**MODULE – 5(DATABASE)**

**1.What do you understand By Database?**

**ANS :-** A database is an electronically stored, systematic collection of data. It can contain any type of data, including words, numbers, images, videos, and files. You can use software called a database management system (DBMS) to store, retrieve, and edit data.

**2.What is Normalization?**

**ANS:-** The process of organising information/data in a database is known as normalization.

**3. What is Difference between DBMS and RDBMS?**

**ANS:-** The main differences are: RDBMS stores data in the form of tables, whereas DBMS stores data in the form of files. Single users are supported by DBMS, whereas multiple users are supported by RDBMS. Client-server architecture is not supported by DBMS, although it is supported by RDBMS.

**4. What is MF Cod Rule of RDBMS Systems?**

**ANS:-** **zero to twelve rules.**

1. **Rule 0: The Foundation Rule**:
2. **Rule 1: The Information Rule**:
3. **Rule 2: The Guaranteed Access Rule**:
4. **Rule 3: Systematic Treatment of Null Values**:
5. **Rule 4: Dynamic Online Catalog Based on the Relational Model**:
6. **Rule 5: The Comprehensive Data Sublanguage Rule**:
7. **Rule 6: The View Updating Rule**:
8. **Rule 7: High-level Insert, Update, and Delete**:
9. **Rule 8: Physical Data Independence**:

10. **Rule 9: Logical Data Independence:**

11. **Rule 10: Integrity Independence:**

12. **Rule 11: Distribution Independence:**

13. **Rule 12: Non-Subversion Rule:**

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

**ANS:-** 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.

**6.What is DDL Interpreter?**

**ANS:-** DDL Interpreter: It interprets the DDL (Data Definition Language) Instructions and stores the record in a data dictionary.

**7. What is DML Compiler in SQL?**

**ANS:-** A DML (data manipulation language) refers to a computer programming language that allows you to add (insert), delete (delete), and alter (update) data in a database.

**8. What is SQL Key Constraints writing an Example of SQL Key Constraints?**

* **ANS:-** NOT NULL - Ensures that a column cannot have a NULL value.
* UNIQUE - Ensures that all values in a column are different.
* PRIMARY KEY - A combination of a NOT NULL and UNIQUE . ...
* FOREIGN KEY - Prevents actions that would destroy links between tables.

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

**Ans:-** A SAVEPOINT is a point in a transaction in which you can roll the transaction back to a certain point without rolling back the entire transaction. Syntax for Savepoint command: SAVEPOINT SAVEPOINT\_NAME;.

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

**ANS:-** To create the DML trigger, from the Query menu, click Execute. The DML trigger is created as an object in the database. To see the DML trigger listed in Object Explorer, right-click Triggers and select Refresh.

## **TOPICS - SQL QUERIES**

## **Create Table Name : Student and Exam**

* **STUDENT:**
* CREATE TABLE STUDENT

(ROLL\_NO INT PRIMARY KEY AUTO\_INCREMENT,NAME VARCHAR(30), BRANCH VARCHAR(30));

* INSERT INTO student (NAME,BRANCH) VALUES ("MAHIMA","INFORMATION TECHNOLOGY"),("DIMPLE","ELECTRICAL ENGINEERING"),

("NENCY","CHEMICAL ENGINEERING"),("NIKTA","CIVIL ENGINEERING"),("HEENA","COMPUTER ENGINEERING");

* SELECT \* FROM student;
* **EXAM:**
* CREATE TABLE EXAM

(ROLL\_NO INT ,S\_CODE VARCHAR(10) PRIMARY KEY,MARKS INT ,P\_CODE VARCHAR(10),FOREIGN KEY(ROLL\_NO) REFERENCES student(ROLL\_NO));

* INSERT INTO EXAM VALUES(1,"CS11",67,"CS"),(1,"CS12",78,"CS"),(3,"EC101",44,"EC"),(2,"EC102",97,"EC"),(5,"EC104",80,"EC"),(2,"EC202",62,"EC"),(3,"EC105",70,"EC");
* SELECT \* FROM EXAM LIMIT 4;

## **2.Create Table Name : PERSON**

* CREATE TABLE PERSON

(FIRST\_NAME VARCHAR(20),LAST\_NAME VARCHAR(20),ADDRESS TEXT,CITY VARCHAR(30),AGE INT );

* INSERT INTO person VALUES

("RINKU","VAGHELA","123 KRISHNA SOCITY","KADI",21),

("JAIMINI","DABHI","002 RAMBAG SOCITY","DANGARVA",26),

("RIDHHIMA","SODHA","024 HOUSING BOARD","VIDAJ",31),

("MITTU","VAGHELA","98 HOUSING BOARD","MORBI",24),

("MALTI","ZALA","019 RADHE COMPLEX","AHEMDABAD",18),

("HEER","RAJ","005 SIVAM HOSPITAL","RAJKOT",29);

* SELECT FIRST\_NAME,CITY,AGE FROM `person` LIMIT 3;

### **3-CREATE TABLE: EMPLOYEE AND INCENTIVE**

* TABLE-1
* CREATE TABLE EMPLOYEE(EMPLOYEEE\_ID INT PRIMARY KEY AUTO\_INCREMENT,FIRST\_NAME VARCHAR(20),LAST\_NAME VARCHAR(20),SALARY BIGINT ,JOINING\_DATE DATETIME ,

DEPARTMENT VARCHAR(10));

