* What do you understand By Databaze?

A database is a structured collection of data that is organized and stored electronically. It is designed to efficiently manage, store, and retrieve large amounts of information. Databases can store various types of data, such as text, numbers, multimedia, and more. They are commonly used in applications ranging from websites and mobile apps to business operations and scientific research.

What is Normalization?

* Normalization is the process of organizing the data in a database efficiently. This process involves reducing redundancy and dependency by organizing fields and table of a database. By normalization, a database can be divided into smaller, related tables, and connect them with relationships. This not only organizes the data logically but also makes it easier to update and manage the database.
* What is Difference between DBMS and RDBMS?
* DBMS (Database Management System) and RDBMS (Relational Database Management System) are both software systems designed to manage databases. However, there are significant differences between the two:

1. **DBMS (Database Management System):**

**Definition:** A DBMS is a software system that enables users to interact with the database. It provides an interface to interact with the database, perform operations like insert, update, delete, and retrieve data.

**Data Structure:** DBMS can handle different types of data structures, including hierarchical, network, and relational models.

**Schema:** DBMS may or may not have a predefined schema. In systems without a schema, each record can have different fields.

**Flexibility:** DBMS systems offer more flexibility in terms of data storage and retrieval. They can handle different data formats and structures.

1. **RDBMS (Relational Database Management System):**

**Definition:** An RDBMS is a specific type of DBMS that is based on the relational model of data. It organizes data into structured tables with rows and columns.

**Data Structure:** RDBMS stores data in the form of tables. Each table consists of rows (records) and columns (attributes). Data is organized based on predefined relationships between tables.

**Schema:** RDBMS enforces a predefined schema. Each table has a fixed structure with specified fields and data types. This ensures data integrity and consistency.

**ACID Properties:** RDBMS systems adhere to ACID (Atomicity, Consistency, Isolation, Durability) properties, ensuring that database transactions are processed reliably.

**Behind the Scenes:**

**DBMS:** Behind the scenes, a DBMS manages the physical organization of data on storage media, handles user requests, and ensures data security and integrity. It allows users to interact with the database without knowing the internal complexities of data storage and retrieval.

**RDBMS:** An RDBMS, in addition to the functionalities of a DBMS, includes a structured way of defining, storing, and retrieving data. It uses SQL (Structured Query Language) for defining and manipulating the data. Behind the scenes, an RDBMS uses various algorithms to optimize query performance and maintain relationships between tables.

In summary, while all RDBMS are DBMS, not all DBMS are RDBMS. RDBMS systems provide a higher level of data integrity, organization, and consistency compared to general-purpose DBMS.

* What is MF Cod Rule of RDBMS Systems?
* It appears there might be a misunderstanding or a typo in your question. There is no widely recognized or standard concept called "MF Cod Rule" in the context of RDBMS (Relational Database Management Systems). If you have any other specific questions related to RDBMS or any other topic, feel free to ask!
* What do you understand By Data Redundancy?
* Data redundancy refers to the duplication of data within a database or between different databases. It occurs when the same piece of data is stored in multiple places. Redundant data can lead to various problems and inefficiencies in database management.

**Behind the Scenes:**

Behind the scenes, data redundancy can happen for several reasons, including:

**Poor Database Design:** If the database is not properly designed and normalized, it can lead to redundancy. For instance, in a non-normalized database, the same customer information might be duplicated in multiple tables.

**Application Issues:** In some cases, data redundancy occurs due to the way applications handle data. If applications do not have proper checks to prevent duplication, the same data can be entered multiple times.

**Integration of Multiple Systems:** When integrating data from different systems or databases, especially in large organizations, redundancy can occur if data synchronization is not managed effectively.

**Problems Caused by Data Redundancy:**

**Data Inconsistency:** If redundant data is not updated consistently across all instances, it can lead to inconsistencies. For example, different copies of the same data might have different values.

**Wasted Storage Space:** Storing the same data multiple times consumes additional storage space, which can be costly in large databases.

**Increased Complexity:** Managing redundant data adds complexity to database queries and maintenance tasks. It can slow down query performance and make the system harder to maintain.

**Update Anomalies:** Redundant data can lead to anomalies during updates. For instance, if a piece of data is duplicated in multiple places and one instance is updated while others are not, it creates an update anomaly.

Database normalization techniques, such as those used in relational databases, are employed to minimize data redundancy. Normalization organizes data in a way that reduces redundancy and ensures data integrity and consistency. By eliminating or minimizing redundancy, databases become more efficient, easier to manage, and less prone to errors.

* What is DDL Interpreter?
  + - DDL, or Data Definition Language, is a subset of SQL (Structured Query Language) used for defining and managing the structure of a database. DDL statements are used to create, modify, and delete database objects such as tables, indexes, and constraints.

A DDL interpreter is a component of a Database Management System (DBMS) that processes DDL statements. It interprets and executes these statements to create or modify the database structure based on the specifications provided by the user.

* What is DML Compiler in SQL?
* It seems there might be a confusion in your question. In SQL (Structured Query Language), there is no specific component referred to as a "DML Compiler." However, there are components related to Data Manipulation Language (DML) operations, which involve manipulating data stored in the database.

Basic Details:

DML (Data Manipulation Language) in SQL is a subset of SQL statements used for managing data within database objects. DML operations include SELECT for retrieving data, INSERT for adding new records, UPDATE for modifying existing records, and DELETE for removing records from a database table.

* What is SQL Key Constraints writing an Example of SQL Key Constraints?
* In SQL, key constraints are used to enforce the uniqueness and integrity of data in a relational database table. There are several types of key constraints, including:

1. \*\*Primary Key Constraint:\*\* Ensures that a column or a set of columns in a table uniquely identifies each record in that table. It also implies that the specified column(s) cannot containNULL values. Each table can have only one primary key.

Example of defining a primary key constraint in SQL:

**```sql**

**CREATE TABLE Students (**

**StudentID INT PRIMARY KEY,**

**StudentName VARCHAR(255),**

**Age INT**

**);**

**```**

In this example, the `StudentID` column is the primary key of the `Students` table. It ensures that each `StudentID` must be unique, and it cannot contain NULL values.

2. \*\*Unique Constraint:\*\* Similar to a primary key, a unique constraint ensures that the values in a column or a set of columns are unique across all the records in the table. Unlike the primarykey, a table can have multiple unique constraints.

Example of defining a unique constraint in SQL:

**```sql**

**CREATE TABLE Employees (**

**EmployeeID INT UNIQUE,**

**EmployeeEmail VARCHAR(255) UNIQUE**

**);**

**```**

In this example, both `EmployeeID` and `EmployeeEmail` columns have unique constraints, ensuring that each value in these columns must be unique.

3. \*\*Foreign Key Constraint:\*\* Establishes a link between data in two tables, where the foreign key in one table refers to the primary key in another table. It maintains referential integrity between the two related tables.

Example of defining a foreign key constraint in SQL:

**```sql**

**CREATE TABLE Orders (­­­­­­­­­­­­­­­­­­­­­­­­­**

**OrderID INT PRIMARY KEY,**

**ProductID INT,**

**Quantity INT,**

**FOREIGN KEY (ProductID) REFERENCES Products(ProductID)**

**);**

**CREATE TABLE Products (**

**ProductID INT PRIMARY KEY,**

**ProductName VARCHAR(255)**

**);**

**```**

In this example, the `Orders` table has a foreign key constraint (`ProductID`) that references the `ProductID` column in the `Products` table. It ensures that every `ProductID` in the `Orders` table must correspond to an existing `ProductID` in the `Products` table.

These key constraints help maintain the integrity and relationships of data in a relational database, ensuring that the data remains accurate, consistent, and reliable.

* What is save Point? How to create a save Point write a Query?
* In SQL, a savepoint is a point within a transaction to which you can later roll back. This means you can set a savepoint within a transaction and later roll back the transaction to that specific ­­­­­point, undoing any operations performed after the savepoint was set, while still keeping the transaction active. Savepoints are useful in situations where you want to handle errors within a transaction without rolling back the entire transaction.

**Query=SAVEPOINT savepoint\_name;**

* What is trigger and how to create a Trigger in SQL?
* In SQL, a trigger is a set of instructions that are automatically executed ("triggered") in response to certain events on a particular table or view. These events can include INSERT, UPDATE, DELETE, or MERGE operations. Triggers are useful for enforcing business rules, validating input data, maintaining referential integrity, and automating complex database operations.
* **CREATE TABLE NAME : STUDENT AND EXAM**

|  |  |
| --- | --- |
| STUDENT | EXAM |
|  |  |

* **CREATE TABLE**

|  |
| --- |
|  |

* **Create table given below: Employee and Incentive**

|  |
| --- |
| Employee |
|  |

|  |
| --- |
| Incentive |
|  |

1. **Get First\_Name from employee table using Tom name “Employee Name”.**

|  |
| --- |
| Quary : [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM `employee` WHERE FIRST\_NAME='tom'; |
|  |

1. **Get FIRST\_NAME, Joining Date, and Salary from employee table.**

|  |
| --- |
| Quary : [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) FIRST\_NAME,JOINING\_DATE,salary FROM `employee`; |
|  |

1. **Get all employee details from the employee table order by First\_Name Ascending and Salary descending?**

|  |
| --- |
| First\_Name Ascending Quary : [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM `employee` ORDER BY FIRST\_NAME ASC; |
|  |
| Salary descending Quary : [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM `employee` ORDER BY salary desc; |
|  |

1. **Get employee details from employee table whose first name contains ‘J’.**

|  |
| --- |
| Quary : [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM `employee` WHERE FIRST\_NAME [LIKE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/string-comparison-functions.html%23operator_like) 'J%'; |
|  |

1. **Get department wise maximum salary from employee table order by salary ascending?**

|  |
| --- |
| Quary : [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) DEPARTMENT, [MAX](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/aggregate-functions.html%23function_max)(salary) FROM employee GROUP BY DEPARTMENT ORDER BY salary ASC; |
|  |

* **Create table given below: Salesperson and Customer**

|  |  |
| --- | --- |
| CUSTOMER |  |
|  |  |

**b) Names and cities of all salespeople in London with commission above 0.12**

|  |
| --- |
| QUARY : SELECT SNAME,CITY FROM SELSEPERSON\_ WHERE CITY=’LONDON’ AND COMM>=.12 |
|  |

**c) All salespeople either in Barcelona or in London**

|  |
| --- |
| QUARY : SELECT \* FROM SALSEPERSON\_ WHERE CITY=’LONDON’ OR CITY=’ Barcelona’ |
|  |

**d) All salespeople with commission between 0.10 and 0.12. (Boundary values should be excluded).**

|  |
| --- |
| QUARY : SELECT \* FROM SELSEPERSON\_ WHERE COMM BETWEEN .10 AND .12 |
|  |

**d) All salespeople with commission between 0.10 and 0.12. (Boundary values should be excluded).**

|  |
| --- |
| QUARY : SELECT \* FROM CUSTOMER WHERE RATTING>100 |
|  |