SOFTWARE REQUIREMENTS AND DESIGN DOCUMENT

for

<eHospital>

Prepared by

<Anoosha Ali>

<Noor Fatima>

<Sara Akbar>

<National University of Computer and Emerging Sciences>

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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use outdated, manual, or semi-automated techniques for managing patient data, scheduling appointments, and facilitating departmental communication.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.

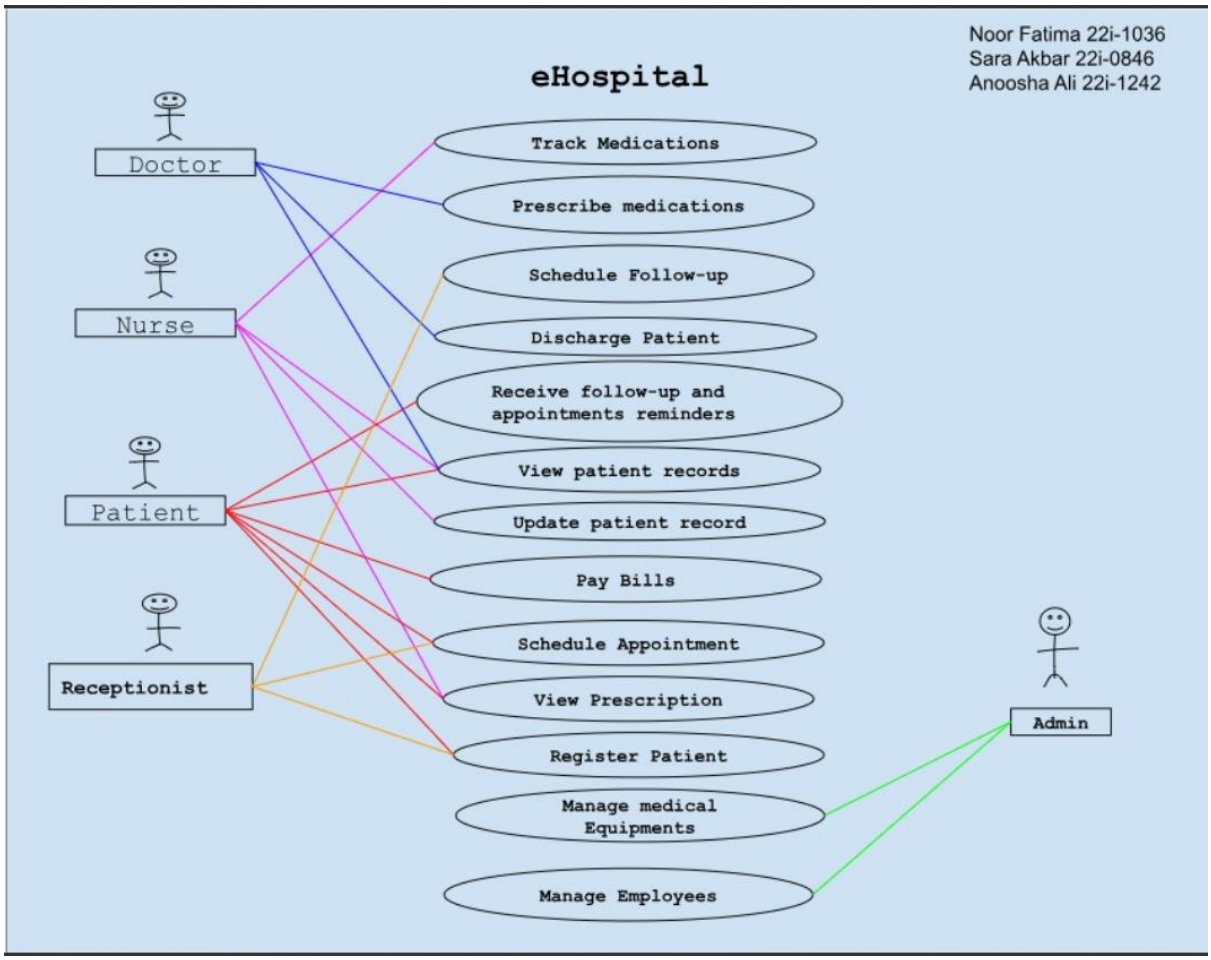
List of Use Cases

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 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.

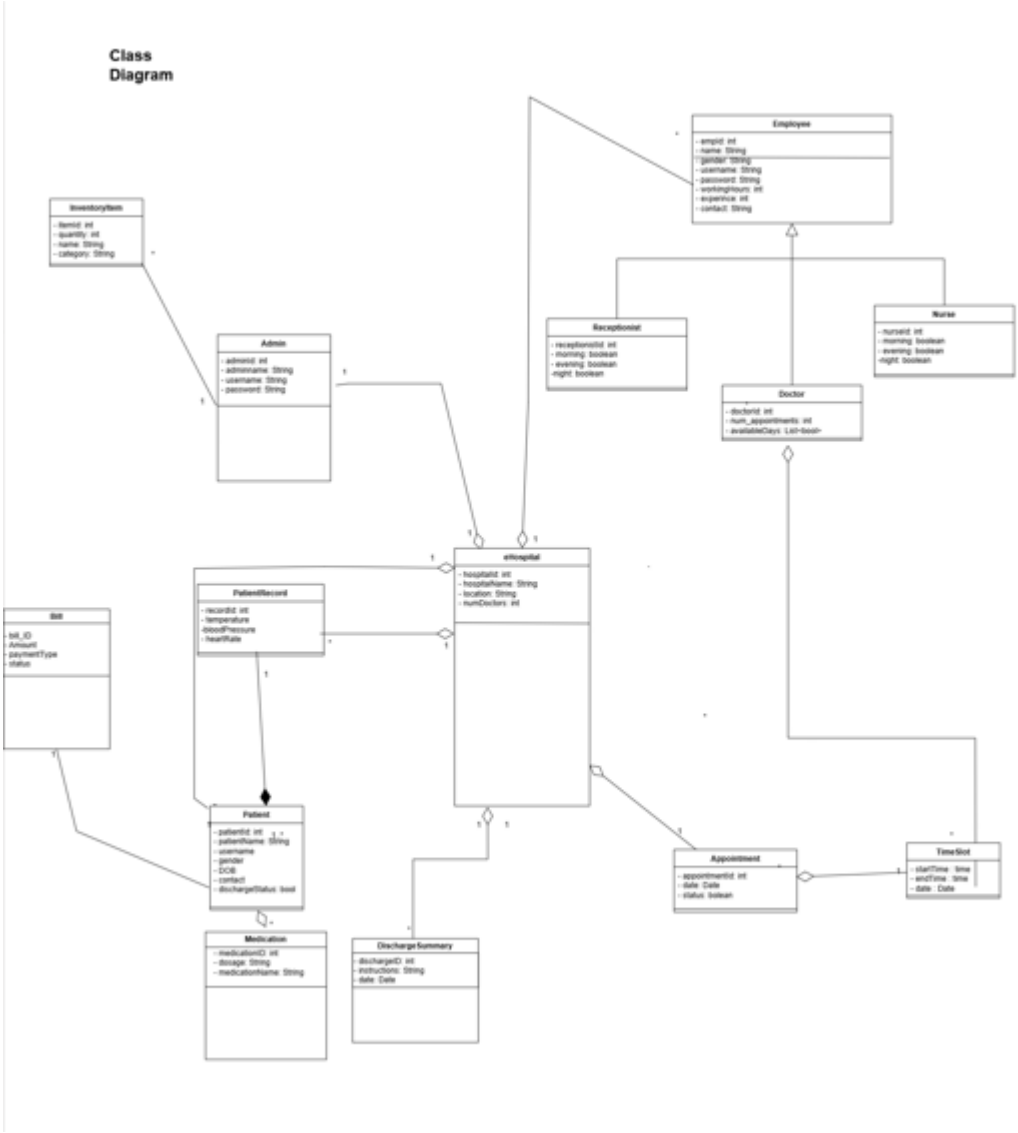
Operating Environment

- 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

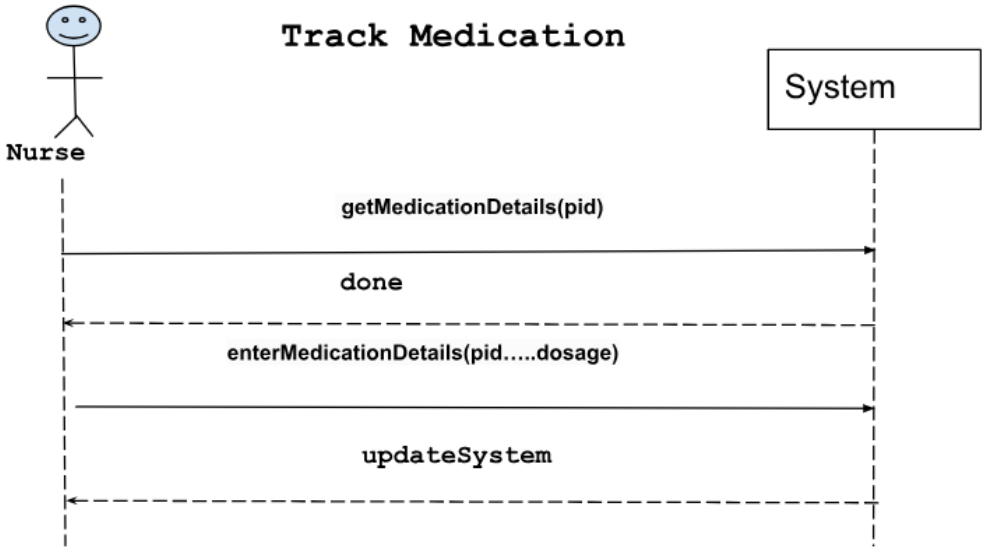
- **Login Page**: A secure interface with email/username and password fields/
- **Patient Records**: A detailed view with tabs for medical history, ongoing treatments, prescriptions, and billing.
- **Appointment Booking**: An interactive calendar with drag-and-drop functionality for rescheduling.
- **Billing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

