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Compulsory Task 1

1. Define each of the following terms:

Solution 1

a) Data: Data are raw facts, such a phone number, client name, or birthdate. Data don't have much meaning unless they've been organised logically. The lowest unit of data that a computer can recognise is a single character. One byte of computer storage is all that is needed.

b) Field: Field is a character or group of characters with a particular meaning. Data is defined and stored using it.

c)Record: Record is a collection of one or more fields that, when logically related, describes a person, location, or thing.

d)File: A collection of related records.

Solution 2

A DBMS (Database Management System) is a software system that allows users to interact with one or more databases. It provides a way to store, retrieve, and update data in a structured and organized manner.

Advantages of using a DBMS include:

1. Data Integrity: A DBMS ensures that data is stored in a consistent and accurate way, and prevents data from being corrupted by errors or inconsistencies.
2. Data Security: A DBMS provides various security mechanisms to protect data from unauthorized access or changes.
3. Data Sharing: A DBMS allows multiple users to access and share the same data simultaneously, increasing collaboration and productivity.
4. Data Backup and Recovery: A DBMS provides mechanisms for creating backups and recovering data in case of a failure or disaster.
5. Data Scalability: A DBMS allows a database to grow and adapt to changing data needs, making it suitable for large and complex data sets.
6. Concurrent access: Multiple users can access data simultaneously and the DBMS ensures that data is not corrupted.
7. Data independence: Applications can be created independently of the data storage and structure.
8. Improved data access: DBMS allows for faster and more efficient data retrieval through indexing and advanced query optimization techniques

Solution 3

1. Data refers to raw facts and figures that have little or no context. It is unprocessed and unorganized, and typically requires some form of processing or analysis to be transformed into meaningful information. For example, a list of customer names and addresses is data, but a list of customers who live within a certain radius of a store is information.
2. Information, on the other hand, is data that has been processed and organized in such a way that it has meaning and context. It is useful, and can be used to make decisions or take actions. Information is the outcome of data processing and analysis. It is the processed form of data that is human-understandable, meaningful, and useful.

Solution 4

Metadata is data that provides information about other data. It is often used to describe the characteristics of a particular data set, such as its format, size, structure, content, and other properties. Metadata can also be used to provide information about the context of the data, such as when it was created, who created it, how it was collected, and why it was collected.

There are different types of metadata, such as descriptive metadata, which provides information about the content and structure of a data set, and administrative metadata, which provides information about the management, preservation, and use of a data set.

Metadata is used in many different fields, including library and information science, digital preservation, and data management. It is particularly important in the digital world, where data is often stored in multiple locations and in different formats, making it difficult to find, access, and use. By providing information about the data, metadata makes it easier to locate and understand data, and to make decisions about how to use it.

In short, we can also say metadata is data about data, providing information that is useful for managing, understanding, and using other data.