* INSERT INTO employee(FIRST\_NAME,LAST\_NAME,SALARY,JOINING\_DATE,DEPARTMENT) VALUES("JOHN","ABRAHAM",1000000,'13-1-1',"BAMKING"), ("JOHN","ABRAHAM",1000000,'01-JAN-13 12:00',"BANKING");
* insert into employee (FIRST\_NAME,LAST\_NAME,SALARY,JOINING\_DATE,DEPARTMENT) VALUES

("MICHAEL","CLARKE",800000,'13-1-1',"INSURANCE"),("ROY","THOMAS",700000,'13-2-1',"BANKING"),

("TOM","JOSE",600000,'13-2-1',"INSURANCE"),("JERRY","PINTO",650000,'13-1-1',"INSURANCE"),

("PHILIP","MATHEW",750000,'13-1-1',"SERVICES"),("TESTNAME1","123",650000,'13-1-1',"SERVICES"),

("TESTNAME2","LNAME",600000,'13-2-1',"INSURANCE");

* SELECT EMPLOYEEE\_ID,FIRST\_NAME,LAST\_NAME,SALARY,DATE\_FORMAT(JOINING\_DATE,'%d-%b-%y %h.%i.%s %p'),DEPARTMENT FROM employee;
* **TABLE-2**
* [CREATE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/create-table.html) [TABLE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/create-table.html) INCENTIVE (EMPLOYEE\_REF\_ID INT ,INCENTIVE\_DATE DATE,INCENTIVE\_AMOUNT INT ,FOREIGN KEY (EMPLOYEE\_REF\_ID)REFERENCES EMPLOYEE(EMPLOYEEE\_ID));
* [INSERT](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/insert.html) INTO incentive [VALUES](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/miscellaneous-functions.html%23function_values)(5,'13-2-1',5000),(2,'13-2-1',3000),(3,'13-2-1',4000),(5,'13-1-1',4500), (2,'13-2-1',3500);
* SELECT EMPLOYEE\_REF\_ID ,DATE\_format(INCENTIVE\_DATE,'%d-%b-%y'),INCENTIVE\_AMOUNT FROM `incentive` WHERE 1

**RETRIEVE BELOW DATA FROM ABOVE TABLE**

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

SELECT FIRST\_NAME AS EMPLOYEE\_NAME FROM EMPLOYEE WHERE FIRST\_NAME="TOM";

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

SELECT FIRST\_NAME,DATE\_FORMAT(JOINING\_DATE,'%d-%b-%y %h.%i.%s %p'),SALARY FROM `employee`

**c)** Get all employee details from the employee table order by First\_Name

SELECT \* FROM employee ORDER BY FIRST\_NAME DESC;

D)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%';

**E)** Get department wise maximum salary from employee table order by salary ascending?

SELECT DEPARTMENT,MAX(SALARY) FROM employee GROUP BY DEPARTMENT ORDER BY SALARY ASC;

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

SELECT FIRST\_NAME ,INCENTIVE\_AMOUNT FROM employee AS E INNER JOIN incentive AS I ON E.EMPLOYEEE\_ID =I.EMPLOYEE\_REF\_ID

WHERE I.INCENTIVE\_AMOUNT>3000;

**G)** Create After Insert trigger on Employee table which insert records in viewtable

### **4- CREATE TABLE : SALESPERSON AND CUSTOMER**

* **TABLE-1**
* CREATE TABLE SALESPERSON

(SNO INT PRIMARY KEY AUTO\_INCREMENT,SNAME VARCHAR(20),CITY VARCHAR(20),COMM FLOAT(4));

CHANGE AUTO\_INCREAMENT STARTING VALUE

* [ALTER](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/alter-table.html) [TABLE](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/alter-table.html) salesperson AUTO\_INCREMENT=1001;
* INSERT INTO salesperson (SNAME,CITY,COMM) VALUES

("PEEL","LONDON",.12),

("SERRES","SAN JOSE",.13),

("MOTIKA","LONDON",.11),

("RAFKIN","BARCELONA",.15),

("AXEIROD","NEW YORK",.1);

* **TABLE-2**
* CREATE TABLE CUSTOMER(CNM INT PRIMARY KEY AUTO\_INCREMENT,CNAME VARCHAR(20),CITY VARCHAR(20), RATING INT ,SNO INT,FOREIGN KEY (SNO) REFERENCES salesperson(SNO));
* ALTER TABLE customer AUTO\_INCREMENT=201;
* INSERT INTO customer (CNAME,CITY,RATING,SNO) VALUES

("HOFFMAN","LONDON",100,1001),

("GLOVANNE","ROE",200,1003),

("LIU","SAN JOSE",300,1002),

("GRASS","BARCELONA",100,1002),

("CLEMENS","LONDON",300,1005),

("PEREIRA","ROE",100,1004);

**RETRIEVE BELOW DATA FROM ABOVE TABLE**

**B)** 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 FROM `salesperson` WHERE CITY="LONDON" [AND](http://localhost/phpmyadmin/url.php?url=https://dev.mysql.com/doc/refman/8.0/en/logical-operators.html%23operator_and) COMM>.12;

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

SELECT \* FROM `salesperson` WHERE CITY="BARCELONA" OR CITY="LONDON";

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

SELECT \* FROM salesperson WHERE COMM > 0.11 AND COMM <.12;

**E)** All customers excluding those with rating <= 100 unless they are located in Rome

SELECT \* FROM customer WHERE NOT RATING<=100 AND NOT CITY="ROE";