

**Kingdom of Saudi Arabia**

**Ministry of Higher Education**

**King Faisal University**

**College of Computer Sciences & Information Technology**

Hospital Management System

**Database Concepts and Design Course Project**

Year: 2023-2024 Semester: 2nd

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# Introduction (case description)

In today's busy world, efficient management of healthcare facilities is crucial to ensuring patient safety and the smooth operation of hospitals. Hospital Management Systems (HMS) have revolutionized hospital workflows by simplifying processes, enhancing patient care, and optimizing resource utilization. This project aims to develop a user-friendly Hospital Management System tailored to the specific requirements of modern healthcare facilities. Therefore, the outlined requirements are as follows:

* Each doctor is identified by a unique doctorID and has a full name, gender, date of birth, qualifications, experience, email, specialty, rank, phone number, department, contact address, salary, and employment date.
* Each nurse is identified by a unique nurseID, and has a full name, qualifications, a unique doctorID, department, address, ER, rank, nurse name, specialty, salary, contact address, gender, and date of birth.
* Each patient is identified by a patientID, medical history, contact, gender, insurance, age, patient name, date of birth, address, and blood type.
* Each medication is identified by a unique medicineID, medType, medName, expiration date, price, quantity, and duration.
* Each appointment is identified by a unique aptID, unique doctorID, unique patientID, appointment date, and appointment time,appointment status.
* Each lab test is identified by a unique testID, unique doctorID, unique patientID, test result, test date, and test type.
* Each payment is identified by a unique paymentID, unique invoiceID, datePaid, details, payment method,buyer name, buyer contact,confirmation number,amountPaid.
* Each department is identified by a unique depID, unique doctorID, unique nurseID, department name, contact, and description.
* Each invoice is identified by unique invoiceID, unique patientID, status,information,amount,date.

# System Analysis

## A. List of users

Doctor:

* Diagnosing patients and determining appropriate treatment.
* Scheduling appointments.
* Accessing all patient records.

Nurse:

* Assisting doctors in patient care, monitoring patient vital signs.
* Recording patient observations.
* Accessing patient records.

Patients:

* Register for appointments.
* Get a consultant by doctors.
* Receive medical care by nurses
* Pay for their invoices.

Lab Technician:

* Conducting laboratory tests.
* Preparing samples and performing necessary tests for patients.
* Updating laboratory test records.

Pharmacist:

* Managing medication inventory, dispensing prescriptions, and determining dosage.
* Accessing medication inventory.

Each person in this system has specific access and function that helps in building and developing the system.

## B. List of main functions (functional requirements)

1. **Patient Management:**
   1. The system should allow registration of new patients.

1. **Appointment Scheduling:**
   1. The system should facilitate the scheduling of appointments for patients with doctors.
2. **Doctor Management:**
   1. The system should support the addition and management of doctors.
   2. It should allow assigning doctors to specific departments within the hospital.

1. **Nurse Management:**
   1. The system should support the addition and management of nurses.
   2. It should allow assigning nurses to specific departments within the hospital.
2. **Payment Management:**
   1. The system should handle payment processing for services rendered to patients.
3. **Invoice Management:**
   1. The system should generate and manage invoices for services provided to patients.
4. **Medicine Management:**
   1. The system should maintain a database of medicines, including their names, duration, and other relevant information.
   2. It should allow healthcare providers to prescribe medicines to patients and record the details of the prescription.

1. **Lab Test Management:**
   1. Ordering lab tests and diagnostic procedures.
   2. Integrating lab results with patient records.

## C. List of main reports

* Doctor Schedule Report - Lists available times and dates for each doctor.
* Nurse Assignment Report - Displays the nurses' assignments for the various departments or patients they are responsible for.
* Patient Medical History Report - Provides a brief overview of the patient's medical history.
* Patient Medication Report - tracks medications prescribed to patients by the specialist.
* Daily Appointments Report - Summarizes all patient appointments scheduled for the day.
* Medicine Stock Report - Shows the number of medicines in stock and their availability.
* Laboratory Test Results Report - Displays the results of all laboratory tests performed.
* Financial Transaction Report – Summarizes all financial transactions, including invoices, payments, and insurance.

# Database Conceptual Design (ERD)

Please use yED (<http://www.yworks.com/en/products/yfiles/yed/>) to draw your model using Chen’s notation. Or SQL Developer Data Modeler (<http://www.oracle.com/technetwork/developer-tools/datamodeler/overview/index.html> ) to draw data model Or any other tool you choose.

