

A Mini Project Report

On

Hospital Management System

Student of
Computer application

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Submitted

To



Submitted By

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Under the Guidance of

Guide

1. Introduction

In many hospitals and healthcare centers, patient management is still handled using semi-manual or outdated systems. This results in long waiting times, overcrowded waiting areas, and inefficient coordination between patients, doctors, and hospital staff. With increasing patient load and limited administrative resources, these issues become more prominent and directly affect service quality, operational efficiency, and overall patient satisfaction.

The **Hospital Management and Online Queue System** is a web-based application developed to simplify hospital operations by digitizing patient queues, department information, and doctor availability. The system provides a centralized platform where patients can access hospital services online, check available departments, view doctors, and generate queue tokens without physically standing in line. At the same time, administrators can manage patient flow more systematically.

By implementing this system, the hospital workflow becomes more transparent and structured. The project demonstrates how modern web technologies such as React.js and JavaScript can be effectively utilized to improve healthcare service delivery. It also highlights the importance of digital transformation in small and medium healthcare institutions.

1.2 Problem Definition

Hospitals often face difficulties in managing patient flow due to the absence of an organized digital queue system. Manual token systems and physical queues create confusion, increase waiting time, and lead to errors in patient handling. Patients are usually unaware of their exact position in the queue, which causes uncertainty and frustration. In busy departments, this often leads to overcrowding and inefficient crowd control.

Additionally, many healthcare facilities lack an integrated platform to manage departments, doctors, and appointments in a coordinated manner. Information is scattered and not easily accessible to patients. Without a centralized system, maintaining accurate records, tracking daily patient count, and updating doctor availability becomes difficult. These limitations reduce operational efficiency and increase administrative workload.

Therefore, there is a clear need for a web-based hospital management system that can automate queue handling, improve coordination, and provide real-time information access. This project aims to address these challenges through a simple yet effective digital solution.

1.3 Objectives

The primary objectives of this project are:

- To design and develop a web-based Hospital Management System.
 - To implement an online queue management feature for patients.
 - To provide structured information about hospital departments and available doctors.
 - To reduce patient waiting time and minimize manual administrative work.
 - To improve transparency, efficiency, and workflow management within the hospital.
 - To create a user-friendly interface that is accessible and easy to operate.
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2. Review of Literature

Digital healthcare systems have gained significant importance in recent years due to increasing patient demand and technological advancements. Various hospital management systems have been developed to automate processes such as appointment scheduling,

billing, electronic medical records, and staff management. Research studies indicate that digital systems improve operational efficiency, reduce paperwork, and enhance patient satisfaction.

Queue management systems, in particular, have shown measurable improvements in reducing waiting times and improving service delivery. However, many existing solutions are either costly, complex, or require specialized infrastructure. Small and medium-sized hospitals often cannot afford such systems.

This project focuses on creating a simplified, cost-effective, and user-friendly hospital management solution. Unlike large enterprise systems, this application emphasizes core functionality such as department management and queue automation, making it practical and accessible for smaller healthcare institutions.

3. Study Area

The study focuses on the digital simulation of a general hospital environment. The system is designed to manage outpatient departments, doctors, and patient queues in an organized manner. It represents a typical hospital workflow where patients visit different departments and require systematic queue handling.

The application aims to model real-world hospital operations digitally while keeping the system lightweight and easy to use. It supports multiple departments and doctors while maintaining a clean and responsive user interface.

3.1 Location and Extent

The application is designed as a web-based platform that can be accessed through standard web browsers. It can be deployed on a local server for internal hospital use or hosted online for wider

accessibility. The system is scalable and can be extended to support additional departments or users as required.

3.2 General Description of Study Area

The system simulates real-world hospital workflow, including department selection, doctor listing, and patient queue generation. It is particularly useful in outpatient departments (OPD), where large numbers of patients need to be managed daily.

The application is structured to provide smooth navigation between different sections such as home page, departments page, doctor listing page, and queue management page. The design ensures that users can easily understand and operate the system without technical knowledge.

