SECD2523 -16 Database: 20242025 – SEMESTER 1

Proposal

Hospital Management System.

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Table of Contents

1.1 An overview for current system:

Hospital management systems (HMS) emerged to streamline the management and financial processes of medical institutions. Its goal is to make patient care more efficient and high-quality while also reducing operating costs.

Features of existing system:

1. Patient registration and appointment:

The system enables efficient patient registration and appointment booking, with patients registering online or onsite, reducing wait times and improving patient flow.

2. Electronic Medical Records (EMR):

Electronic medical records store comprehensive patient information, including medical history, treatment options and test results, facilitate communication between medical providers and ensure patient data is easily accessible.

3. Financial management:

These include tools to manage bills, insurance claims and payments. This feature automates financial processes, reduces errors, and ensures timely revenue collection.

4. Reporting and Analysis:

HMS generates a variety of reports on patient demographics, financial performance and operational efficiency to aid decision-making and strategic planning.

5. User Access and Security:

Role-based access control ensures sensitive patient information is protected while allowing medical professionals access to necessary data.

There are still many challenges, such as insufficient user experience and information fragmentation. While existing hospital management systems improve operational efficiency and patient care, continued updates and improvements will help them remain relevant in a rapidly changing healthcare environment.

1.2 Database Planning

Database planning defines the goals and requirements for the system, focusing on data security, ease of use, efficiency, and scalability. It outlines how data will be organized, accessed, and managed, ensuring the database supports hospital operations and improves overall performance.

1.2.1 Mission Statement:

Holistic Improvement: Our mission is to create a comprehensive database management system that addresses various needs within the hospital, ensuring all departments can collaborate effectively.

Patient-Centric Approach: We are dedicated to enhancing patient care by ensuring that healthcare providers have timely access to relevant medical information, which helps in delivering personalized treatment.

Technological Integration: The system will leverage the latest technologies to facilitate smooth data flow between departments, reducing delays and improving overall hospital efficiency.

Empowerment of Staff: By simplifying data management tasks, we aim to empower hospital staff, allowing them to dedicate more time to patient interactions and improving service quality.

1.2.2 Mission Objectives:

Data Security: Ensure the protection of patient data by implementing strong encryption and access controls to maintain privacy and confidentiality.

Ease of Use: Design an intuitive and simple interface to minimize training time and allow hospital staff to use the system efficiently.

Efficient Data Management: Streamline the process of entering, retrieving, and updating patient and hospital records to improve workflow and reduce delays.

Scalability: Build a system capable of growing with the hospital, accommodating more patients, departments, and new technologies as needed.

Regulatory Compliance: Ensure the system complies with all relevant healthcare regulations and standards to avoid legal issues and maintain the integrity of patient care.

1.3 System Definition

Hospital Management System (HMS) is an all-in-one package of handling almost everything for hospitals. It can be considered as the voice of all users — Administrators, Doctors, Nursing Staffs and front desk Receptionists, Patients, Pharmacists, path lab Physicians Management which makes flow of communication between two person so easy because these are built for betterment in patient care.

The Hospital Management System provides a platform for appointment scheduling, patient records maintenance, medicine delivery record keeping and also needful features of billing & inventory control to improve work power and deliver breakthrough care.

1.3.1 System Boundaries

In-Scope Functions:

- **User Management:** Manage different parts of the system by various user roles (admin,, doctor,), nurse and more.

- **Patient Records:** Ability to track and manage medical histories, lab results, treatment plans etc.
- **Appointment Management System**: Scheduling this section consists of the scheduling system integrated, users may be able to schedule or check-in for purposes such as appointments with staff.
- **Billing & Insurance Processing:** Billing patients, insurance verification and payment.
- **Medication Management:** Prescription processing, medication administration tracking, and inventory management.

- **Laboratory Management:** Managing test orders, results entry, and tracking lab workflows.
- **Reporting and Analytics:** Generating operational, financial, and performance reports.

Out-of-Scope Functions:

- **External Healthcare Systems Integration:** Integration with third-party healthcare systems or electronic health records (EHR) not within the hospital.
- **Telehealth Services:** Features related to telemedicine or remote consultations not directly part of the HMS.
- **Non-Medical Services:** Management of services unrelated to patient care, such as facilities management or cafeteria services.

User Roles and Interfaces:

- **Admin:** Dashboard, user management, reports.
- **Doctor:** Access to patient records, appointment management, electronic prescriptions.
- **Nurse:** Patient care data, medication administration, task management.
- **Receptionist:** Appointment scheduling, check-in/check-out processes, billing.
- **Patient:** Access to health records, appointment management, billing information.
- **Pharmacy:** Inventory management, prescription processing, dispensing records.
- **Lab Technician:** Test order management and results entry.
- **Management:** Financial reporting, operational metrics, staff performance assessment.

Data Storage and Security:

The HMS will securely store sensitive patient and operational data, implementing robust security measures to ensure compliance with healthcare regulations such as HIPAA (Health Insurance Portability and Accountability Act).This definition and boundary outline provides a clear framework for the functionalities and limitations of the Hospital Management System, facilitating focused development and implementation while ensuring that user needs are adequately addressed.

System Limitations

Here are some potential limitations of our Hospital Management System (HMS):

1. External Healthcare Systems Integration:

The HMS may not integrate with external healthcare systems or electronic health records (EHR) platforms, potentially leading to data silos and hindering comprehensive patient care.

2. Telehealth Services:

Lack of features for telemedicine or remote consultations may limit the hospital's ability to provide care to patients who cannot visit in person.

3. Non-Medical Services Management: The system does not handle non-medical services, such as facilities management or cafeteria services, which may lead to inefficiencies in managing the overall hospital operations.

4. Scalability:

Depending on the design, the system may face challenges in scaling to accommodate increased patient loads or additional functionalities as the hospital grows.

5. User Training:

Adequate training may be required for various user roles to effectively navigate and utilize the system, which could lead to initial inefficiencies or errors.

6. Data Migration and Legacy Systems:

Transitioning from existing legacy systems to the HMS may present challenges in data migration, compatibility, and system integration.

7. Dependency on Internet Connectivity:

If the HMS is cloud-based, reliance on internet connectivity may pose issues during outages or slow connections, affecting accessibility and performance.

8. Security Risks:

- Despite implementing robust security measures, there is always a risk of data breaches or cyber-attacks that can compromise sensitive patient information.

9. Limited Customization:

The system may have limited customization options for specific hospital needs, which could impact user satisfaction and system usability.

10. Technical Support and Maintenance:

The efficiency of the HMS may depend on the availability and quality of technical support, which can be a limitation if not adequately addressed.

1.3.2 Hospital Major User View

Here are some users' views in this system. Admin view, doctor view, nurse view, reception view, patient view, pharmacy view, lab technician view, management view.

1. Admin View

- **Dashboard:** Overview of key performance indicators and statistics.
- **User Management:** Oversee access for staff and patients.
- **Reports:** Create operational and financial reports.

2. Doctor View

- **Patient Records:** Access to medical histories and treatment plans.
- **Appointments:** Organize and oversee patient visits.
- **Prescriptions:** Create and manage electronic prescriptions.

3. Nurse View

- **Patient Care:** Access to vital signs and care plans.
- **Medication Administration:** Monitor medication schedules.
- **Task Management:** Review daily responsibilities.

4. Receptionist View

- **Appointment Scheduling:** Handle patient bookings.
- **Check-in/Check-out:** Manage patient arrivals and departures.
- **Billing:** Process payments and verify insurance information.

5. Patient View

- **Health Records:** Access medical history and lab results.
- **Appointments:** Organize and manage visit schedules.
- **Billing Information:** Review and pay bills.

6. Pharmacy View

- **Inventory Management:** Monitor medication supplies.
- **Prescription Processing:** Handle prescriptions from healthcare providers.
- **Dispensing:** Record medications dispensed to patients.

7. Lab Technician View

- **Test Orders:** Manage incoming laboratory requests.
- **Results Entry:** Input and track lab results.

