Relational DataBase Management Systems (RDBMS)

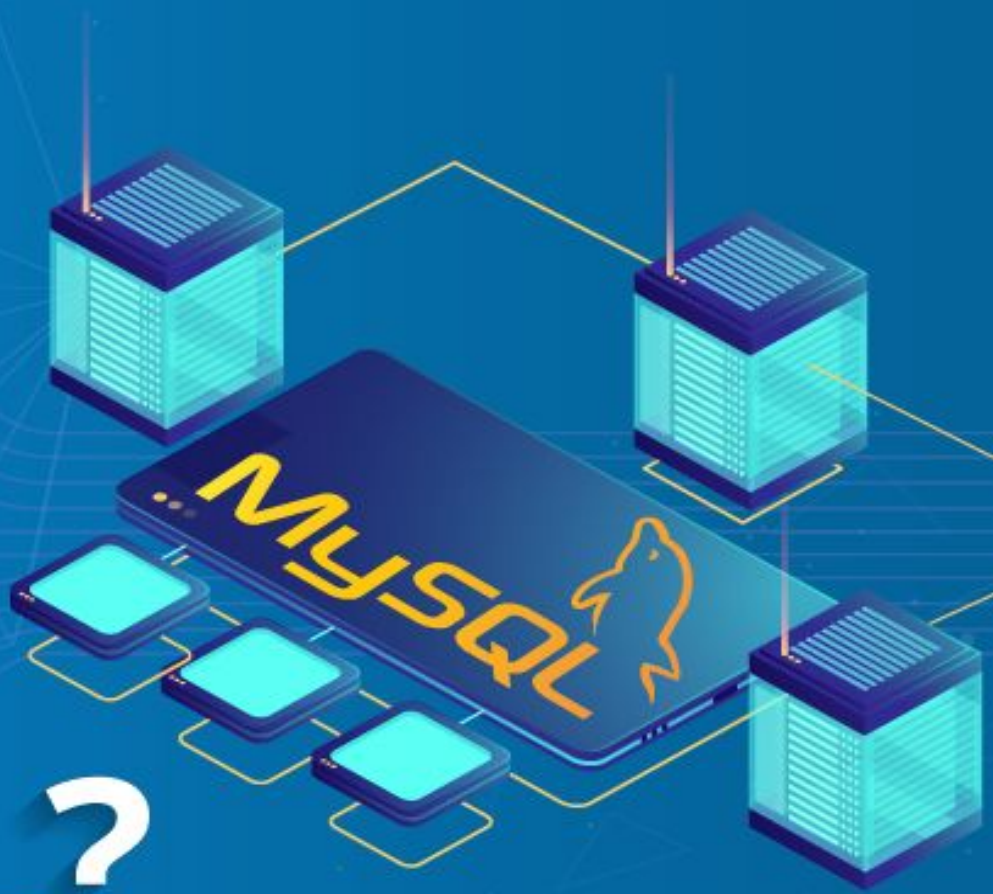
présenté par: MELKI TAKWA

What is RDBMS?

Introduction to RDBMS

RDBMS stands for Relational Database Management System. It is developed by E. F. Codd from 1970 to 1972. It stores data in the form of a table that makes the relation between the data, so it is named as an RDBMS. All modern database management systems like SQL servers, SQL, Oracle, MySQL, MS SQL are based on this relational database management system.

