

# Business Requirements Document (BRD)

## 1. Project Overview

Hospitals and medical centres face significant challenges in managing their patient records, appointments, billing, and staff allocations. The current systems are fragmented, leading to inefficiencies in patient care and long wait times. A unified solution is required to streamline hospital operations, enabling better coordination among departments, timely patient care, and simplified administrative tasks such as billing and scheduling.

## 2. Objectives

- Give patient an opportunity to book appointments in the hospital with a specified doctor.
- Doctors can manage the appointment and give proper prescription and feedback to the patient based on the diagnosis.
- The hospital admin can do billing for a particular user.
- Based on the doctor's availability, proper slots are assigned to which the appointments can be taken by the patients.

## 3. Scope

- **For Patients:**
  - Patient can register themselves in the hospital.
  - Patient can view their medical history.
  - Patient can book an appointment for a doctor in the portal.
- **For Doctors:**
  - Doctor can view their schedule and manage each appointment.
  - Doctor can give prescription to patient based on their diagnosis.
- **For Hospital Admin:**
  - Admin can add doctors to the hospitals and manage them.
  - Admin can generate bill for each patient after their appointment has been completed.

## 4. Key features and Requirements

### 4.1. Search and Discovery

- **Search Doctors:** Patients can search for doctors based on their availability. Results will display:
  - Doctor name and specialty.

- Availability status (available or booked).

## 4.2. Appointment Management

- **Appointment Booking:** Patients can schedule appointments with doctors, specifying the type of consultation (e.g., general, specialist).
- **Appointment Confirmation:** Patients receive confirmation notifications once the appointment is booked.
- **Appointment Tracking:** Patients can view and track the status of their appointments (e.g., confirmed, completed).

## 4.3. Doctor Availability

- **Availability Status:** Doctors can update their availability status (available or not), visible to patients when booking appointments.

## 4.4. Notifications

- **Doctor Notifications:** Doctors receive notifications when new appointments are booked.
- **Patient Notifications:** Patients are notified when:
  - Their appointment is confirmed.
  - There are updates or changes to their appointment.

## 4.5. Payment and Billing Options

- **Billing Process:** Patients can view their bill after the appointment and make payments through the portal.
- **Payment Options:** Support for multiple payment methods (credit card, insurance claims, etc.).

# 5. Functional Requirements

## 5.1. Frontend (React & TypeScript)

- **Search Page:** Location-based doctor search with filters (specialty, availability, rating).
- **Doctor Profile Page:** Detailed doctor profile with reviews, availability status, and appointment booking functionality.
- **Appointment Management Dashboard:** Patient dashboard for tracking appointment status and viewing medical history.
- **Notifications:** Frontend support for push notifications regarding appointment confirmations and updates.

## 5.2. Backend (Node.js with Typescript)

- **User Management:** Authentication and authorization for both patients and doctors.
- **Appointment Processing:** Manage the entire appointment lifecycle from booking to completion, including rescheduling and cancellations.
- **Notification System:** Push notification service for notifying patients and doctors about appointment updates and confirmations.
- **Reporting Module:** Generate monthly reports and analytics for doctors, including patient feedback and appointment statistics.

## 6. Non-functional Requirements

- **Performance:** The system must be able to handle peak loads, especially during busy times such as flu season or health campaigns when appointment requests are higher.
- **Security:** Secure storage of patient data and medical history, including encryption of sensitive information and compliance with health data regulations (e.g., HIPAA).
- **Scalability:** The system should easily scale as more patients and doctors join the platform, accommodating increased appointment volumes and user interactions.
- **Usability:** The user interface must be intuitive for patients and doctors with varying levels of technical expertise, ensuring easy navigation and access to essential features.

## 7. User Stories

- As a patient, I want to search for nearby doctors so that I can book an appointment easily.
- As a doctor, I want to manage my appointment efficiently.
- As an admin, I want to look over all aspects of the hospital.

## 8. Stakeholders

- **Patients:** Individuals seeking to book medical appointments and access their health information online.
- **Doctors:** Medical professionals who need an efficient way to manage appointments, patient interactions, and prescriptions.
- **Hospital Administrators:** Staff responsible for overseeing operations, managing doctor schedules, and handling billing and patient records.

## 9. Timeline

- **Phase 1 (3 days):** Develop patient-side application
- **Phase 2 (3 days):** Develop doctor-side application
- **Phase 3 (3 days):** Integrate microservices and finish project
- **Phase 4 (2 days):** Testing, deployment, and final polish (UI/UX improvements, bug fixes).

## 10. UML Diagram

