BUSINESS REQUIREMENT SPECIFICATION

HOSPITAL MANAGEMENT SYSTEM

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1. Introduction

The Hospital Management System (HMS) is designed to streamline and enhance the operations within a healthcare facility. This system facilitates the management of patient information, staff scheduling, appointment booking, billing, and medical inventory. By implementing the HMS, the hospital aims to increase operational efficiency, improve patient care, and optimize resource utilization.

2. Problem/Impact/Successful Outcome

The Problem

Manual processes in patient management, scheduling, and billing lead to inefficiencies, data inaccuracies, and delays in patient care.

The Impact

Inaccurate patient records and scheduling can result in treatment delays, miscommunication among departments, and patient dissatisfaction.

The Successful Outcome

Implementing an integrated Hospital Management System that automates patient record management, staff scheduling, billing, and inventory tracking, ensuring real-time data accuracy and improved patient care.

3. Objectives

ID	Business Objective	Business Owner	Business Importance
O01	To automate the management of patient records and appointments	Administration Department	High
O02	To improve the accuracy of medical inventory tracking	Pharmacy Department	High
O03	To enhance patient care by providing timely and accurate information	Patient Care Services	High

4. Purpose of Document

This document outlines the business requirements for developing a Hospital Management System. It serves as a guideline for stakeholders to review and approve the specifications necessary for enhancing hospital operations.

5. Scope

In Scope:

1. Development of a system for managing patient records, appointments, and billing.
2. Implementation of a real-time inventory tracking system for medical supplies.
3. Creation of a dashboard for managing hospital processes.

Out Of Scope:

1. Integration with third-party health insurance platforms.
2. Advanced analytics and reporting beyond standard operational reports.
3. Mobile application development for patient access

6. Definitions, Acronyms, and Abbreviations

Abbreviation/Acronym	Description
EHR	Electronic Health Record
HMS	Hospital Management System
ICU	Intensive Care Unit
OPD	Outpatient Department

7. Risks

Ref	Risk	Detailed BRS Reference	Detailed Description
R01	Data inaccuracies due to manual data entry	Functional Requirements	Incorrect data entry can lead to treatment errors.
R02	System downtime affecting hospital operations	Non-Functional Requirements	Downtime could disrupt patient care services.

8. Assumptions

Ref	Assumption	Detailed BRS Reference
A01	Hospital staff will receive adequate training	Functional Requirements
A02	The system will be accessible via a stable internet connection	Non-Functional Requirements

9. Issues

Ref	Issue	Detailed BRS Reference
I01	Resistance to change from medical staff	High-Level To Be Business Requirements

10. Dependencies

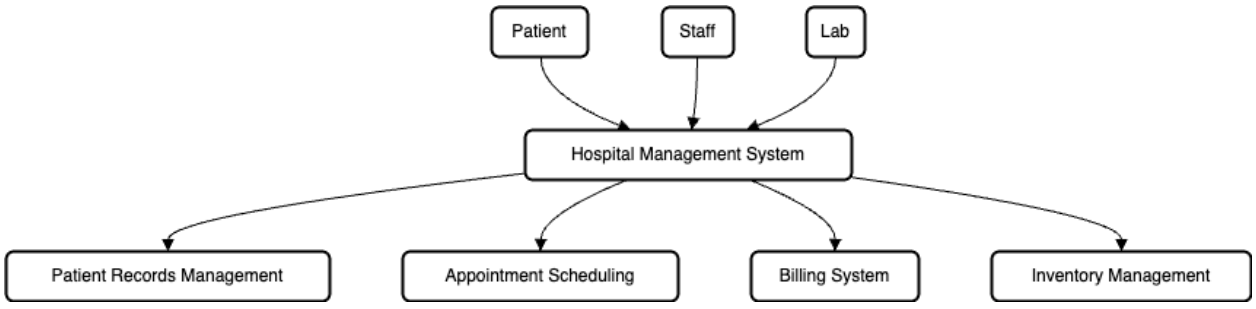
Ref	Dependency	Detailed BRS Reference
D01	Integration with existing EHR systems	Functional Requirements
D02	Availability of IT support for system maintenance	Non-Functional Requirements

11. Current Process

Currently, patient records, appointment scheduling, and billing are managed manually. This leads to time wastage, errors in patient records, and delayed treatments. The lack of a unified system hampers efficient hospital management.