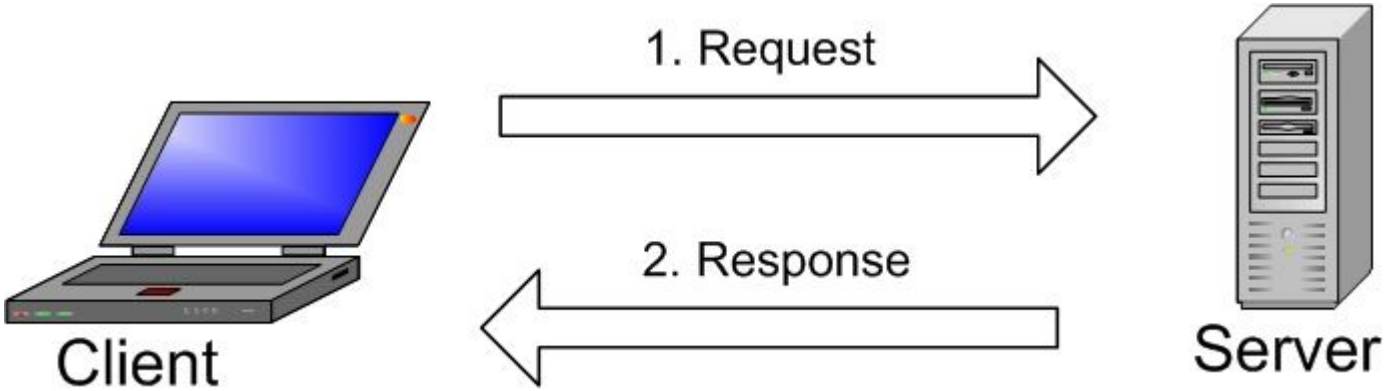
What is MySQL?



Introduction to What is MySQL?

A relational database management system based on SQL for the purpose of a web database is called MySQL. It is used in several applications such as data cleaning, data warehousing, e-commerce, logging applications and an online portal. This is used to store the applications, whether it is as small as a single record or it stores an entire inventory of products. The application of MySQL varies based on the need. It can associate with any scripting language such as PHP or Perl and create websites.

How MySQL Works?



The image explains the basic structure of the client-server structure. One or more devices (clients) connect to a server through a specific network. Every client can make a request from the graphical user interface (GUI) on their screens, and the server will produce the desired output, as long as both ends understand the instruction. Without getting too technical, the main processes taking place in a MySQL environment are the same, which are:

1. MySQL creates a database for storing and manipulating data, defining the relationship of each table.
2. Clients can make requests by typing specific SQL statements on the MySQL.
3. The server application will respond with the requested information and it will appear on the clients' side.

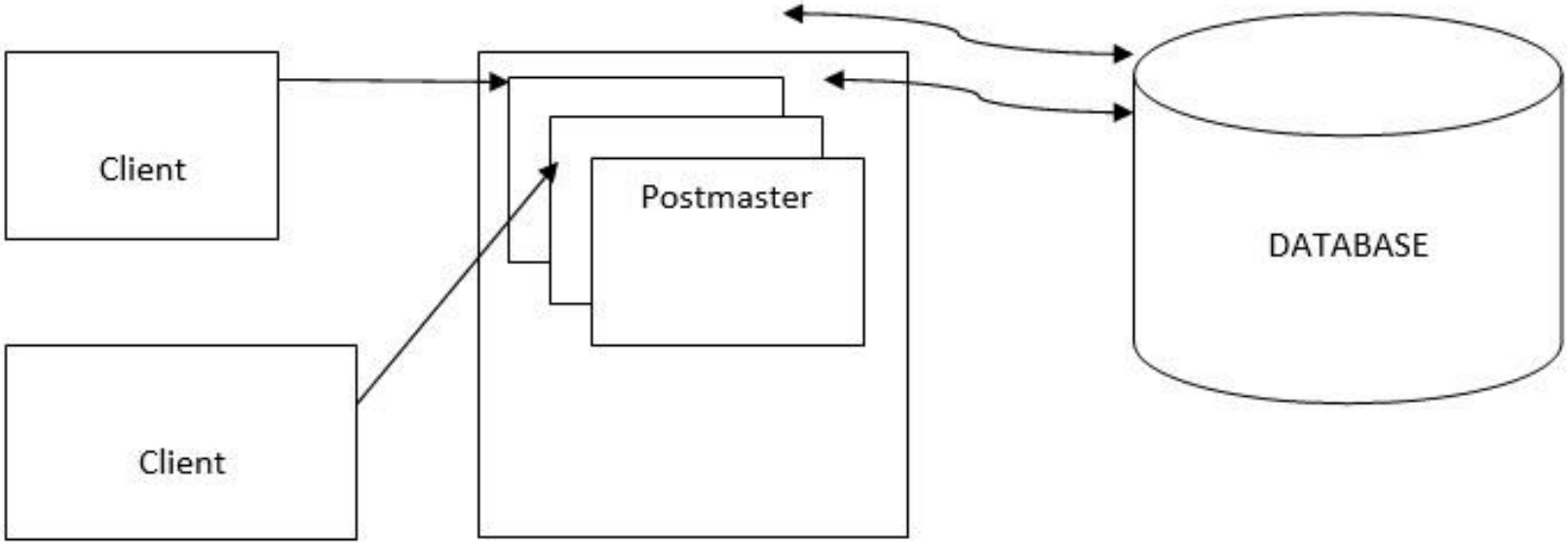
What is PostgreSQL?

