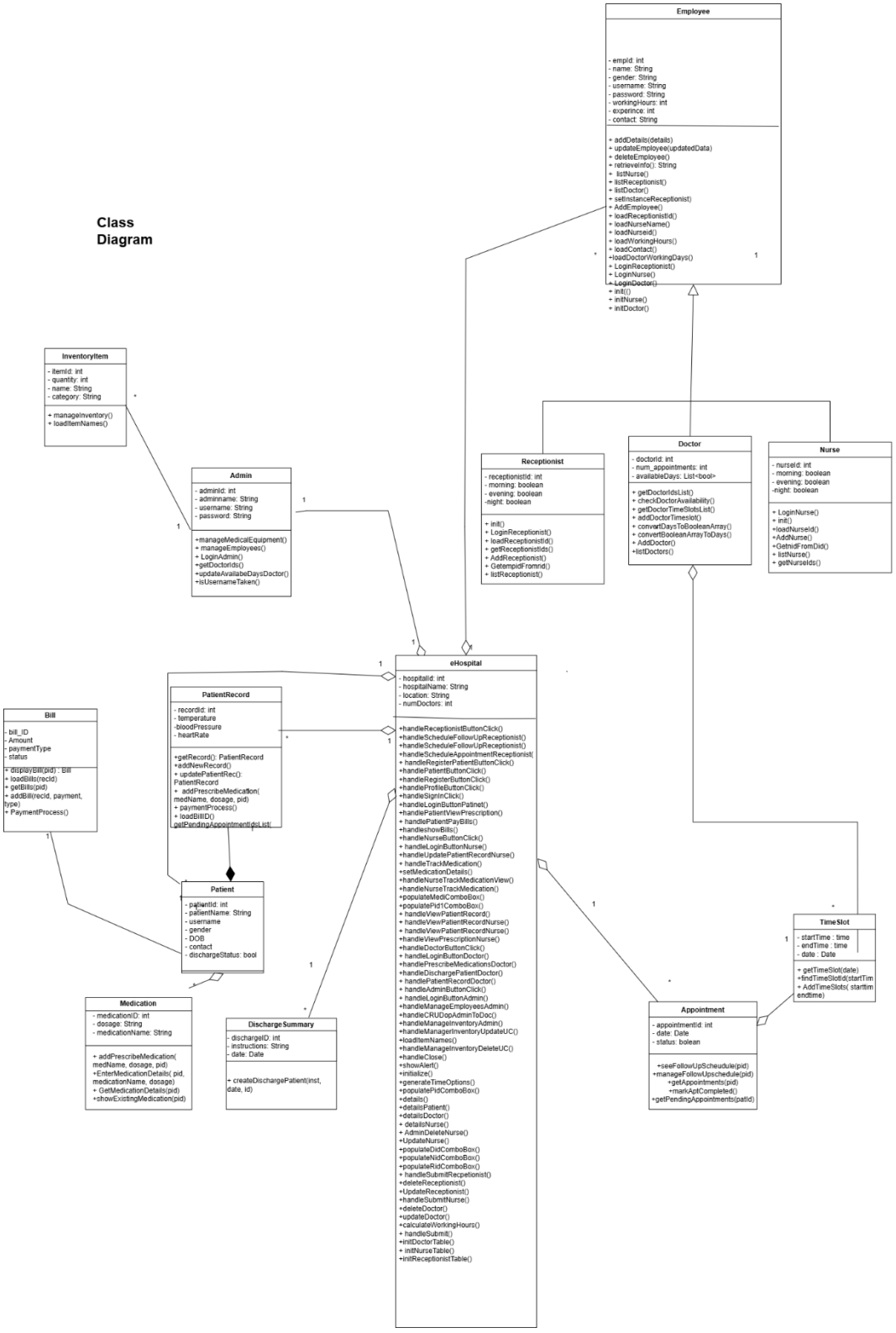
View Patient Record



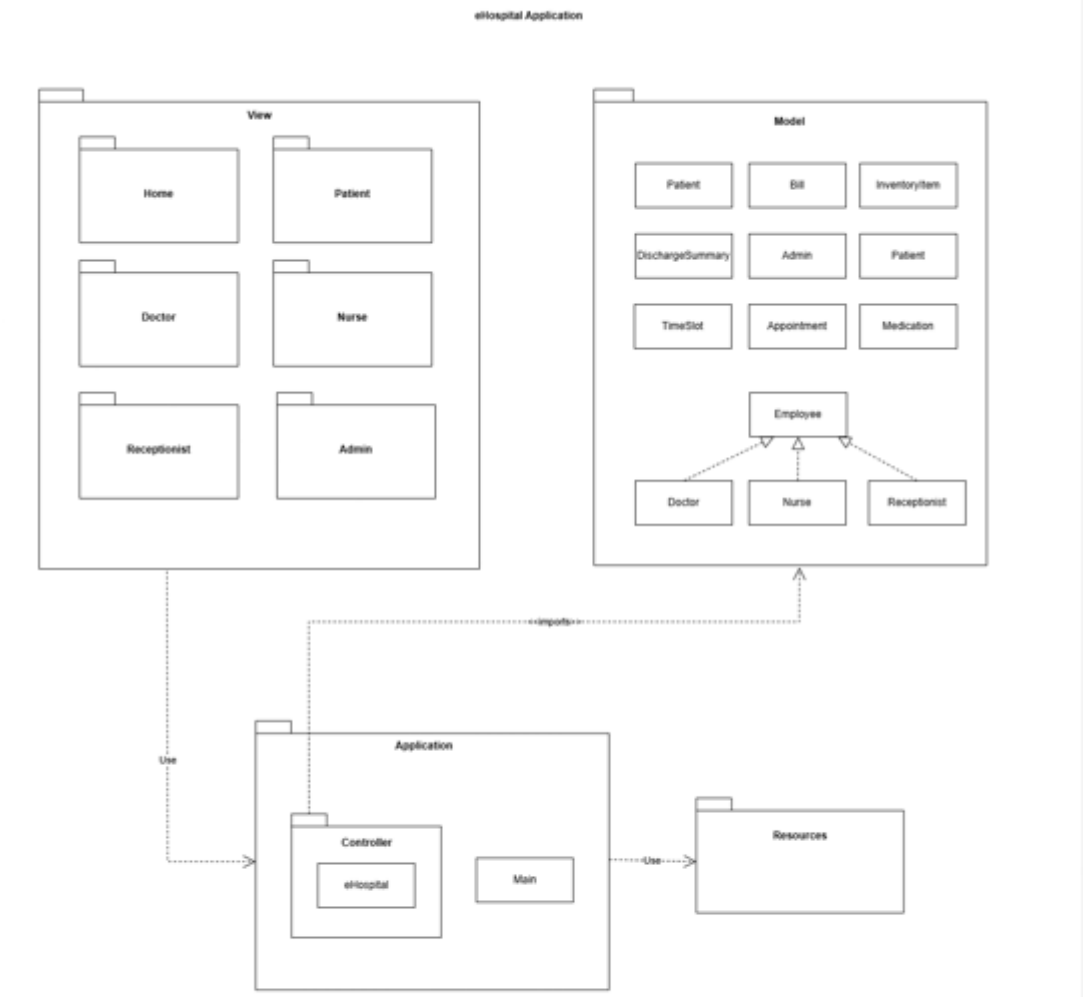
Manage Inventory