4. Materials and Methods

4.1 Materials Used

- Computer or laptop
 - Internet browser
 - Stable internet connection
 - Development environment
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4.2 Software Used

- React.js for frontend development
- JavaScript for application logic
- HTML for page structure
- CSS for styling and responsiveness
- Node.js (for future backend integration and API handling)
- VS Code / Cursor IDE for development

4.3 Data Processing

Patient and queue data are processed within the application using structured JavaScript logic. The system generates unique queue tokens for each patient entry and updates the queue dynamically.

Data is temporarily stored using browser storage mechanisms to ensure that the queue persists during active sessions. This allows efficient management of patient flow without manual intervention.

4.3.1 Digitization

Traditional manual queue handling is converted into a digital format through automated token generation. Each patient receives a digital token number upon booking, which determines their position in the queue.

The digitization process eliminates paperwork, reduces errors, and ensures systematic queue management. This digital approach improves accuracy and enhances transparency in hospital operations.

5. Research Methodology

The project follows a structured and systematic development methodology. The process begins with understanding hospital workflow requirements and identifying key features needed for effective queue management. Based on this analysis, the system architecture and user interface were designed.

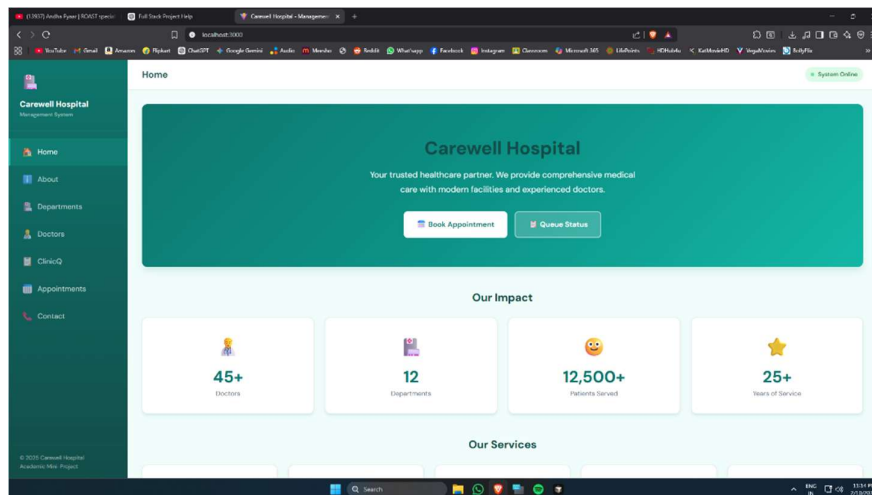
The development phase involved creating frontend components, implementing queue logic, and testing the application for functionality and performance. Continuous testing ensured that navigation, token generation, and department selection worked accurately.

