



The Open University of Sri Lanka  
B. Sc. Degree programme – Level 05  
Closed Book Test 2008/2009  
CSU 3278: Database Management Systems  
Duration : One and half hours  
Date 30.04.2009

Time: 4.00 p.m. to 5.30 p.m.

1. The following rules describe the health care services provided by a hospital. Construct an E-R diagram that models the hospital's information needs.
  - There are only two kinds of health care employees: nurses and clinicians. A nurse may be assigned to one or more hospital wards in each of which the nurse has a certain role. A clinician (who may be a staff doctor or technologist) works in one of the hospital's clinics (e.g. gerontology, radiology, physiotherapy).
  - Each employee has an identifying number, name, and title. Also, each nurse has a seniority level and each clinician has a hospital phone number.
  - A hospital patient (actually a future patient, in most cases, but this need not concern you) may be scheduled for one or more operations or may have one or more appointments with the hospital's clinics.
  - Each scheduled operation has an identifying number, date, time, type, and location. No operation at this hospital is performed on more than one patient (e.g. the separation of siamese twins is not done at this hospital). Each clinic appointment has a date, time, and purpose.
  - An in-patient is a special kind of patient who stays in the hospital for one or more days (e.g. while recovering from an operation).
  - Each patient has a provincial health care number, name, and physician. At the time of hospital admittance, the date and reason for admittance are recorded for each in-patient.
  - A nurse may work on one or more shifts (some shifts are part-time). Each shift has an identifying number and work-time (e.g. Sat&Sun, 00:00-08:00).
  - A nurse may care for one or more in-patients. For each such in-patient, the nurse may have several duties (e.g. intravenous feeding) to perform.
  - Each ward has a code (e.g. M=maternity), name, and phone number. Each clinic has a code and name. Furthermore, a clinician heads each clinic.
  - Each ward has a number of rooms in which in-patients may stay. Each room has an identifying number (the ward-code, room-number combination is unique) and capacity (i.e. number of beds for in-patients).

2. Consider the following incomplete relational schema:  
Supplier(Snum, Sname, Saddress)  
Part(Pcode, Pname, unit\_price, discount)

A constraint applied to this schema is that many suppliers supply a single part and a single supplier can supply many parts.

- (a) Complete the above schema by identifying primary keys, foreign keys. Write down SQL statements to create the database.
- (b) Use your schema to write down SQL statements to obtain the following
- i) the names and addresses of all Suppliers,
  - ii) the information of the join of the Supplier and Part relations,
  - iii) the names and codes of parts those were supplied by the supplier S128,
  - iv) the parts supplied by the supplier PQR and the unit price of those parts, where the price exceeds Rs. 250.00,
  - v) suppliers who supply parts without discounts.

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