AI Powered Hospital Information Management System

Project Code: HIMS-AI-2526
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Project Overview

- Modern hospitals often struggle with inefficiencies caused by manual data entry, fragmented record-keeping, and time-consuming administrative processes. These challenges lead to delays in patient care, errors in documentation and increased workload on medical staff. To address these issues, the AI-Powered Hospital Information Management System (HIMS) is proposed as an intelligent, automated platform that integrates speech recognition and natural language processing to streamline hospital workflows. The system functions as follows:
- 1. AI-Based Conversation Recording and Analysis: The system listens to doctor–patient interactions in real time, identifies the speaker, and extracts key medical information such as symptoms, diagnosis, prescribed treatments, and follow-up details.

Project Overview

- 2. Doctor Confirmation and Data Storage: Before saving, the extracted data is displayed to the doctor for verification. Once confirmed, it is automatically stored in a centralized hospital database.
- 3. Dedicated Dashboards: Uses dedicated separate dashboards for doctor, patient, receptionist, and admin.

Project Overview

- Doctor Dashboard: Enables doctors to view patient histories, review notes, and manage consultations.
- Admin Dashboard: Allows hospital administrators to manage records, monitor data flow, and ensure system compliance.
- Patient Portal: Provides patients with access to their medical history, prescriptions, and reports.
- Reception Dashboard : Manages incoming patients' accounts and appointments.

Project Scope

- The scope of the AI-powered Hospital Information Management System (HIMS) is defined by its focus on improving patient record management, reducing administrative workload, and supporting accurate medical documentation through AI assistance, while keeping doctors in control of validation. The project is specifically designed for healthcare institutions and has clear boundaries on what it will and will not cover.
- Inclusions:
- AI-Assisted Medical Note Creation: The system captures doctor-patient conversations, highlights relevant medical details (symptoms, diagnoses, tests), and presents them for doctor confirmation before storing in the database.

