**SOFTWARE REQUIREMENTS SPECIFICATION**

**for**

**HOSPITAL MANAGEMENT SYSTEM**

**PREPARED BY**

AMRITAMMBA S V (23CSR017)

DHARUN SIDDHARTH S P (23CSR049)

AKSHAY LAVAN S (23CSL251)

KONGU ENGINEERING COLLEGE

27

**Table of Contents**

**Table of Contents ........................................................................................................................... ii  
Revision History ........................................................................................................................... ii**

**1. Introduction**

1.1 Purpose ............................................................................................................................. 1  
1.2 Scope ................................................................................................................................. 1  
1.3 Definitions, Acronyms, and Abbreviations ...................................................................... 1  
1.4 References ......................................................................................................................... 1  
1.5 Overview ............................................................................................................................ 1

**2. Overall Description**

2.1 Product Perspective .......................................................................................................... 2  
2.2 Product Functions ............................................................................................................ 2  
2.3 User Characteristics ......................................................................................................... 2  
2.4 Constraints ........................................................................................................................ 2

**3. Specific Requirements**

3.1 User Authentication ......................................................................................................... 3  
3.2 Patient Management ........................................................................................................ 3  
3.3 Appointment Scheduling .................................................................................................. 3  
3.4 Billing & Payments ......................................................................................................... 3  
3.5 Medical Inventory Management ..................................................................................... 4  
3.6 Reports & Analytics ......................................................................................................... 4

**4. System Design & Architecture**

4.1 Tech Stack ........................................................................................................................ 4  
4.2 System Architecture ........................................................................................................ 4

**5. Future Enhancements …............................................................................................ 5**

**1. Introduction**

**1.1 Purpose**

This document defines the functional and non-functional requirements for the **Hospital Management System (HMS)**, a web-based platform designed to manage hospital operations such as patient records, doctor schedules, appointment bookings, medical billing, and inventory tracking.

This document is intended for developers, project managers, stakeholders, and testers to provide a clear understanding of system requirements and design.

**1.2 Scope**

The Hospital Management System aims to achieve the following:

* **User Authentication**: Secure login for patients, doctors, and hospital staff.
* **Appointment Scheduling**: Patients can book, modify, or cancel appointments.
* **Medical Records Management**: Secure storage and retrieval of patient records.
* **Billing & Payment Processing**: Making billing records and secure payments.
* **Inventory Management**: Tracking stock levels of medical supplies and equipment.
* **Finding a Doctor:** To search for the doctor with their specialisation

The system will be built using modern web technologies and will be scalable for future enhancements.

**1.3 Definitions, Acronyms, and Abbreviations**

* **HMS** - Hospital Management System
* **UI/UX** - User Interface / User Experience
* **API** - Application Programming Interface
* **CRUD** - Create, Read, Update, Delete
* **JWT** - JSON Web Token (for authentication)
* **EHR** - Electronic Health Records

**1.4 References**

* [www.kmchhospitals.com](http://www.kmchhospitals.com)
* <https://kalaharijournals.com/resources/2988_JULY_14%20%281%29.pdf>
* https://ieeexplore.ieee.org/document/10112962

**1.5 Overview**

This document is structured as follows:

* Section 2: Overview of the system, user characteristics, and constraints.
* Section 3: Functional and non-functional requirements.
* Section 4: System architecture and design choices.
* Section 5: Future enhancements and scalability options.

**2. Overall Description**

**2.1 Product Perspective**

The **Hospital Management System (HMS)** is a **web-based** platform designed to improve operational efficiency and streamline patient care. It consists of:

* **Frontend**: A user-friendly web interface for patients, doctors, and administrators.
* **Backend**: Handles authentication, business logic, and data management.
* **Database**: Secure storage for patient records, appointment details, billing and inventory.

**2.2 Product Functions**

The system will include the following functionalities:

1. **User Authentication**
   * Secure registration and login.
   * Role-based access control.
2. **Patient Management**
   * Patients can manage their profiles.
   * Doctors can access and update medical records.
3. **Appointment Scheduling**
   * Patients can book and modify appointments.
   * Doctors receive real-time notifications.
4. **Medical Record Storage & Retrieval**
   * Secure access to patient records and medical history.
   * Doctors can update treatment details.
5. **Billing & Payment Processing**
   * Automated generation of invoices.
   * Integration with online payment gateways.
6. **Inventory Management**
   * Track stock levels of medicines and medical equipment.
   * Automated alerts for low-stock items.

7. **Finding a Doctor**

* Patients can search for doctors based on their specialization.
* Doctors' availability and contact details are provided.

**2.3 User Characteristics**

* **Patients**: Book appointments, access medical records, and manage payments.
* **Doctors**: View patient records, manage schedules, and be discoverable based on specialization.
* **Hospital Staff**: Manage administrative tasks such as billing, scheduling, and inventory.

**2.4 Constraints**

* **Data Security**: All patient data must be securely stored and accessed.
* **Regulatory Compliance**: System must comply with **HIPAA** and other healthcare regulations.
* **Scalability**: Should handle high traffic and large data storage.

**3. Specific Requirements**

**3.1 User Authentication**

* Secure login for patients, doctors, and staff.
* JWT-based authentication.

**3.2 Patient Management**

* Patients can update personal details.
* Doctors can update medical history.

**3.3 Appointment Scheduling**

* Patients can book, modify, or cancel appointments.
* Doctors receive real-time notifications.

**3.4 Medical Record Management**

* Secure storage and retrieval of patient medical history.
* Doctors can update treatment and prescriptions.

**3.5 Billing & Payment Processing**

* Automated invoice generation.
* Secure online payment integration.

**3.6 Inventory Management**

* Track stock levels of medicines and equipment.
* Alerts for low-stock supplies.

**3.7 Finding a Doctor**

* Patients can search for doctors by specialization.
* Doctors' profiles and availability are displayed.

**4. System Design & Architecture**

**4.1 Tech Stack**

* **Frontend**: React.js (Material UI/Bootstrap for styling)
* **Backend**: Node.js with Express.js
* **Database**: MongoDB
* **Authentication**: JWT (JSON Web Token)
* **Hosting**: AWS / DigitalOcean / Heroku

**4.2 System Architecture**

1. **Frontend (React.js)**: Handles UI and API interactions.
2. **Backend (Node.js + Express.js)**: Manages authentication and business logic.
3. **Database (PostgreSQL / MongoDB)**: Stores patient and hospital data.
4. **REST API**: Securely connects frontend and backend.

**5. Future Enhancements**

* **Telemedicine Integration**: Enable remote patient consultations.
* **Mobile App Development**: Extend access to mobile users.
* **Wearable Device Integration**: Sync patient vitals from smart devices.

This document provides a detailed overview of the **Hospital Management System (HMS)** and its technical requirements.