ER Modelling Exercise – Hospital
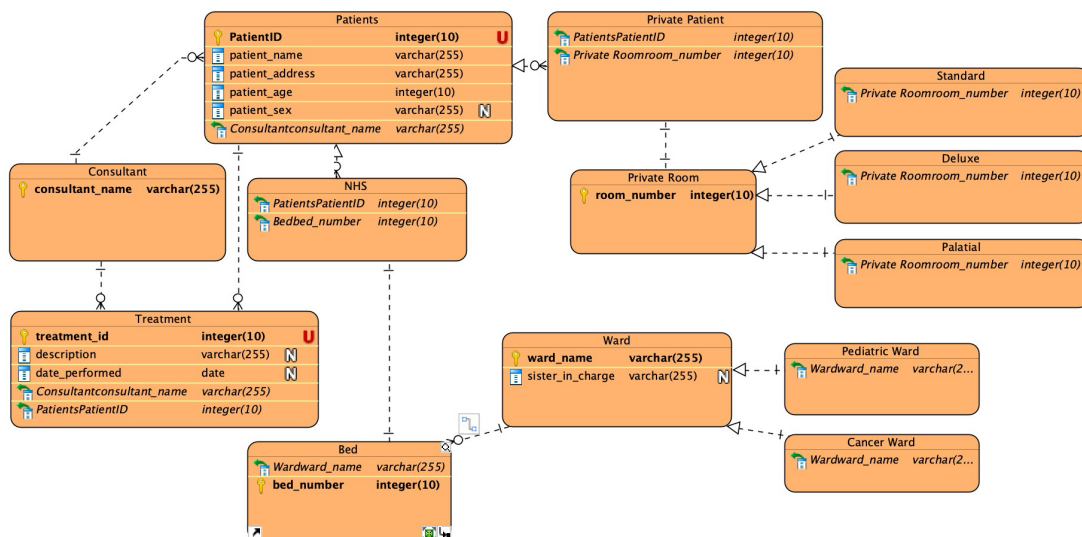
Consider the following requirements for inpatients at a hospital:

All patients admitted to the hospital are given a unique patient number. The patient's name, address, age, and sex are recorded. Private patients are allocated a private room, identified by the room number. Private rooms are of different types, e.g., standard, deluxe, palatial, etc. NHS patients are allocated a bed in a ward, beds being identified by the ward name and bed number. Wards are of different types, e.g., pediatric, cancer, etc, with a named sister in charge of each one. Each patient is allocated to a named consultant who supervises the medical care of the patient. The consultant decides on the treatments to be given to the patient. A treatment is any medical procedure performed on the patient. Each treatment is given a , and a unique treatment number   description of the treatment and the date it is performed are recorded.

Design an E-R diagram for the above database. Derive a corresponding relational scheme from your E-R diagram.

The E-R diagram must show attributes, keys, cardinalities, and constraints. The relational scheme must be in third-normal form, with primary and foreign keys clearly indicated.

Patients (PatientID {pk}, patient_name, patient_address, patient_age, patient_sex, consultant_name {fk consultant_name Consultant})

Consultant (consultant_name {pk})

Treatment (treatment_id {pk}, description, date_performed, consultant_name {fk consultant_name Consultant}, PatientID {fk PatientID Patients})

NHS (PatientID {pk, fk patientID Patients}, bed_number {fk bed_number Bed})

Bed (bed_number {pk}, ward_name {fk ward_name Ward})

Ward (ward_name {pk}, sister_in_charge)

Pediatric Ward (ward_name {pk, fk ward_name Ward})

Cancer Ward (ward_name {pk, fk ward_name Ward})

Private Patient (PatientID {pk, fk PatientID Patients}, room_number {fk room_number Private Room})

Private Room (room_number {pk})

Standard (room_number {fk room_number Private Room})

Deluxe (room_number {fk room_number Private Room})

Palatial (room_number {fk room_number Private Room})