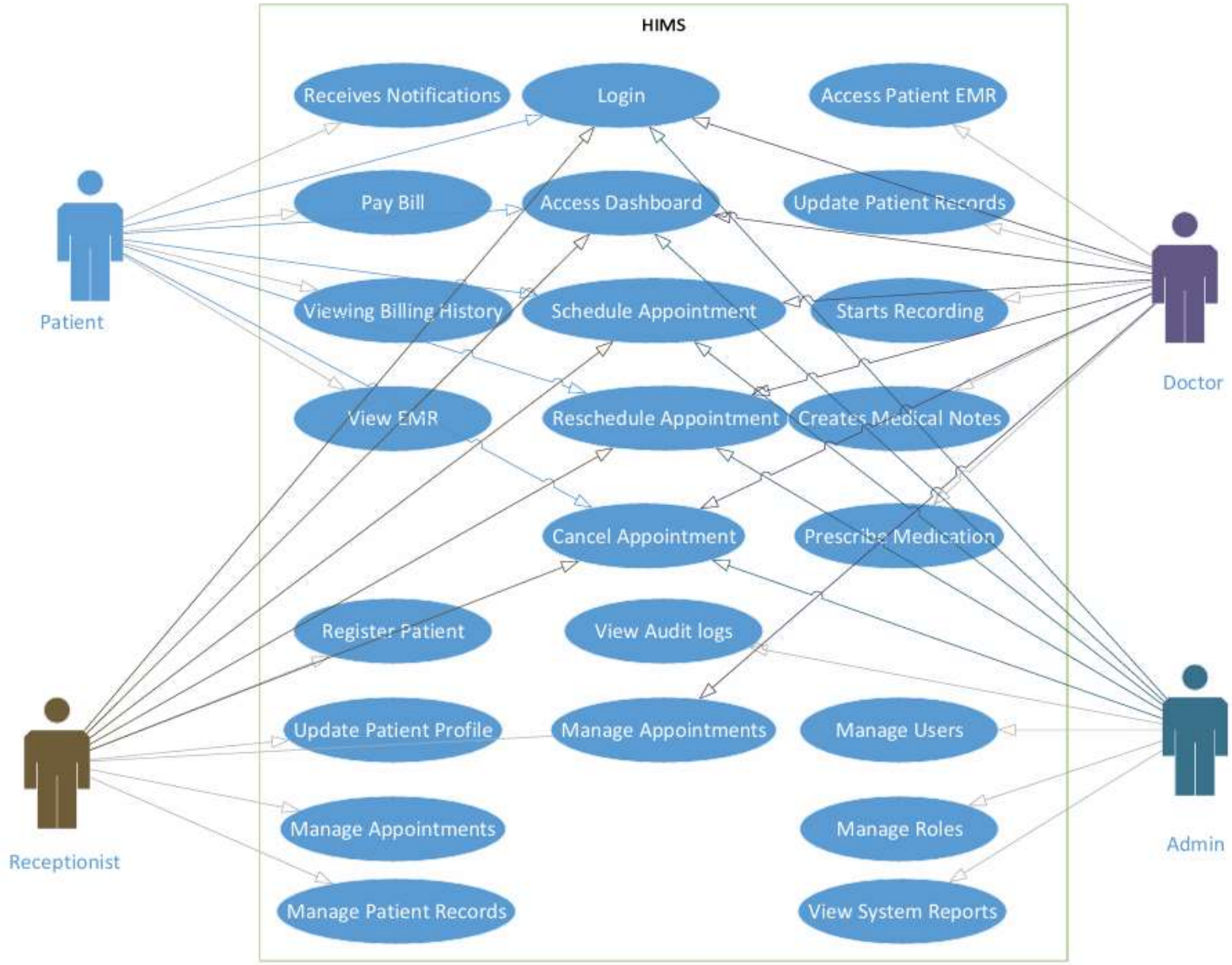
Project Scope

- Centralized Patient Record Management: Hospitals can maintain structured medical histories, accessible to authorized staff across visits.
- Integrated Staff Dashboard: Enables staff to verify or edit patient records, and oversee hospital operations such as scheduling and reporting.
- Secure Patient Access: Patients can receive their reports digitally through their profile or via staff-provided printed documents.
- Data Analytics for Hospitals: Aggregated data helps identify trends in patient issues, treatment effectiveness, and administrative workload.