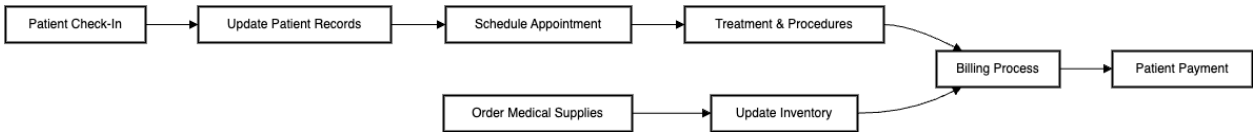
12. Diagrams Overview

12.1 Context Diagram



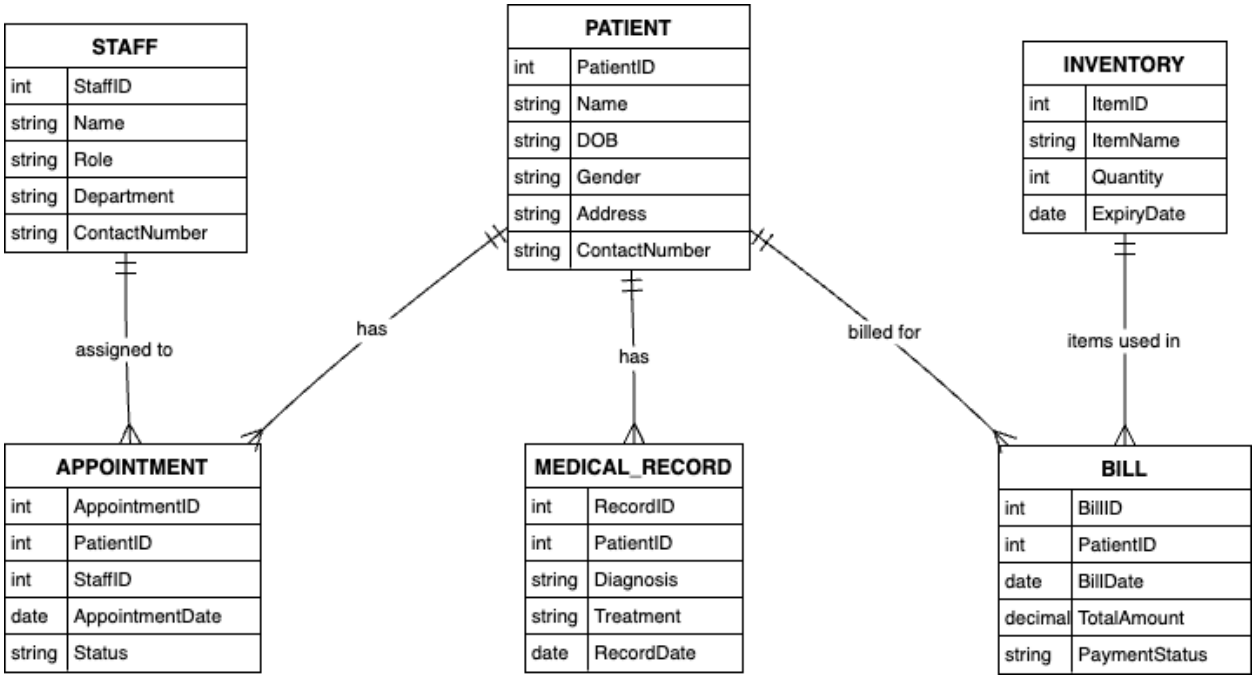
Explanation: The Context Diagram provides a high-level view of the Hospital Management System and its interactions with external entities like patients, doctors, nurses, and external systems. It shows how data flows between the system and these entities, defining the system's boundaries and scope.

