

IFB105: Database Management

Tutorial 5 – Normalisation





Part 1 – Week 4 Summary

Activity 1

Q1. In this week's lectures you learned about Full Functional Dependencies. Define it and use an example to support the definitions.

Activity 1

Q2. What is Normalisation? Which normalisation form does ORM provide?

Activity 1

Q3. Consider the following table. If we try to update the address of a student, what will happen to this table?

<u>StudentID</u>	StudentName	Address	<u>SubjectID</u>	SubjectName
1	Bill	Brisbane	IAB130	Databases
1	Bill	Brisbane	CAB203	Structures
2	Hillary	Sydney	IAB130	Databases
2	Hillary	Sydney	CAB201	Programming

Activity 1

Q4. Transform the following table so it can satisfy First Normal Forma (1NF).

roll_no	name	subject
101	Akon	OS, CN
103	Ckon	Java
102	Bkon	C, C++

Activity 1

Q5. Is the following table in 1NF? Why (or why not)? If not, what can you do to make it 1NF?

name	subject
Akon	OS
Akon	CN
Ckon	Java
Bkon	C
Bkon	Java
Akon	CN

Activity 1

Q6. Transform the following table so it can satisfy Second Normal Forma (2NF).

student_id	subject_id	marks	teacher	subject_name
10	1	70	Java Teacher	Java
10	2	75	C++ Teacher	C++
11	1	80	Java Teacher	Java

Activity 1

Q7. Transform the following tables so it can satisfy Third Normal Forma (3NF).

Student Table

student_id	name	reg_no	branch	address
10	Akon	07-WY	CSE	Kerala
11	Akon	08-WY	IT	Gujarat
12	Bkon	09-WY	IT	Rajasthan

Subject Table

subject_id	subject_name	teacher
1	Java	Java Teacher
2	C++	C++ Teacher
3	Php	Php Teacher

Score Table

Score_id	Marks	Exam_name	Total_marks
1	100	Workshop	200
2	45	Mains	70
3	15	Practical	30
4	20	Workshop	200
5	28	Practical	30
6	40	Mains	70



Part 2 – More Normalisation

Task 1

The following table is in 1NF. Convert it to 2NF.

TempStaffAllocation (Not 2NF)

staffNo	branchNo	branchAddress	name	position	hoursPerWeek
S4555	B002	City Center Plaza, Seattle, WA 98122	Ellen Layman	Assistant	16
S4555	B004	16 – 14th Avenue, Seattle, WA 98128	Ellen Layman	Assistant	9
S4612	B002	City Center Plaza, Seattle, WA 98122	Dave Sinclair	Assistant	14
S4612	B004	16 – 14th Avenue, Seattle, WA 98128	Dave Sinclair	Assistant	10

Task 2

Convert the following table to 3NF.

StaffBranch (Not 3NF)

staffNo	name	position	salary	branchNo	branchAddress	telNo
S1500	Tom Daniels	Manager	46000	B001	8 Jefferson Way, Portland, OR 97201	503-555-3618
S0003	Sally Adams	Assistant	30000	B001	8 Jefferson Way, Portland, OR 97201	503-555-3618
S0010	Mary Martinez	Manager	50000	B002	City Center Plaza, Seattle, WA 98122	206-555-6756
S3250	Robert Chin	Supervisor	32000	B002	City Center Plaza, Seattle, WA 98122	206-555-6756
S2250	Sally Stern	Manager	48000	B004	16 – 14th Avenue, Seattle, WA 98128	206-555-3131
S0415	Art Peters	Manager	41000	B003	14 – 8th Avenue, New York, NY 10012	212-371-3000

Task 3

Convert this table to 1NF

<i>branchNo</i>	<i>branchAddress</i>	<i>telNos</i>
B001	8 Jefferson Way, Portland, OR 97201	503-555-3618, 503-555-2727, 503-555-6534
B002	City Center Plaza, Seattle, WA 98122	206-555-6756, 206-555-8836
B003	14 – 8th Avenue, New York, NY 10012	212-371-3000
B004	16 – 14th Avenue, Seattle, WA 98128	206-555-3131, 206-555-4112

Task 4

Convert this table to 2NF

<i>staffNo</i>	<i>branchNo</i>	<i>branchAddress</i>	<i>name</i>	<i>position</i>	<i>hoursPerWeek</i>
S4555	B002	City Center Plaza, Seattle, WA 98122	Ellen Layman	Assistant	16
S4555	B004	16 – 14th Avenue, Seattle, WA 98128	Ellen Layman	Assistant	9
S4612	B002	City Center Plaza, Seattle, WA 98122	Dave Sinclair	Assistant	14
S4612	B004	16 – 14th Avenue, Seattle, WA 98128	Dave Sinclair	Assistant	10

Task 5

Convert this table to 3NF

<i>branchNo</i>	<i>branchAddress</i>	<i>telNo</i>	<i>mgrStaffNo</i>	<i>name</i>
B001	8 Jefferson Way, Portland, OR 97201	503-555-3618	S1500	Tom Daniels
B002	City Center Plaza, Seattle, WA 98122	206-555-6756	S0010	Mary Martinez
B003	14 – 8th Avenue, New York, NY 10012	212-371-3000	S0145	Art Peters
B004	16 – 14th Avenue, Seattle, WA 98128	206-555-3131	S2250	Sally Stern

Don't forget your assignments

		Mid Semester Break	
6	18/04/22	Consolidation Week Assignment Task 1 and 3A Support	Assessment Task 1 Online quiz test Due: 24 April 2022 23:59
7	25/04/22	SQL Data Definition Language	Assessment Task 3A ORM diagram and relational schema Due: 1 May 2022 23:59