

Database Management Systems (DB212)

Tutorial 5

1. Consider the following student examination result slip. Using the normalization rules, normalize the below student exam result slip to 3NF. Begin by indicating the primary key and repeating groups. Show all steps in the normalization process

STUDENT EXAM RESULT		
Student No	: 00010202020	Name : King Adam
Address	: 222, Kent Street	
Exam Period	: August 2003	
Unit Code	Description	Grade
CS121	Computer Architecture	A
CS222	Database System	B
CS232	Information System	D

Answer

UNF	1NF	2NF	3NF
<p><u>StudentNo</u>, Name, Address, Exam Period, {UnitCode, Description, Grade}</p>	<p><u>StudentNo</u>, Name, Address, Exam Period,</p> <p><u>StudentNo</u> <u>UnitCode</u>, Description, Grade</p>	<p><u>StudentNo</u>, Name, Address, Exam Period,</p> <p><u>StudentNo</u> <u>UnitCode</u>, Grade</p> <p><u>UnitCode</u>, Description</p>	<p>SAME AS 2NF</p>
[2 marks]	[2 marks]	[3 marks]	[2 marks]

2. Using the normalization rules, normalize the customer order below. Perform your normalization in stages working from UNF through to 3NF:

CUSTOMER ORDER			
Order Number: 12345 Order Date: 12/OCT/2003		Customer ID: C1005 Name: New Software Pte Ltd Contact Number: 69090909 Contact Person: Ms Kelly Lin	
Product ID	Product Description	Quantity	Delivery Date
P4545	ACE Accounting Package	5	31/Oct/2003
P5656	Bubble Dragon Game	15	10/Nov/2003
P6767	Hello Kitty Game	20	10/Nov/2003

Answer

UNF

Order (Order Number, Order Date, Customer ID, Name, Contact Number, Contact Person, {Product ID, Product Description, Quantity, Delivery date})

1NF

Order (Order Number, Order Date, Customer ID, Name, Contact Number, Contact Person)

Details (Order Number, Product ID, Product Description, Quantity, Delivery date)

2NF

Order (Order Number, Order Date, Customer ID, Name, Contact Number, Contact Person)

Details (Order Number, Product ID, Quantity, Delivery date)

Product (Product ID, Product Description)

3NF

Order (Order Number, Order Date, Customer ID)

Details (Order Number, Product ID, Quantity, Delivery date)

Product (Product ID, Product Description)

Customer (Customer ID, Name, Contact Number, Contact Person)

3. Perform normalization based on the following initial design. ({} indicates a repeating group.)

PROJECT = (PROJECT_NUMBER, PROJECT_NAME, START_DATE, PROJECT_STATUS, {EMPLOYEE_NUMBER, EMPLOYEE_NAME, JOB_TITLE, DEPT_NUMBER, DEPT_NAME, PROJECT_HOURS})

Answer

1NF	2NF	3NF
<u>PROJECT_NUMBER</u> PROJECT_NAME START_DATE PROJECT_STATUS (1)	<u>PROJECT_NUMBER</u> PROJECT_NAME START_DATE PROJECT_STATUS (1)	<u>PROJECT_NUMBER</u> PROJECT_NAME START_DATE PROJECT_STATUS (1)
<u>PROJECT_NUMBER</u> <u>EMPLOYEE_NUMBER</u> EMPLOYEE_NAME JOB_TITLE DEPT_NUMBER DEPT_NAME PROJECT_HOURS (1)	<u>PROJECT_NUMBER</u> <u>EMPLOYEE_NUMBER</u> PROJECT_HOURS (1)	<u>PROJECT_NUMBER</u> <u>EMPLOYEE_NUMBER</u> PROJECT_HOURS (1)
	<u>EMPLOYEE_NUMBER</u> EMPLOYEE_NAME JOB_TITLE DEPT_NUMBER DEPT_NAME (1)	<u>EMPLOYEE_NUMBER</u> EMPLOYEE_NAME JOB_TITLE DEPT_NUMBER (1)
		<u>DEPT_NUMBER</u> DEPT_NAME (1)