**MODULE: 5 (Database)**

**• What do you understand By Database**

**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)](https://www.oracle.com/in/database/what-is-database/?source=rh-rail#WhatIsDBMS). Together, the data and the DBMS, along with the applications that are associated with them, are referred to as a database system, often shortened to just database.

Data within the most common types of databases in operation today is typically modeled in rows and columns in a series of tables to make processing and data querying efficient. The data can then be easily accessed, managed, modified, updated, controlled, and organized. Most databases use structured query language (SQL) for writing and querying data.

**• What is Normalization?**

**Ans-:** Normalization is the process to estimate data redundancy and enhance data integrity in the table. Normalization also helps to organize the data in the database. It is a multistep process that sets the data into tabular form and removes the duplicated data from the relational tables.

**• What is Difference between DBMS and RDBMS?**

**Ans-:**

|  |  |
| --- | --- |
| **DBMS** | **RDBMS** |
| DBMS stores data as file. | RDBMS stores data in tabular form. |
| Data elements need to access individually. | Multiple data elements can be accessed at the same time. |
| No relationship between data. | Data is stored in the firm of tables which are related to each other. |
| Normalization is not present. | Normalization is present. |
| DBMS does not support distributed database. | RDBMS supports distributed database. |
| It stores data in either a navigational or hierarchical form. | It uses a tabular structure where the headers are the column names, and the rows contain corresponding values. |
| It deals with quantity of data. | It deals with large amount of data. |
| Data redundancy is common in this model. | Keys and indexes do not allow data redundancy. |
| It is used for small organization and deal with small data. | It is used to handle large amount of data. |
| Not all codd rules are satisfied. | All 12 codd rules are satisfied. |
| Security is less. | More security measures provided. |
| It supports single user. | It supports multiple users. |
| Data fetching is slower for the large amount of data. | Data fetching is fast because of relational approach. |
| The data in a DBMS is subject to low security levels with regards to data manipulation. | There exist multiple levels of data security in a RDBMS. |
| low software and hardware necessities.  Examples XML, Window Registry,  Forxpro, dbaselllplus etc. | Higher software and hardware necessities.  Example: MySQL, PostgreSQL, SQL server, oracle, Microsoft access etc. |

**• What do you understand By Data Redundancy?**

**Ans-:** Data redundancy refers to the practice of keeping data in two or more places within a database or data storage system. Data redundancy ensures an organization can provide continued operations or services or services in the event something happens to its data. -- for example, in the case of data corruption or data loss. The concept applies to areas such as database, computer memory and file storage systems.

Data redundancy can occur within an organization intentionally or accidentally. If done intentionally, the same data is kept in different locations with the organization making a conscious effort to protect it and ensure its consistency. This data is often used for backups or disaster recovery.

**• What is DDL Interpreter?**

**Ans-:** A data definition language (DDL) interpreter is a component or subsystem of a database management system (DBMS) responsible for processing and executing DDL statements. DDL statements are SQL statements used to define, modify, and manage the structure and schema of a database, including tables, indexes, constrains, and other database objects. DDL statements are used to create, alter, and delete database objects.

**• What is DML Compiler in SQL?**

**Ans-:** A data manipulation language (DML) is a computer programming language used for adding (inserting), deleting, and modifying (updating) data in a database. A DML is often a sublanguage of a broader database language such as SQL, with the DML comprising some of the operators in the language. DML Compiler: Translates DML statements in a query language within low level instructions understandable through the query evaluation engine. Attempts to transforms users request within an equivalent and well-organized from for executing the query understandable through Data Manager, Interprets DDL statements and records them within a set of tables containing Meta data in a form that can be used through other elements of a DBMS.

**• What is SQL Key Constraints writing an Example of SQL Key Constraints**

**Ans-:** Constraints are the rules that we can apply on the type of data in a table. That is, we can specify the limit on the type of data that can be stored in a particular column in a table using constraints.

The available constraints in SQL are: 

* **NOT NULL**: This constraint tells that we cannot store a null value in a column. That is, if a column is specified as NOT NULL then we will not be able to store null in this particular column any more.
* **UNIQUE**: This constraint when specified with a column, tells that all the values in the column must be unique. That is, the values in any row of a column must not be repeated.
* **PRIMARY KEY**: A primary key is a field which can uniquely identify each row in a table. And this constraint is used to specify a field in a table as primary key.
* **FOREIGN KEY**: A Foreign key is a field which can uniquely identify each row in a another table. And this constraint is used to specify a field as Foreign key.
* **CHECK**: This constraint helps to validate the values of a column to meet a particular condition. That is, it helps to ensure that the value stored in a column meets a specific condition.

**• What is save Point? How to create a save Point write a Query?**

**Ans-:** A save point is a logical rollback point within a transaction. When you set a save point, whenever an error occurs past a save point, you can undo the events you have done up to the save point using the rollback.

MySQL InnoDB provides support for the statements SAVEPOINT, ROLLBACK TO SAVEPOINT, RELEASE SAVEPOINT.

The SAVEPOINT statement is used to set a save point for the transaction with the specified name. If a save point with the given name already exists the old one will be deleted.

**• What is trigger and how to create a Trigger in SQL?**

**Ans-:** A trigger is a stored procedure in a database that automatically invokes whenever a special event in the database occurs. For example, a trigger can be invoked when a row is inserted into a specified table or when specific table columns are updated in simple words a trigger is a collection of [SQL](https://www.geeksforgeeks.org/sql-tutorial/)statements with particular names that are stored in system memory. It belongs to a specific class of stored procedures that are automatically invoked in response to database server events. Every trigger has a table attached to it.

Because a trigger cannot be called directly, unlike a stored procedure, it is referred to as a special procedure. A trigger is automatically called whenever a data modification event against a table takes place, which is the main distinction between a trigger and a procedure. On the other hand, a stored procedure must be called directly.