IT214

(Database Management System)

Group 12

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Database Project : MediCare

Objective:

Design and implement a database for managing hospital operations, such as appointment scheduling, billing, patient records, and physician schedules. Several users, such as administrators, physicians, patients, and employees, should be supported by the system.

Application Users:

1. **Patients**
2. **Doctors**
3. **Hospital Staff**
4. **Administrators**

Use Cases - Patients:

Patients can perform the following activities:

1. **Register and Maintain Personal Details**

   ○ Enter and maintain your name, birthdate, emergency contact information, and insurance information.
2. **Schedule, Modify, or Cancel Appointments**

   ○ Book appointments with preferred doctors.
   ○ Appointments can be changed or cancelled with enough notice.
   ○ Get confirmations of your appointments.
3. **View Medical History, Prescriptions, and Test Results**

   ○ Access past medical records, such as diagnosis and notes from doctors.
   ○ View and save the results of lab tests.
4. **View Billing History**

   ○ Keep track of invoices and payment records for insurance claims.
   ○ View pending bills and view partial payment or full payment.
5. **Rate Doctors and Leave Feedback**

- Provide ratings based on consultation experience and treatment effectiveness.
- Provide comments to help enhance doctor performance and hospital services.
- Before scheduling an appointment, read previous patient reviews.

Use Cases - Doctors:

Doctors have access to the following functionalities:

1. **Register and Update Professional Details**

   - Doctors must provide their name and information, specialization, availability schedule, and contact information.
   - When necessary, they can edit the information on their profile.
2. **View and Manage Appointments**

   - Doctors can view upcoming appointments with patients.
   - Appointments can be accepted, rescheduled, or cancelled as needed.
3. **Access Patient Medical Records**

   - To provide better care, doctors can access a patient's medical history, past diagnoses, and prescriptions.
   - They can update patient records with new treatment details.
4. **Prescribe Medications and Request Tests**

   - Doctors can generate and issue electronic prescriptions.
   - They can order lab tests and receive test results.
5. **Generate Treatment and Diagnosis Reports**

   - Doctors are able to draft and revise patient medical reports and treatment plans.

Use Cases - Hospital Staff:

Hospital staff members perform essential operational tasks:

1. **Manage Patient Check-ins and Discharges**

   - Verify the information of newly registered patients.
   - Update medical records and manage patient discharges.
2. **Schedule and Manage Doctor Shifts**

   - Assign doctors to available shifts.
   - Schedules should be updated for emergencies or modifications.

3. **Process Payments and Generate Invoices**

   ○ Compute medical costs and create billing invoices for patients.
   ○ Handle insurance claims and process reimbursements.

4. **Assist with Hospital Administration**

   ○ Organise hospital room assignments and patient intakes.

Use Cases - Administrators:

Administrators oversee and manage hospital-wide operations:

1. **Manage User Accounts and Permissions**

   ○ Add, modify, or remove user accounts for doctors, staff, and patients.
2. **Oversee Hospital Inventory and Resources**

   ○ Track and manage medical supplies, equipment, and facility resources.
3. **Generate Financial and Operational Reports**

   ○ Provide financial transaction, spending, and income reports for the hospital.
   ○ Analyze hospital performance metrics, patient volume, and treatment effectiveness.
4. **Handle Insurance Claims and Policy Integration**

   ○ Handle insurance claims and keep track of transactions.

List of Queries(Tentative)

For Patients:

1. Get the patient's entire medical history, current test findings, and prescriptions.
2. Get the availability and specialisation of the doctor as well as upcoming appointments.
3. Find the average wait time for a patient before consultation.
4. Retrieve top 3 highest-rated doctors consulted by the patient.
5. List of available doctors for particular department.

For Doctors:

1. Get a summary of each patient's medical history for all upcoming appointments.

2. Find patients who need follow-ups but haven't been seen in more than a year.
3. Using appointment data, determine a doctor's busiest times.
4. Retrieve all lab tests ordered by the doctor with pending results.
5. Determine which people are at high risk by looking at their prior hospital stays and medical information.
6. Get a list of patients who have seen several different doctors for the same problem.
7. Find the average recovery time of patients treated by the doctor.

For Hospital Staff:

1. List every bed and room that is available along with the current occupancy status.
2. Find medicine that has sold the most in the past (days, months, or years) and Get a list of the medications whose supplies are running low.
3. Determine the most frequent cause of emergency room visits throughout the previous 12 months.
4. Get the list of past-due bills for patients who have been released.
5. Retrieve the quantity of surgical operations carried out in each department.
6. Obtain information about the monthly volume of ambulance requests.
7. Which hospital department has received the most patient over a specific time.

For Administrators:

1. Retrieve a financial summary of the hospital, including revenue and expenses for the last year.
2. Identify the most frequently treated diseases in the hospital.
3. Retrieve the insurance companies that reject claims the most frequently.
4. Generate a report on doctor performance based on consultation frequency and patient feedback.
5. Using historical data, determine the times when hospital admissions are at their highest.
6. Get a list of doctors who have the lowest rates of patient retention.