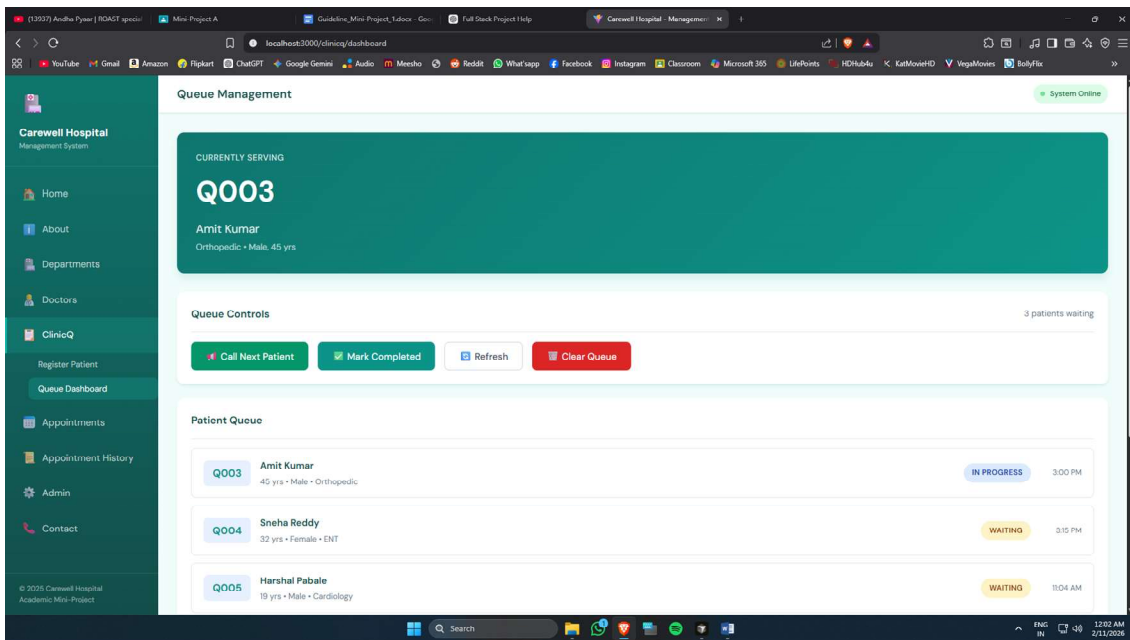
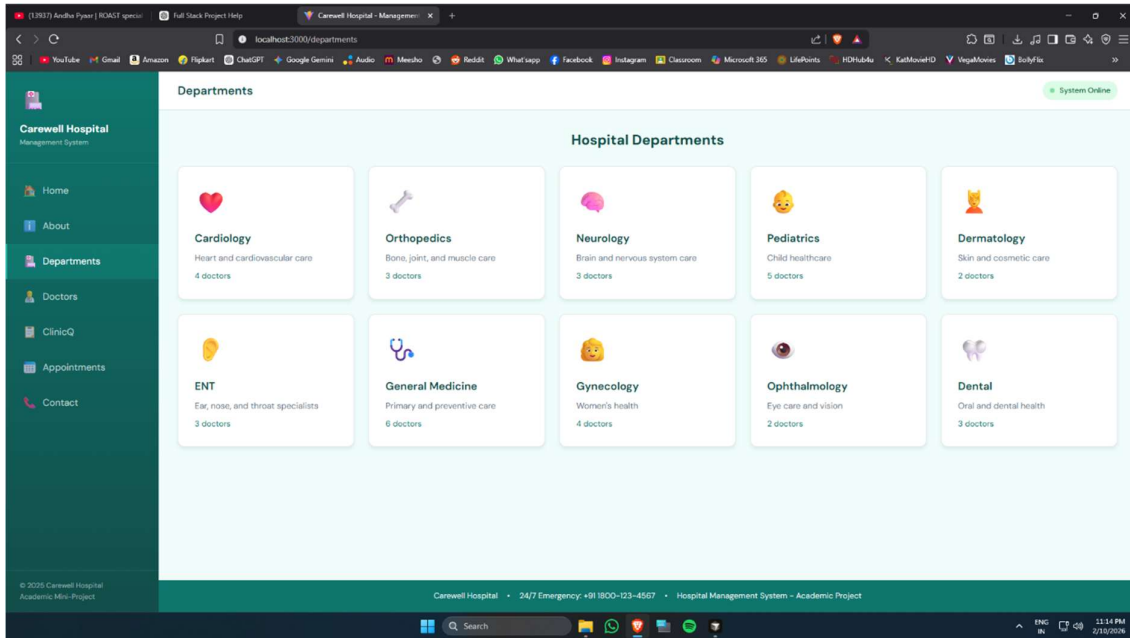
5.1 Steps in Analysis

1. Requirement analysis
 2. System design and planning
 3. User interface development
 4. Implementation of queue management logic
 5. Integration of departments and doctors
 6. Testing and validation of system performance
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6. Results

The system successfully manages patient queues and hospital information through a web interface. Queue status updates dynamically and data persists across sessions.





7. Conclusion

7.1 Overall Conclusion

The Hospital Management and Online Queue System provides an efficient solution to common hospital management challenges. It improves patient experience, reduces manual work, and enhances operational efficiency.

7.2 Future Developments

- Backend integration with database
- Online appointment booking
- User authentication
- SMS or email notifications

REFERENCES

1. React.js Official Documentation
2. MDN Web Docs
3. Node.js Official Website

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**PILLAI COLLEGE OF ARTS, COMMERCE &
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Re-accredited "A" Grade by NAAC (3rd Cycle)



Project Completion Certificate

THIS IS TO CERTIFY THAT Harshal Pabale of SY BCA has completed the project titled **Hospital Management System** under our guidance and supervision during the academic year 2024-25 in the department of **Computer Application**.

Project Guide
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