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Assignment 3: Normalization

1. Assumptions about the data and attributes shown include that one employee is responsible for processing an order, each order is only tied to one customer, and that unit price refers to the price of one part.

This table is in 1NF. There are no repeating groups and there is a composite primary key of **customerNumber, partNumber, date, time**. It is not in 2NF because of this composite primary key, and also because there are attributes that are not dependent on the whole primary key. For example, name, type, and cageCode are only dependent on partNumber, and customerName is only dependent on customerNumber. The 2NF version of the table would be:

customer

customerNumber

customerName

customerType

part

partNumber

name

type

cageCode

unitPrice

order

customerNumber

partNumber

date

time

quantityOrdered

employee

However, it is not yet in 3NF because employee in the order table creates a transitive dependency. To change the table to 3NF, employee should have its own table. The 3NF version of this table would be

customer

customerNumber

customerName

customerType

part

partNumber

name

type

cageCode

unitPrice

order

customerNumber

partNumber

date

time

quantityOrdered

employee

employee

employee

2. Assumptions include each patient can have multiple therapists, and each therapist also has multiple patients, that the appointment date and time are unique to each appointment, and that each appointment takes place at the branch in the branch column.

This table is not in 1NF because the appointment column has both date and time stored within it. To make this table into 1NF its attributes would be:

staffNo

therapistName

patNo

patName

appointmentDate

appointmentTime

branchNo

However, it is not in 2NF because all the non-key attributes do not depend on the full primary key. For example, patName only relies on patNo. The 2NF version of the table would be:

staff

staffNo

therapistName

patient

patientNo

patientName

appointment

staffNo

patNo

appointmentDate

appointmentTime

branchNo

branch

branchNo

This table does not have any transitive dependencies, so it is also in 3NF.

3. Assumptions include that the contractNo represents the contract that the employee is working under, and that, in turn, the hours corresponds to the hours that the employee worked under that contract.

This table is in 1NF. The primary key is eNo, contractNo. However, it is not in 2NF because eName is only dependent on eNo. The 2NF version of this table would be:

employee

eNo

eName

contract

contractNo

eNo

hours

eventNo

eventLoc

This table is not in 3NF because there is a transitive dependency as eventLoc is dependent on eventNo. It can be further normalized to 3NF by making an event table.

employee

eNo

eName

contract

contractNo

eNo

hours

eventNo

event

eventNo

eventLoc