

**TOPIC**  
**HOSPITAL MANAGEMENT SYSTEM**

**NAME :BENEESH V**  
**ROLL NO : 24PMC119**  
**STREAM : FULL STACK**

# ABSTRACT OF

## **Hospital Management System – Comprehensive Patient and Facility Management Platform**

This project, Hospital Management System, is a full-stack web application designed to streamline and digitize the day-to-day operations of hospitals and clinics. It provides modules for patient registration, doctor appointment scheduling, electronic medical records (EMR), billing, staff management, and real-time reporting. The system ensures quick access to patient data, minimizes paperwork, reduces errors, and improves communication between departments. Designed for scalability, it supports both small clinics and large hospital networks through role-based access and a responsive interface.

### **Problem Statement / Objective**

Hospitals and clinics often face challenges in managing patient data, appointments, billing, staff allocation, and inventory manually. This leads to inefficiencies, miscommunication, delays, and increased workload. The objective of this project is to create a centralized, digital hospital management system that automates and streamlines hospital operations, improves patient care, and enables better decision-making by healthcare administrators.

### **Objective and Scope of the Project:**

The objective is to develop a centralized platform to manage hospital operations efficiently. The scope includes:

- Patients – Can register, book appointments, view prescriptions, access reports, and pay bills online.
- Doctors – Can manage appointments, write prescriptions, view medical histories, and update records.
- Admin – Can manage users, assign doctors, update schedules, oversee billing, and monitor hospital statistics.

### **Proposed Solution Overview**

The proposed system, **SmartCare**, is a full-stack web application built using **Next.js(Frontend)** and **Spring boot (Backend)**. It will provide role-based access for doctors, patients, receptionists, and admin staff. Key modules include:

- **Patient Registration & Records:** Secure patient profile management and history.
- **Appointment Scheduling:** Real-time doctor appointment booking with availability tracking.

- **Doctor Dashboard:** View appointments, update diagnoses, prescribe medication.
- **Admin Panel:** Manage doctors, staff, departments, inventory, and generate reports.
- **Billing Module:** Automated invoice generation and payment tracking.
- **Pharmacy & Inventory Management:** Track medicine stock and manage orders.
- **Notifications:** Email/SMS notifications for appointments and reminders.

### **Expected Output / Demonstrable Features**

During the final demo, we will showcase the following working features:

- User authentication and role-based login (Patient/Doctor/Admin/Receptionist).
- Patient registration, consultation history, and profile updates.
- Live appointment booking with doctor schedule conflict resolution.
- Doctor dashboard to manage visits, prescriptions, and case notes.
- Admin dashboard to manage departments, staff, and reports.
- Automated bill generation for treatments, tests, and medicines.
- Medicine and stock tracking system in the pharmacy module.
- Real-time alerts and appointment reminders via email or SMS.

### **Hardware & Software:**

- Hardware: Standard computing devices with internet connectivity
- Software:
  - Frontend: Next.js
  - Backend: Spring Boot
  - Database: PostgreSQL
  - Deployed : render,git

**Testing Technologies:**

The platform is tested through unit testing for individual modules, integration testing for workflows, and manual testing for interface usability. Tools like Postman and Jest are used for backend and frontend testing, ensuring robustness and reliability.

**Contribution of the Project:**

The Hospital Management System improves operational efficiency, reduces administrative overhead, and enhances patient care. It creates a structured environment where patient and hospital records are securely maintained, enabling quick decisions and seamless coordination across departments.