

## Iven Zuo - Normalization

### 1. Parts Order Form for a Local Supply Company

#### Assumption

- Many Employees help many customers
- The cage code is the place in the store that holds the partType
- A customer can place an order with multiple parts
- An employee processes each order

An order table is created using all of the information from the order form:

order
customerName <b><u>customerNumber</u></b> customerType <b><u>date</u></b> <b><u>time</u></b> employeeName <b><u>partNumber</u></b> partType partName cageCode quantityOrdered unitPrice

This table is in 1NF because there are no repeating groups. However, it is not in 2NF because it has partial dependencies. The primary keys for the order\_quantity table are customerNumber, date, time, and partNumber. employeeName depends on customerNumber, date, and time. partName, partType, cageCode, and unitPrice depend only on partNumber, and customerName and customerType depend only on customerNumber. The 2NF tables are:

order
<b><u>customerNumber</u></b> <b><u>date</u></b> <b><u>time</u></b> <b><u>partNumber</u></b> quantityOrdered employeeName

part
<b><u>partNumber</u></b> partName partType cageCode unitPrice

customer
<b><u>customerNumber</u></b> customerName customerType

To get to 3NF, we need to move cageCode to a separate table because it has a transitive dependency to partType. The 3NF tables with the italicized FKs are:

order
<i><b><u>customerNumber</u></b></i> <b><u>date</u></b> <b><u>time</u></b> <i><b><u>partNumber</u></b></i> quantityOrdered employeeName

part
<b><u>partNumber</u></b> partName <i>partType</i> unitPrice

part_location
<b><u>partType</u></b> cageCode

customer
<b><u>customerNumber</u></b> customerName customerType

## 2. Panacea Mental Health Corporation

Assumptions:

- A patient is given an appointment at a specific time and date at a particular branch with one therapist.
- Patients may have multiple appointments in any given day and with multiple different therapists.
- The data has appointment date time, which is a column for date and time

The data is in 1NF as there is no repeating group. The PKs are staffNo, appointmentDate, and appointmentTime.

The 1NF table is:

appointment
<b><u>staffNo</u></b> therapistName patNo patName <b><u>appointmentDate</u></b> <b><u>appointmentTime</u></b> branchNo

These tables are not in 2NF as it has partial dependencies. The therapistName is dependent on staffNo. branchNo are dependent on staffNo and appointmentDate.

The 2NF tables are:

appointment
<u><b>staffNo</b></u> patNo patName <u><b>appointmentDate</b></u> <u><b>appointmentTime</b></u>

staff
<u><b>staffNo</b></u> therapistName

staff_branch
<u><b>staffNo</b></u> <u><b>appointmentDate</b></u> branchNo

To get to 3NF, we have to remove the transitive dependency in the appointment table. patName is dependent on patNo. The 3NF tables with the italicized FKs are:

appointment
<u><b><i>staffNo</i></b></u> <i>patNo</i> <u><b>appointmentDate</b></u> <u><b>appointmentTime</b></u>

staff
<u><b>staffNo</b></u> therapistName

staff_branch
<u>staffNo</u> <u>appointmentDate</u> branchNo

patient
<u>patNo</u> patName

3. Maid Better temp agency supplies

The 1NF table is:

employee_hour
<u>eNo</u> <u>contractNo</u> hour eName eventNo eventLoc

The data is in 1NF because there is no repeating groups. The PKs are contractNo and eNo. To convert it into 2NF, we need to get rid of the partial dependencies. eName is dependent on eNo. eventNo and eventLoc are dependent on contractNo. Therefore, these have to be moved to other tables. The 2NF of the tables are:

employee_hour
<u>eNo</u> <u>contractNo</u> hour

employee
<b><u>eNo</u></b> eName

contract
<b><u>contractNo</u></b> eventNo eventLoc

There is a transitive dependency in contract table with eventNo. eventLoc is dependent on eventNo. The 3NF tables with the italicized FKs are:

employee_hour
<b><u>eNo</u></b> <b><u>contractNo</u></b> hour

employee
<b><u>eNo</u></b> eName

contract
<b><u>contractNo</u></b> <i>eventNo</i>

event
<b><u>eventNo</u></b> eventLoc