

mediCore - A Complete JavaFX Hospital Management System

■ Project Overview

mediCore is an enterprise-level, modular and scalable JavaFX-based Hospital Management System (HMS) built for modern hospitals. Designed using FXML and CSS for a clean and responsive UI, it supports role-based access, multithreading for performance, server-socket for real-time communication, and MySQL for secure data persistence. It is IntelliJ IDEA-friendly and supports all layers of a hospital's digital workflow.

■ Supported Roles (Login & Register)

The system supports dedicated login/registration flows for various roles, each with unique privileges and dashboards.

- 1 Admin
- 2 Doctor
- 3 Patient
- 4 Nurse
- 5 Pharmacist
- 6 Security Guard
- 7 Ambulance Driver
- 8 Hospital Canteen Worker
- 9 Hospital Cleaner
- 10 Receptionist and Support Staff

■ Module-wise Features Overview

Module	Main Features	Additional (Smart/AI) Features
Doctor Module	<ol style="list-style-type: none"> 1 - View and manage appointments 2 - Generate digital prescriptions (PDF) 3 - Access patient diagnosis history 4 - Schedule follow-ups 	<ol style="list-style-type: none"> 1 - AI-based suggestion for treatment based on past records 2 - Voice-to-text prescription input 3 - Live video/audio consultation with file sharing 4 - Real-time vitals monitoring integration
Nurse Module	<ol style="list-style-type: none"> 1 - Log and monitor patient vitals 2 - Track medicine administration 3 - Manage bed allocations 	<ol style="list-style-type: none"> 1 - Automated reminders for medicine/vitals via notification system 2 - QR-based patient wristband scanning 3 - Emergency alert from patient side
Pharmacist Module	<ol style="list-style-type: none"> 1 - Manage medicine inventory 2 - Issue and track medications 3 - Receive expiry alerts 	<ol style="list-style-type: none"> 1 - Automated reordering with AI-predicted demand 2 - Stock visualization with charts 3 - Barcode scanning for fast issuing
Admin Module	<ol style="list-style-type: none"> 1 - Control user management and access 2 - Assign shifts to staff 3 - Monitor hospital performance 	<ol style="list-style-type: none"> 1 - Broadcast emergency or routine alerts to all staff 2 - Download financial & operational reports (PDF/Excel) 3 - Analytics dashboard powered by charts and graphs
Patient Module	<ol style="list-style-type: none"> 1 - Register & login securely 2 - Book appointments 3 - View history, prescriptions, lab results 4 - Chat with doctors 	<ol style="list-style-type: none"> 1 - Voice assistant for elderly/visually impaired users 2 - Online bill payment gateway integration (Stripe/SSLCommerz) 3 - Map-integrated ambulance tracking 4 - Health reports in charts/graphs
Ambulance Driver	<ol style="list-style-type: none"> 1 - Track assigned emergencies 2 - Status updates (en route, arrived) 	<ol style="list-style-type: none"> 1 - Google Maps integration for real-time navigation 2 - Driver shift scheduler with route logging
Hospital Cleaners & Canteen	<ol style="list-style-type: none"> 1 - Daily task schedule view 2 - Report completion and issues 	<ol style="list-style-type: none"> 1 - QR-based room scanning for task validation 2 - Nutrition suggestion system (AI)

Module	Main Features	Additional (Smart/AI) Features
Security Guard	1 - Manage and log visitor entries	1 - Facial recognition system (mock) for staff/visitors
	2 - Issue digital gate passes	2 - CCTV record review panel (simulation)

■■ Technical Architecture

- 1 JavaFX frontend using FXML for clean separation of UI logic
- 2 CSS for styling and light/dark mode theme support
- 3 MySQL for data persistence using JDBC
- 4 Server-socket for real-time alert, chat and notification system
- 5 Multithreading for background jobs (report generation, DB sync, notifications)
- 6 File handling: logs, medical report upload/download, PDF generation
- 7 Secure login with hashed passwords and session tracking