St Mungo's Hospital for Magical Maladies and Injuries

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Problem Statement

The St. Mungo's Hospital for Magical Maladies and Injuries is having a hard time keeping track of its doctors, nurses, patients and their treatments. Currently, the appointment details, user information, patient treatment details, details like salary, qualification of doctors & nurses are being stored using excel sheets. When appointment needs to be given to a patient, the hospital departments are doing a gruesome task of browsing all the excel sheets. A lot of time is being wasted in searching for every other detail being stored about the hospital system. Mungo Bonham, the founder and the head of the hospital wants to ease life of the various users at St. Mungo's hospital & store all necessary information in a database system for smooth processing of various tasks at the hospital.

The application for the Hospital Management System will have the following type of users:

1. Doctors
2. Nurses
3. Patients

Users are recognized by a 'userid' (which they will use to log in to the application along with a password). Users' details such as name, contact number, address, email, and address are stored.

Doctors:

- Doctors' details such as their experience, qualifications, and salary are stored.
- Doctors treat patients. Doctors can treat multiple patients at the same time.
- For every appointment a patient takes, the department assigns an available doctor for the overall treatment. However, a patient can be treated by multiple doctors from different departments for the complete treatment.
- Every doctor belongs to one or more departments. And a department can have more than one doctor. (E.g. Cardio, Neurology, etc).
- Once an initial diagnosis is performed, a doctor determines if the patient needs to be admitted and changes the patient's status to in-patient.

Nurses:

- Nurses govern the rooms when a patient is admitted, based on the availability of the nurse.
- If a nurse already governs a room, then she is not available to be assigned to another room.
- Nurses can work either in the day shift or night shift. Details like availability, shift and salary are to be stored.

Patients:

- Patients will be in-patients when the doctors determine that the patient needs to be admitted.
- Details such as age and gender are stored.
- Once a patient has been admitted, he/she would be asked for a choice of room type and based on the availability of rooms, he/she is admitted to a room.
- Patients request for appointments from a particular department. One patient could have multiple appointments over a period of time.
- The details of in-patients such as the admission date and the discharge date are stored.

This application manages the hospital's doctors and patients. It is also capable of handling hospital's room allocations, departments, pharmacy's inventory, patient's appointments and diagnosis.

Rooms:

Rooms in the hospital are where doctors will treat the patients.

- A room is identified by roomno and has phone as an attribute.
- The In-patients at the hospital stay in the hospital rooms.
- Each and every room has a room type.
- These room types determine the daily rent of that room. This rent is later billed to the IN-patient who is occupying that room.
- Every occupied room is assigned a nurse as per the nurses' availability. A nurse can govern only a single room.
- Initially a doctor treats a patient like a walk-in. If he/she decides the patient should be admitted, the patient chooses the room type he/she wants and is allotted an available one.

Room Type:

Room type is table created to efficiently maintain details of all the rooms in the hospital.

- To reduce redundancy of information in the Rooms table, we have created this table. Without this change in organization, each entry of Rooms table would have contained redundant information like room type and room rent.
- Every room belongs to a room type. And every room type is identified by type_id and has other attributes such as type, rent and number of rooms of that type.
- This Room Type will only have as many entries as there are different types of rooms.
- Whenever a room is booked by an in-patient or is vacated, this table will be accordingly queried or updated.

Departments:

Departments in the hospital play a key role in the hospital management system.

- A department is identified by its dept_id and has dept_id and d_name as attributes. The various departments in the hospital can be cardiology, radiology, gynecology etc. and will have unique 'dept_id'.
- Different departments in the hospital request the pharmacy to bring in medicines that are necessary for the patients being treated. Thus departments prescribe stock to the pharmacy.
- A department can have more than one doctor and each department will have at least one doctor.

Treatment Details:

Treatment Details table is used for storing a patient's diagnostic history – identified by bill numbers which are generated at the time of treatment.

- In this table, a new record is created every time a patient is diagnosed by a doctor and is given a medical prescription.
- Identified by bill number, other attributes include appointment date, diagnosis and medicines prescribed.
- Through this table, a patient can easily see his complete medical history.
- A relation called "treats" is responsible for filling this table through a ternary relation with Doctors and Patients entities.

Pharmacy:

Pharmacy table is used to maintain medicinal stock in the hospital and provides medicines according to doctors' prescription for a treatment.