Domain Model

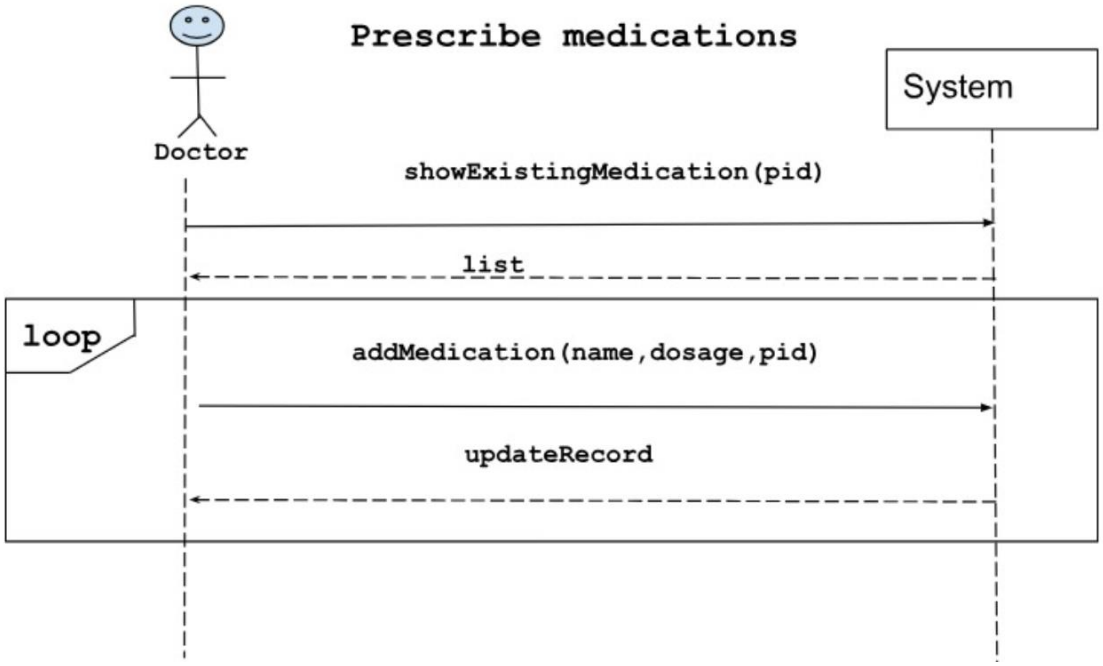


System Sequence Diagram

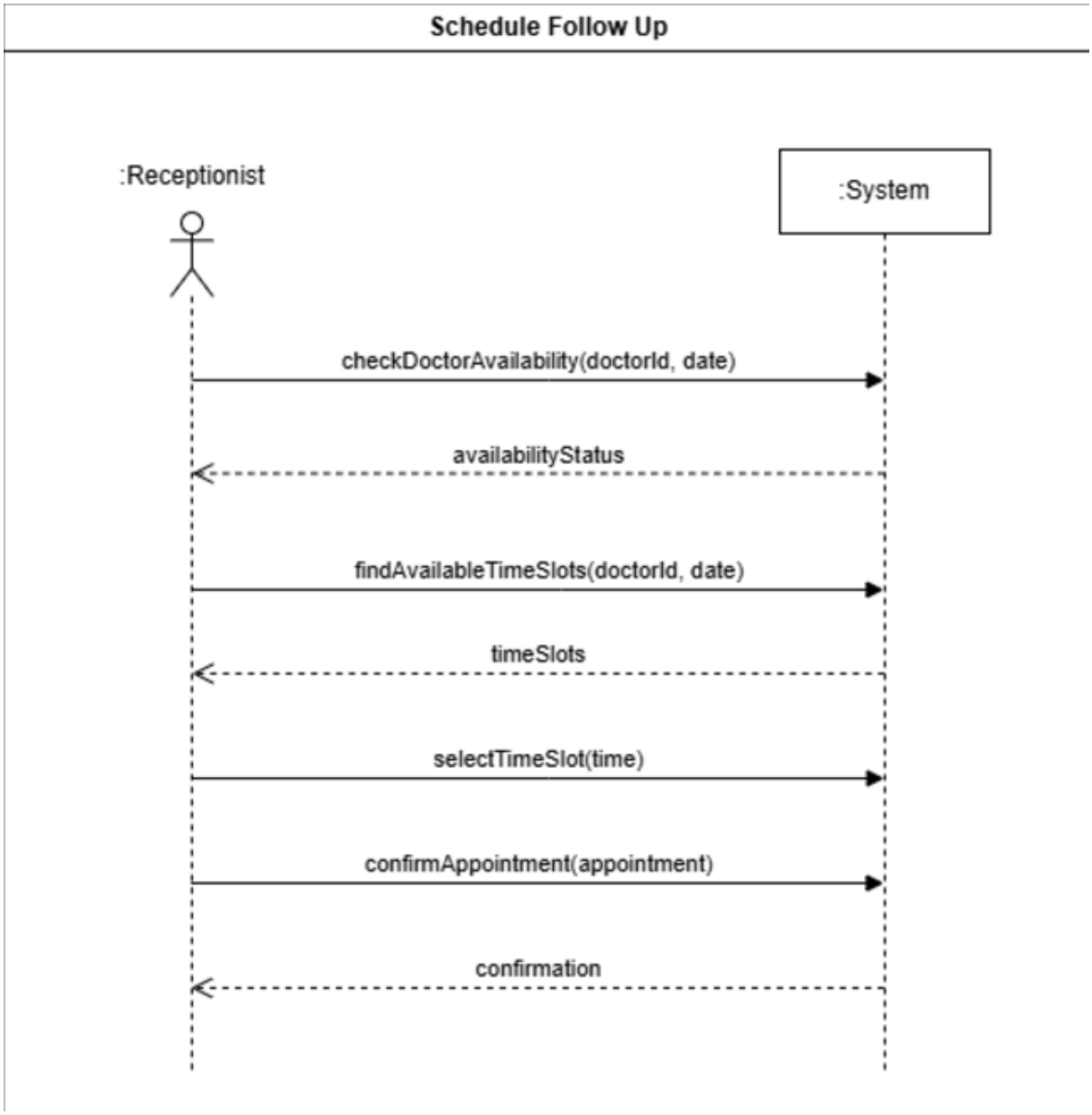
Track Medication



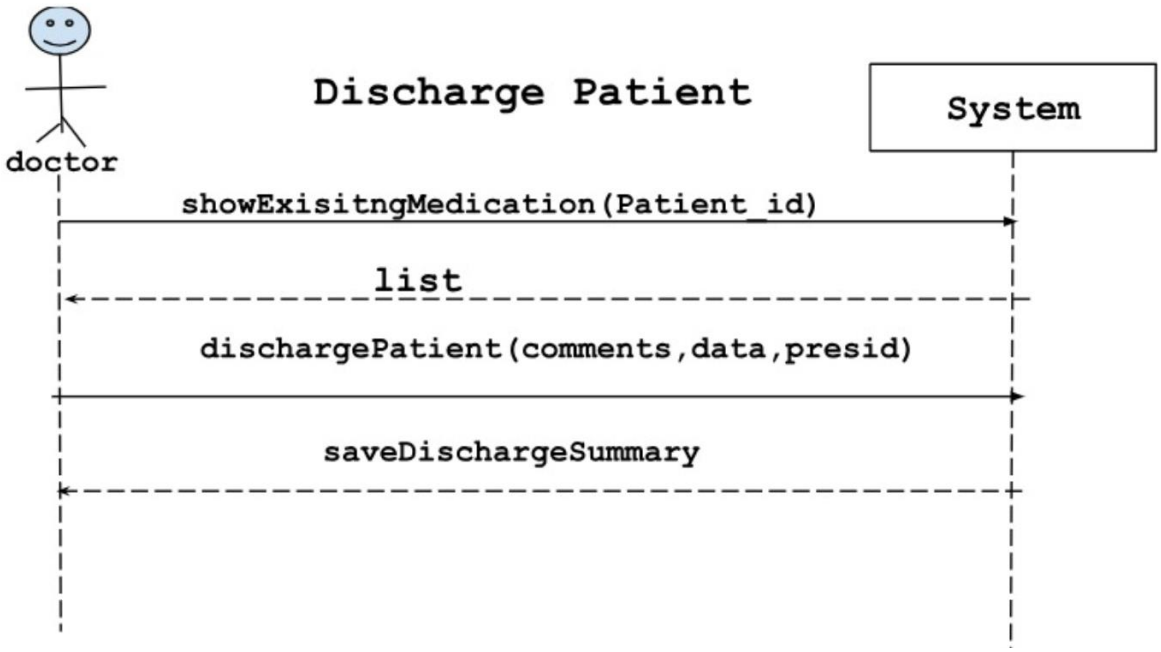
Prescribe medication


Prescribe medications
Doctor
System
showExistingMedication(pid)
list
loop
addMedication(name,dosage,pid)
updateRecord

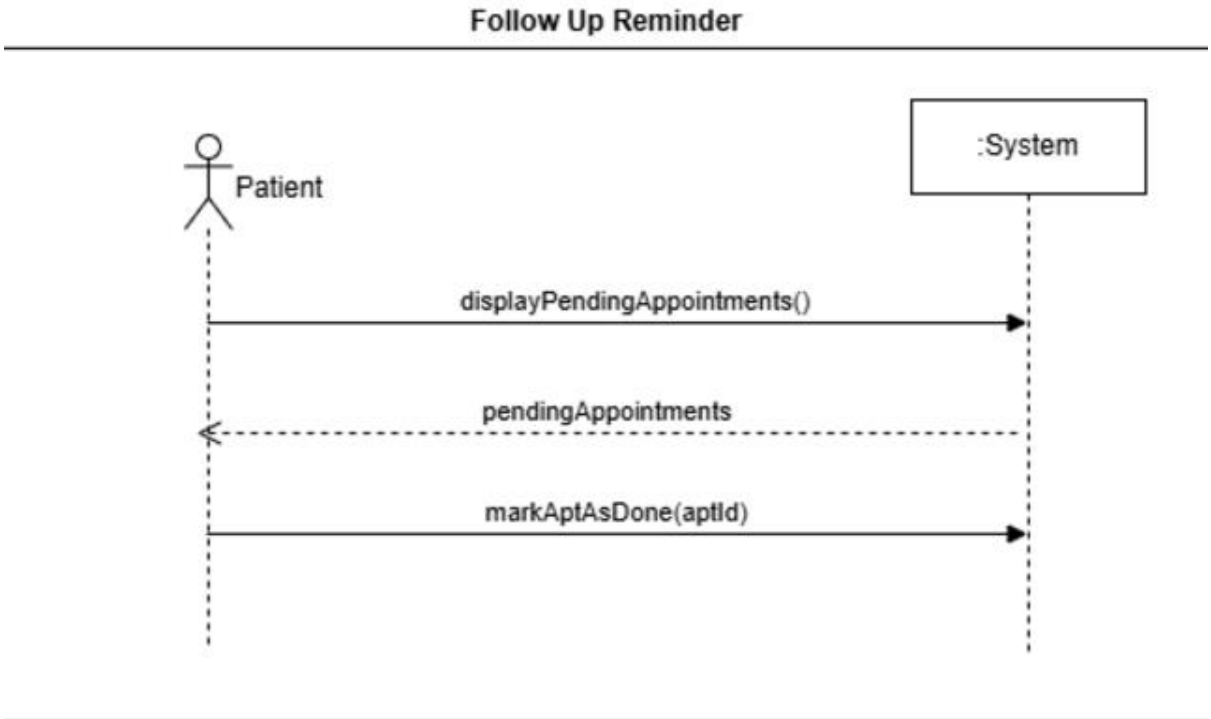
Schedule follow-up



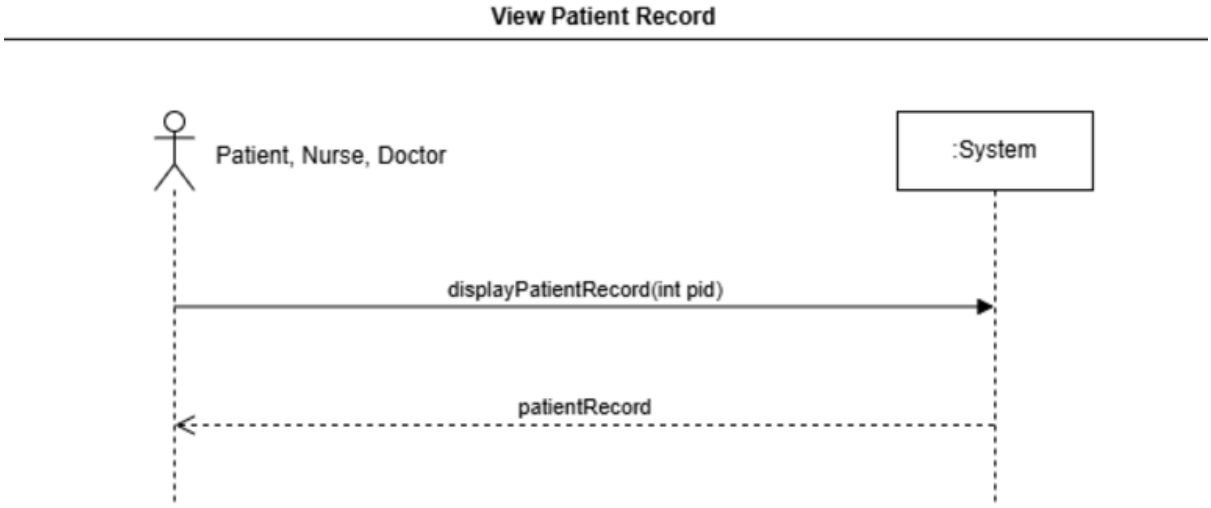
Discharge patient



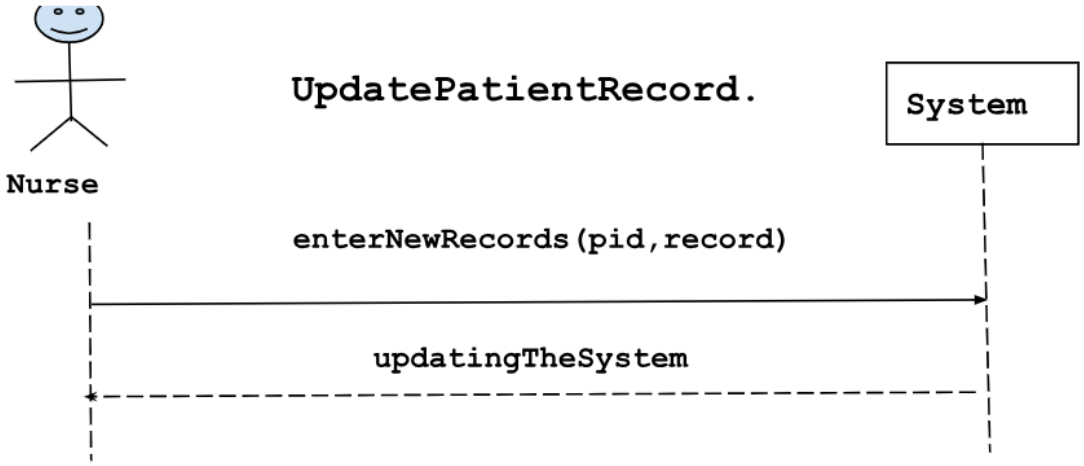
Follow up and appointment reminders



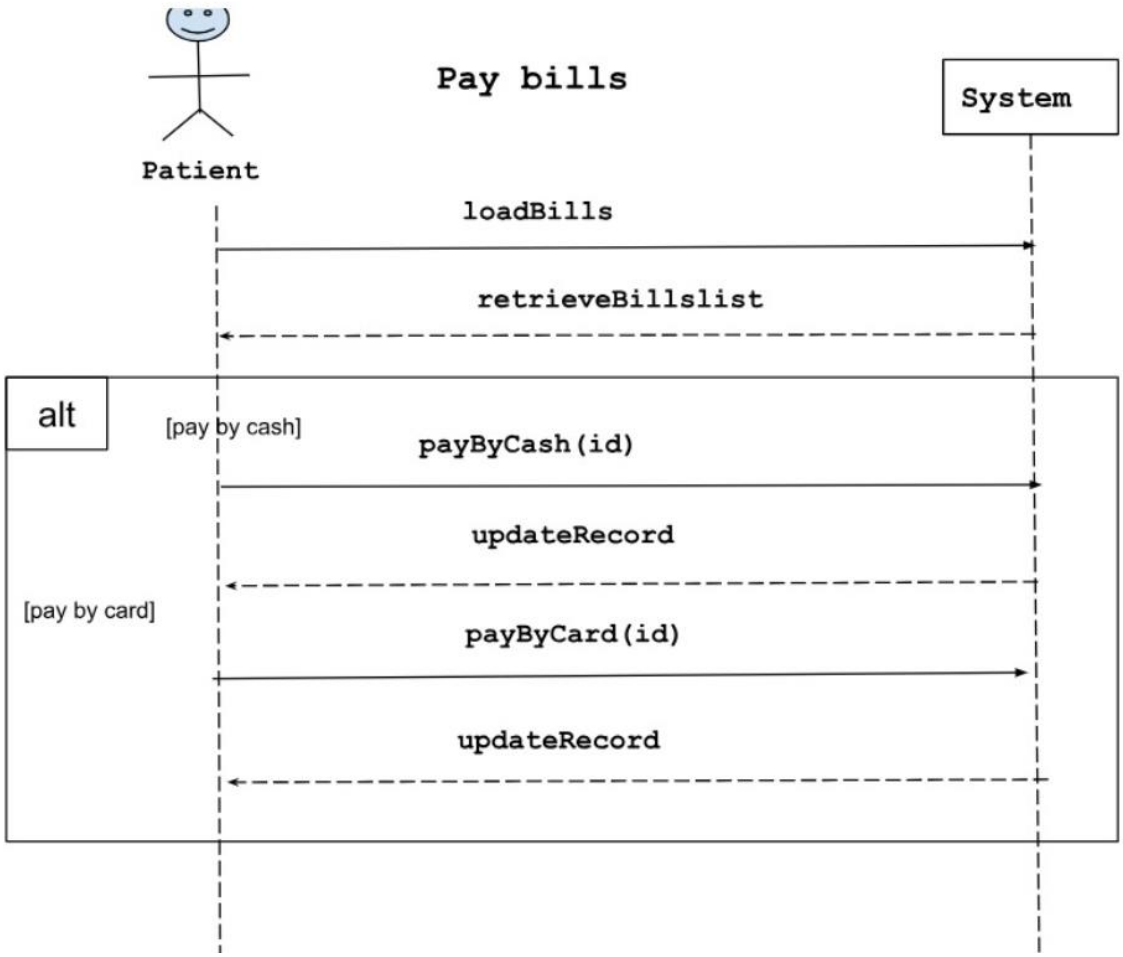
View patient records



Update patient record

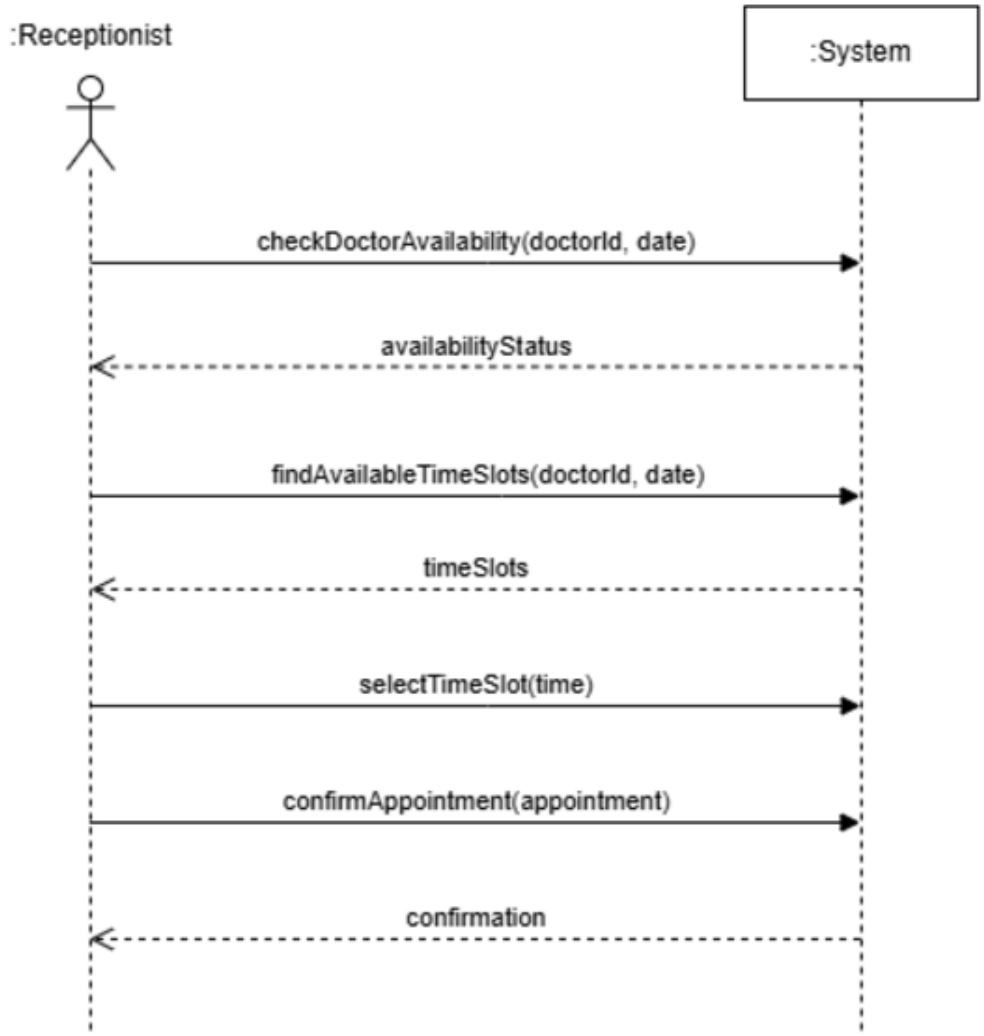


Pay bills

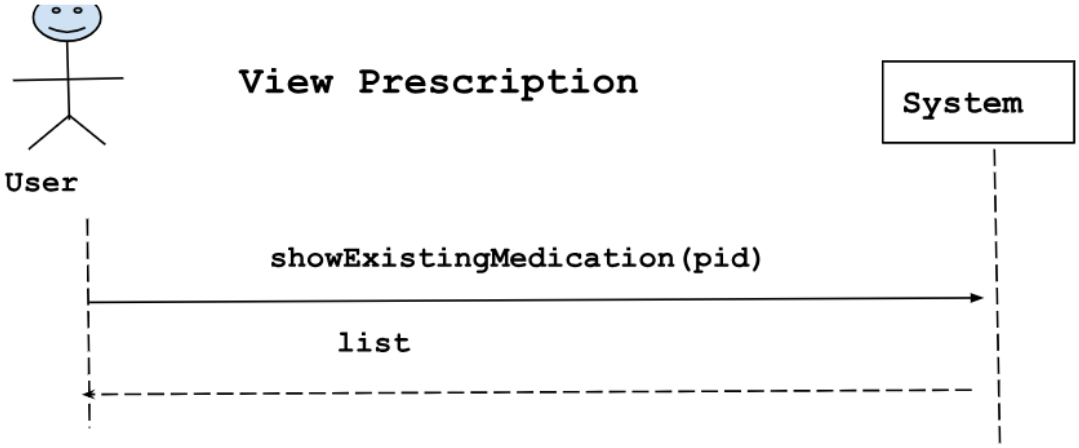

Pay bills
Patient
System
loadBills
retrieveBillslist
alt
[pay by cash]
payByCash(id)
updateRecord
[pay by card]
payByCard(id)
updateRecord

