Q: Define a database and the three database language types covered in this lesson

A: Definition: It is an organized collection of structured data or information.

A DBMS generally controls a database. The DBMS, the data, and the associated applications

are referred to as a database system, often shortened to database.

Data within today's most common databases are typically modelled in rows and columns in a

series of tables to make processing and data querying efficient.

The data can be easily accessed, managed, modified, updated, controlled, and organized.

Most databases use structured query language (SQL) for writing and querying data.

Three Database language types:

1) Data Definition Language (DDL)

2) Data manipulation language (DML)

3) Query languages (SQL)

Q: Using the INVOICE table given below, draw its dependency diagram and identify all dependencies (including transitive and partial dependencies).

You can assume that the table does not contain any repeating groups and that an invoice number references more than one product.

A:

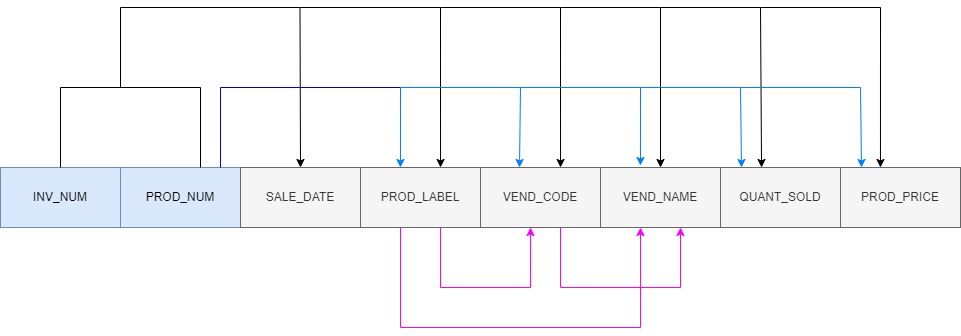
INV\_NUM, PROD\_NUM -> SALE\_DATE, PROD\_LABEL, VEND\_CODE, VEND\_NAME, QUANT\_SOLD, PROD\_PRICE

PROD\_NUM -> PROD\_LABEL, VEND\_CODE, VEND\_NAME, PROD\_PRICE

PROD\_LABEL -> VEND\_CODE, VEND\_NAME

VEND\_CODE -> VEND\_NAME

**Figure 1.jpg**



Q: Draw new dependency diagrams to show the data in 2NF.

Step 1.1

A:

INV\_NUM

PROD\_NUM

INV\_NUM PROD\_NUM

Step 1.2

PROD\_NUM

PROD\_LABEL

VEND\_CODE

VEND\_NAME

PROD\_PRICE

PROD\_NUM PROD\_LABEL VEND\_CODE VEND\_NAME PROD\_PRICE

Step 1.3

INV\_NUM

PROD\_NUM

SALE\_DATE

PROD\_LABEL

VEND\_CODE

VEND\_NAME

QUANT\_SOLD

PROD\_PRICE

INV\_NUM PROD\_NUM SALE\_DATE PROD\_LABEL VEND\_CODE VEND\_NAME QUANT\_SOLD PROD\_PRICE

Step 2.1

ITEM\_TRANSACTION (INV\_NUM, PROD\_NUM)

Step 2.2

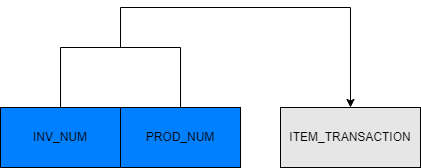
PROD\_NUM (PROD\_NUM, PROD\_LABEL, VEND\_CODE, VEND\_NAME, PROD\_PRICE)

Step 2.3

INV\_NUM (PROD\_NUM, SALE\_DATE, PROD\_LABEL, VEND\_CODE, VEND\_NAME, QUANT\_SOLD, PROD\_PRICE)

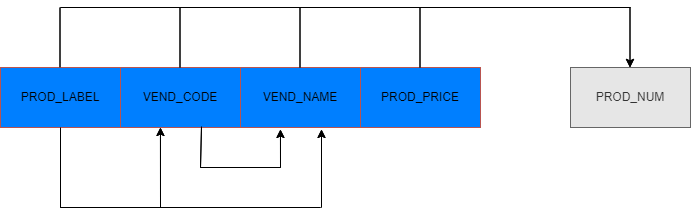
Step 3.1 Dependency diagram below shows the result of Steps 1 and 2.

Figure 2.jpg

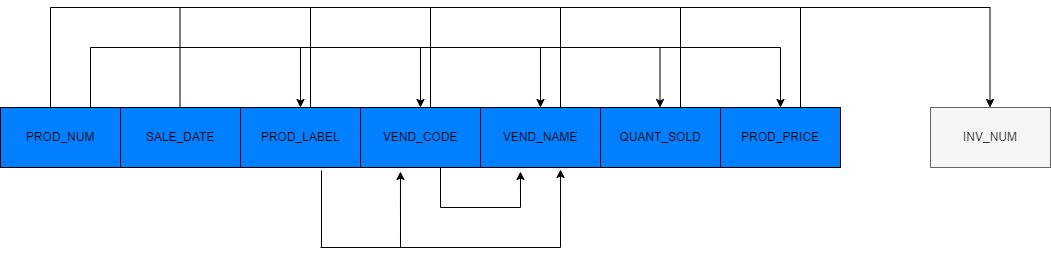


Step 3.2 Dependency diagram below shows the result of Steps 1 and 2.

Figure 3.jpg



Step 3.3 Dependency diagram below shows the result of Steps 1 and 2.



Q: Draw new dependency diagrams to show the data in 3NF.

A.

Figure 4.

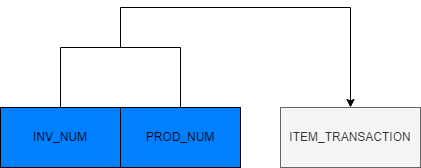
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Figure 8.



Figure 5.



Figure 6.



Figure 7.

