

SMART INDIA HACKATHON 2024 ABSTRACT

THEME : MedTech / BioTech / HealthTech

PROBLEM STATEMENT ID: 1620

PROBLEM STATEMENT TITLE: Queuing models in OPDs/ availability of beds/ admission of patients. A hospital based solution is ideal which can be integrated with city wide module.

PROBLEM STATEMENT DESCRIPTION:

Technological solution as per queuing models in OPDs/availability of beds/admission of patients would be one area. Study of dispensation of various types of medicines/consumables and Inventory management modules at hospital level are key areas requiring support. NIC has already developed some modules but their implementation in Delhi is yet to be started. A hospital based solution is ideal which can be integrated with city wide module may be required.

SOLUTION TO THE PROBLEM STATEMENT

- **Dynamic OPD Queue Management:** Our solution introduces an advanced queuing model that manages patient flow in OPDs by providing real-time updates on wait times and queue status. This dynamic approach minimizes patient wait times and optimizes the efficiency of OPD operations, leading to improved patient satisfaction and streamlined workflow.
- **Real-Time Bed Availability Tracking:** We have developed a bed management module that offers real-time visibility into bed occupancy across various departments and wards. This functionality ensures effective bed utilization, facilitates prompt patient placement, and helps prevent overbooking and bottlenecks, thereby enhancing overall hospital efficiency.
- **Automated Patient Admission Process:** The project includes an integrated patient admission system that automates key processes such as registration, room assignment, and medical record management. This automation not only speeds up the admission

process but also reduces administrative overhead, ensuring accurate and efficient handling of patient data.

- **Efficient Inventory Management:** Our solution features a robust inventory management module designed to track and manage the dispensation of medicines and consumables. By providing real-time inventory data and automating the reordering process, this module helps maintain optimal stock levels, prevent shortages, and support effective resource management at the hospital level.
- **City-Wide Integration Capability:** Designed with scalability and integration in mind, our hospital-based solution is capable of seamlessly integrating with city-wide healthcare modules. This ensures that our solution can be extended across multiple healthcare facilities, allowing for coordinated management of resources and improved efficiency at a broader level.
- **Data-Driven Insights and Reporting:** The system incorporates advanced analytics and reporting features that provide actionable insights into hospital operations, patient flow, and resource utilization. These data-driven insights enable hospital administrators to make informed decisions, identify trends, and implement improvements based on real-time data.
- **Enhanced Patient Communication:** To further improve the patient experience, the solution includes features for better communication between patients and hospital staff. This includes automated notifications for appointment reminders, status updates, and personalized health information, fostering clearer communication and reducing patient anxiety.

Tech Stack	Role
React.js	<ul style="list-style-type: none"> - Front-end framework to build dynamic and interactive user interfaces for the hospital management system. - Handles the user-facing aspects such as patient admission forms, real-time bed availability status, and OPD queuing display. - Allows seamless integration with backend APIs to fetch and display data on patient admissions and bed availability.
TailwindCSS and Bootstrap	<ul style="list-style-type: none"> - Styling language used to create visually appealing layouts and designs for the hospital management system. - Ensures responsive design across different devices, making the UI accessible for both hospital staff and patients. - Customizes the appearance of the interface, including colors, fonts, and spacing, to align with the hospital's branding.
Express.js	<ul style="list-style-type: none"> - Back-end framework that manages server-side logic and API creation for data handling. - Facilitates communication between the front-end (React.js) and the database, ensuring data related to patient admissions, bed availability, and OPD queuing is accurately processed and served. - Manages user authentication, data validation, and integration with city-wide modules for a cohesive healthcare system.
MongoDB	<ul style="list-style-type: none"> - NoSQL database used to store and manage patient data, bed availability, and OPD queuing information. - Provides a flexible schema that can handle complex and varied healthcare data efficiently. - Enables real-time data retrieval and updates, ensuring the hospital system always reflects the current status of patient admissions and bed occupancy. - Supports scalable data management as the system grows and integrates with city-wide healthcare modules.
Figma	<ul style="list-style-type: none"> - UI/UX design tool used for creating wireframes, prototypes, and final design layouts before development. - Allows collaborative design, enabling stakeholders to visualize the hospital management system and provide feedback early in the process.

	<ul style="list-style-type: none">- Serves as a reference point for developers to maintain consistency in the design and user experience during implementation.
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