Schedule appointment

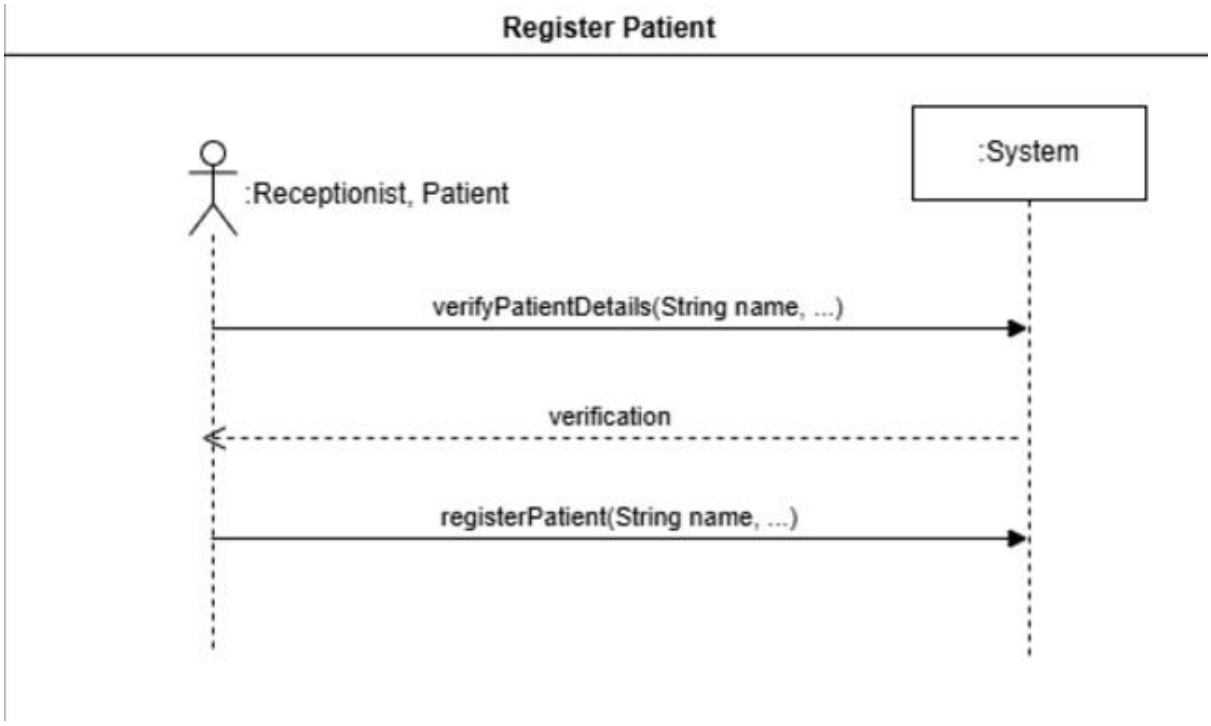
Schedule Appointment



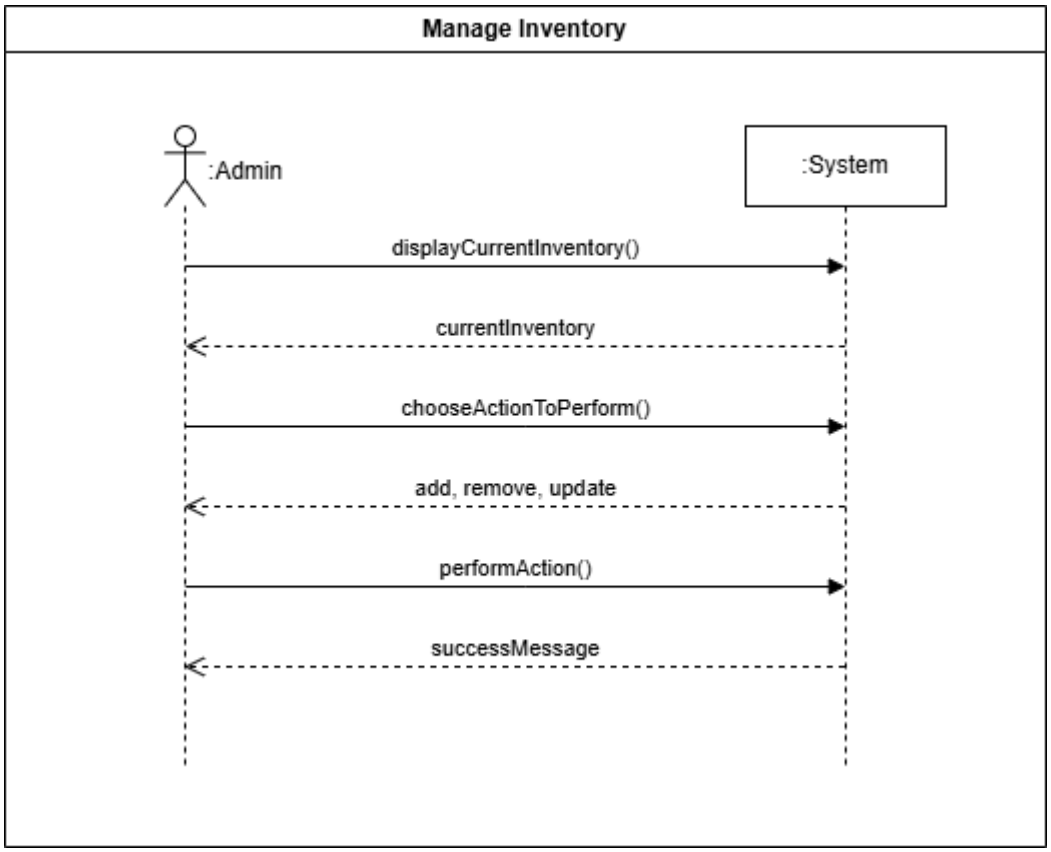
View prescription



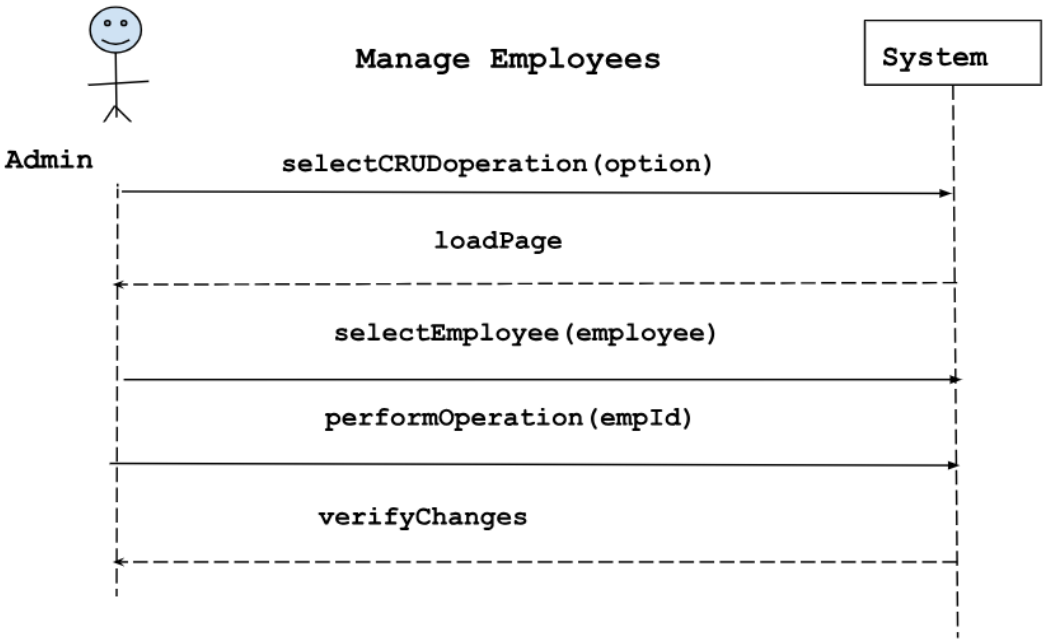
Register patient



Manage Inventory



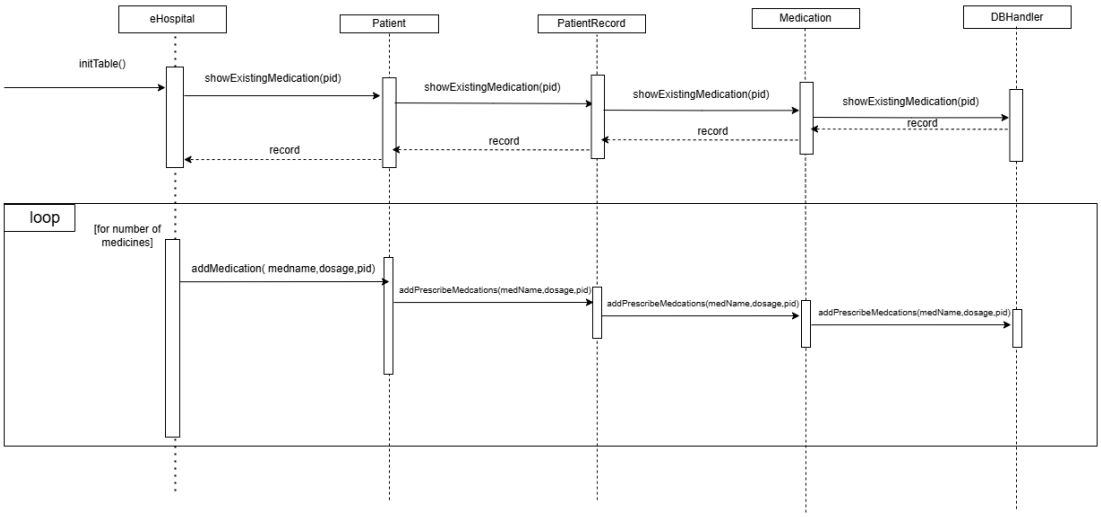
Manage employees



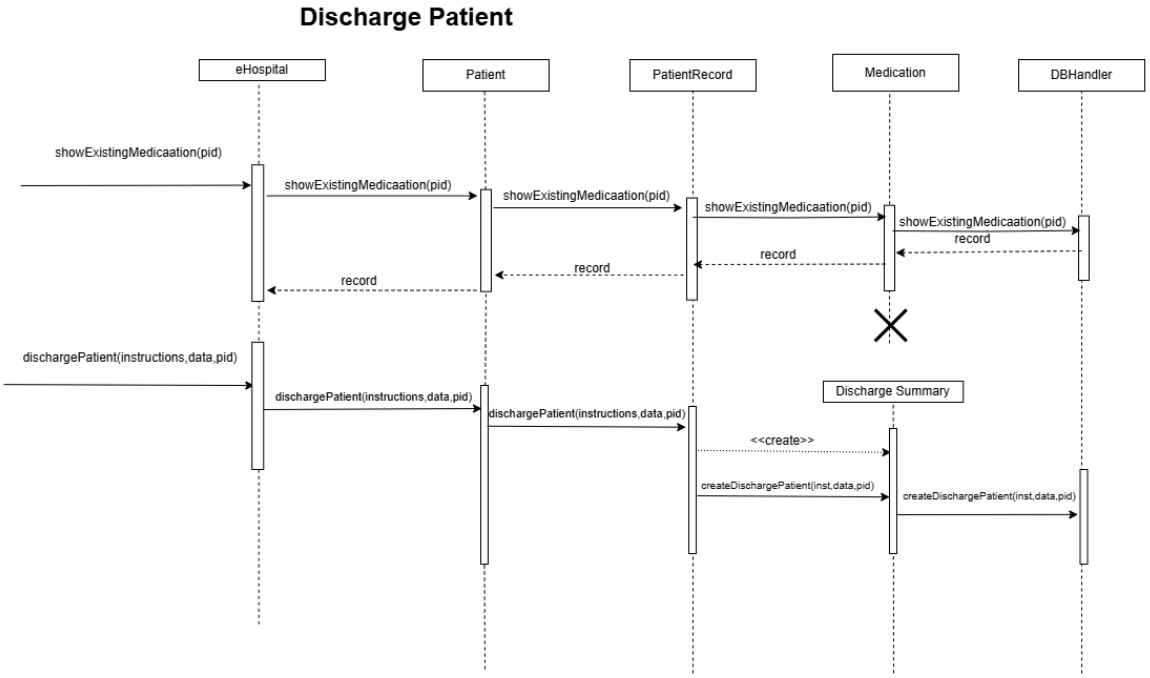
Sequence Diagram

Prescribe Medications

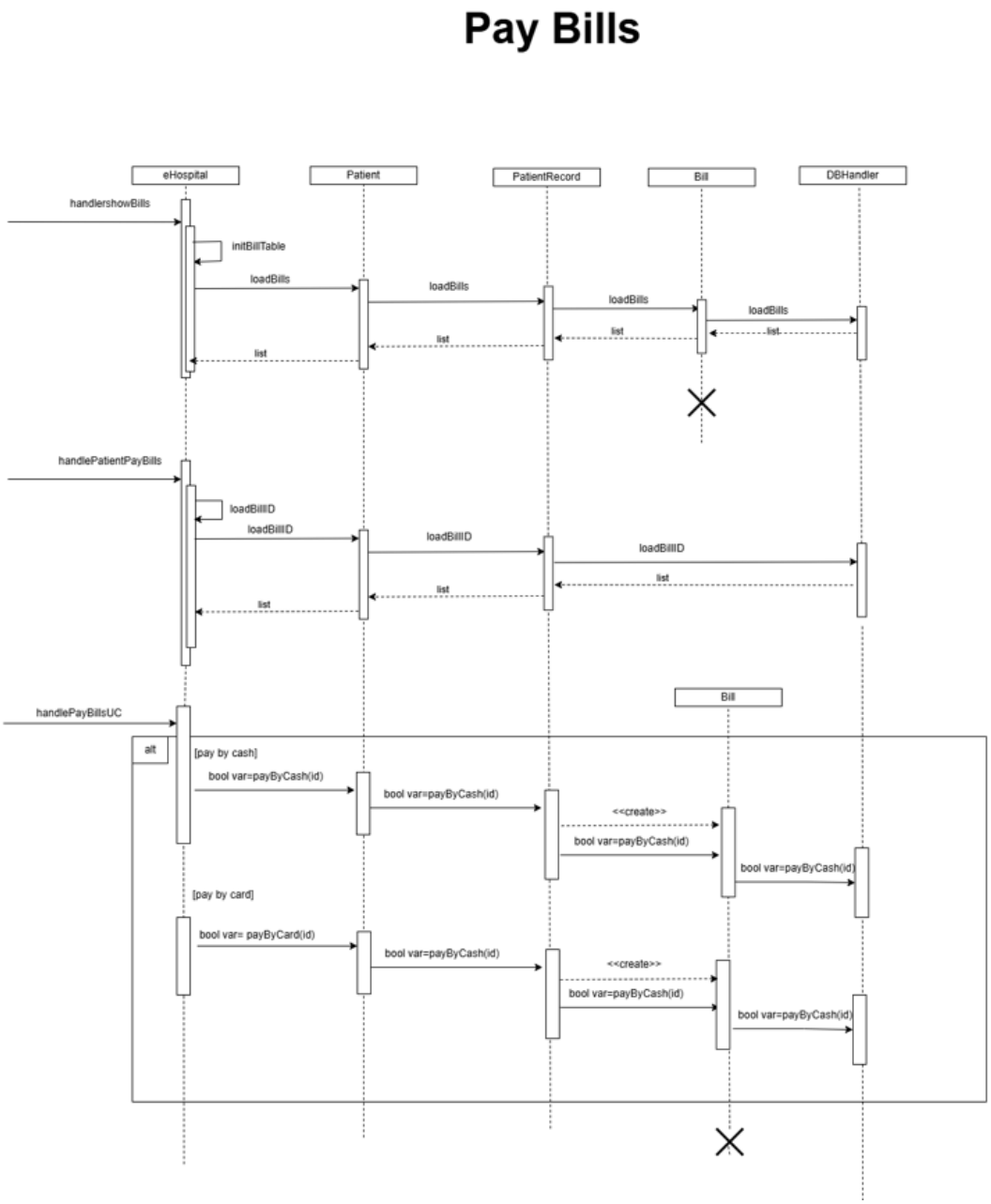
Prescribe Medicine



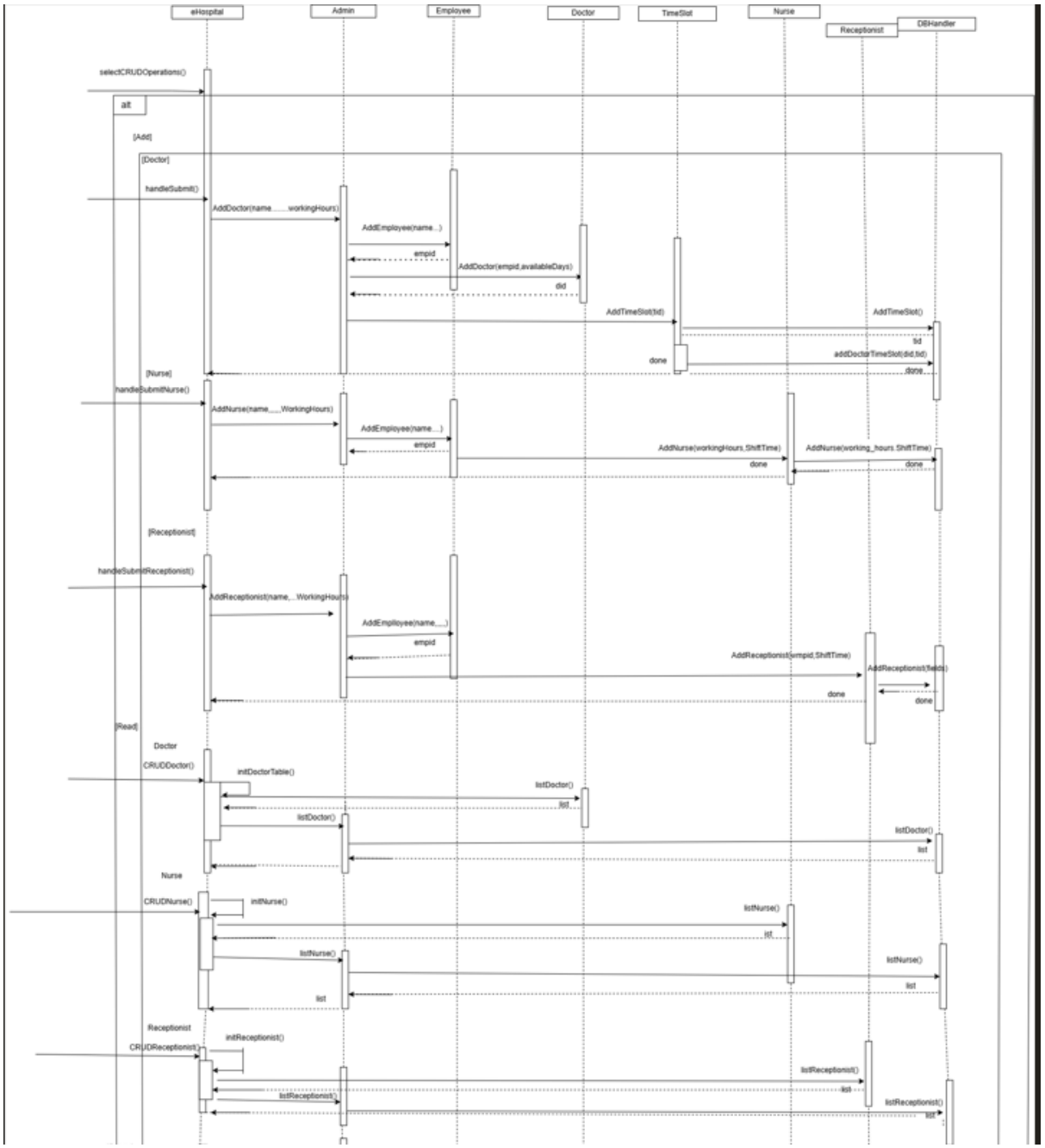