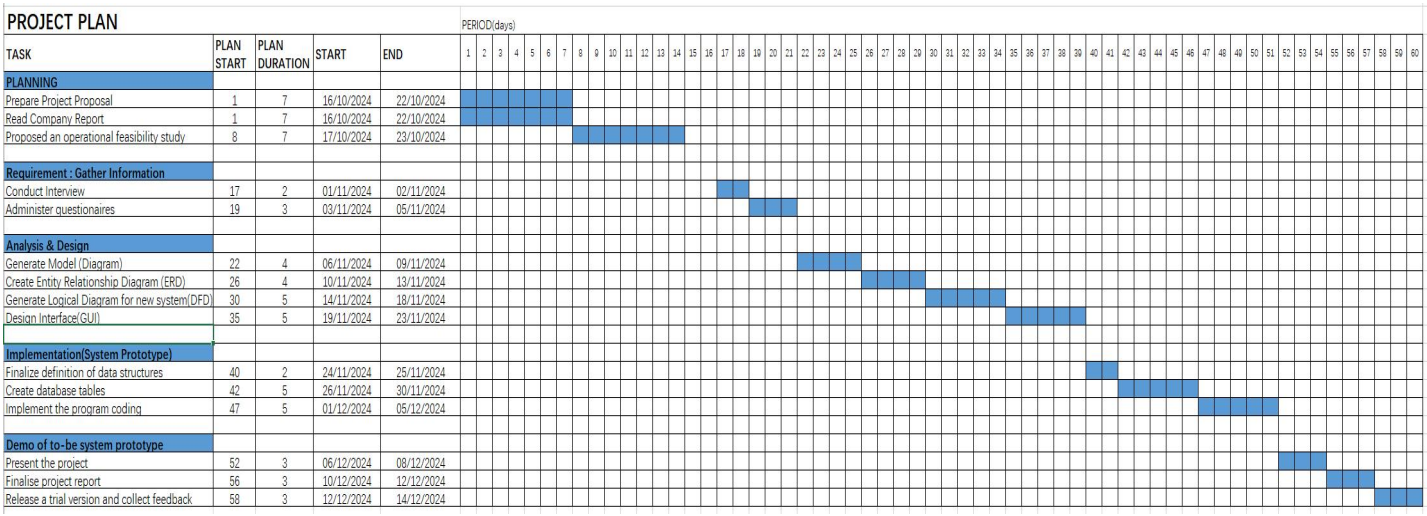
8. Management View

- **Financial Reports:** Summary of income and expenses.
- **Operational Metrics:** Track key performance indicators.

- **Staff Performance:** Assess staff productivity.

These perspectives enhance operational efficiency, improve patient care, and facilitate communication throughout the hospital.

1.4 Gantt Chart



PROJECT PLAN					PERIOD(days)
TASK	PLAN START	PLAN DURATION	START	END	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
PLANNING					
Prepare Project Proposal	1	7	16/10/2024	22/10/2024	
Read Company Report	1	7	16/10/2024	22/10/2024	
Proposed an operational feasibility study	8	7	17/10/2024	23/10/2024	
Requirement : Gather Information					
Conduct Interview	17	2	01/11/2024	02/11/2024	
Administer questionaires	19	3	03/11/2024	05/11/2024	
Analysis & Design					
Generate Model (Diagram)	22	4	06/11/2024	09/11/2024	
Create Entity Relationship Diagram (ERD)	26	4	10/11/2024	13/11/2024	
Generate Logical Diagram for new system(DFD)	30	5	14/11/2024	18/11/2024	
Design Interface(GUI)	35	5	19/11/2024	23/11/2024	
Implementation(System Prototype)					
Finalize definition of data structures	40	2	24/11/2024	25/11/2024	
Create database tables	42	5	26/11/2024	30/11/2024	
Implement the program coding	47	5	01/12/2024	05/12/2024	
Demo of to-be system prototype					
Present the project	52	3	06/12/2024	08/12/2024	
Finalise project report	56	3	10/12/2024	12/12/2024	
Release a trial version and collect feedback	58	3	12/12/2024	14/12/2024	