**WEB APPLICATION FOR MANAGING A HOSPITAL**

STUDENT

ELENA PARTENI

Table of Contents

[**1.** **Problem analysis** 3](#_Toc171075314)

[**1.1.** **Definitions** 3](#_Toc171075315)

[**1.2.** **Customer requirements** 3](#_Toc171075316)

[**2.** **Specification of requirements** 4](#_Toc171075317)

[**2.1.** **Objectives** 4](#_Toc171075318)

[**2.2.** **The functionalities of the application** 5](#_Toc171075319)

[**2.3.** **What the application will allow** 6](#_Toc171075320)

# **Problem analysis**

A web application for managing a hospital is a comprehensive solution designed to streamline various administrative and clinical processes within a healthcare facility. This application integrates multiple functionalities to enhance efficiency, improve patient care, and optimize resource utilization.

## **Definitions**

**Web**: A system of interconnected documents and resources, typically accessed via the internet, using web browsers. The web enables the sharing and access of information across different devices and locations.

**Application**: A software program designed to perform a group of coordinated functions, tasks, or activities for the user's benefit. In this context, it refers to a software solution that runs on web servers and is accessed via web browsers.

**Managing**: The process of overseeing, controlling, and organizing various activities and resources to achieve specific goals. In a hospital context, managing involves coordinating administrative and clinical operations to ensure efficient functioning.

**Hospital**: A healthcare institution providing patient treatment with specialized medical and nursing staff and medical equipment. Hospitals offer a range of services including emergency care, surgeries, inpatient care, and outpatient services.

## **Customer requirements**

**Requirement**: Implement a secure login system for all users (admin, doctors, nurses, and patients).

**Requirement**: Ensure user roles and permissions are appropriately assigned and enforced.

**Requirement**: Integrate data visualization tools for displaying various hospital metrics and individual performance charts.

**Requirement**: Implement advanced filtering and sorting options for different data sets (personnel, patients, shifts, etc.).

**Requirement**: Ensure the application is user-friendly and accessible on various devices (desktop, tablet, mobile).

# **Specification of requirements**

The web application aims to streamline hospital management by providing an integrated platform for handling patient care, staff coordination, inventory management, and financial operations. By leveraging modern web technologies, the application will enhance operational efficiency, reduce errors, and improve the overall quality of healthcare services.

## **Objectives**

Enhancing patient care is a primary objective of this application. By providing accurate and accessible electronic health records (EHR), the system ensures that patient information is readily available to healthcare providers, facilitating better diagnosis and treatment. Efficient appointment scheduling and patient management tools reduce wait times and improve resource utilization. Doctors and nurses can seamlessly record and access patient information, ensuring continuity and quality of care.

Improving staff coordination is another critical goal. Automated staff scheduling ensures optimal coverage and reduces conflicts, enhancing the efficiency of hospital operations. Integrated communication tools improve collaboration among healthcare providers, leading to better patient outcomes. Detailed tracking and reporting of shifts and duties enable better management and oversight of staff activities.

Streamlining inventory and resource management is essential for preventing shortages and overstocking. Real-time tracking of medical supplies and medications ensures that the hospital is always adequately stocked. Scheduling and tracking maintenance of medical equipment prevent downtime and ensure operational readiness. Inventory management tools help in maintaining the right balance of supplies, reducing wastage and cost.

Optimizing financial operations is crucial for the hospital’s financial health. Comprehensive financial management tools for budgeting and reporting provide admins with insights into the hospital’s financial performance. Streamlined billing and insurance claims processing reduce errors and improve cash flow. Efficient revenue cycle management ensures timely payments and enhances the hospital’s financial stability.

## **The functionalities of the application**

**Login Section**

* **Staff Login**: Secure login interface for hospital staff.

**Admin Section**

* **Manage Personnel**: Add, delete, and edit details for doctors, nurses, and other staff members.
* **User Accounts**: Create and manage user accounts for employees.
* **Data Visualization**: View charts and reports for various hospital metrics.
* **Filtering and Sorting**: Advanced filtering and sorting options for personnel and other data.

**Doctor and Nurse Management**

* **Doctors**:
  + **Profile Information**: Username, doctor ID, specialty, hospital floor, contact number, and qualifications.
  + **Patient Management**: Add, edit, and delete patient records.
  + **Diagnostics**: Assign diagnoses and request investigations.
  + **Medication Management**: Add, edit, and delete patient medications.
  + **Patient Observations**: Leave and update notes about patients.
  + **Access Patient History**: View detailed medical history of patients.
  + **Appointment Management**: Manage patient appointments.
* **Nurses**:
  + **Profile Information**: Username, nurse ID, type of nurse, working floor, and contact number.
  + **Patient Management**: Add, edit, and delete patient records.
  + **Analysis Results**: Record patient analysis results.
  + **Bed Allocation**: Assign beds and rooms to patients.
  + **Medication Details**: Add and update details about medications administered to patients.
  + **Download Reports**: Download PDF reports of patient analyses and medications.

**Shift Management**

* **Shifts for Doctors and Nurses**:
  + **Shift Details**: View shifts with date, hours worked, number of patients cared for, interventions performed, and consumables used.
  + **Shift Management**: Add, delete, and edit shift details.
  + **Filtering and Sorting**: Advanced filtering and sorting options for shifts.
  + **Data Visualization**: View charts and reports for individual performance metrics.

**Patient Section**

* **Patient Accounts**: Patients can create login accounts with personal details.
* **Staff Directory**: View the list of hospital staff.
* **Appointment Booking**: Schedule appointments with specific doctors.
* **Medical History Access**: Patients can access their detailed medical history.

**General Application Features**

* **Filtering and Sorting**: Doctors and nurses can filter and sort data based on various criteria.
* **Data Visualization**: Charts and graphs for individual and department metrics.
* **Personnel Management**: Add, delete, and edit hospital staff details.

This comprehensive functionality ensures efficient management of hospital operations, enhances patient care, and improves overall staff coordination.

## **What the application will allow**

The application will provide admins with the tools to manage hospital personnel, view and analyze hospital data, ensure proper scheduling, and maintain overall hospital operations. They will have the ability to add, delete, and edit details of staff members, create and manage user accounts, and access comprehensive data visualization tools.

Doctors will have the functionality to manage patient information, assign diagnoses, request and analyze investigations, prescribe medications, and manage appointments. They will be able to seamlessly record and access patient information, ensuring high-quality care and efficient workflow.

Nurses will be empowered to record and manage patient information, assign beds, administer medications, and generate reports. They will have the tools to efficiently manage patient care, ensuring that all necessary information is accurately recorded and accessible.

Patients will be able to create accounts, view hospital staff, schedule appointments, and access their medical histories. This access empowers patients to take an active role in their healthcare, ensuring they are well-informed and can easily interact with the hospital’s services.

In conclusion, the proposed web application will serve as a comprehensive solution for managing hospital operations. By integrating essential functionalities and providing a user-friendly interface, the application will enhance efficiency, reduce operational costs, and improve the quality of patient care.