

CSC1023 Databases

Practical 3 - Data Redundancy & Normalisation

This week we will be looking at data redundancy and normalisation. After each question please show your work to one of the demonstrators for feedback. You might disagree with the stated “answer”, if so explain your thinking to the demonstrator.

Exercise A. Data Redundancy

Study the Employee table (it contains information about workers and their salaries) below and answer the questions that follows:

Employee				
EID	NAME	ROLE	Salary	serviceYear
D01	Jeff	Programmer	15000	3
D02	Lisa	Programmer	15000	3
D03	Newton	Programmer	15000	3
D04	Nash	Programmer	15000	3
D05	Jordan	Programmer	20000	5
D06	Mary	Programmer	20000	5
D07	Geary	Technical Lead	30000	7
D08	Monash	Technical Lead	30000	7
D09	Kerry	Manager	40000	10
D10	Johnny	Manager	40000	10

- A1. State what is meant by the term **data redundancy** in database systems.
- A2. Describe your observation of any **trend** in the Employee table.
- A3. **Identify** the **redundant** information in the Employee table.
- A4. Apply **normalization** to reduce data repetition.

Exercise B. Data Normalisation 1

Study the data shown below and answer the questions that follows:

BMC PHARMACY PRESCRIPTION RECORD			
PATIENT DETAILS			
Patient No.	BMC-M-6651	Patient Name	Paul Mitchell
Address:	97 Main Street	D.O.B	21 st March, 1979
	Ballysomewhere	GP ID	27
	BT98 7ZY	GP Name	Dr. Julie Millar
MEDICATION DETAILS			
Prescription Issued	Medication Code	Medication Name	
12/01/2003, 08:00	AH02	Antihistamine Tablets	
14/02/2003, 10:00	AH02	Antihistamine Tablets	
14/02/2003; 10:00	FJ01	Flu Jab	
21/02/2003, 14:00	PK14	Codeine Tablets (Soluble)	
End Of Report			

B1. Write out the un-normalised (ONF) schema.

B2. Using a table work from ONF to 3NF.

B3. Write out the 3NF schema.

Exercise C. Data Normalisation 2

Study the data shown in the table (which shows the software installed on different computers as a source) along with the note written at the bottom of the table, and answer the questions that follows:

Machine No	Machine Owner	Machine Type	Machine Maker	Software Licence-No	Software Title	Software Size (k)	Software Cost
1	Grayson	486	Dan	193	Lotus 123	200	150.00
				187	MS Office	7000	250.00
				165	Paradox	250	60.00
3	White	286	Opus	134	MS Access	150	50.00
				193	Lotus 123	200	150.00
5	Black	486	IBM	187	MS Office	7000	250.00
6	O' Driscoll	Pentium	Gateway	234	Lotus Notes	340	450.00
				213	MS Backup	25	19.99

Notes: Machines have one or more pieces of software installed on them. Each installed item of software is installed under a licence which may allow software to be installed on more than one machine.

- C1.** Write out the un-normalised (ONF) schema.
- C2.** Using a table work from ONF to 3NF.
- C3.** Write out the 3NF schema.

Exercise D. Data Normalisation 3

Study the data shown below and answer the questions that follows:

<p style="text-align: center;"><i>Belfast Metropolitan Company</i> <i>College Square East</i> <i>Belfast</i> <i>BT1 6DJ</i></p>				
Customer Number:	1001	Sales Order Number:	405	
Name:	Burrows & Co.	Sales Order Date:	2/1/2008	
Customer Address:	32 Hillhead Road	Staff Number:	210	
	Lisburn	Staff Name:	Eoin Mairs	

Item Ordered	Description	Quantity	Unit Price £	Total £
400	Chair	40	160.00	6400.00
401	Carver chair	20	220.00	4400.00
405	Table	10	1500.00	15000.00
Order Total				25800.00

D1. Write out the un-normalised (ONF) schema.

D2. Using a table work from ONF to 3NF.

D3. Write out the 3NF schema.

Did you complete Exercise 5 of Practical 1 - Get MySQL Setup?

Please make sure you have already completed Exercise 5 of Practical 1, that is to create your **MySQL hosting account**. If you have problems doing this then please seek help from the demonstrator.

Note:

You will need the SQL account setup and running to perform SQL work in Practical 4, for your project work in week 7 and to try out examples in week 4's lectures.