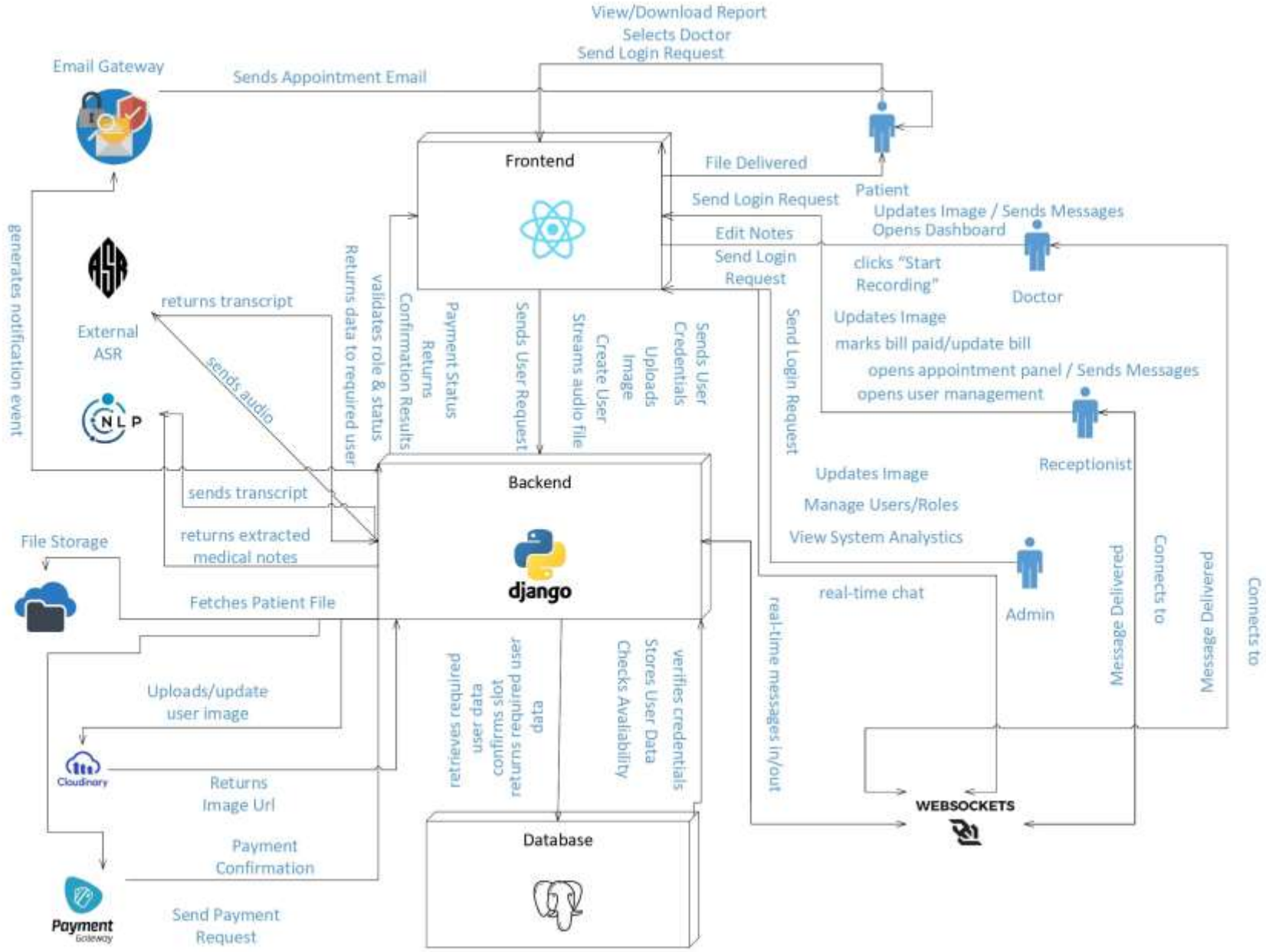
Project Scope

- Exclusions:

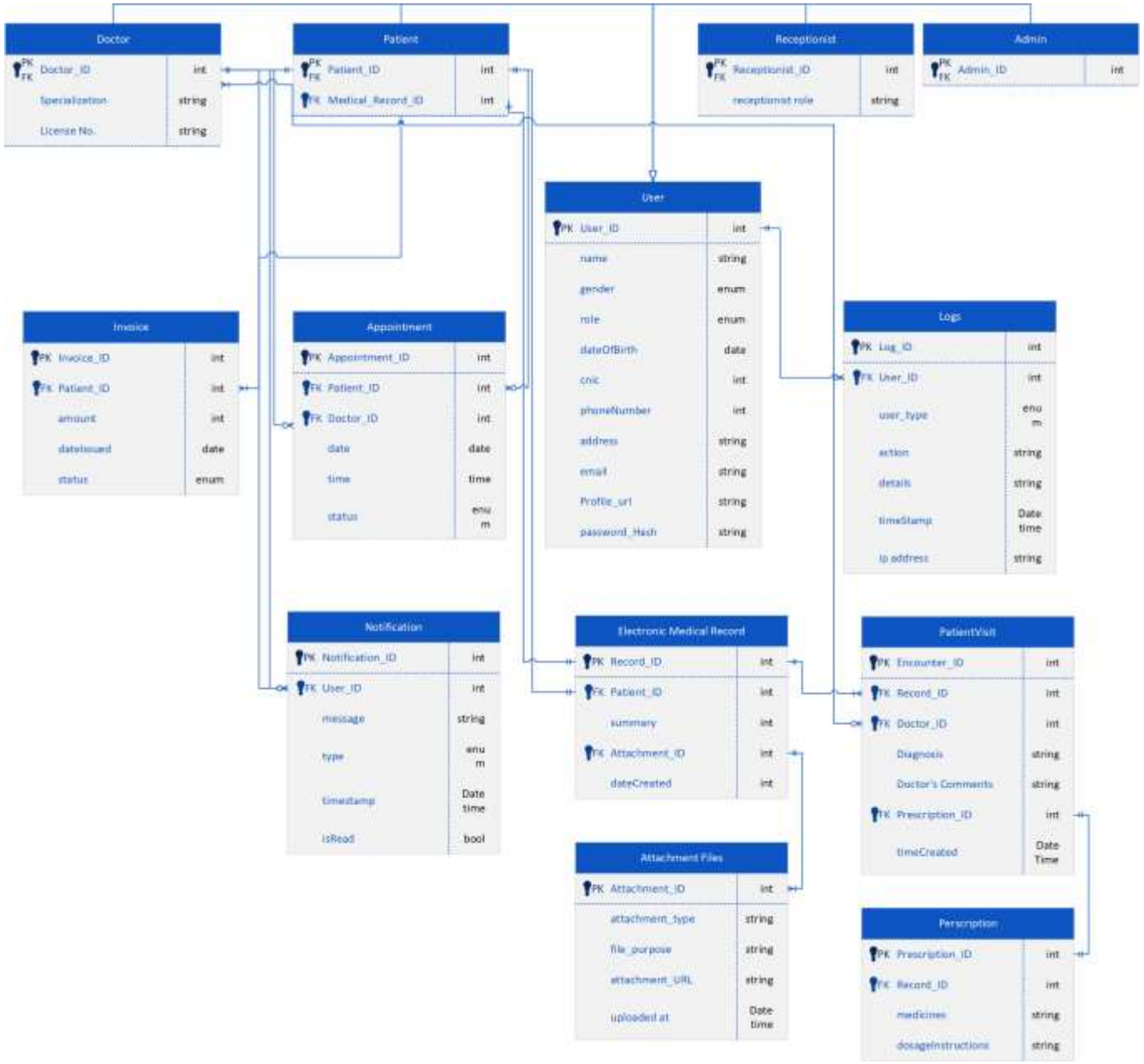
1. Full Clinical Decision-Making: The system does not recommend treatments or prescribe medicines; it only records and structures doctor-validated information.
2. Cross-Hospital Data Sharing: Patient data will not automatically transfer between hospitals unless formally integrated with external systems.
3. Self-Registration by Patients: Initial patient accounts will be created by hospital staff; self service registration will not be included in the current scope.
4. Non-Medical Hospital Operations: The system will not handle unrelated tasks such as payroll, pharmacy stock management, or facility maintenance.