Discharge Patient

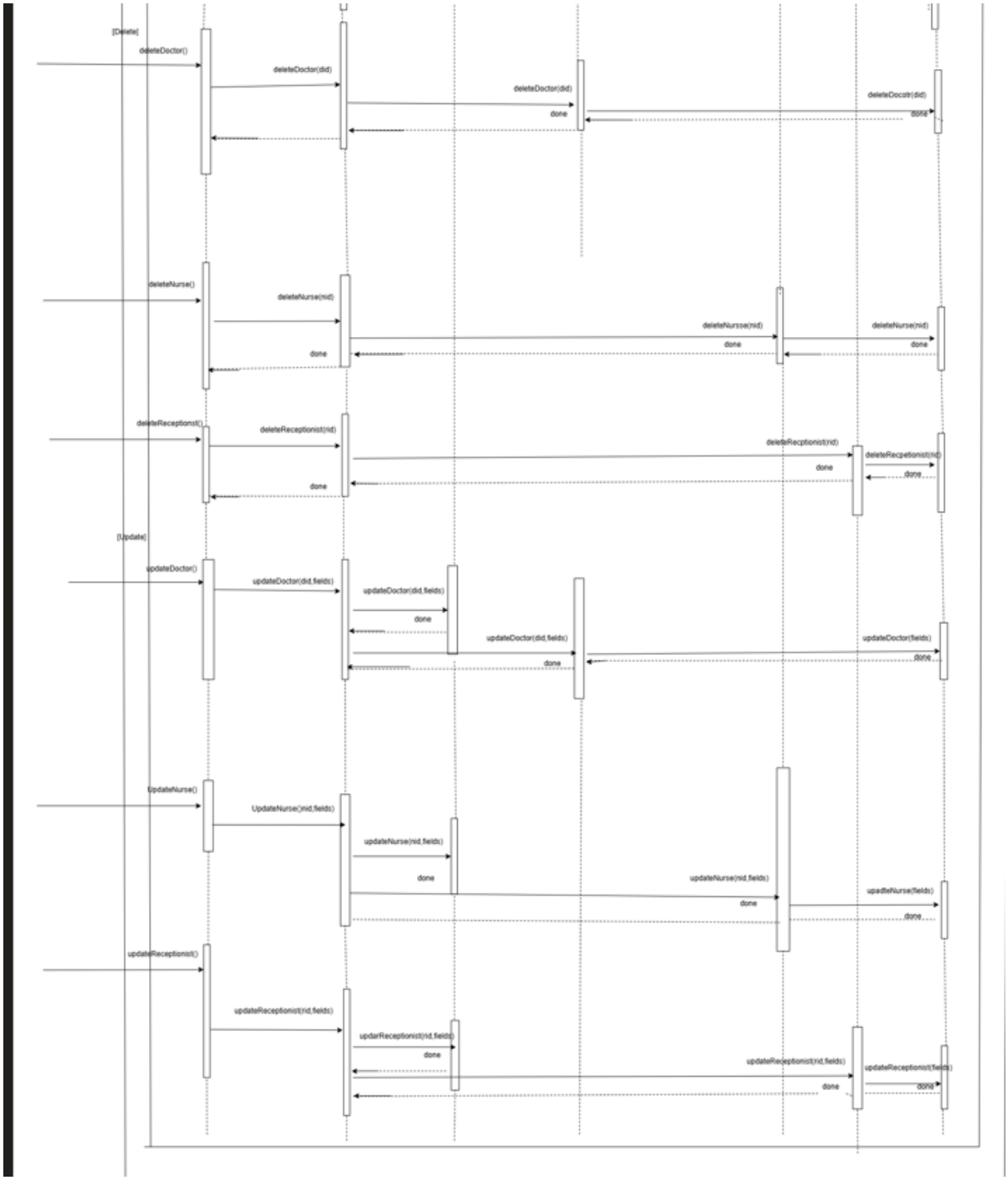


Pay Bills

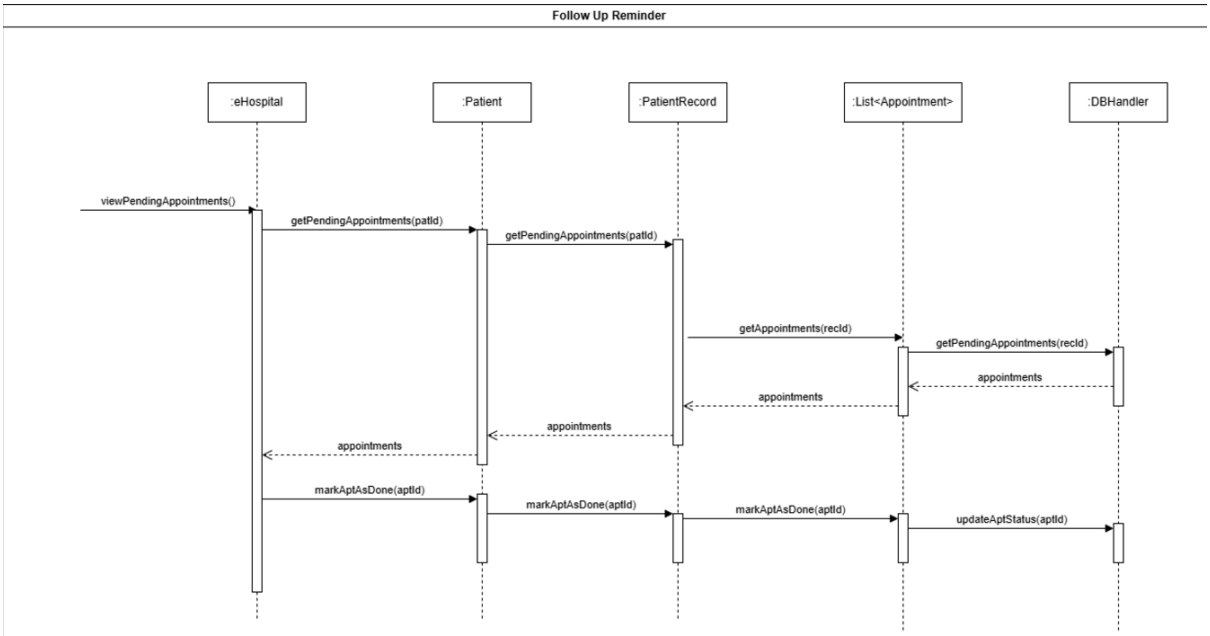

Pay Bills
eHospital
Patient
PatientRecord
Bill
DBHandler
handlershowBills
initBillTable
loadBills
loadBills
loadBills
loadBills
list
list
list
list
handlePatientPayBills
loadBillID
loadBillID
loadBillID
loadBillID
list
list
list
Bill
handlePayBillsUC
alt
[pay by cash]
bool var=payByCash(id)
bool var=payByCash(id)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