12.2 Process Overview Diagram



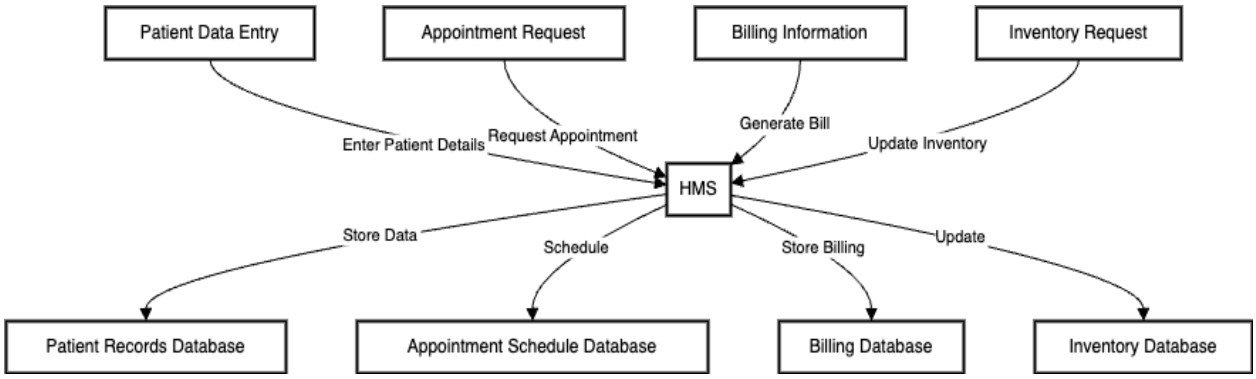
Explanation: The Process Overview Diagram outlines the internal workflows of the Hospital Management System. It details the sequence of key processes such as patient check-in, appointment scheduling, treatment, billing, and inventory management, illustrating how these activities are interrelated.

12.3 Entity-Relationship (ER) Diagram



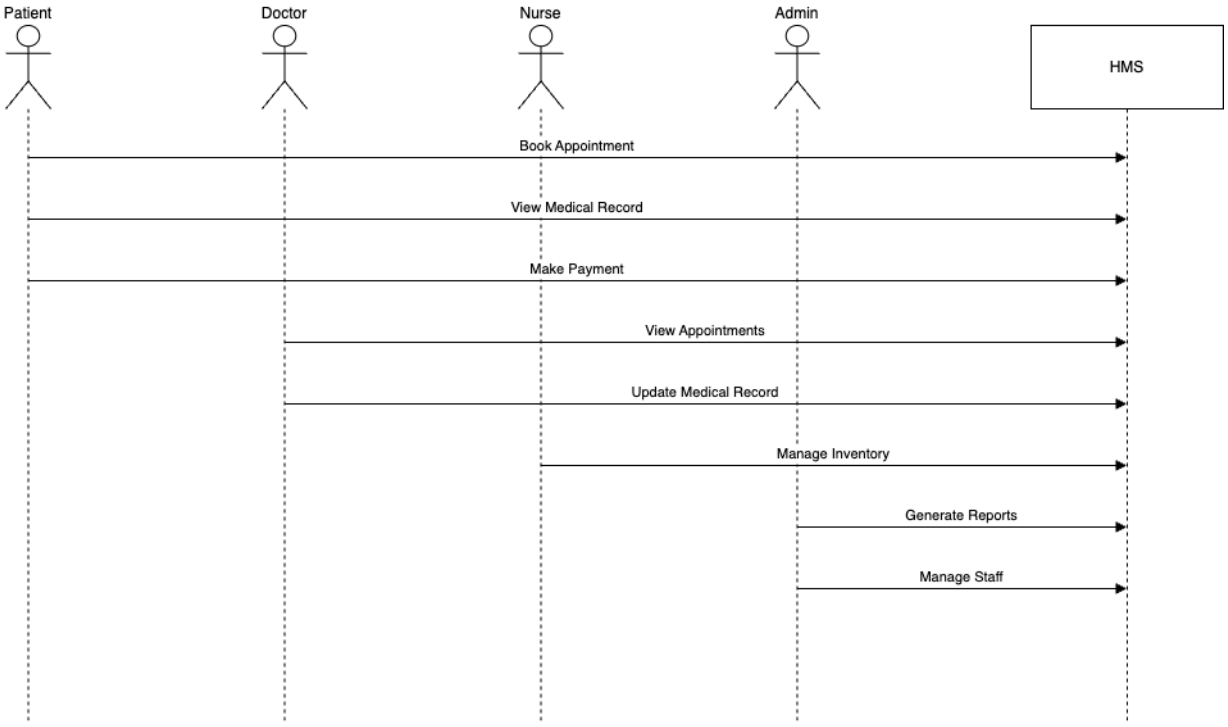
Explanation: The ER diagram shows the relationships between different entities within the system, such as Patients, Staff, Appointments, Medical Records, and Inventory. It defines how data is structured and how entities relate to each other in the database.

