

Comments for TMA02

Semester OCT 2003, by Andy Au (t420135), Group 4

This document is aimed at providing readers a guideline for addressing the key points of each question in TMA02, whereas the most common errors made by colleague.

Q1. This is straight forward, most students give correct result of execution, more tricky one is iii) which result in no records (the body is empty), your answer should still show the **heading – ConsultantNo**. For what each query ask for, please refer to the key words:

- i) **medical specialisms** of **consultant**
- ii) **name of patients** who are treated y doctor **Buckley**
- iii) **staff number of consultants** who are not treating **any** of the patients **they are responsible for**
- iv) **staff number of consultants** who are not treating **some** of the patients **they are responsible for**
- v) **identifiers of patients** who are **treated by more than 1 doctors**

Q2. Not most of students get how it is represented in ER model in part ii) and iii), others are fine.

- i) 1) Entity integrity is violated (PK staffNo is null); 2) Doctor's identifier -> StaffNo; 3) PK StaffNo in Doctor
- ii) 1) Referential integrity is violated (FK Treatment.patient → p58 which does not exist in Patient); 2) Treatment is Mandatory w.r.t. Receives relationship; 3) FK PatientId references Patient;
- iii) 1) Attribute constraint is violated (Patient.ConsultantNo NOT allowed NULL); 2) Patient is Mandatory w.r.t.IsResponsibleFor; 3) FK reference....NOT allowed NULL
- iv) 1) General constraint is violated (only consultant has medical specialism); 2) In constraint section...only a consultant has a medical specialism; 3) constraint ()Position = 'Consultant'.....Specialism is NULL))
- v) 1) Domain declaration is violated (Pathologist is not a value for Position); 2) In constraint section...A doctor has the position ...; 3) Domain declaration PositionsOfDoctors =

Q3.

a)
Most people identify the introduction of immediate Entity – Reservation breaking down m:n into 2 x 1:many relationships; and get correct entity definition: Reservation (CustomerNumber, FilmTitle, ReservationDate)

b)
You get it right in a), reasonably you will have heading of additional relationship: Reservation (CustomerNumber, FilmTitle, ReservationDate); besides you should have introduced shared attributes: **PriceBand {Includes}** into Film; **FilmTitle {HasMany} & CustomerNumber {Rents}** in Copy and **FilmTitle {MayHave}** in CD. Others like Customer, Group and Individual simply a copy from their Entity definition in ER model.

c)
You should note followings for domain declaration domains

BandOfPrices = a .. c; CertificatesOfFilms = (U, PG, 12, 15, 18); LevelsofDiscount = (low, high)
NumbersOfCDs = (000000 .. 999999); NumbersOf..... = (000000 ..999999); ...
.... Strings; Calendardates
QuantitiesInStock = Integer; Priced =.Real

For relation declaration, attributes may be referred by the relational headings in b), only PK, FK and constraints are stated:

Relation RentalClass

PK PriceBand

{ **Mandatory on 1: side of Includes**}

Constraint (project RentalClass over PriceBand) difference (project Film over PriceBand) is Empty

Relation Copy

PK VideoNumber

{ **Mandatory on 1: side of Includes**}

FK FilmTitle references Film not allowed null {**Mandatory on m: side of HasMany**}

FK CustomerNumber references Customer allowed null {**Optional on m: side of Rents**}

Relation Film

PK FilmTitle

{ **Mandatory on 1: side of Includes**}

FK PriceBand references RentalClass not allowed null {**Mandatory on m: side of Includes**}

Relation CD

PK CDNumber

Alternate Key FilmTitle { **Mandatory on m: side of MayHave**}

FK PriceBand FilmTitle references Film not allowed null

*** Some users give Film and CD definition regarding Film on m: side and CD on 1: side, the solution is more complicated. Besides, you should pay attention to the participation: Film is Optional w.r.t. MayHave while CD is Mandatory, that means Film may participate but CD must, so if you treat Film as m:side and include CDNumber as shared attribute, there could be many NULL values. On the other hand, each CD must have a FilmTitle.