

DATABASE DESIGN & MANAGEMENT

SI10317

PROGRAM STUDI SISTEM INFORMASI
UNIVERSITAS TARUMANAGARA

Exercises

- 14.8 On completion of Exercise 13.16 examine the 3NF relations created to represent the attributes shown in the relation displaying employee contract data for an agency called *Instant Cover* in Figure 13.20. Determine whether these relations are also in BCNF. If not, transform the relations that do not conform into BCNF.

Figure 13.20

Table displaying sample data for the *Instant Cover* agency.

NIN	contractNo	hours	eName	hNo	hLoc
1135	C1024	16	Smith J	H25	East Kilbride
1057	C1024	24	Hocine D	H25	East Kilbride
1068	C1025	28	White T	H4	Glasgow
1135	C1025	15	Smith J	H4	Glasgow



Jawaban

NIN	contractNo	hours	eName	hNo	hLoc
1135	C1024	16	Smith J	H25	East Kilbride
1057	C1024	24	Hocine D	H25	East Kilbride
1068	C1025	28	White T	H4	Glasgow
1135	C1025	15	Smith J	H4	Glasgow

NIN,contractNo → hours, eName, hNo, hLoc

NIN → eName

contractNo → hNo, hLoc

hNO → hLoc

FD

FD (Partial)

FD (Partial)

FD (Transitif)



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Jawaban – sudah 2NF

NIN	contractNo	hours
1135	C1024	16
1057	C1024	24
1068	C1025	28
1135	C1025	15

contractNo	hNo	hLoc
C1024	H25	East Kilbride
C1025	H4	Glasgow

NIN	eName
1135	Smith J
1057	Hocine D
1068	White T



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Jawaban – sudah 3NF dan BCNF

NIN	contractNo	hours
1135	C1024	16
1057	C1024	24
1068	C1025	28
1135	C1025	15

contractNo	hNo
C1024	H25
C1025	H4

NIN	eName
1135	Smith J
1057	Hocine D
1068	White T

hNo	hLoc
H25	East Kilbride
H4	Glasgow



Exercises

- 14.9 The relation shown in Figure 14.11 lists members of staff (staffName) working in a given ward (wardName) and patients (patientName) allocated to a given ward. There is no relationship between members of staff and

Figure 14.11

The WardStaffPatient relation.

wardName	staffName	patientName
Pediatrics	Kim Jones	Claire Johnson
Pediatrics	Kim Jones	Brian White
Pediatrics	Stephen Ball	Claire Johnson
Pediatrics	Stephen Ball	Brian White

patients in each ward. In this example assume that staff name (staffName) uniquely identifies each member of staff and that the patient name (patientName) uniquely identifies each patient.

- Describe why the relation shown in Figure 14.11 is not in 4NF.
- The relation shown in Figure 14.11 is susceptible to update anomalies. Provide examples of insertion, deletion, and update anomalies.
- Describe and illustrate the process of normalizing the relation shown in Figure 14.11 to 4NF.

Jawaban

(a) Describe why the relation shown in Figure 14.11 is not in 4NF.

Relasi sudah dalam bentuk BCNF tetapi ada ketegantungan multi-nilai nontrivial dalam relasinya, sehingga relasinya tidak ada di 4NF

wardName -- >> staffName

wardName -- >> patientName



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Jawaban

(b) The relation shown in Figure 14.11 is susceptible to update anomalies. Provide examples of insertion, deletion, and update anomalies.

- Insertion, ketika menambahkan nama pasien baru, tentu harus menambahkan dua inputan, satunya untuk anggota staf.
- Update, ketika mengupdate (memperbarui) nama pasien Claire Johnson, maka harus memperbarui dua record.
- Deletion, ketika menghapus record yang berhubungan dengan pasien Claire Johnson, maka harus menghapus dua record.



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Jawaban

(c) Describe and illustrate the process of normalizing the relation shown in Figure 14.11 to 4NF

- Menghapus ketergantungan multi nilai (MDV) sehingga menjadi dua relasi:
 - WardStaff (wardName, staffName)
 - WardPatient(wardName, patientName)



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Exercises

- 14.10 The relation shown in Figure 14.12 describes hospitals (hospitalName) that require certain items (itemDescription), which are supplied by suppliers (supplierNo) to the hospitals (hospitalName). Furthermore, whenever a hospital (h) requires a certain item (i) and a supplier (s) supplies that item (i) and the supplier (s) already supplies *at least one* item to that hospital (h), then the supplier (s) will also supply the required item (i) to the hospital (h). In this example, assume that a description of an item (itemDescription) uniquely identifies each type of item.
- (a) Describe why the relation shown in Figure 14.12 is not in 5NF.
- (b) Describe and illustrate the process of normalizing the relation shown in Figure 14.12 to 5NF.

Figure 14.12

The
HospitalItemSupplier
relation.

hospitalName	itemDescription	supplierNo
Western General	Antiseptic Wipes	S1
Western General	Paper Towels	S2
Yorkhill	Antiseptic Wipes	S2
Western General	Antiseptic Wipes	S2



Thank You

Reference: Database Systems A Practical Approach to Design, Implementation, and Management Fourth Edition.

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