Use Case Diagram



Architecture Diagram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License No. string
Patient
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FK Medical_Record_ID int
Receptionist
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receptionist role string
Admin
PK FK Admin_ID int
User
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name string
gender enum
role enum
dateOfBirth date
cnic int
phoneNumber int
address string
email string
Profile_url string
password_Hash string
Invoice
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FK Patient_ID int
amount int
dateIssued date
status enum
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FK Doctor_ID int
date date
time time
status enu m
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action string
details string
timeStamp Date time
ip address string
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FK User_ID int
message string
type enu m
timestamp Date time
isRead bool
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FK Patient_ID int
summary int
FK Attachment_ID int
dateCreated int
PatientVisit
PK Encounter_ID int
FK Record_ID int
FK Doctor_ID int
Diagnosis string
Doctor's Comments string
FK Prescription_ID int
timeCreated Date Time
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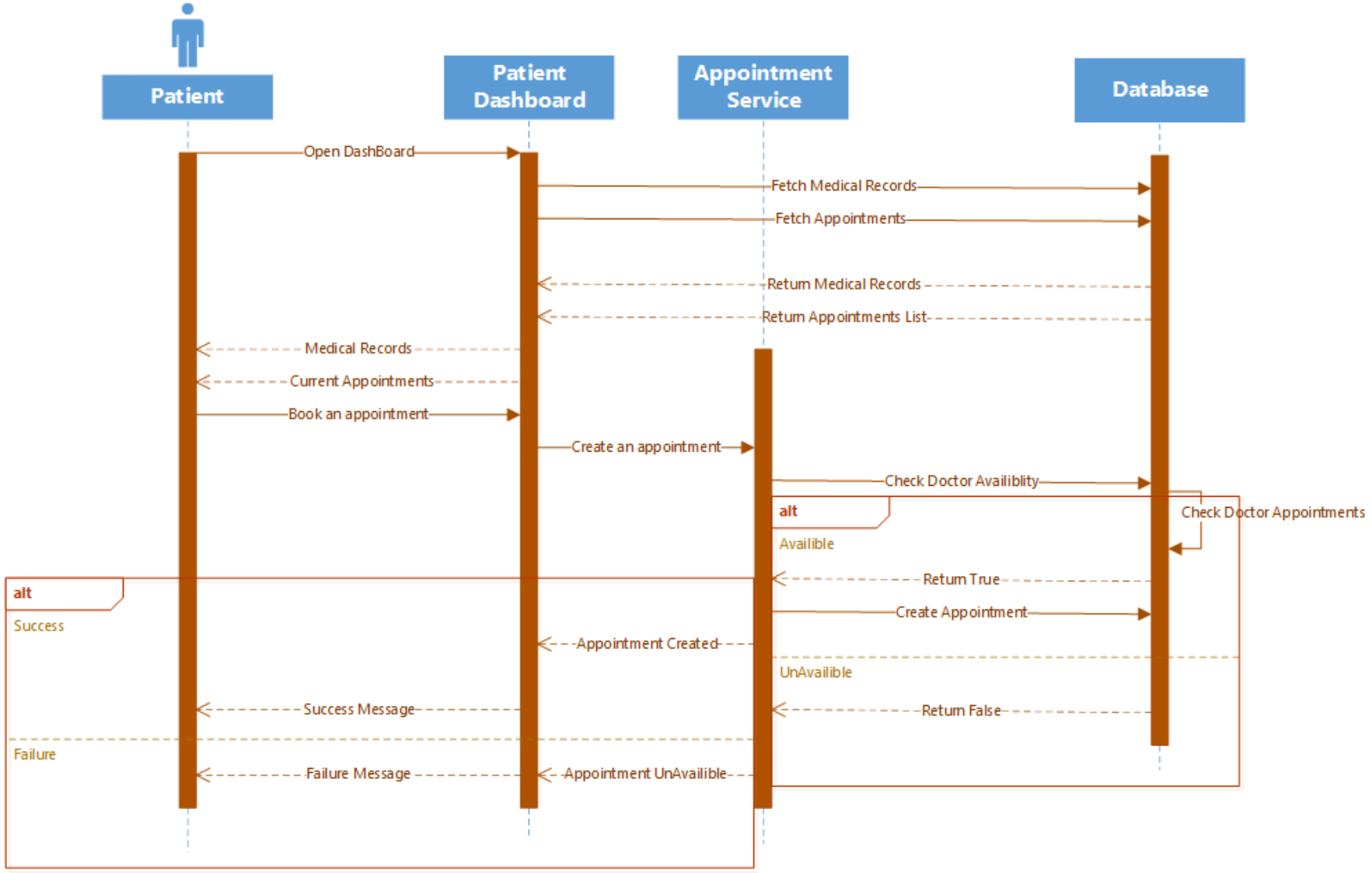
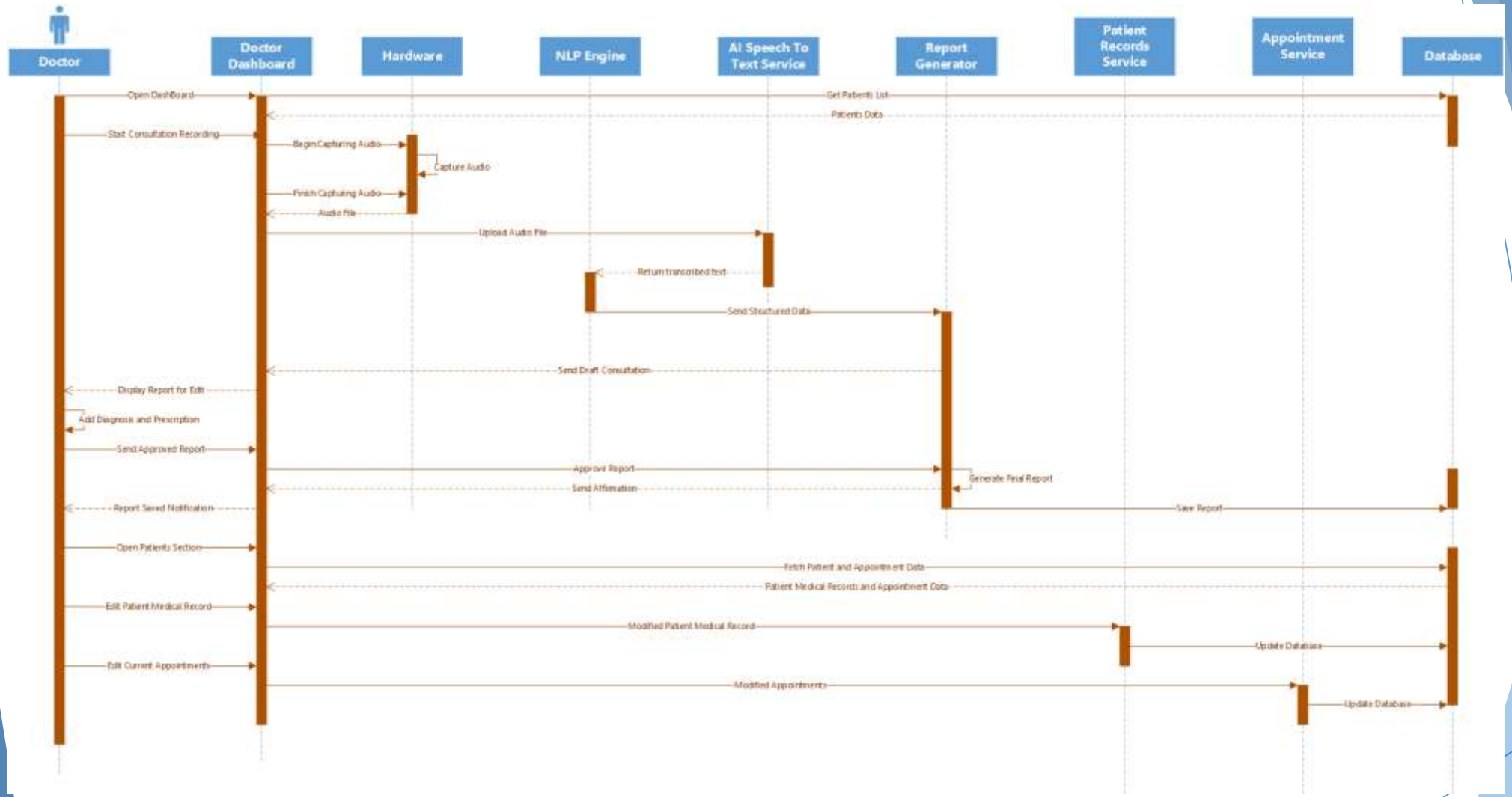
FK Record_ID int
medicines string
dosageInstructions string