Solution 5

1. There is four record from 21-5U to 29-7P
2. There is five different fields

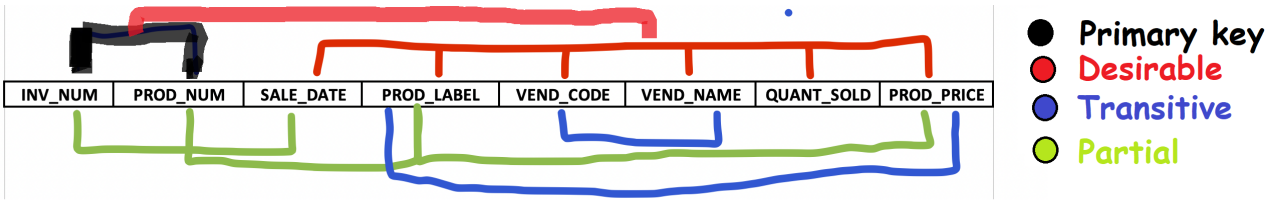
Compulsory Task 2

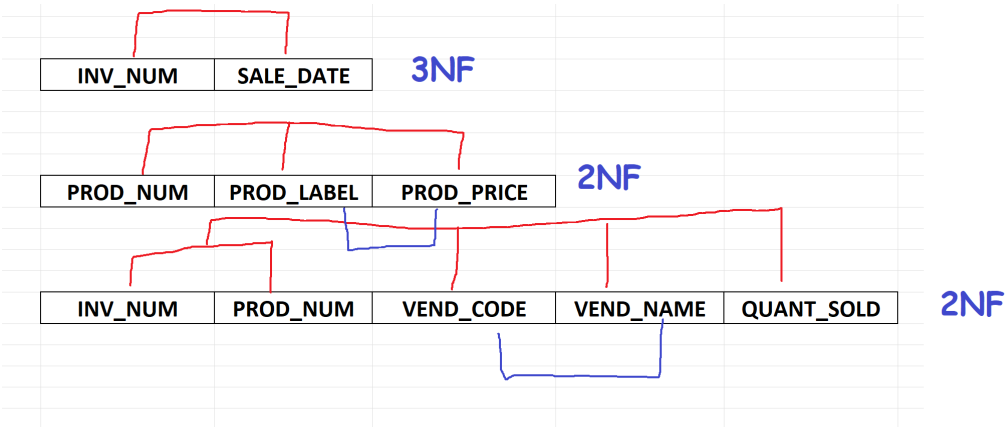
1. Normalization is the process of organizing data in a database so that it meets certain constraints. The goal of normalization is to minimize data redundancy and improve data integrity.

2. A table is in first normal form (1NF) Each cell in the table contains only one value (atomic value), Each row in the table is unique, and There are no repeating groups of columns

3. A table is in second normal form (2NF), when it is already in 1NF, Each non-primary key column is functionally, and dependent on the entire primary key.

4. A table is in third normal form (3NF)when, it is already in 2NF, There are no transitive dependencies between non-primary key columns.


INV_NUM
PROD_NUM
SALE_DATE
PROD_LABEL
VEND_CODE
VEND_NAME
QUANT_SOLD
PROD_PRICE
Primary key
Desirable
Transitive
Partial


INV_NUM
SALE_DATE
3NF
PROD_NUM
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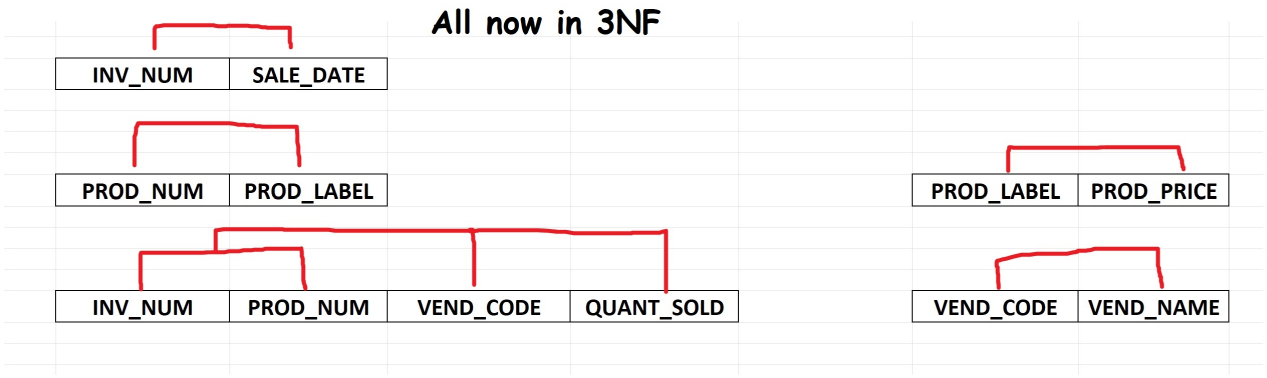
PROD_PRICE
2NF
INV_NUM
PROD_NUM
VEND_CODE
VEND_NAME
QUANT_SOLD
2NF


All now in 3NF
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SALE_DATE
PROD_NUM
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VEND_CODE
QUANT_SOLD
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