CSE2DBF – CSE4DBF

Normalization Exercise

Reading:
Elmasri and Navathe, "Fundamentals of Database Systems, Chapters 1 & 2", Pearson, 2016.
***Ebook**: https://ebookcentral-proquest-com.ez.library.latrobe.edu.au/lib/latrobe/detail.action?docID=5573709*

Normalization Exercise

Normalization of a single form:

- Quality Car Imports maintains a service log for all of its customers' vehicles. This log can be represented by the following form.
- Task: derive the relational tables for the form.

QUALITY CAR IMPORTS					
Customer Number:					
Customer Name:					
Customer Address:					
Customer Town:			Customer Postcode:		
Vehicle Registration Number:					
Vehicle Engine Number:					
Vehicle Description:					
Vehicle Colour:					
Date Purchased:					
Service Date	Mechanic Number	Mechanic Name	Description of Work Carried Out	Speedo Reading	Service Cost

Normalization Exercise

UNF:

SERVICE
(Cust#, CustName, CustAddress, CustTown, CustCode,
VehReg#, VehEng#, VehDesc, VehColour, Purchased,
(ServDate, Mechanic#, MechName, DescWork, SpReading, ServCost))

1NF:

CUSTOMER_VEHICLE
(Cust#, CustName, CustAddress, CustTown, CustCode,
VehReg#, VehEng#, VehDesc, VehColour, Purchased)

SERVICE
(*Cust#, VehReg#*, ServDate, Mechanic#, MechName, DescWork, SpReading, ServCost)

Normalization Exercise

2NF:

CUSTOMER (Cust#, CustName, CustAddress, CustTown, CustCode) ←

VEHICLE (VehReg#, VehEng#, VehDesc, VehColour) ←

CUSTOMER_VEHICLE (*Cust#, VehReg#,* Purchased) ←

3NF:

MECHANIC (Mechanic#, MechName) ←

SERVICE (*Cust#*, *VehReg#*, ServDate, *Mechanic#*, DescWork, SpReading, ServCost) ←

The Final tables is shown above, after 3NF/BCNF step.

Normalization Exercise

Normalization of multiple reports:

- Derive the relational tables for the following 3 reports (subject, lecturer and student)

SUBJECT REPORT

SUBJECTS CURRENTLY APPROVED

Subject Code	Subject Name	Subject Description	Subject Credit
CS830	Introduction to Databases	Database Technology	15
CS577	Object-Oriented Programming	C++ Programming	15
CS670	Computer Programming for Technologist	C Programming	10
CS825	Software Engineering Analysis & Design	Analysis & Design	10

Normalization Exercise

LECTURER REPORT

LECTURER DETAILS

LECTURER'S NUMBER	AS200
LECTURER'S NAME	GIUSEPPE BLOGGS
LECTURER'S OFFICE No.	Bldg 63 Room 130
LECTURER'S PHONE No.	52246

LECTURING:

Subject Code	Subject Name
CS830	Introduction to Databases
CS825	Software Engineering Analysis & Design

Note: A given subject may have several lecturers.

Normalization Exercise

STUDENT REPORT

STUDENT DETAILS

STUDENT NO.	S1234567
STUDENT NAME	Poindexter Jones
STUDENT ADDRESS	23 Wide Road, Kew, 3101
COURSE ENROLLED	BSc
MODE OF STUDY	Internal
LECTURER NUMBER	AS200
LECTURER NAME	Guiseppe Bloggs

ACADEMIC RECORD:

Subject Code	Subject Name	Year/Semester	Grade
CS830	Introduction to Databases	2013/1	A
CS891	Computing Fundamentals	2013/1	B

Normalization Exercise

SUBJECT REPORT

1NF, 2NF, 3NF, BCNF

SUBJECT (Subject#, SubjectName, SubjectDesc, SubjectCredit)

Normalization Exercise

LECTURER REPORT

UNF:
LECTURER (Lect#, LectName, LectOffice, LectPhone, (Subject#, SubjectName))

1NF:
LECTURER (Lect#, LectName, LectOffice, LectPhone)
TEACH (*Lect#*, Subject#, SubjectName)

2NF:
LECTURER (Lect#, LectName, LectOffice, LectPhone)
SUBJECT (Subject#, SubjectName)
TEACH (*Lect#, Subject#*)

3NF, BCNF:
LECTURER (Lect#, LectName, LectOffice, LectPhone)
SUBJECT (Subject#, SubjectName)
TEACH (*Lect#, Subject#*)

Normalization Exercise

STUDENT REPORT

UNF:
STUDENT (Stu#, StuName, StuAddress, StuCrse, StuMode, Lect#, Lect_name,
(Subject#, SubjectName, YrSem, Grade))

1NF:
STUDENT (Stu#, StuName, StuAddress, StuCrse, StuMode, Lect#, LectName)
AC-REC (*Stu#*, Subject#, SubjectName, YrSem, Grade)

2NF:
STUDENT (Stu#, StuName, StuAddress, StuCrse, StuMode, Lect#, LectName)
SUBJECT (Subject#, SubjectName)
AC-REC (*Stu#*, *Subject#*, YrSem, Grade)

3NF, BCNF:
LECTURER (Lect#, LectName)
STUDENT (Stu#, StuName, StuAddress, StuCrse, StuMode, *Lect#*)
SUBJECT (Subject#, SubjectName)
AC-REC (*Stu#*, *Subject#*, YrSem, Grade)

Normalization Exercise

COLLECTED BCNF RELATIONS

1. SUBJECT (Subject#, SubjectName, SubjectDesc, SubjectCredit)

2. LECTURER (Lect#, LectName, LectOffice, LectPhone)
3. SUBJECT (Subject#, SubjectName)
4. TEACH (*Lect#*, *Subject#*)

5. STUDENT (Stu#, StuName, StuAddress, StuCrse, StuMode, *Lect#*)
6. LECTURER (Lect#, LectName)
7. SUBJECT (Subject#, SubjectName)
8. AC-REC (*Stu#*, *Subject#*, YrSem, Grade)

Normalization Exercise

COMBINED RELATIONS – FINAL RESULT

1. 3. & 7.

   SUBJECT (Subject#, SubjectName, SubjectDesc, SubjectCredit)

2. & 6.

   LECTURER (Lect#, LectName, LectOffice, LectPhone)

4. TEACH (*Lect#, Subject#*)

5. STUDENT (Stu#, StuName, StuAddress, StuCrse, StuMode, *Lect#*)

8. AC-REC (*Stu#, Subject#,* YrSem, Grade)

Next Lecture

Data Manipulation using Relational Algebra

Reading:

Elmasri and Navathe, "Fundamentals of Database Systems, Chapters 1 & 2", Pearson, 2016.

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