12.4 Data Flow Diagram (DFD) - Level 1



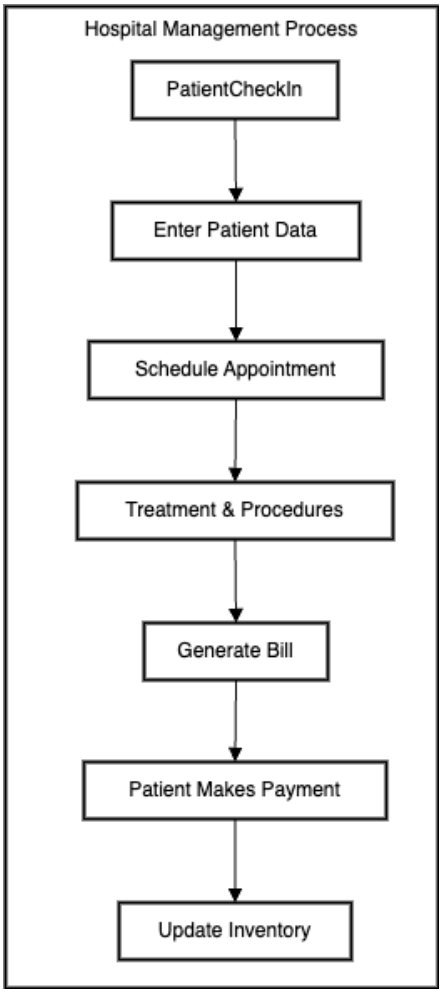
Explanation: The DFD depicts how data moves through the system. It shows the inputs, processing, and outputs of the Hospital Management System, including data entry, storage, and retrieval processes.

12.5 Use Case Diagram



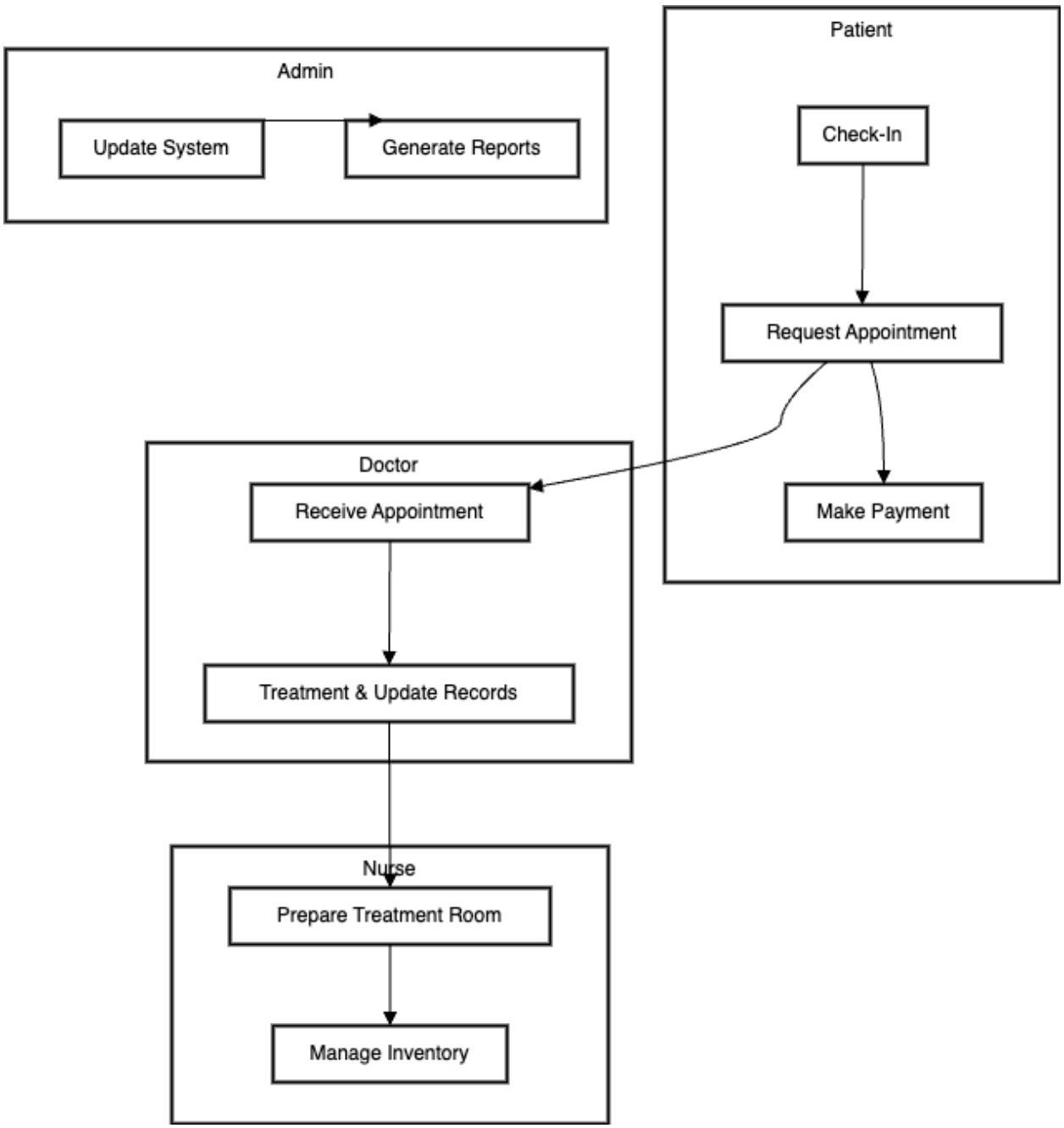
Explanation: The use case diagram illustrates the interactions between users (patients, doctors, nurses, administrators) and the Hospital Management System. It identifies the main functionalities the system should provide, such as booking appointments, accessing medical records, and managing inventory.

12.6 Business Process Model and Notation (BPMN) Diagram



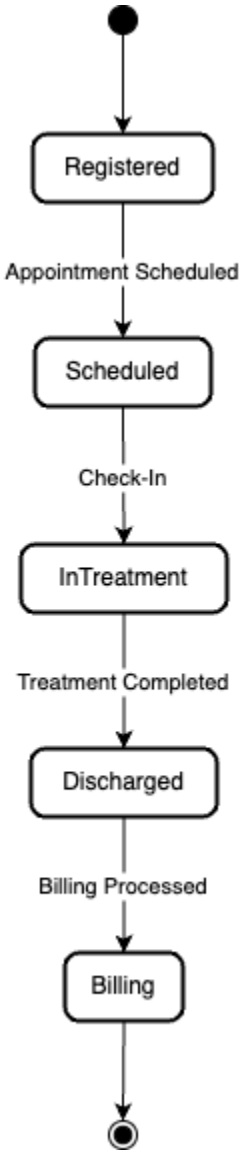
Explanation: The BPMN diagram visually represents the flow of activities within the hospital, including patient registration, appointment scheduling, treatment, billing, and inventory management. This helps identify the sequence of operations and potential bottlenecks.

12.7 Swimlane Diagram (Cross-Functional Flowchart)



Explanation: The swimlane diagram illustrates how different departments (e.g., Patient, Doctor, Nurse, Admin) interact with the system and with each other. It shows the flow of processes across various roles.

12.8 State Diagram



Explanation: The state diagram illustrates the different states within a process, such as patient registration, appointment scheduling, and treatment. It shows the transitions between these states, providing insight into the workflow.

13. High-Level To Be Business Requirements

The "To Be" requirements focus on creating an integrated system that automates patient management, appointment scheduling, billing, and inventory tracking. The system will provide a unified platform for hospital staff to manage their activities efficiently.

User Stories

1. **As a patient**, I want to book appointments online so that I can easily schedule my visits.
2. **As a doctor**, I want to access patient records quickly so that I can provide efficient treatment.
3. **As an administrator**, I want to generate reports to track hospital performance and ensure compliance.
4. **As a nurse**, I want to manage the inventory of medical supplies to ensure we have adequate stock.

