NeuroSurgeryDB database

Database Description + Requirements Analysis:

Color legend: Object Attribute Relationship Foreign key.

I propose a Database to efficiently manage patient information, appointments, diagnosis, surgeries, and insurance details within a neurosurgery department. The proposed database comprises **seven** primary objects/entities: *Patients*, *Appointments*, *Doctors*, *Specialties*, *Surgeries, and Diagnosis*, with an additional Insurance table for handling *insurance-related information*. Each patient is assigned a unique PatientID and has associated attributes such as name, date of birth, gender, address, InsuranceID, and emergency contact info. Patients can schedule appointments with doctors, which are recorded in the Appointments table along with details such as AppointmentID, PatientID, date, time, DoctorID, and purpose of the appointment. Doctors are identified by a unique DoctorID and have attributes including name, SpecialtyID, and email address. Specialties are identified by a unique SpecialtyID and Specialty Name, with each specialty representing a specific area of expertise within the neurosurgery department. Surgeries performed on patients are documented in the Surgeries table, which includes data such as a unique SurgeryID, PatientID, DoctorID, Date of Surgery, and surgery name. The Diagnosis table maintains records of each patient's neurosurgical diagnosis, including PatientID, Diagnosis, Date of Diagnosis. Additionally, the Insurance table stores details of each patient's insurance coverage, including the InsuranceID, PatientID, insurance provider's name, policy number, coverage type, as well as start date and end date. These entities are interconnected through foreign key relationships.

Objects/Entities Relationships:

- Each patient has only one insurance record, and each patient can have only one insurance (one-to-one relationship).
- Each patient can have multiple appointments, surgeries, and diagnosis (one-to-many relationship).
- Many appointments and surgeries can be assigned to one doctor, but each appointment and surgery is attended/performed by only one doctor. (many-to-one relationship).
- Many doctors can specialize in one specialty, but each doctor can have only one specialty (many-to-one relationship).

Foreign Key Relationships:

- PatientID in the insurance, appointments, surgeries, and diagnosis tables references patients in patients' table.
- DoctorID in the appointment and surgeries tables references doctors in doctors' table.
- SpecialtyID in the doctors table reference specialty in specialties table.

Mohamed Elsherif
Entwurf und Umsetzung von Datenbanken (SoSe 2024)