

Database Normalization

REVIEW 2

The following table, OrderDetails, exists in a database.

OrderID	ProductID	ProductName	CustomerName	Quantity	UnitPrice
1001	P01	Wireless Mouse	Alex Tan	2	25
1001	P02	USB Keyboard	Alex Tan	1	40
1002	P03	Laptop Stand	Maria Gomez	1	35
1002	P01	Wireless Mouse	Maria Gomez	1	25
1003	P02	USB Keyboard	Sam Lee	3	40

Note:

An order can contain **multiple products**, so OrderID alone is not unique.

A product can appear in **many different orders**, so ProductID alone is not unique.

Answer the questions on the following page.

Question 1

Explain what information one row of this table represents.

Question 2

The database designer has decided to create a **Composite Primary Key** composed of 2 fields. Identify the 2 fields here:

(_____, _____)

Question 3

Is the table in **First Normal Form (1NF)**? Explain your answer.

Question 4

Which attribute depends only on **orderID** rather than the full primary key?

*hint, for each orderID, find any other fields that remain the same. You should find only one.

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Question 5

Which attributes depend only on **productID** rather than the full primary key?

*hint - you should find 2

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Question 6

Which attribute depends on the full primary key?

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Question 7

Your answer to Q4 and Q5 will reveal that the table is not in second normal form (2NF).

State the two rules for a table to be in 2NF:

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Challenge: Redesigning the Database

To achieve Second Normal Form (2NF), attributes/fields that depend on only part of the primary key must be moved to separate tables.

Redesign the database so that it is normalised to 2NF. You do not need to include any data, just field names. Use your answers from Q4, Q5 and Q6 to help you do this.

In each table, underline fields that denote the primary key.

Table1: OrderDetails

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Table2: _____

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Table3: _____

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2NF normalization algorithm:

1. Identify composite key
2. Identify partial dependencies
3. Move attributes dependent on part of the key
4. Leave attributes dependent on the full key