

# Hospital Management System

System Architecture Diagram

## CLIENT LAYER (Web Browser)

### Management Frontend

#### Roles:

- Admin
- Doctor
- Nurse
- Reception
- Accounts

#### Technologies:

HTML, CSS, JavaScript

Role-based dashboard with operational control

### Patient Frontend

(Separate UI)

#### Features:

- View Medical Records
- Book Appointments
- View Bills

#### Technologies:

HTML, CSS, JavaScript

Personalized dashboard for patient data only

## Key Design Features



### Three-Tier Architecture

Separation of concerns for scalability



### Role-Based Access Control

RBAC for secure authorization



### Separate User Interfaces

Distinct Patient & Management portals



### JWT Authentication

Secure token-based auth system



### Scalable Design

Maintainable & extensible codebase

## Technology Stack

Frontend:

HTML, CSS, JS

Backend:

Node.js, Express

Database:

MySQL

Auth:

JWT + RBAC

## Note:

This architecture ensures data security, role separation, and efficient system management suitable for healthcare environments.

## APPLICATION LAYER (Node.js + Express)

### REST API Layer

Express.js

Validate Token & Role

Authorized Request

### Business Logic Layer

JWT + Role-Based Access Control (RBAC)

- Patient Management
- Treatment Management
- Billing Management
- Appointment Management
- Ward & Admission
- Salary Management

SQL Queries

### Database Access Layer

MySQL Driver

Read / Write Data

## DATA LAYER (MySQL Database)

### Hospital Management Database



#### Tables:

- users
- doctors
- appointments
- wards
- bills
- patients
- nurses
- treatments
- admissions
- salary\_payments

Relational database with normalized schema for efficient data management