

1.

normalization process:

(1NF=has primary key+no repeating groups)

It is 1NF because the primary key is customerNumber, date, and partNumber and there is no repeating group.

all data in one table:

customerName

**customerNumber PK**

customerType

**date PK**

time

employee

**partNumber PK**

name

type

cageCode

quantityOrdered

unitPrice

(2NF=1NF+one field that makes up the primary key or all non-PK fields are dependent on all the PK fields)

It is not 2NF because it has a composite PK and there are attributes dependent upon only part of the PK:

name, type, cageCode, and unitPrice are dependent on partNumber

customerName and customerType are dependent on customerNumber

employee are dependent on the date

Moving these fields out of the table results in the following 2NF version:

order\_detail

**partNumber PK FK**

**customerNumber PK FK**

**date PK FK**

quantityOrdered

time

customer\_detail

**customerNumber PK**

customerName

customerType

part\_detail

**partNumber PK**

name  
type  
cageCode  
unitPrice

employee\_detail  
**date PK**  
employee

(3NF=2NF+no transitive dependencies)

It is not in 3NF as there is a transitive dependency:

cageCode is dependent on type

Moving this data out of the tables results in the following 3NF versions:

Tables:

order\_detail  
**partNumber PK FK**  
**customerNumber PK FK**  
**date PK FK**  
quantityOrdered  
time

customer\_detail  
**customerNumber PK**  
customerName  
customerType

part\_detail  
**partNumber PK**  
name  
*type FK*  
unitPrice

employee\_detail  
**date PK**  
employee

inventory\_detail  
**type PK**  
cageCode

Assumption:

- assume each type corresponds to a cage, and all inventory of the same type is placed in a cage. Therefore, inventory of the same type has the same cage code.
- Only one customer is being helped at a time
- Customer orders can only be made once a day
- each day has only one employee

2.

normalization process:

(1NF=has primary key+no repeating groups

It is a 1NF since it has the primary key and there is no repeating groups.

The primary key is staffNo, patNo, and appointmentDateTime.

all data in one table:

**staffNo PK**

therapistName

**patNo PK**

patName

**appointmentDateTime PK**

branchNo

(2NF=1NF+one field that makes up the primary key or all non-PK fields are dependent on all the PK fields)

It is not 2NF because it has a composite PK and there are attributes dependent upon only part of the PK:

therapistName are dependent on staffNo

patName and branchNo are dependent on patNo

Moving these fields out of the table results in the following 2NF version:

therapist\_order

**staffNo PK FK**

**patNo PK FK**

**appointmentDateTime PK**

branchNo FK

patient\_detail

**patNo PK**

patName

branchNo

therapist\_detail

**staffNo PK**

therapistName

(3NF=2NF+no transitive dependencies)

It is 3NF because there is no transitive dependency.

therapist\_order

**staffNo PK FK**

**patNo PK FK**

**appointmentDateTime PK**

*branchNo FK*

patient\_detail

**patNo PK**

patName

branchNo

therapist\_detail

**staffNo PK**

therapistName

Assumption:

-Patients always only go to one branch, so one patients only appears in one branches

3.

normalization process:

(1NF=has primary key+no repeating groups)

It is a 1NF since it has the primary key and there is no repeating groups.

The primary key is eNo and contractNo.

all data in the table:

**eNo PK**

**contractNo PK**

hours

eName

eventNo

eventLoc

(2NF=1NF+one field that makes up the primary key or all non-PK fields are dependent on all the PK fields)

It is not 2NF since it has a composite PK and there are attributes dependent upon only part of the PK:

eName is dependent on eNo

eventNo and eventLoc is dependent on contractNo

Moving these fields out of the table results in the following 2NF version:

employee\_construct

**contractNo PK FK**

**eNo PK FK**

hours

contract\_detail

**contractNo PK**

eventNo

eventLoc

employee\_detail

**eNo PK**

eName

(3NF=2NF+no transitive dependencies)

Using the tables created in 2NF, it is not 3NF because eventLoc is dependent on eventNo. It has transitive dependency.

In order to resolve this I would move eventLoc into a new table.

employee\_construct

**contractNo PK FK**

**eNo PK FK**

hours

contract\_detail  
**contractNo PK**  
*eventNo FK*

employee\_detail  
**eNo PK**  
eName

event\_detail  
**eventNo PK**  
eventLoc

Assumption:  
-the event can happen in only one location