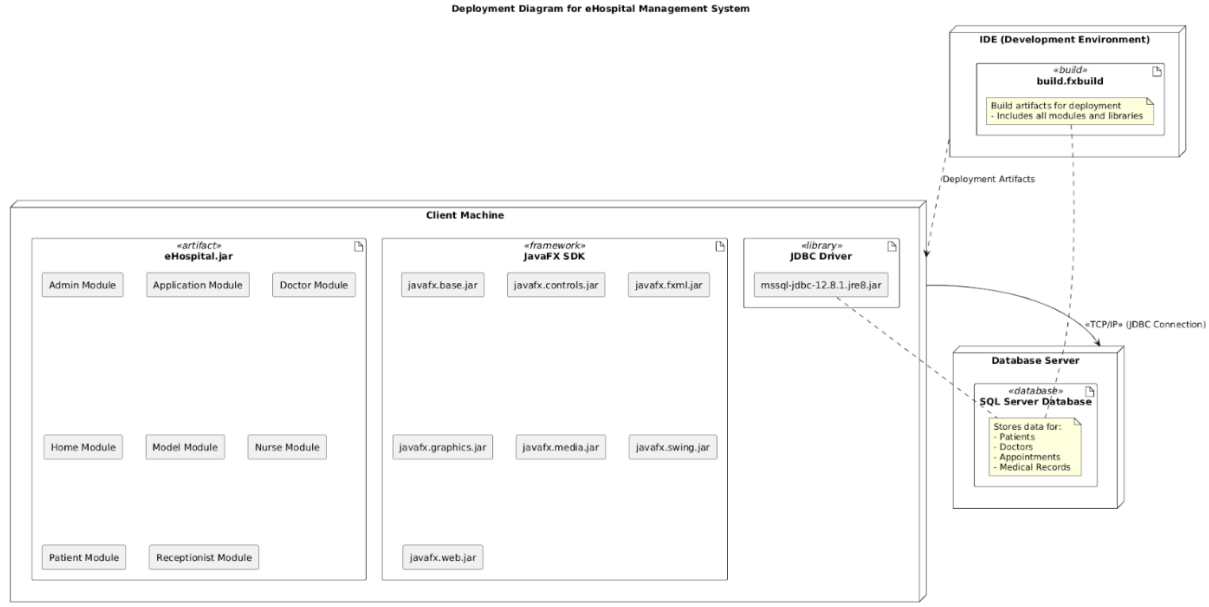
Class Diagram



Package Diagram



Deployment Diagram



Component Diagram