

M358 TMA04 Tutor-notes

Question 1

```
CREATE FUNCTION births (country_name VARCHAR(16))
  RETURNS DECIMAL(4,1)
BEGIN
  DECLARE country_births DECIMAL(4,1);
  SELECT births INTO country_births
  FROM country WHERE name=country_name;
  RETURN country_births;
END!

SELECT births ('Italy') AS Italian_births;
SELECT births ('Monaco');
```

Question 2

```
FD1: PlotNo -> PlotSize
FD2: PlotNo -> MemberNo
FD3: MemberNo -> MemberName
FD4: VarietyName, PlotNo -> Yield
FD5: VarietyName -> VegetableType
FD6: VegetableType -> ClubRecord

FD7: PlotNo -> MemberName [transitivity, FD2 and FD3]
FD8: VarietyName -> ClubRecord [transitivity, FD5 and FD6]
```

BCNF

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

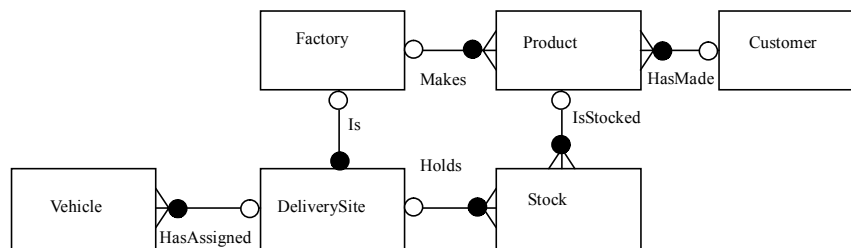
Note: the steps of the normalization process must be shown (i.e. from 1NF, 2NF, 3NF, to BCNF). You must show the offending FD's and prove the relations are in certain Normal Form.

The degrees of the relationship among the relations are:

Member3 : Plot3 is 1:n, Plot3 : Yield2 is 1:n, Variety3 : Yield2 is 1:n, VegType3 : Variety3 is 1:n

Question 3

e.g.



Entity types

```
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.

Assumption

...

Details of a customer are retained even when they do not have a product on order.

Question 4

The mandatory participation condition of B in the relationship:

Table B should have the following referential constraint:

```
FOREIGN KEY (a1) REFERENCES a
```

and define the column a1 has the NOT NULL constraint in table A

The mandatory participation condition of A in the relationship:
Table A may have the following general constraint:
CHECK (a1 IN (SELECT a1 FROM b))