14. Detailed Business/IT Requirements

14.1 Functional Requirements

These requirements detail the functionalities that the Hospital Management System must provide.

ID	Title	Requirements Description	Type	Priority	Originator	Status
FR001	Patient Registration	The system must allow registration of new patients with their personal and medical details.	Application	Must Have	Stakeholder	Proposed
FR002	Appointment Scheduling	Patients can schedule and manage their appointments online or via the hospital reception.	Application	Must Have	Stakeholder	Proposed
FR003	Medical Records Management	Doctors and nurses can view and update patient medical records securely.	Application	Must Have	Stakeholder	Proposed
FR004	Billing and Payments	The system generates bills for treatments and allows patients to make payments.	Application	Must Have	Stakeholder	Proposed
FR005	Inventory Management	The system tracks the inventory of medical supplies and alerts when stock is low.	Application	Should Have	Stakeholder	Proposed
FR006	Report Generation	Administrators can generate various reports, such as patient records, billing, and inventory status.	Application	Could Have	Stakeholder	Proposed

14.2 Non-Functional Requirements

These requirements specify the criteria that the system must meet to ensure performance, security, and usability.

ID	Title	Requirements Description	Type	Priority	Originator	Status
NFR001	Security	The system must have secure login and data encryption to protect patient data.	Security	Must Have	Stakeholder	Proposed
NFR002	Performance	The system should handle up to 1000 concurrent users without performance degradation.	Performance	Should Have	Stakeholder	Proposed
NFR003	Usability	The interface should be user-friendly and intuitive for staff of all levels.	Usability	Must Have	Stakeholder	Proposed
NFR004	Availability	The system should have an uptime of 99.9% to ensure reliable access for users.	Availability	Must Have	Stakeholder	Proposed
NFR005	Scalability	The system should be scalable to accommodate future growth, including more users and features.	Scalability	Should Have	Stakeholder	Proposed

15. Business Impact Assessment

The implementation of the Hospital Management System (HMS) is expected to have a significant impact on the hospital's operations, affecting various areas such as efficiency, patient care, and cost management.

Expected Business Impacts:

- **Improved Efficiency**: Automation of tasks such as patient registration, appointment scheduling, and billing will reduce manual workload, minimize errors, and speed up processes. This leads to quicker patient throughput and more efficient use of staff time.
- **Enhanced Patient Care**: With quick access to accurate patient records and streamlined appointment management, healthcare providers can offer more personalized and timely care, improving patient satisfaction and outcomes.
- **Cost Savings**: Real-time inventory management will help in reducing wastage and preventing stockouts, leading to better resource utilization. The reduction in paperwork and manual data entry will also lower administrative costs.

- **Better Decision-Making**: The system's reporting and analytics capabilities will provide hospital administrators with valuable insights into operations, patient trends, and financial performance, enabling data-driven decisions.
- **Regulatory Compliance**: By securely storing patient data and managing records in compliance with healthcare regulations, the system helps ensure adherence to legal standards and protects patient privacy.

Risks to Mitigate:

- **System Downtime**: To avoid disruptions in hospital operations, the system should have robust backup and recovery solutions.
- **Data Security**: Implementing strict security measures to protect sensitive patient data is crucial to maintain trust and comply with regulations.

16. Costs

When considering the costs associated with implementing the Hospital Management System, the following aspects need to be evaluated:

Initial Costs:

- **System Development**: This includes the design, coding, and testing of the system. Customizing the software to meet specific hospital needs may add to the development cost.
- **Hardware Infrastructure**: Investment in servers, workstations, and network equipment required to run the system efficiently.
- **Training**: Providing training for hospital staff to ensure effective use of the new system.

Ongoing Costs:

- **Maintenance and Support**: Regular system maintenance, updates, and technical support to ensure the system remains functional and up-to-date.
- **Licensing Fees**: If the HMS includes third-party components, there may be licensing fees involved.
- **Data Backup and Security**: Ensuring regular data backups and maintaining security protocols to protect patient data.

Potential Cost Savings:

- **Reduced Administrative Overhead**: By automating manual processes, the system will reduce the need for paper records and minimize errors, resulting in lower administrative costs.
- **Efficient Resource Utilization**: Improved inventory management can lead to more efficient use of medical supplies, reducing wastage and procurement costs.