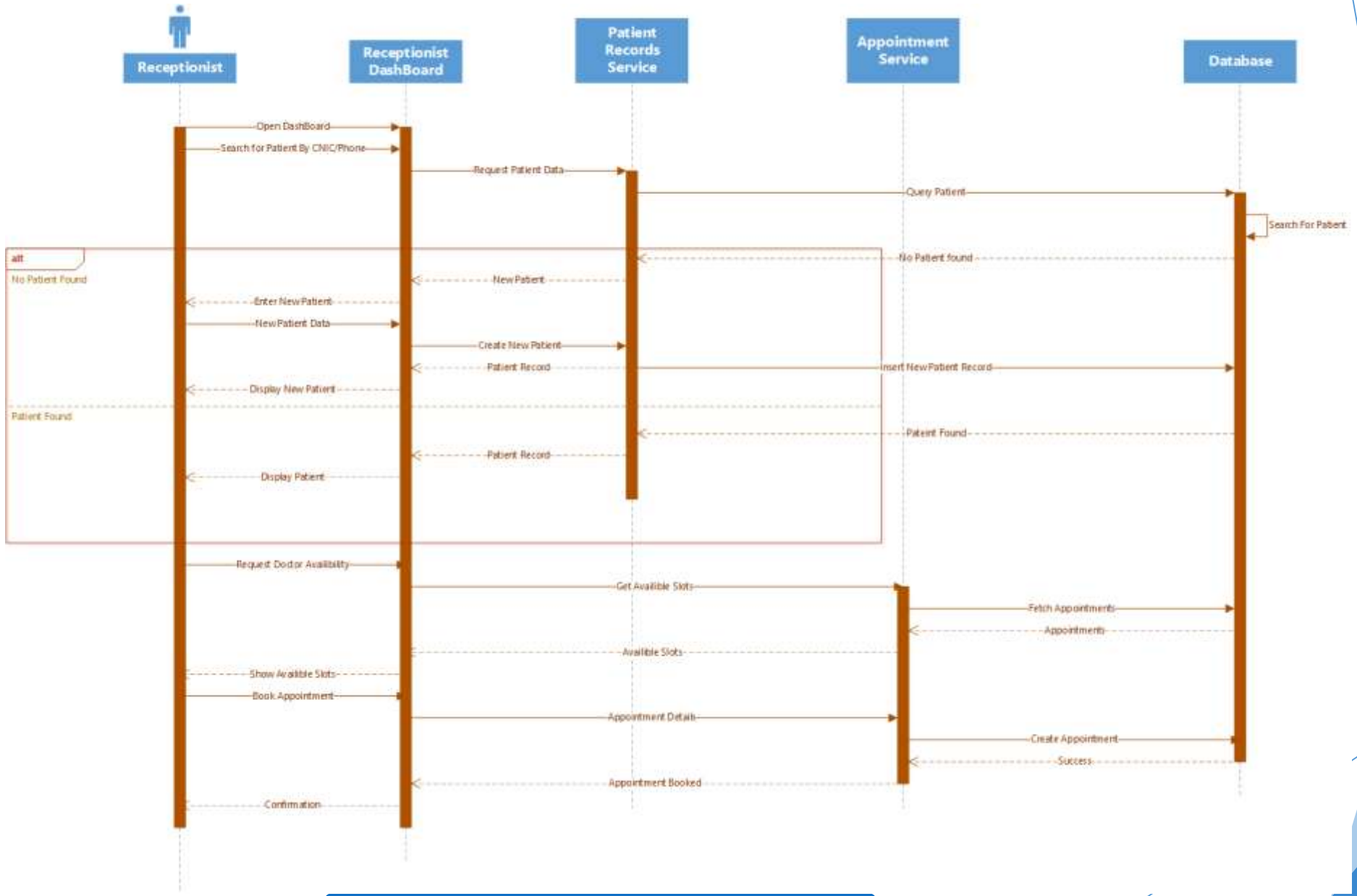
ER Diagram



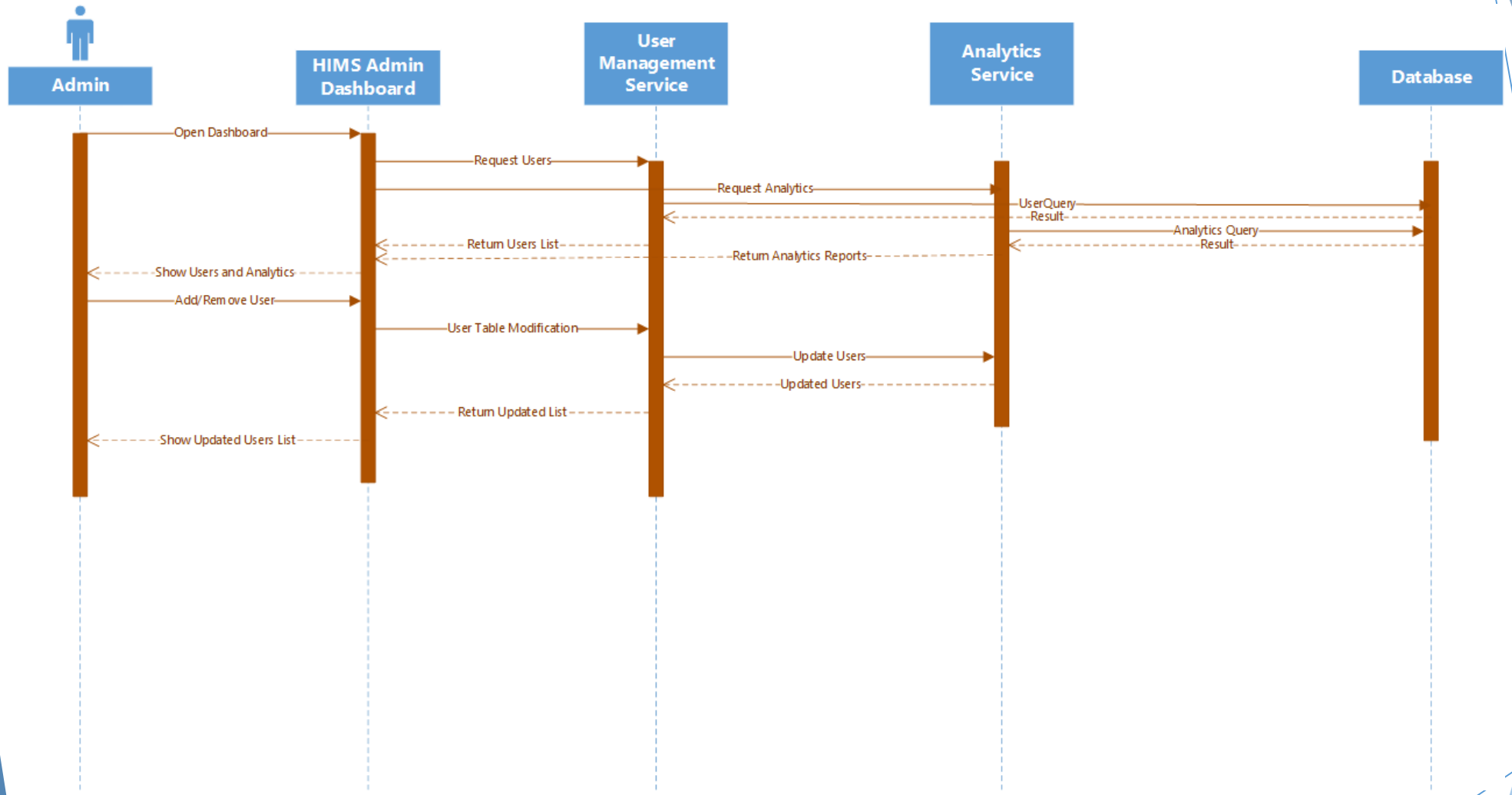
Sequence Diagram (Patient)



Sequence Diagram (Doctor)



Sequence Diagram (Receptionist)



Sequence Diagram (Admin)

Thanks