**DBMS LAB PROJECT**

Project by:

1.**Dhruv Agarwal**:220962336(Roll No. 54)

2.**Jai Shah**: 220962362(Roll No. 58)

**Abstract:**

The *Medical College and Hospital Management System* is a comprehensive database project developed to optimize and streamline the operations of medical institutions like KMC and AIIMS.

This effort offers an effective platform for managing several areas of medical college and hospital operations by combining a powerful SQL database with an easy-to-use graphical user interface (GUI). We hope to improve the overall organizational performance within the whole of healthcare sector through our efforts on this project.

**Features:**

The Medical College and Hospital Management System is designed to encompass a range of features aimed at meeting the unique requirements of healthcare institutions.

Key features include:

* **Patient Information Management:**

Facilitates secure storage and retrieval of patient records, encompassing personal details, medical history, and treatment plans.

Integration with electronic health records (EHR) for real-time access to patient data.

* **Appointment Scheduling:**

Streamlines scheduling of appointments for both patients and healthcare professionals.

Automated reminders to reduce appointment no-shows and enhance adherence.(send a message to patient’s phone number when time)

* **Inventory Management:**

Efficient tracking and management of medical supplies, pharmaceuticals, and equipment inventory.

Automatic notifications for restocking to ensure uninterrupted healthcare services.

* **Staff Management:**

Comprehensive personnel record-keeping, including qualifications, certifications, and work schedules.

Implementation of access controls to ensure data privacy and security**.**

* **Collaboration and Communication:**

Seamless communication channels within the system for healthcare professionals.

Integration with communication tools to facilitate efficient team collaboration.

* **Intern Management:**

Dedicated module for managing interns from medical colleges.

Tracks intern details, rotations, and evaluations.

Facilitates communication between interns and supervising healthcare professionals

**SQL Functionalities used:**

1. **DDL AND DML Operations:** Utilizes SQL for Create, Read, Update, and Delete operations for managing data in each table.
2. **Joins:** Implements SQL JOIN operations to combine data from multiple tables when retrieving information for the GUI.
3. **Constraints:** Applies SQL constraints (e.g., Primary Key, Foreign Key, unique, check) to maintain data integrity and enforce relationships between tables.
4. **Transactions:** Implements transactions to ensure the atomicity and consistency of operations, especially during critical processes like patient admissions and treatment updates.
5. **Stored Procedures and Triggers:** Uses stored procedures and triggers for automation and customization of certain tasks, such as sending notifications on critical patient updates.
6. **Data Security Measures:** Implementation of access controls, user authentication, and role-based permissions to safeguard sensitive patient information.

**NEED FOR DATABASE MANAGEMENT SYSTEM:**

An effective and centralized platform to handle several elements of healthcare operations is urgently needed, and this is what the Medical College and Hospital Management System aims to provide.

It is built with medical colleges in mind and solves many of their needs including the specific requirements of managing interns from medical colleges.

It guarantees an organized method of patient care, makes it easier for medical staff to collaborate with one another, maximizes the use of resources, and preserves the accuracy and integrity of data.

By improving the user experience and making it more accessible to medical professionals with different levels of technical proficiency, the GUI eventually raises the standard of healthcare services offered.

a basic schema outline for the Medical College and Hospital Management System:

1. **Patient Information Management:**
   * Patient Table
     + PatientID (Primary Key)
     + FirstName
     + LastName
     + DateOfBirth
     + ContactNumber
     + Address
     + MedicalHistory(foreign key to a medical history table)
     + EHR (Link to Electronic Health Records)
2. **Appointment Scheduling:**
   * Appointment Table
     + AppointmentID (Primary Key)
     + PatientID (Foreign Key referencing Patient Table)
     + DoctorID (Foreign Key referencing Staff Table for Doctors)
     + AppointmentDateTime
     + Status (Scheduled, Completed, Cancelled, etc.)
     + Med\_history\_id(foreign key referencing medical history table)
3. **Inventory Management:**
   * InventoryItem Table
     + ItemID (Primary Key)
     + ItemName
     + ItemType (Medical Supplies, Pharmaceuticals, Equipment)
     + QuantityAvailable
     + Threshold (Minimum quantity before restocking is required)
     + ExpiryDate
     + NotifyThreshold (Number of days before expiry to trigger notification)
     + PricePerUnit
4. **Staff Management:**
   * Staff Table
     + StaffID (Primary Key)
     + FirstName
     + LastName
     + DateOfBirth
     + ContactNumber
     + Dept
     + Qualifications
     + Certifications
     + WorkSchedule
     + AccessControlLevel (to manage data privacy and security)
5. **Collaboration and Communication:**
   * CommunicationTable
     + MessageID (Primary Key)
     + SenderID (Foreign Key referencing Staff Table)
     + ReceiverID (Foreign Key referencing Staff Table)
     + MessageType (Text, File, etc.)
     + Timestamp
     + MessageContent
6. **Intern Management:**
   * InternTable
     + InternID (Primary Key)(foreign key to staff id)
     + CollegeName
     + RotationDetails
     + EvaluationDetails

7. **Prescription Management:**

* + Prescription Table
    - PrescriptionID (Primary Key)
    - PatientID (Foreign Key referencing Patient Table)
    - DoctorID (Foreign Key referencing Staff Table for Doctors)
    - PrescriptionDate
    - Status (Filled, Pending, Cancelled, etc.)

**8. Medication Dispensing:**

* + DispensingRecord Table
    - DispenseID (Primary Key)
    - PrescriptionID (Foreign Key referencing Prescription Table)
    - PharmacyItemID (Foreign Key referencing InventoryItem Table)
    - DispenseDate
    - QuantityDispensed
    - TransactionType (Sale, Return, etc.)
    - TransactionDate
    - TotalAmount

**9. Medical history**

* + Med history Table
    - Med\_history\_ID (Primary Key)
    - PatientID (Foreign Key referencing Patient Table)
    - DoctorID (Foreign Key referencing Staff Table for Doctors)
    - Diagnosis
    - PrescriptionID (Foreign Key referencing Prescription Table)
    - treatment plan