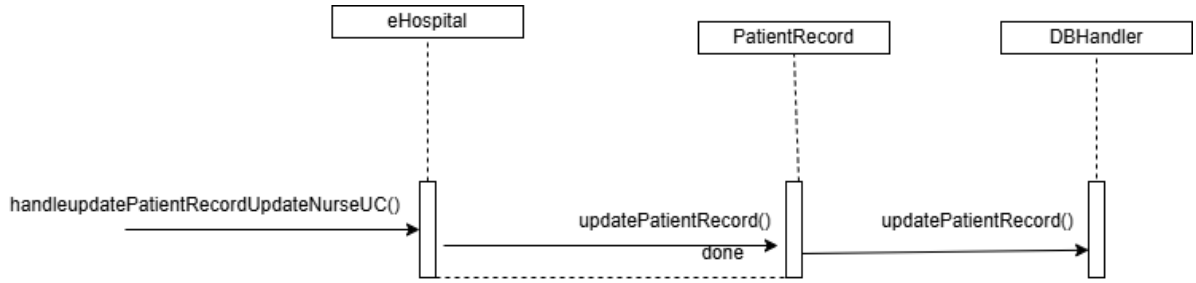




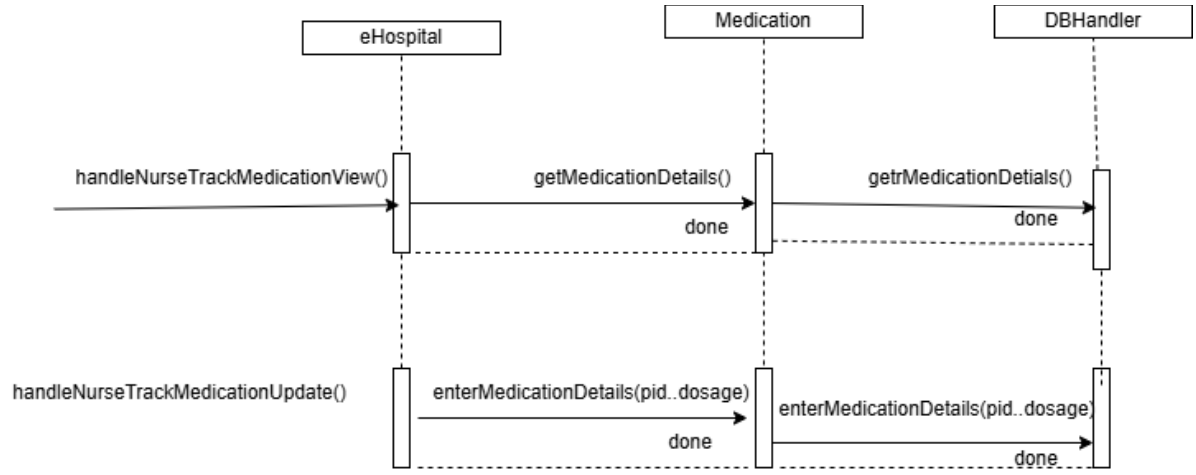
Follow up Reminder



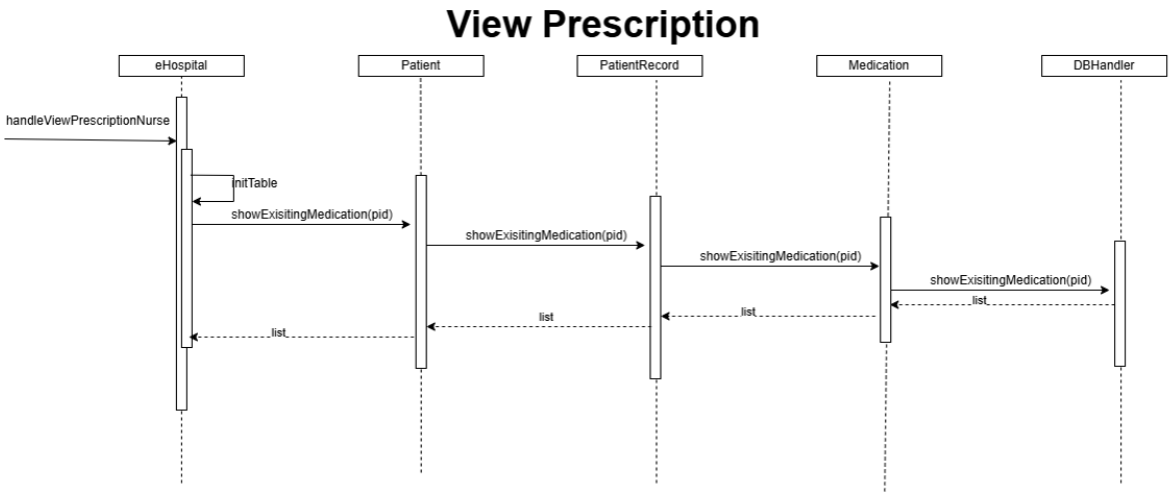
Update Patient Records

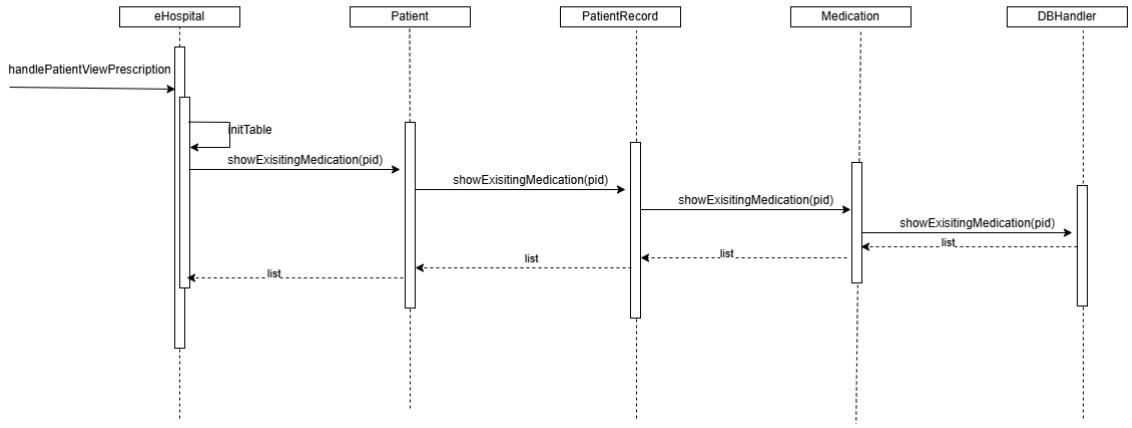


Track Medications

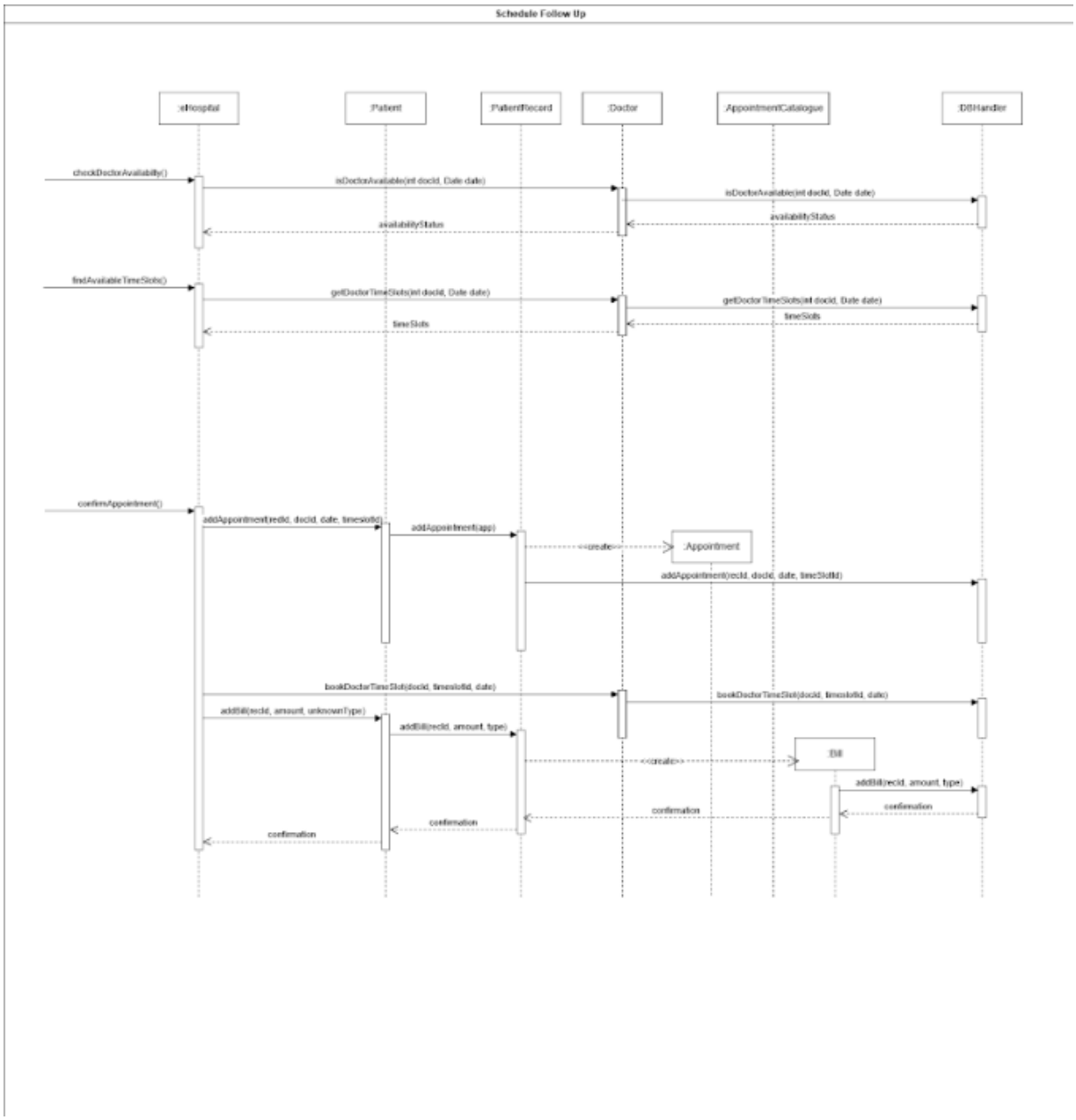


