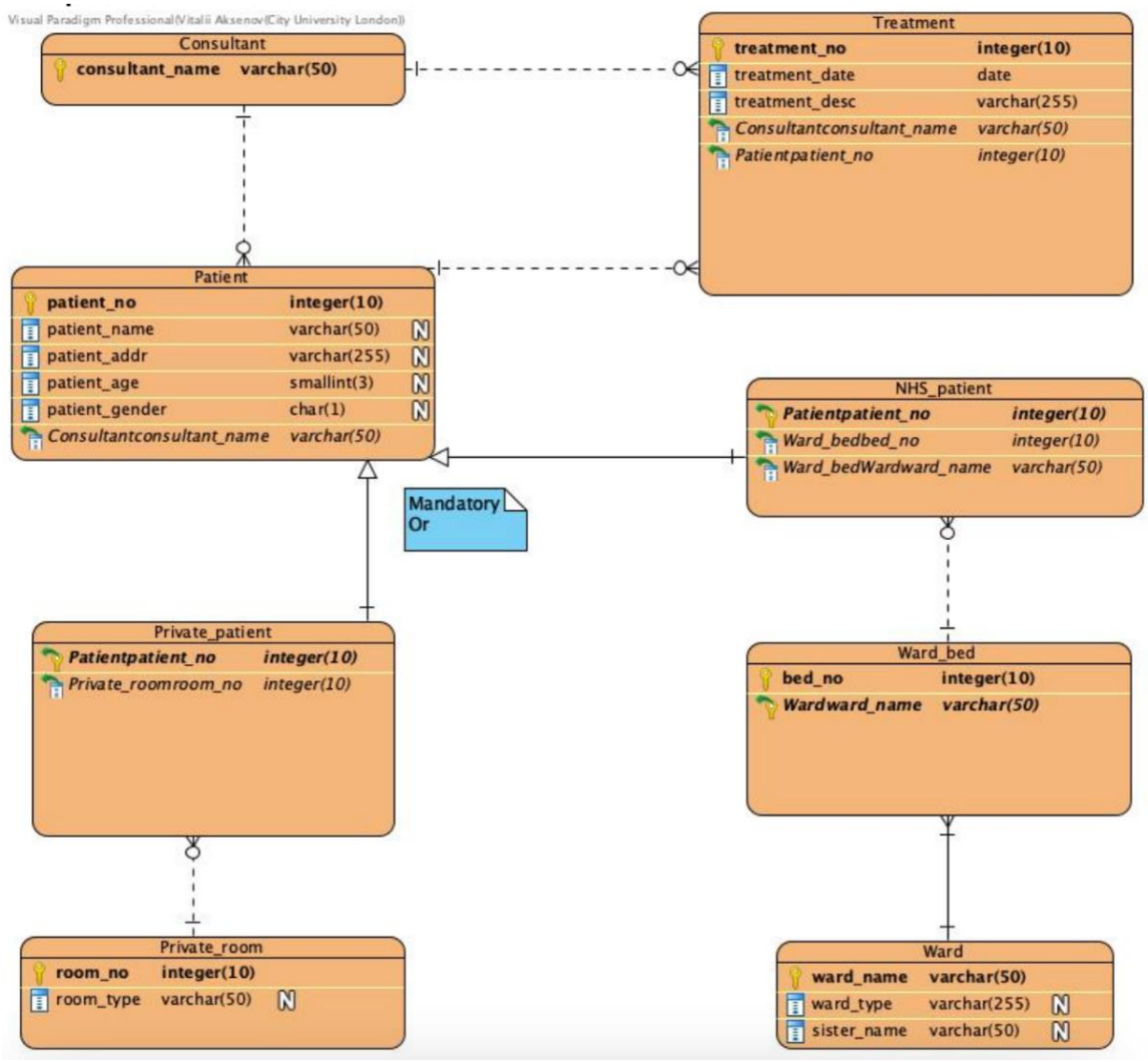
Consider the following requirements for inpatients at a hospital:

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., paediatrics, 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 unique treatment number, and a 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.

Answer


Visual Paradigm Professional(Vitalii Aksenov(City University London))
Consultant
consultant_name varchar(50)
Treatment
treatment_no integer(10)
treatment_date date
treatment_desc varchar(255)
Consultantconsultant_name varchar(50)
Patientpatient_no integer(10)
Patient
patient_no integer(10)
patient_name varchar(50) N
patient_addr varchar(255) N
patient_age smallint(3) N
patient_gender char(1) N
Consultantconsultant_name varchar(50)
NHS_patient
Patientpatient_no integer(10)
Ward_bedbed_no integer(10)
Ward_bedWardward_name varchar(50)
Mandatory
Or
Private_patient
Patientpatient_no integer(10)
Private_roomroom_no integer(10)
Ward_bed
bed_no integer(10)
Wardward_name varchar(50)
Private_room
room_no integer(10)
room_type varchar(50) N
Ward
ward_name varchar(50)
ward_type varchar(255) N
sister_name varchar(50) N

Private_room (room_no {pk}, room_type)

Ward (ward_name {pk}, ward_type, sister_name)

Ward_bed ((bed_no, ward_name) {pk, fk ward_name Ward})

Consultant (consultant_name {pk})

Patient (patient_no {pk}, patient_name, patient_addr, patient_age, patient_gender, consultant_name {fk consultant_name Consultant})

Private_patient (patient_no {pk, fk patient_no Patient}, room_no {fk room_no, Private_room})

NHS_patient (patient_no {pk, fk patient_no Patient}, (bed_no, ward_name) {fk (bed_no, ward_name) Ward_bed})

Treatment (treatment_no {pk}, treatment_date, treatment_desc, patient_no {fk patient_no Patient}, consultant_name {fk consultant_name Consultant})