Introduction to PostgreSQL

PostgreSQL is the open-source relational database software that runs on the Linux platform and functions with objects as a relational component in the database management system. It uses Structured Query Language (SQL) for accessing the data in the tables of the database, and hence it is also called Postgres. Some of this database's prominent features are that it is highly robust and reliable, the recovering process is effortless, and maintenance costs less cost and manual efforts. PostgreSQL is developed and maintained by the PostgreSQL Global Development Group, which is a group of PostgreSQL developers.

Architecture of PostgreSQL

The Architecture is based on Client-Server Model:



What Makes PostgreSQL Stand Out?

It is a very old database management system. We can integrate PostgreSQL with any programming language like Java, C, C++, etc. This feature allows defining our own customized functions. The Postgre structured query language is having many features that we could find in other databases.

This is a very old database. So, we can find troubleshooting with this database is easy. Community base for PostgreSQL is very big.

It is flexible to work. It supports user-defined data types with primitive once. Primitive means one which came with the language itself. Postgre Structured query language is one system who implemented multi-version concurrency control (MVCC). Like any other language, PostgreSQL is having its own commands. Usually, a separate database server getting for different projects.


Microsoft®
SQL Server®

What Is SQL Server?

It is Microsoft's relational database management system. It also is referred to as MSSQL, or Microsoft SQL. Microsoft originally partnered with Sybase to create SQL Server in 1989, but this partnership dissolved over the next decade, leaving Microsoft with the rights to the SQL Server name. There are several alternatives to using SQL Service, such as Oracle and IBM DB2. In addition, there are several free SQL Server options, including SQL Server Express Edition, SQLite, PostgreSQL, Mem SQL and MySQL

While SQL Server adheres to ANSI (American National Standards Institute) SQL standards, it also uses its own T-SQL codes. SQL server administrators and designers must learn the T-SQL coding language in addition to the basic SQL language to be able to work with this database management system. Microsoft offers several SQL Server editions, including Standard, Enterprise, Business Intelligence and Workgroups in the main market, as well as several specialised editions, such as Developer, Fast Track and Azure.

A comparison between the three RDBMS

MySQL	PostgreSQL	Microsoft SQL Server
Open-source	Open-source	Licensed
Owned by Oracle	Owned by PostgreSQL Global Development Group	Owned by Microsoft
Scalable buffer pool to pull cache	Scalable buffer pool to pull cache	Isolate processes as separate OS processes
Limited functionality regarding temporary tables to deal with complex processes	More functionality regarding temporary tables (divide tables into local and global). Better with complex processes.	More functionality regarding temporary tables (divide tables into local and global). Better with complex processes.
Organizes indexes into clusters and tables (not very flexible search)	Rich automated functionality for index management	Flexible search
Belongs to the Oracle ecosystem (very large community)	Belongs to the Oracle ecosystem (very large community)	Smaller community but Microsoft support team
Targeted to all sizes of companies	Targeted to all sizes of companies	Targeted to large companies
Flexible, cost efficient and innovative	Flexible, cost efficient and innovative	Professional management tools for big businesses