Module 04 Tutorial Session

Question

Based on the scenario from Tutorial 3, expand the logical and physical ER diagrams to include the additional information (below) about BMC’s database needs.

* Some patients develop a preference for a specific doctor, so BMC wants the patient’s preferred doctor to be recorded in the patient details.
* Prescriptions of medicines made during appointments sometimes involve a number of doses or special instructions. The number of doses and instructions must be recorded.
* To simplify the ordering of medicines, BMC wishes to record the contact number and the name of the sales representative for the manufacturers of medicines.
* Not all rooms in the clinic are equal – some have equipment that others do not. In order to select an appropriate room for appointments, BMC needs to store room details with more detail. This involves:
  + Storing a list of rooms – the room number and the access code needed to unlock the room must be recorded.
  + Storing a list of equipment – simply the name of the pieces of equipment (e.g. ultrasound machines, ventilators, insulin pumps...) need to be recorded.
  + Recording which rooms contain which equipment – the clinic may own several pieces of the same equipment, hence one piece of equipment can be in many rooms, and one room can contain many pieces of equipment.

**Assumptions**

* Patients may not have a preferred doctor, and a doctor may not be the preferred doctor of any patients
* Manufacturer details are only stored if they provide a medicine to BMC, and all medicines have one manufacturer
* It is possible for a room to exist without having had any appointments in it, but all appointments are in a room
* It is possible for a room to have no equipment in it, but equipment names are only stored in the database if they are in at least one room

**Solution – Logical ERD**

*preferred doctor*

doctor\_id, name

dob, qualifications, address, phone

doctor

patient\_id, name

dob, address,

phone

appointment

patient

appt\_type

appt\_id, datetime, reason

appt\_type\_id,

name, cost

medicine\_id, name, cost

manufacturer

prescription\_id,

doses, instructions

prescription

medicine

room\_id, room\_number

access\_code

room

equipment

manufacturer\_id,

manufacturer\_name, rep\_name, phone

equipment\_id,

equipment\_name

**Solution – Physical ERD**

appt\_type

doctor

doctor\_id, name

dob, qualifications, address, phone

appointment

patient

*preferred doctor*

room\_equip\_id,

*room\_id*, *equipment\_id*

equipment\_id,

equipment\_name

equipment

room\_id, room\_number

access\_code

room

prescription\_id, doses, instructions, *appt\_id*, *medicine\_id*

medicine\_id, name

*manufacturer\_id*, cost

appt\_type\_id,

name, cost

patient\_id, name

dob, address,

phone, *pref\_doc*

appt\_id, datetime, reason, *room\_id*, *patient\_id*, *doctor\_id*, *appt\_type\_id*

room\_equip

manufacturer\_id,

manufacturer\_name, rep\_name, phone

manufacturer

medicine

prescription