**What do you understand By Database?**

* **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 DBMS.**
* [**DATABASE MANAGEMENT SYSTEM (DBMS)**](https://www.oracle.com/in/database/what-is-database/#WhatIsDBMS)
* **What is Normalization?**
* **Normalization is the process of organizing the data in the database.**
* **Normalization is used to minimize the redundancy from a relation or set of relations. It is also used to eliminate undesirable characteristics like Insertion, Update, and Deletion Anomalies.**
* **Normalization divides the larger table into smaller and links them using relationships.**
* **The normal form is used to reduce redundancy from the database table.**
* **NORMAL FORM**
* **1NF :- A RELATION IS IN 1NF IF IT CONTAINS AN AUTOMATIC VALUE.**
* **2NF :- A RELATION WILL BE UN 2NF IF IT IA AN 1NF AND ALL NON KEY ATTRIBUTES ARE FULLY FUNCTIONAL DEPENDENT IN THE PRIMARY KEY.**
* **3NF :- A RELATION WILL BE IN 3NF IF IT IS IN 2NF AND NO TRANSITION DEPENDENCY EXISTS.**
* **What is Difference between DBMS and RDBMS?**
* **DBMS :- DATABASE MANAGEMENT SYSTEM IS SOFTWARE USED TO IDENTYFY, MANAGE ANECREATE A DATABASE THAT PROVIDES ADMINISTERED ACCESS TO THE DATA.**
* **RDBMS :- RELATIONAL DATABASE MANAGEMENT SYSTEM IS A MORE ADVANVCED VERSION OF A DBMS SYSTEM THAT ALLOWS ACCESS TO DATA IN MORE EFFICIENT WAY.**
* Difference between RDBMS and DBMS

|  |  |  |
| --- | --- | --- |
| **RDBMS** | **DBMS** |  |
| Data stored is in table format | Data stored is in the file format |  |
| Multiple data elements are accessible together | Individual access of data elements |  |
| Data in the form of a table are linked together | No connection between data |  |
| Normalisation is not achievable | There is normalisation |  |
| Support distributed database | No support for distributed database |  |
| Data is stored in a large amount | Data stored is a small quantity |  |
| RDBMS supports multiple users | DBMS supports a single user |  |
| It features multiple layers of security while handling data | There is only low security while handling data |  |
| The software and hardware requirements are higher | The software and hardware requirements are low |  |
| Oracle, SQL Server. | XML, Microsoft Access. |  |

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

**Data redundancy occurs when the same piece of data exists in multiple places, whereas data inconsistency is when the same data exists in different formats in multiple tables. Unfortunately, data redundancy can cause data inconsistency, which can provide a company with unreliable and/or meaningless information.**

**🡪What is DDL Interpreter?**

* **It interprets DDL statements and record them in tables containing metadata.  
    
  Its a language in database through which you can make the logical design of the schemas.**
* **What is DML Compiler in SQL ?**

1. **DML Compiler: Translates DML statements in a query language within low level instructions understandable through the query evaluation engine.**
2. **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 ?**
* **Constraints in SQL means we are applying certain conditions or restrictions on the database.**
* **This further means that before inserting data into the database, we are checking for some conditions.**
* **If the condition we have applied to the database holds true for the data which is to be inserted, then only the data will be inserted into the database tables.**

**🡪CONSTRAINTS IN SQL CAN BE CATEGORIZED INTO TWO TYPE.**

1. **COLUMN LEVEL CONSTRAINT :-**

**COLUMN LEVEL CONSTRAINT IS USED TO APPLY CONSTRAINT ON A SINGLE COLUMN.**

1. **TABLE LEVEL CONSTRAINT :-TABLE LEVEL CONSTARINT IS USED TO APPLY A CONSTRAINT ON**

**MULTIPLE COLUMNS.**

**EXAMPLE :-**

**Whenever  we set a password for any system, there are certain constraints that are to be followed. These constraints may include the following:**

* **There must be one uppercase character in the password.**
* **Password must be of at least eight characters in length.**
* **Password must contain at least one special symbol**.

**Constraints available in SQL are:**

1. **NOT NULL**
2. **UNIQUE**
3. **PRIMARY KEY**
4. **FOREIGN KEY**
5. **CHECK**
6. **DEFAULT**
7. **CREATE INDEX**

* **What is save Point? How to create a save Point write a Query?**
* **Save point is a command in SQL that is used with the rollback command.**
* **It is a command in Transaction Control Language that is used to mark the transaction in a table.**
* **Consider you are making a very long table, and you want to roll back only to a certain position in a table then; this can be achieved using the save point.**
* **If you made a transaction in a table, you could mark the transaction as a certain name, and later on, if you want to roll back to that point, you can do it easily by using the transaction's name.**
* **Save point is helpful when we want to roll back only a small part of a table and not the whole table. In simple words, we can say save point is a bookmark in SQL.**

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

**TRIGGER :-**

**A TRIGGER IS A STORED PROCEDURE IN DATABASE WHICH AUTOMATICALLY INVOKES WHWNEVER A SPACIAL EVENT IN THE DATABASE COURSE.**

**FOR EXAMPLE, A TRIGGER CAN BE INVOKED WHEN A ROW IS INSERTED INTO A SPECIFIED TABLE OR WHEN CERTAIN TABLE COLUMNS ARE BEING UPDATED.**

**SYNTAX :-**

**CREATE TRIGGER (TRIGGER\_NAME)(TRIGGER\_TIME)(TRIGGER\_EVENT) ON TABLE\_NAME (FOR EAACH ROW) BEGIN VARIABLES DECLARATION TRIGGER CODE END;**

**TASK:- FOR ASSIGNMENT**

Table 3 🡪 Employee and Incentive

3a) Get First\_Name from employee table using Tom name “Employee Name”

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM employee WHERE FIRST\_name="Tom";

3b) Get FIRST\_NAME, Joining Date, and Salary from employee table.

* [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;

3c) Get all employee details from the employee table order by First\_Name Ascending and Salary descending?

* [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;
* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM `employee` ORDER by Salary DESC;

3d) Get employee details from employee table whose first name contains ‘J’.

* [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%';

3e) Get department wise maximum salary from employee table order by salary ascending?

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) Department,Salary FROM employee where Department="Banking" ORDER by Salary ASC;
* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) Department,Salary FROM employee where Department="Insurance" ORDER by Salary ASC;
* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) Department,Salary FROM employee where Department="service" ORDER by Salary ASC;

3f) Select first\_name, incentive amount from employee and incentives table for those employees who have incentives and incentive amount greater than 3000.

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) First\_name,incentive\_amount FROM employee INNER JOIN incentive ON employee.Employee\_id=incentive.employee\_ref\_id WHERE incentive\_amount>3000;

3g) Create After Insert trigger on Employee table which insert records in view table.

Table 4 🡪 Customer and Salesperson

4a) All orders for more than $1000.

4b) Names and cities of all salespeople in London with commission above 0.12.

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) SNAME,City,COMM FROM salesperson WHERE COMM>=.12;

4c) All salespeople either in Barcelona or in London.

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) SNAME,City FROM salesperson WHERE city [IN](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/comparison-operators.html%23function_in) ("London","Barcelona");

4d) All salespeople with commission between 0.10 and 0.12. (Boundary values should be excluded).

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) COMM FROM salesperson WHERE COMM BETWEEN 0.10 [and](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html%23operator_and) 0.12;

4e) All customers excluding those with rating <= 100 unless they are located in Rome.

* [SELECT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/select.html) \* FROM customer WHERE Rating<=100 [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html%23operator_and) [NOT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html%23operator_not) City="roe";