- All medicines in stock at the Pharmacy are identified by 'medicine_id'.
- The pharmacy stores the name, cost, and the stock for each medicine.

Entity-Relationship Diagram

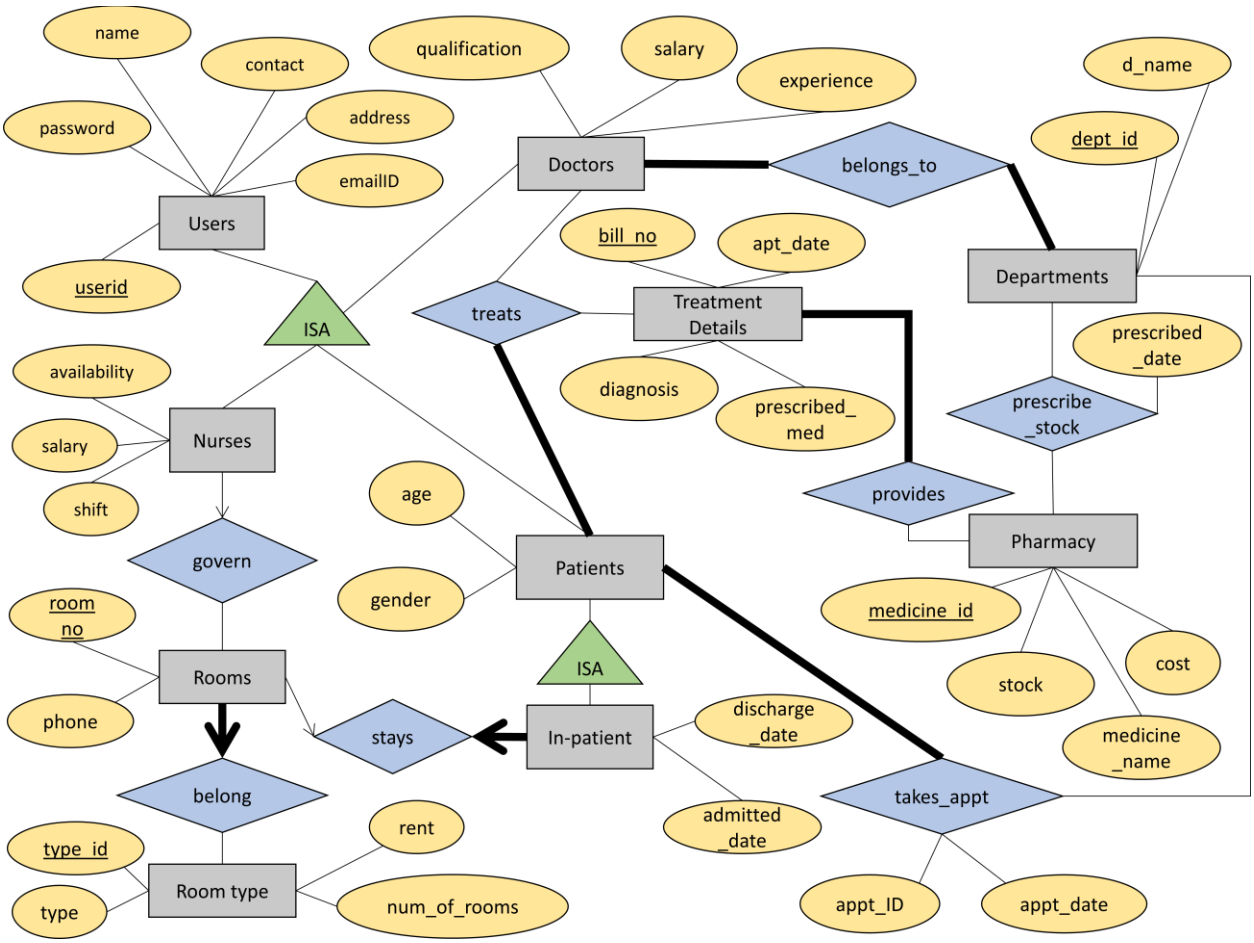

Figure 1: ER Diagram for Hospital Management System

Technology

Web Application

Application Development Technology - J2EE using Servlets with MVC, HTML, CSS, JavaScript

DBMS Software - MS SQL Server