# Lab 6

## Part 1

### (a)

Assumptions:

- Patient Number uniquely identifies the patient.
- Drug Number uniquely identifies the drug.
- A patient may receive multiple drugs over time.
- The same drug can be prescribed more than once with different dosages in different periods.
- Each medication entry is uniquely identified by a combination of Patient Number, Drug Number, and Start Date.

Functional Dependencies:

- PatientNumber -> FullName, BedNumber, WardNumber, WardName
- DrugNumber -> DrugName, Description
- PatientNumber, DrugNumber, StartDate -> Dosage, MethodOfAdmin, UnitsPerDay, FinishDate

### (b)

#### *UNF*

Patient(PatientNumber, FullName, BedNumber, WardNumber, WardName, [DrugNumber, DrugName, Description, Dosage, MethodOfAdmin, UnitsPerDay, StartDate, FinishDate])

#### *1NF*

PatientMedication(PatientNumber, FullName, BedNumber, WardNumber, WardName, DrugNumberm DrugName, Description, Dosage, MethodOfAdmin, UnitsPerDay, StartDate, FinishDate)

#### *2NF*

Patient(PatientNumber, FullName, BedNumber, WardNumber, WardName)

Drug(DrugNumber, DrugName, Description)

Medication(PatientNumber, DrugNumber, StartDate, Dosage, MethodOfAdmin, UnitsPerDay, FinishDate)

*3NF*

Patient(PatientNumber, FullName, BedNumber, WardNumber)

Ward(WardNumber, WardName)

Drug(DrugNumber, DrugName, Description)

Medication(PatientNumber, DrugNumber, StartDate, Dosage, MethodOfAdmin, UnitsPerDay, FinishDate)

## (c)

Primary Keys:

Patient: PatientNumber

Ward: WardNumber

Drug: DrugNumber

Medication: PatientNumber, DrugNumber, StartDate

Foreign Keys:

WardNumber in Patient Table

PatientNumber and DrugNumber in Medication Table

# Part 2

## (a)

### *Insertion Anomaly:*

I have to know other data to insert some data here. For example, If I want to add a new Dentist before he has had any appointments, I need to know the appointment details.

### *Deletion Anomaly:*

If I were to delete one record, then it would cause unnecessary loss of other useful information. For example, If I want to delete the patient Gillian White because he cancels his appointment then I will be deleting Tony's information too.

### *Update Anomaly*

Since the data here is stored in a redundant way, I have to update in every row where a particular dentist is present if I want to update his/her information.

## (b)

Assumptions:

- staffNo uniquely identifies the dentist.
- patNo uniquely identifies the patient.
- Each patient can only have one appoitnment at a specific date and time.
- A dentist is assigned to one surgery per day but can have multiple appointments in a day.

Functional Dependencies:

- StaffNo -> dentistName
- PatNo -> patName
- StaffNo, appointmentDate -> surgeryNo
- PatNo, apoointmentDate, time -> staffNo

## (c)

### *UNF*

Appointment(staffNo, dentistName, patNo, patName, appointmentDate, time, surgeryNo)

### *1NF*

Appointment(staffNo, dentistName, patNo, patName, appointmentDate, time, surgeryNo)

*2NF*

Patient(patNo, patName)

Dentist(staffNo, dentistName)

Surgery(staffNo, appointmentDate, surgeryNo)

Appointment(patNo, appointmentDate, time, staffNo)

*3NF*

Patient(patNo, patName)

Dentist(staffNo, dentistName)

Surgery(staffNo, appointmentDate, surgeryNo)

Appointment(patNo, appointmentDate, time, staffNo)

Primary Keys:

Patient: patNo

Dentist: staffNo

Surgery: staffNo, appointmentDate

Appointment: patNo, appointmentDate, time

Foreign Keys:

StaffNo in Surgery Table

PatNo and staffNo in Appointment Table