**What is DBMS :- Database management system**

Software system that enables users to define create, maintain and control access to the database.

**Example:-**

DBMS include MYSQL, PostgreSQL, Microsoft SQL Server, Oracle Database, and Microsoft Access.

**There are 4 types of DBMS :-**

1. Relational database
2. Object oriented database
3. Hierarchical database
4. Network database

**SQL Commands :-**

The standard SQL commands to interact with relation database are CREATE, SELECT, INSETR, UPDATE, DELETE and DROP.

**DDL- Data Definition Language.**

|  |  |
| --- | --- |
| **Command** | **Description** |
| CREATE | Creates a new table, a view of a table, or other object in the database. |
| ALTER | Modifies an existing database object, such as a table. |
| DROP | Deletes an entire table, a view of a table or other objects in the database. |

**DML – Data Manipulation Language.**

|  |  |
| --- | --- |
| **Command** | **Description** |
| SELECT | Retrieves certain records from one or more tables. |
| INSERT | Creates a record. |
| UPDATE | Modifies records. |
| DELETE | Deletes records. |

**DCL – Data Control Language.**

|  |  |
| --- | --- |
| **Command** | **Description** |
| GRANT | Gives a privilege to user. |
| REVOKE | Takes back privileges granted from user. |

**What is a table**:-

The data in an RDBMS is stored in database objects which are called as tables. This table is basically a collection of related data entries and it consists of numerous columns and rows.

| ID | NAME | AGE | ADDRESS | SALARY |

+----+--------+-------+---------------+---------+

| 1 | Ramesh | 32 | Ahmedabad | 2000.00 |

| 2 | Ayush | 25 | Delhi | 1500.00 |

| 3 | khushi | 23 | Kota | 2000.00 |

| 4 | Chaitali | 25 | Mumbai | 6500.00 |

| 5 | Hardik | 27 | Bhopal | 8500.00 |

| 6 | Komal | 22 | MP | 4500.00 |

| 7 | Muffy | 24 | Indore | 10000.00 |

+-------+--------------+------+-------------------------+-------------+

**What is a Record or a Row:-**

A record is also called as a row of data is each individual entry that exists in a table. For example, there are 7 records in the above CUSTOMERS table. Following is a single row of data or record in the CUSTOMERS table:

+---+-------------+----+-------------+------------+

| 1 | Ramesh | 32 | Ahmedabad | 2000.00 |

+--+---------------+----+-------------+-------------+

**What is a column:-**

A column is a vertical entity in a table that contains all information associated with a specific field in a table. For example, a column in the CUSTOMERS table is ADDRESS, which represents location description and would be as shown below:

+-----------+

| ADDRESS |

| Ahmedabad |

| Delhi |

| Kota |

| Mumbai |

| Bhopal |

| MP |

| Indore |

+----+------+

**MySQL :-**

MySQL is an open source SQL database, which is developed by a Swedish company MySQL AB. MySQL is pronounced as “my ess-que-ell”, in contrast with SQL, pronounced “sequel”.

MySQL is supporting many different platforms including Microsoft Windows, the major Linux distributions, UNIX, and Mac OS X.

**Features :-**

* High Performance.
* High Availability.
* Scalability and Flexibility Run anything.
* Robust Transactional Support.
* Web and Data Warehouse Strengths.
* Strong Data Protection.
* Comprehensive Application Development.
* Management Ease.
* Open Source Freedom and 24\*7 Support.
* Lowest Total Cost of Ownership**.**

**MS SQL Server:-**

MS SQL Server is a Relational Database Management System developed by Microsoft Inc. Its primary query languages are:

• T-SQL

• ANSI SQL

**Features :-**

• High Performance

• High Availability

• Database mirroring

• Database snapshots

• CLR integration

• Service Broker

• DDL triggers

• Ranking functions

• Row version-based isolation levels

• XML integration

**ORACLE :-**

It is a very large multi-user based database management system. Oracle is a relational database management system developed by 'Oracle Corporation'. Oracle works to efficiently manage its resources, a database of information among the multiple clients requesting and sending data in the network. It is an excellent database server choice for client/server computing. Oracle supports all major operating systems for both clients and servers, including MSDOS, NetWare, UnixWare, OS/2 and most UNIX flavors.

**Features:-**

• Concurrency

• Read Consistency

• Locking Mechanisms

• Quiesce Database

• Portability

• Self-managing database

• SQL\*Plus

**Database Normalization:-**

• First Normal Form (1NF)

• Second Normal Form (2NF)

• Third Normal Form (3NF)

**Database –First Normal Form (1NF)**

The First normal form (1NF) sets basic rules for an organized database:

• Define the data items required, because they become the columns in a table.

• Place the related data items in a table.

• Ensure that there are no repeating groups of data.

• Ensure that there is a primary key.

