HOMEWORK -4-

Note if you miss the session, your homework must include the extra queries to gain a grade. Homework MUST be handed in via Canvas ONLY in one file representing the entire homework.

Homework exercise:

Study the Northshore Hospital case study file available on Canvas, using the following Figure1:

a. Identify the functional dependencies represented by the attributes shown in the form in Figure 1. State any assumptions that you make about the data and the attributes shown in this form.

b. Describe and illustrate the process of normalizing the attributes shown in Figure 1 to produce a set of well-designed 3NF relations.

c. Identify the primary and foreign keys in your 3NF relations.

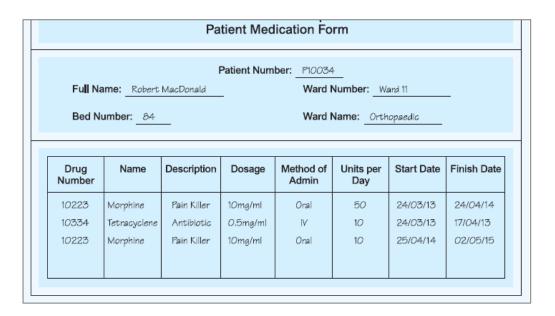d. Examine the 3NF relations created to represent the attributes shown in the Hospital form shown in Figure 1.

Patient Medication Form

Patient Number: P10034

Full Name: Robert MacDonald   Ward Number: Ward 11

Bed Number: 84   Ward Name: Orthopaedic

Drug Number	Name	Description	Dosage	Method of Admin	Units per Day	Start Date	Finish Date
10223	Morphine	Pain Killer	10mg/ml	Oral	50	24/03/13	24/04/14
10334	Tetracyclene	Antibiotic	0.5mg/ml	IV	10	24/03/13	17/04/13
10223	Morphine	Pain Killer	10mg/ml	Oral	10	25/04/14	02/05/15

Figure 1. Hospital Patient Medication Form.

Extra queries:

The relation shown in Figure 2 describes hospitals (hospitalName) that require certain items (itemDescription), Which are supplied by suppliers (supplierNo) to the hospitals (hospitalName).

Furthermore, whenever a hospital (h) requires a certain item (i), and a supplier (s) supplies that item (i), and the supplier (s) already supplies at least one item to that hospital (h), then the supplier (s) will also supply the required item (i) to the hospital (h). In this example, assume that a description of an item (itemDescription) uniquely identifies each type of item.

    a. Describe why the relation shown in Figure 2 is not in 4NF.
    b. Describe and illustrate the process of normalizing the relation shown in Figure 2 to 4NF.

Hospital name	Item Description	Supplier No.
Northshore Hospital	Antiseptic Wipes	S1
Northshore Hospital	Paper towels	S2
Northshore Hospital	Antiseptic Wipes	S2
Northshore Hospital	Antiseptic Wipes	S2

Figure 2. The Hospital item Supplier relation