

## ER Modelling Exercise – Hospital

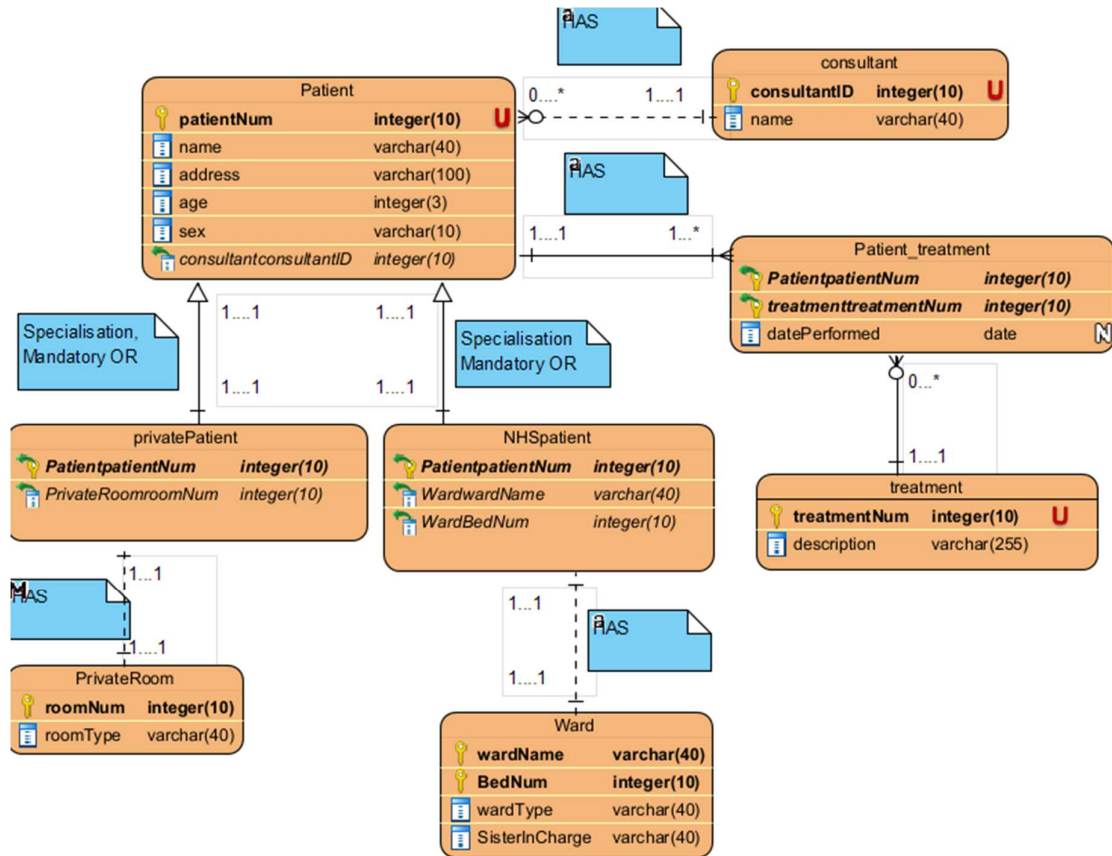
Consider the following requirements for inpatients at a hospital:

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 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.

EER Model:



Relational Scheme:

Patient (patientNum, name, address, age, sex)

FOREIGN KEY consultantID REFERENCES consultant (consultantID)

Consultant (consultantID, name)

PrivatePatient (patientNum (PK Inherited))

FOREIGN KEY patientNum REFERENCES patient (patientNum)

FOREIGN KEY roomNum REFERENCES privateRoom (roomNum)

NHSpatient (patientNum (PK Inherited))

FOREIGN KEY patientNum REFERENCES patient (patientNum)

FOREIGN KEY wardName REFERENCES ward (wardName)

FOREIGN KEY bedNum REFERENCES ward (bedNum)

privateRoom (roomNum, roomType)

Ward (wardName, bedNum, wardType, sisterInCharge)

Treatment (treatmentNum, description)

Patient\_Treatment (datePerformed)

FOREIGN KEY patientNum REFERENCES patient (patientNum)

FOREIGN KEY treatmentNum REFERENCES treatment (treatmentNum)