Database Design (Group 16A)

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In the rapidly-evolving world of healthcare, efficient patient management systems are essential to ensure timely and high-quality care. As part of Group 16A, we were tasked with designing the "Patient" interface, a crucial component of such a system. To tackle the complexity of the project, we developed a comprehensive database with four different tables: Bookings, Doctors, Patients, and Logs. In this report, we provide a detailed analysis of our design choices, including table and column names, variable types, and PK and FK selection to provide best normalization. I (Nikola) will provide insights on the Doctors and Logs DBs, while Ethan will delve into the Bookings and Patients DBs.

DB Design Diagram

The 'Doctors' table stores information about the medical professionals associated with the clinic. It contains the following attributes:

* DoctorID (PK): A unique identifier for each doctor in the system, as their name and specialty may not be unique and hence cannot be a PK.
* Name: The name of the doctor, stored as a VARCHAR(15) to accommodate most names' length.
* PhoneNumber: The doctor's contact number, stored as a VARCHAR with a length of 12 due to the UK's phone format - XXXXX XXXXXX. This attribute is not allowed to be null in case of emergencies.
* Background: An optional field that stores any important background information about the doctor. This field can be null in most cases and has a VARCHAR(255) type. I choose a length of 255 because that is the SQL standard for a longer attribute.
* Speciality: The doctor's area of expertise which cannot be null. It will help with department filtration in the future.

For example, the PhoneNumber field might be used in an emergency, and the Background field could store information about a doctor's previous surgeries or research projects. The Speciality field will allow for easier filtering of doctors based on their area of expertise.

The ‘Logs’ table records users’ actions within the interface, providing the administrators with valuable information on how the system is used. It contains the following attributes:

* LogID (PK): A unique identifier for each log in the system, ensuring no two entries’ PKs are identical.
* PatientID: An identifier connecting the ‘Logs’ table with the ‘Patients’ table, allowing administrators to track user activity by patient.
* Timestamp: A crucial attribute that records the date and time of each user action, aiding in problem detection and system maintenance.
* Action: This column stores a human-readable description of the users’ actions, such as logging in or booking an appointment. Its type is VARCHAR(255), providing ample space for a detailed description.

All the attributes in the ‘Logs’ table are required and cannot be null. The LogID and PatientID are essential for connecting user actions to the relevant patients and ensuring the uniqueness of each log entry. The Timestamp is crucial for tracking the sequence of events within the system and identifying potential issues. Finally, the Action attribute provides insight into how the interface is used and is critical for administrators to understand user behavior.