View Prescription



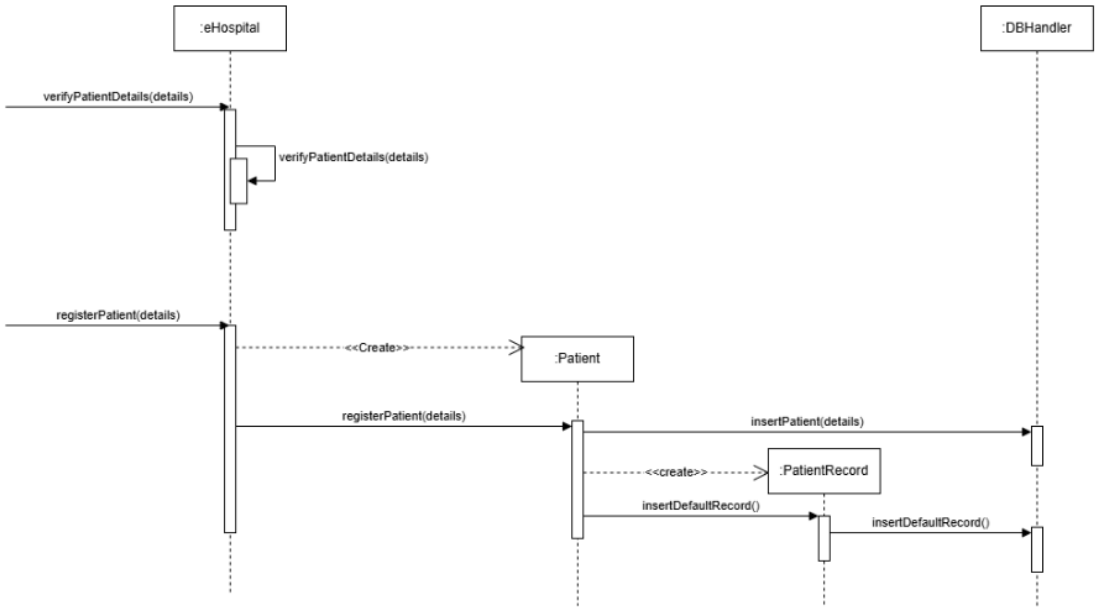


Schedule Follow Up

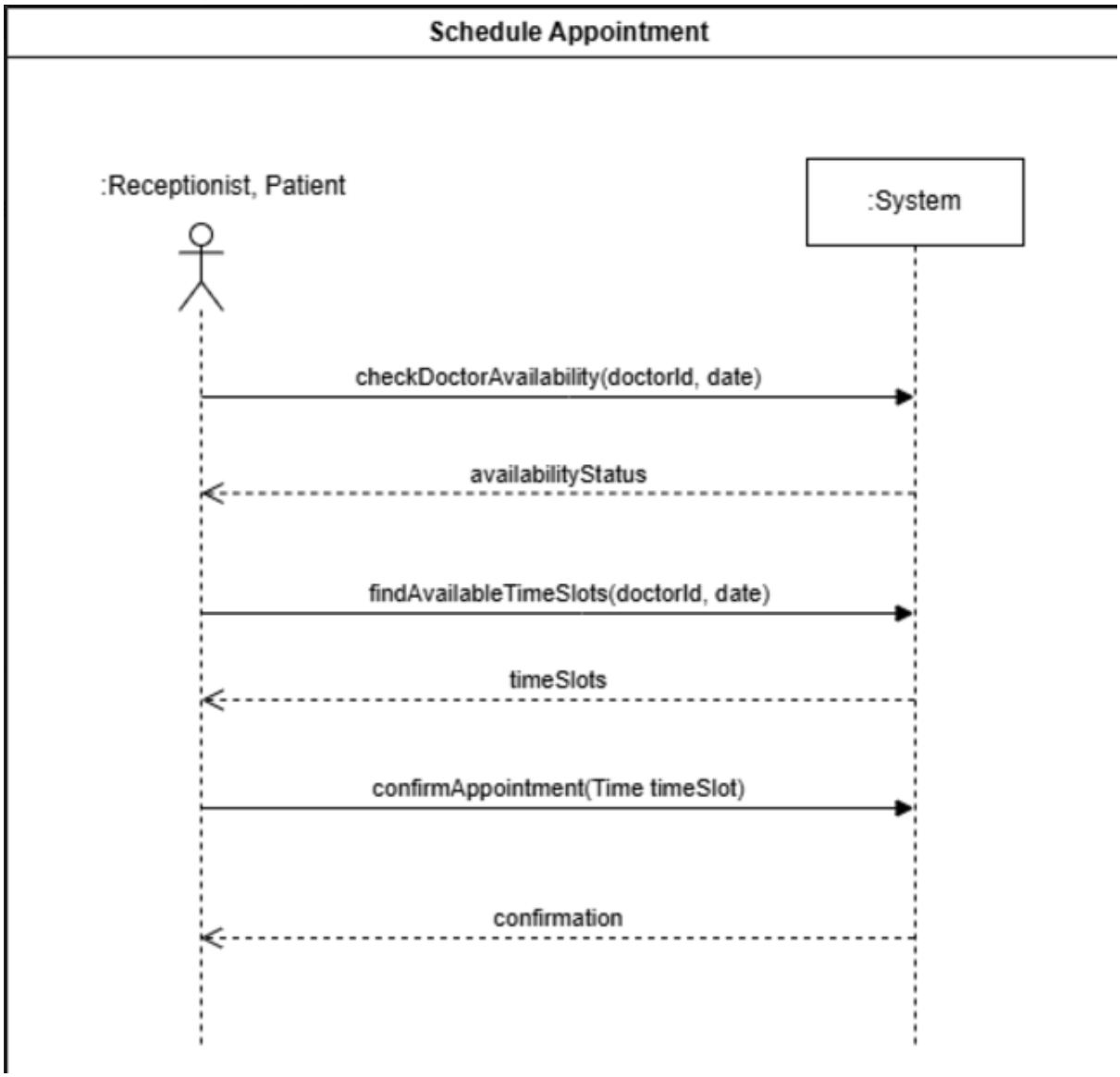


Register Patient

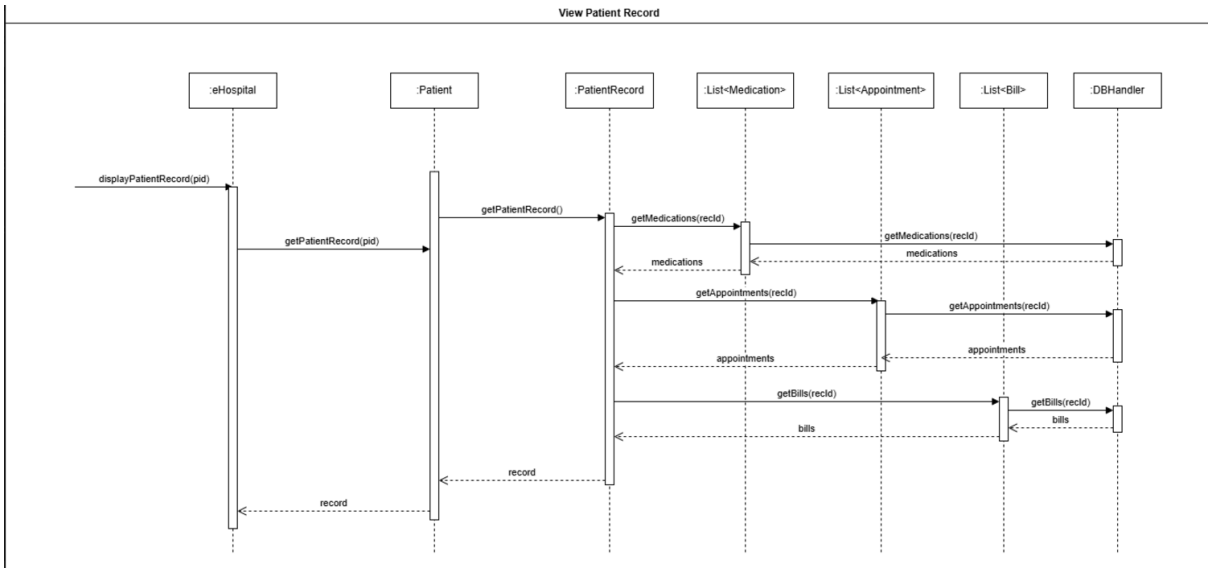
Register New Patient



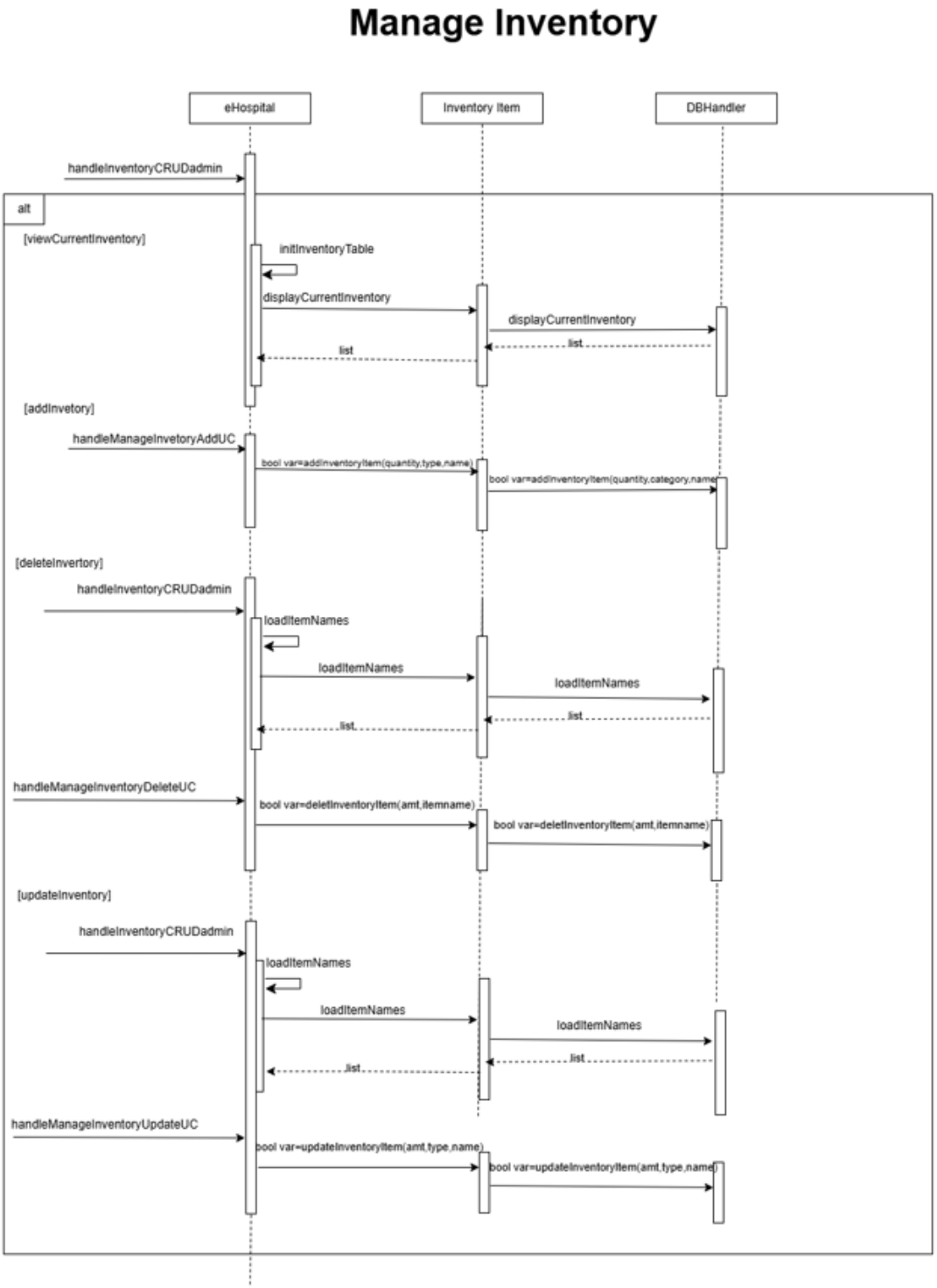
Schedule Appointment