**First Rule of 1NF**

You must define the data items. This means looking at the data to be stored, organizing the data into columns, defining what type of data each column contains and then finally putting the related columns into their own table.

For example, you put all the columns relating to locations of meetings in the Location table, those relating to members in the Member Details table and so on.

**Second Rule of 1NF**

The next step is ensuring that there are no repeating groups of data. Consider we have the following table:

|  |
| --- |
| CREATE TABLE CUSTOMERS(  ID INT NOT NULL,  NAME VARCHAR (20) NOT NULL,  AGE INT NOT NULL,  ADDRESS CHAR (25),  ORDERS VARCHAR(155)  ); |

**Database –Second Normal Form (2NF)**

|  |
| --- |
| CREATE TABLE CUSTOMERS(  CUST\_ID INT NOT NULL,  CUST\_NAME VARCHAR (20) NOT NULL,  ORDER\_ID INT NOT NULL,  ORDER\_DETAIL VARCHAR (20) NOT NULL,  SALE\_DATE DATETIME,  PRIMARY KEY (CUST\_ID, ORDER\_ID)  ); |

**Database –Third Normal Form (3NF)**

|  |
| --- |
| CREATE TABLE CUSTOMERS(  CUST\_ID INT NOT NULL,  CUST\_NAME VARCHAR (20) NOT NULL,  DOB DATE,  STREET VARCHAR(200),  CITY VARCHAR(100),  STATE VARCHAR(100),  ZIP VARCHAR(12),  EMAIL\_ID VARCHAR(256),  PRIMARY KEY (CUST\_ID) |

**Various Syntax in SQL:-**

All the examples given in this tutorial have been tested with a MySQL server.

* **SQL SELECT Statement**

SELECT column1, column2....columnN

FROM table\_name;

* **SQL DISTINCT Clause**

SELECT DISTINCT column1, column2....columnN

FROM table\_name;

* **SQL WHERE Clause**

SELECT column1, column2....columnN

FROM table\_name

WHERE CONDITION;

* **SQL AND/OR Clause**

SELECT column1, column2....columnN

FROM table\_name

WHERE CONDITION-1 {AND|OR} CONDITION-2;

* **SQL IN Clause**

SELECT column1, column2....columnN

FROM table\_name

WHERE column\_name IN (val-1, val-2,...val-N);

* **SQL BETWEEN Clause**

SELECT column1, column2....columnN

FROM table\_name

WHERE column\_name BETWEEN val-1 AND val-2;

* **SQL LIKE Clause**

SELECT column1, column2....columnN

FROM table\_name

WHERE column\_name LIKE { PATTERN };

* **SQL ORDER BY Clause**

SELECT column1, column2....columnN

FROM table\_name

WHERE CONDITION

ORDER BY column\_name {ASC|DESC};

* **SQL GROUP BY Clause**

SELECT SUM(column\_name)

FROM table\_name

WHERE CONDITION

GROUP BY column\_name;

* **SQL COUNT Clause**

SELECT COUNT(column\_name)

FROM table\_name

WHERE CONDITION;

* **SQL HAVING Clause**

SELECT SUM(column\_name)

FROM table\_name

WHERE CONDITION

GROUP BY column\_name

HAVING (arithematic function condition);

* **SQL CREATE TABLE Statemnt**

CREATE TABLE table\_name(

column1 datatype,

column2 datatype,

column3 datatype,

..... columnN datatype,

PRIMARY KEY( one or more columns )

);

* **SQL DROP TABLE Statement**

DROP TABLE table\_name;

* **SQL CREATE INDEX Statement**

CREATE UNIQUE INDEX index\_name

ON table\_name ( column1, column2,...columnN);

* **SQL DROP INDEX Statement**

ALTER TABLE table\_name

DROP INDEX index\_name;

* **SQL DESC Statement**

DESC table\_name;

* **SQL TRUNCATE TABLE Statement**

TRUNCATE TABLE table\_name;

* **SQL ALTER TABLE Statement**

ALTER TABLE table\_name {ADD|DROP|MODIFY} column\_name {data\_ype};

* **SQL ALTER TABLE Statement (Rename)**

ALTER TABLE table\_name RENAME TO new\_table\_name;

* **SQL INSERT INTO Statement**

INSERT INTO table\_name( column1, column2....columnN)

VALUES ( value1, value2....valueN);

* **SQL UPDATE Statement**

UPDATE table\_name

SET column1 = value1, column2 = value2....columnN=valueN

[ WHERE CONDITION ];

* **SQL DELETE Statement**

DELETE FROM table\_name

WHERE {CONDITION};

* **SQL CREATE DATABASE Statement**

CREATE DATABASE database\_name;

* **SQL DROP DATABASE Statement**

DROP DATABASE database\_name;

* **SQL USE Statement**

USE database\_name;

* **SQL COMMIT Statement**

COMMIT;

* **SQL ROLLBACK Statement**

RoLLBACK;