

Seyfe quiz -1 Answer

1. what is Data?

Ans - Data refers to the raw information. In the context of information technology (IT) and computing, it is information that a software application collects and records. Data is typically stored in a database and includes the fields, records and other information that make up the database. It can be accessed and manipulated digitally, and it is quick and easy to transfer among computers.

2. what is Information?

Ans- Information is stimuli that has meaning in some context for its receiver. When information is entered into and stored in a computer, it is generally referred to as data. After processing -- such as formatting and printing -- output data can again be perceived as information. When information is compiled or used to better understand something or to do something, it becomes knowledge..

3. what is Database(DB)?

Ans- A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS).

4. What is the Relation Database Management System(RDBMS)?

Ans- is a program that allows you to create, update, and administer a relational database. Most relational database management systems use the SQL language to access the database.

5. Define the importance of Relation Database Management System(RDBMS)?

Ans- A relational database's main benefit is the ability to connect data from different tables to create useful information. This approach helps organizations of all sizes and industries decipher relationships between different sets of data, from various departments, to create meaningful insights.

Benefits of relational databases

Relational databases provide plenty of benefits for companies. Here are a few primary advantages of relational databases:

Simple and centralized: Relational databases are simple. Toggling between tables provides a wealth of information that can be used for various purposes. Plus, ERP systems are built on relational databases, so they help users manage clients, inventory, and much more.

Easy to use: Many companies use relational databases, and ERP, to organize and manage large amounts of data. Their continued use helps to drive improvements to these systems—such as migrating to the cloud. Using SQL, users can easily navigate data sets to retrieve, filter, and ideate the information they need.

Save time and money: By using relational databases, companies can stay organized and efficient. The unique IDs help eliminate duplicate information, whether it is tracking a customer's order or museum visitors. Instead of taking time to input logs of customer data, a relational database reduces redundancy, thus saving employees time. Companies can save money by allocating that labour elsewhere.

Improve communication: Relational databases can help to improve a company's internal and external communication and operations by helping to share, store, and deliver data, products, and services.

6. As we all know that there are Two types of Database. Relational Database(SQL) AND Non-Relational DB(NO sql). what is the difference between them.

Ans-What is a relational database?

A relational database is a type of database that stores data in tables. Each table stores information about a specific topic, and the tables are linked together by common fields. This type of database is easy to use and understand, making it a good choice for small businesses and individual users.

What is a non-relational database?

A non-relational database is a type of database that does not store data in tables. Instead, this type of database uses a hierarchical structure to store data. Non-relational databases are often used by large businesses and organizations that need to manage complex data.

Difference between relational and non-relational database

The main difference between relational and non-relational databases is the way that data is stored. Relational databases use tables to store data, while non-relational databases use a hierarchical structure. This makes relational databases easier to use

and understand, while non-relational databases are better suited for managing complex data.

7. List examples of Relation Database Management System(RDBMS)?

Ans- Oracle Database: known for its scalability, security, and comprehensive feature set.

MySQL: Widely used for web applications, it's easy to learn, reliable, and has an active developer community.

SQLite: A minimal SQL-based RDBMS often used for lightweight applications.

PostgreSQL: Known for advanced features, scalability, and extensibility.

Oracle Database: Enterprise-grade RDBMS with robust features.

Microsoft SQL Server: a powerful RDBMS developed by Microsoft.

8. List examples of Non-Relational DB(Nosql)?

Ans- MongoDB, a document-oriented database that stores data in JSON-like format

Redis, a key-value database that supports in-memory data structures

Cassandra, a wide-column database that is designed for scalability and high availability

CouchDB, a document-oriented database that uses HTTP for data access

Elasticsearch, a search engine that stores data in JSON format

BigTable, a wide-column database that is used by Google for various applications

FaunaDB, a distributed database that supports multiple data models

9. Define and Describe is Structured Query Language(SQL)?

Ans- Structured Query Language (SQL) is a standard database language used to create, maintain, and retrieve data from relational databases. Here are some key points about SQL:

Case Insensitivity: SQL is case insensitive, although it's recommended to use keywords (like SELECT, UPDATE, CREATE, etc.) in capital letters and user-defined identifiers (such as table names, column names) in small letters.

Comments: You can write comments in SQL using double hyphens (--) at the beginning of any line.

Relational Databases: SQL is the programming language for relational databases like MySQL, Oracle, SQL Server, and more. These databases store data in the form of relations (tables).

ISO Standard: Although there is an ISO standard for SQL, implementations may slightly vary in syntax. Queries that work in one database system (e.g., SQL Server) may not work in another (e.g., MySQL).

Important Terminologies:

- Attribute: Properties that define a relation (e.g., ROLL_NO, NAME).
- Tuple: Each row in a relation.
- Degree: The number of attributes in a relation.
- Cardinality: The number of tuples in a relation.
- Column: Represents the set of values for a particular attribute.

Query Categories:

- Data Definition Language (DDL): Used to define the structure of the database (e.g., CREATE TABLE, ADD COLUMN, DROP COLUMN).
- Data Manipulation Language (DML): Used to manipulate data in relations (e.g., INSERT, DELETE, UPDATE).
- Data Query Language (DQL): Used to extract data from relations (e.g., SELECT).

10. List and Describe each of the different subsets of SQL(Mean DDL, DML, DCL, TCL)?

Ans-

Data Definition Language (DDL):

Responsible for defining and managing database objects such as tables, views, and indexes.

Key DDL commands include:

CREATE: Used to create new database objects.

ALTER: Modifies existing database objects.

DROP: Removes database objects.

Data Manipulation Language (DML):

Used to modify or manipulate data within the database.

Key DML commands include:

SELECT: Retrieves data from one or more tables.

INSERT: Adds new data to a table.

UPDATE: Modifies existing data in a table.

DELETE: Removes data from a table.

Data Control Language (DCL):

Manages access to the database and its objects.

Key DCL commands include:

GRANT: Gives users or roles access to database objects.

REVOKE: Removes access.

Transaction Control Language (TCL):

Manages transactions within the database.

Key TCL commands include:

COMMIT: Commits changes made during a transaction.

ROLLBACK: Undoes changes made during a transaction.

SAVEPOINT: Marks a point within a transaction for potential rollback.

Data Query Language (DQL):

Retrieves data from the database.

Key DQL commands include:

SELECT: Specifies columns to retrieve data from.

FROM: Specifies tables to retrieve data from.

11. what is table in Database(DB)?

Ans- A database table is a structure that organises data into rows and columns – forming a grid.

Tables are similar to a worksheets in spreadsheet applications. The rows run horizontally and represent each record. The columns run vertically and represent a specific field. The rows and columns intersect, forming a grid. The intersection of the rows and columns defines each cell in the table.

12. what is column and Row(tuples) in table?

Ans- **Column (Field or Attribute):**

A column represents a vertical series of data in a table.

It corresponds to a specific attribute or property of the data.

Each column has a unique name and defines the type of data it holds.

For example, in a table representing customer information, columns might include “customer_id,” “first_name,” and “email.”

Row (Tuple or Record):

A row (also known as a tuple or record) represents a single instance of data in a table.

It is a horizontal collection of values that correspond to the columns.

Each row contains data for all the attributes defined by the columns.

For instance, in a “CUSTOMER” table, each row would represent a specific customer with values for attributes like “customer_id,” “first_name,” and “last_name.”

Here’s an example of a simplified “CUSTOMER” table: