Comments for TMA04 **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 TMA04, whereas the most common errors made by colleague.

Q1.

i) country_name → [births] → births of that country

In the body of Begin … End!, Declare country_birth Decimal (4,1) for value return, then use Select statement to put the value of births from country into this variable country_birth, of course we need to use WHERE to have name=count_name (the input parameter); finally return the country_births.

ii) Simply use Select births ('Italy') and ('Monaco') respectively

Q2.

Basic FDs: 1) PlotNo → PlotSize, 2) PlotNo → MemberNo,, 3) MemberNo → MemberName,
4) VarietyName, PlotNo → Yield, 5) VarietyName → VegetableType, 6) VegetableType → ClubRecord
Derived FDs: 7) PlotNo → MemberName (transitivity 2&3), 8) VarietyName → ClubRecord (transitivity 5&6)
1NF: VetYield (**PlotNo, VarietyName**, …..)
Offending FDs to 2NF: 1,2,5,7,8, why? What is the def of fully functional dependency? Standard way of resolving OFDs:
2NF:

Plot2 (**PlotNo, PlotSize**, MemberNo, MemberName),
Variety2 (**VarietyName,** VegetableType, ClubRecord),
Yield2 (**VarietyName, PlotNo**, Yield)

Offending FDs to 3NF:

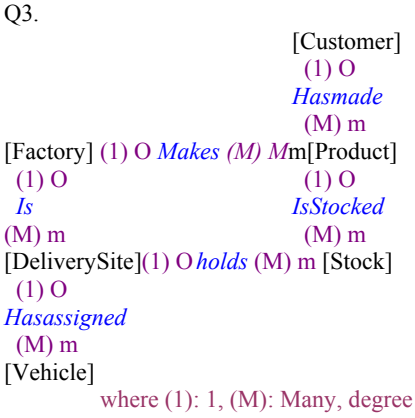
3) offends to Plot2 (MemberName is transitively dependent on PlotNo via MemberNo),
6) offends to Variety2 (ClubRecord is t.d. on VarietyName via VegetableType)

3NF

Plot3 (**PlotNo**, Plotsize, MemberNo)
Member3 (**MemberNo**, MemberName)
Variety3 (**VarietyName**, VegetableType)
VegType3 (**VegetableType**, ClubRecord)
Yield2 (**VarietyName, PlotNo**, Yield)

and also BCNF as all determinants has been candidate keys (primary keys of the relations)
Member3 ---< Plot3 ---< Yield2 >--- Variety3 >---Vegtype3

Q3.



where (1): 1, (M): Many, degree of relationship;
O: Optional and m: Mandatory, participation condition

Entity Def:
Customer (**CustomerId**, CustomerName, CustomerAddress, CustomerTelNo)
Factory (**SiteCode**, Address, TelephoneNo)
DeliverySite (**SiteCode**)
Vehicle (**RegistrationNo**, Make, Model, Capacity)
Product (**PartNo**, Name, Description)
Stock (**PartNo, SiteCode**, Quantity)
Constraints: The site code for a delivery site must be the same as the factory to which it is related.
Assumptions: in addition, Details of a customer are retained event when they do not have a product on order. (justification of Optional of Customer on 1 side of HasMade

Q4.

Remember how we represent the Mandatory and Optional participation on 1: side and n:side in relational model?

On n: side, Foreign Key reference… Allowed Null or Not Allowed Not
On 1:side, Project (PK) difference (FK) is Empty or is not Empty

In SQL, we have:

On Table B, Column a1 NOT NULL, and Foreign Key (a1) references A
On Table A, Check (a1 IN (Select a1 From B)