DBI Lab 006 - Normalization

COMP1048 - Databases and Interfaces

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Exercise 1 - Trial Quiz

Please attempt/practice using the appropriate Trial Quiz for your lab group. Instructions are available on Moodle and will be presented in-class.

Exercise 2 - Database Normalization

staffNo	dentistName	patientNo	patientName	appointment		surgeryNo
				date	time	
S1011	Tony Smith	P100	Gillian White	12-Aug-03	10.00	S10
S1011	Tony Smith	P105	Jill Bell	13-Aug-03	12.00	S15
S1024	Helen Pearson	P108	Ian MacKay	12-Sept-03	10.00	S10
S1024	Helen Pearson	P108	Ian MacKay	14-Sept-03	10.00	S10
S1032	Robin Plevin	P105	Jill Bell	14-Oct-03	16.30	S15
S1032	Robin Plevin	P110	John Walker	15-Oct-03	18.00	S13

The table shown above lists sample dentist/patient appointment data. A patient is given an appointment at a specific time and date with a dentist located at a particular surgery. On each day of patient appointments, a dentist is allocated to a specific surgery for that day.

1. The table shown above is susceptible to update anomalies. Provide examples of insertion, deletion, and update anomalies. These examples should written (in English).
2. Identify the functional dependencies represented by the attributes shown in the table. State any assumptions you make about the data and the attributes shown in this table. Dependencies should written in English .

> **Hint**
>
> You will need to make assumptions here. You should utilise your real-world knowledge and make sensible assumptions. Particularly, consider:

> - Will a patient be registered to more than one surgery?
> - Can a patient have more than one appointment a day?
> - There may be others ...
>
> **Also**, consider that no primary keys are specified here (for good reason). Before attempting this question, it may be easier to convert the table into 1NF form. This will assigning remove all the repeating groups and assign primary keys.

3. Describe and illustrate the process of normalizing the table to 3NF relations. Identify the primary keys in your 3NF relations. You should present this as a step-by-step process using diagrams and written word to describe each step. Your final tables should be presented visually.
4. Write an SQL script which creates the tables you designed. Your script should also insert the data shown in the table above.

Submission

Please submit a PDF document containing your solutions to the above tasks. For questions 1-3, you should submit the written explanation and supporting figures. For question 4, you should submit your SQL code (only), not the results of executing your code.

Submitting this assignment will contribute 2% to your overall Module grade. Your submission should demonstrate reasonable effort and fulfil the specified requirements set out in this lab sheet in order to receive the full marks.

There is no granularity to the marking, the marking is on a pass-or-fail basis.

Registration is reported to Faculty office on a weekly basis. The submission point is available on Moodle.

Submission Deadline - Friday, 19 November 2021 @ 17:00