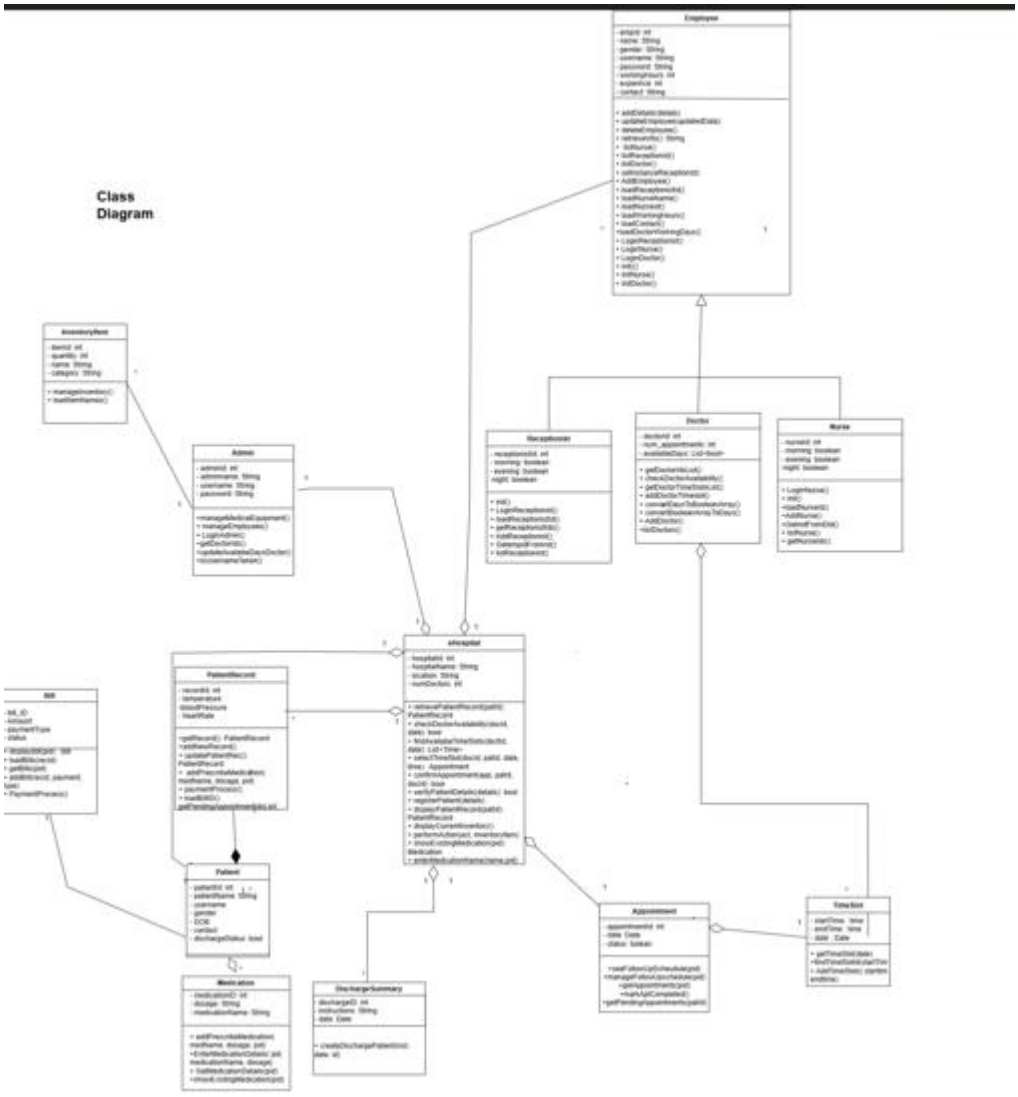
View Patient Record



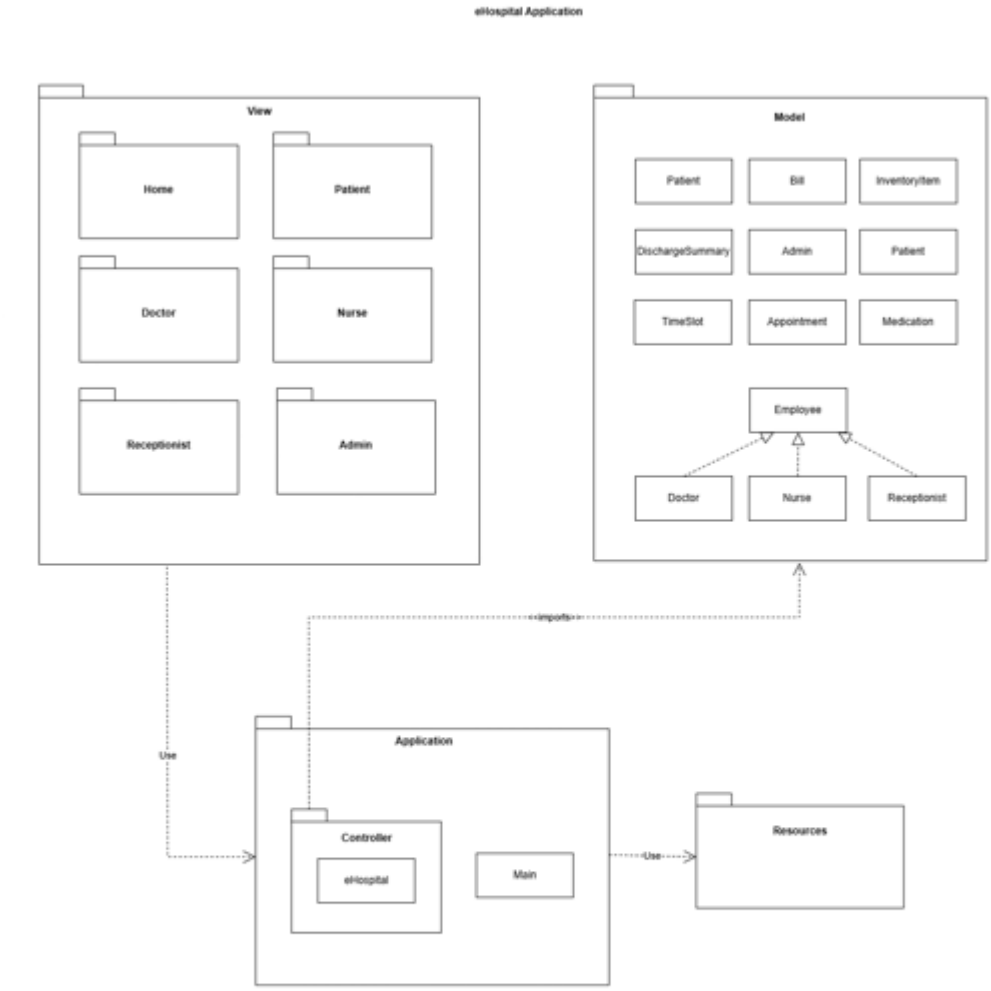
Manage Inventory



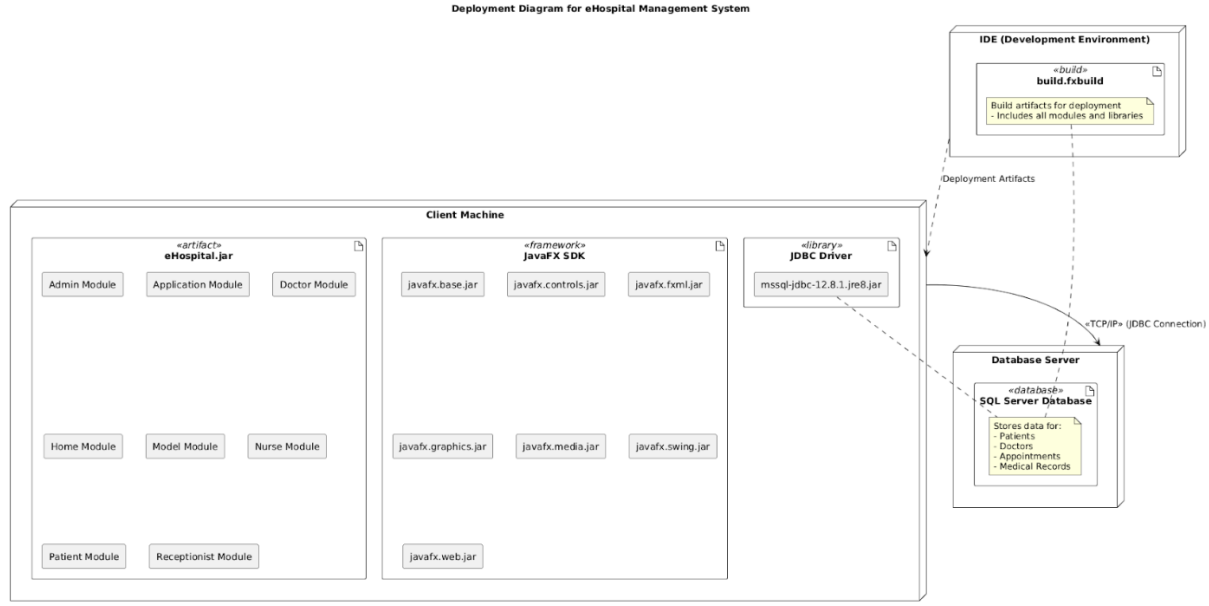
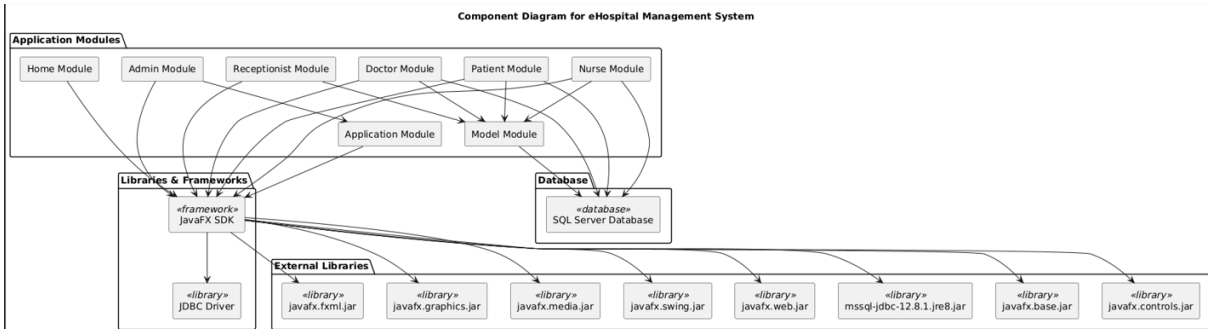
Class Diagram



Package Diagram



Deployment Diagram



Component Diagram