QN 1 A. Un normalised table

Patient number	Full Name	Ward Number	Ward Name	Ward Name	Bed Number	Drug Number	Name	Description	Dosage	Method Of Admin	Units per day	Start date	Finish date
P10034	Robert MacDonald	Ward 11	Orthopaedic	Orthopaedic	84	10223	Morphine	Pain Killer	10mg/ml	Oral	50	24/03/13	24/4/14
						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

1ST NORMAL FORM

Patient number	First Name	Last Name	Ward Number	Ward Name	BED NUMBER	Drug Number	Name	Description	Dosage	Method Of Admin	Units per day	Start date	Finish date
P10034	Robert	MacDonald	Ward 11	Orthopaedic	84	10223	Morphine	Pain Killer	10mg/ml	Oral	50	24/03/13	24/4/14
P10034	Robert	MacDonald	Ward 11	Orthopaedic	84	10334	Tetracyclene	Antibiotic	0.5mg/ml	IV	10	24/03/13	17/04/13
P10034	Robert	MacDonald	Ward 11	Orthopaedic	84	10223	Morphine	Pain Killer	10mg/ml	Oral	10	25/04/14	02/05/15

2ND NORMAL FORM

(identify the primary key and get the functional dependencies)

(Primary keys "patients' number and drug number combined")

Fully functional dependant on patients' number

Patients number

First Name	Last Name	Ward Name	Ward Number	BED NUMBER
Robert	MacDonald	Orthopaedic	Ward 11	84

Not fully functional dependant on Patients Number

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	24/4/14
	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

Drug Number

Fully functional dependencies on Drug Number

Drug Number	Name	Description	Dosage	Method Of Admin	Units per day
10223	Morphine	Pain Killer	10mg/ml	Oral	50
	Tetracyclene	Antibiotic	0.5mg/ml	IV	10
10223	Morphine	Pain Killer	10mg/ml	Oral	10

Not fully dependant on Drug number

First Name	Last Name	Ward Name	Ward Number	BED NUMBER	Start date	Finish date
Robert	MacDonald	Orthopaedic	Ward 11	84	24/03/13	24/4/14
Robert	MacDonald	Orthopaedic	Ward 11	84	24/03/13	17/04/13
Robert	MacDonald	Orthopaedic	Ward 11	84	25/04/14	02/05/15

3RD NORMAL FORM

BED NUMBER	Ward Number	Ward Name	Method Of Admin	Units per day	Start date	Finish date
84	Ward 11	Orthopaedic	Oral	50	24/03/13	24/4/14
84	Ward 11	Orthopaedic	IV	10	24/03/13	17/04/13
84	Ward 11	Orthopaedic	Oral	10	25/04/14	02/05/15

B)

First Normal Form (1NF)

To achieve 1NF, we need to ensure that each column contains atomic values and each row is unique. The original table already meets the criteria for 1NF.

Second Normal Form (2NF)

To achieve the second normal form , one has to have the original table in first normal form and to ensure that all fully dependent keys are there

Forexample

First Name	Last Name	Ward Name	Ward Number	BED NUMBER
Robert	MacDonald	Orthopaedic	Ward 11	84

Third normal form

Third Normal Form (3NF)

To achieve 3NF, we need to ensure that the table is in 2NF and that all non-key attributes are not only fully dependent on the primary key but also independent of each other

QUESTION TWO

First Normal form

Manager ID	Manager Name	Area	Employee ID	Employee Name	Sector ID	Sector Name
1	Adam. A	East	1	David. D	4	Finance
1	Adam. A	East	2	Eugene. E	3	IT
2	Betty. B	West	3	George. G	2	Security
2	Betty. B	West	4	Henry. H	1	Administration
2	Betty. B	West	5	Ingrid. I	4	Finance
3	Carl. C	North	6	James. J	1	Administration
3	Carl. C	North	7	Katy. K	4	Finance

2nd Normal form

(primary key is employee ID)

Full functional dependency on employee ID

Employee Name
David. D
Eugene. E
George. G
Henry. H
Ingrid. I
James. J
Katy. K

Not fully functional dependant

Manager ID	Manager Name	Area	Sector ID	Sector Name
1	Adam. A	East	4	Finance
1	Adam. A	East	3	IT
2	Betty. B	West	2	Security
2	Betty. B	West	1	Administration
2	Betty. B	West	4	Finance
3	Carl. C	North	1	Administration
3	Carl. C	North	4	Finance

3RD NORMAL FORM

employees

Employee ID	Employee Name	Manager ID	Sector ID
1	David. D	1	4
2	Eugene. E	1	3
3	George. G	2	2
4	Henry. H	2	1
5	Ingrid. I	2	4
6	James. J	3	1
7	Katy. K	3	4

Table 2: Managers

Table

Manager ID	Manager Name	Area
1	Adam. A	East
2	Betty. B	West
3	Carl. C	North

Table 3: Sectors

Table

Sector ID	Sector Name
1	Administration
2	Security
3	IT
4	Finance