CHECKPOINT INTRODUCTION TO DATABASE

PRESENTATION OF MYSQL

MySQL Database Service is a fully managed database service for deploying cloud native applications using the world's most popular open source database.

MySQL, the most popular SQL database server **Open Source**, is developed, distributed and supported by **MySQL AB**. **MySQL AB**is a commercial company, founded by the developers of MySQL, who develop their activity by providing services around MySQL.

- MySQL is a database management system (.
- A database is an organized collection of data. To add, read and process data in a database, you need a database management system such as MySQL server. MySQL is a relational database server.
- A database server stores data in separate tables rather than putting it all together in one table. MySQL is **Open Source**.
- Anyone can download MySQL from the Internet, and use it without paying any fees. Anyone with the will can study and modify the source code to adapt it to their own needs. The **serveur MySQL** was originally developed to handle large databases faster than existing solutions, and has been successfully used in very constrained and demanding production environments for several years. Although still under development, the Le **serveur MySQL** offers many powerful functions. Its connection possibilities, its speed and its security make it **serveur MySQL**a server highly adapted to the Internet.
- MySQL Server works in client/server mode or in embedded system.
- The MySQL server is a client/server system that consists of a multi-threaded SQL server that supports different interfaces, clients, libraries and administration tools, as well as a wide range of drivers for different languages (APIs).
- We also offer MySQL Server as an embedded library, which you can integrate into your applications to make them smaller, faster and easier to use.

MySQL Features

MySQL features the data can be managed without major complications. MySQL is an interactive system whose purpose is to act as a database manager, using the SQL language to operate. Thanks to it, data can be managed, including its introduction, access and processing.

First, clients must connect to a server using a certain network. Then, through a graphical user interface, they make their requests. If the instructions are clear and understandable, the server returns the desired responses.

Basically, the procedure can be defined as follows:

- MySQL creates the database where the data will be stored and manipulated.
- Clients make queries using the SQL language.
- The server application will respond to these requests by forwarding them to the clients.

PRESENTATION OF PostgreSQL

PostgreSQL is one of the main DBMS-R (relational database management systems) on the market. It is open and free.

We pronounce Post-Grèss-QL.

Postgre SQL is the result of research by Professor Michael Stonebraker at the University of California at Berkeley, carried out since 1986. Since 1996, development has been carried out by the PostgreSQL Development Group.

You can deploy PostgreSQL on as many servers with as many CPUs as you want.

Not only is the investment cost zero, but there is no annual maintenance to pay!

In the long term, the economy is very important.

Features offered by PostgreSQL

- Full compatibility with SQL 92 and 99 standards
- Rules.
- Views.
- Triggers.
- Stored Procedures.
- Sequences.
- Outer joins.
- Nested queries.
- Nested transactions.
- Referential integrity (foreign keys).
- Support for UNION, UNION ALL and EXCEPT queries.

- Partial indexes and function indexes.
- Hot, full or incremental backups.
- Complete or partial restorations.
- Very simple import and export of data.
- Replication (commercial and non-commercial solutions) allowing to duplicate a master database to several slave machines: Slony-I and eRserver.
- Hot stand-by (commercial solutions)
- Interfaces natives pour ODBC, JDBC, C, C++, PHP, Perl, TCL, ECPG, Python et Ruby.
- Procedural languages. In particular, PL/PGSQL is close to Oracle's PL/SQL language.
- XML management.
- Fully ACID compatible
- Locking at a fine level.
- Unicode support.
- Native SSL support.
- Identification Kerberos native
- Object extensions (inheritance between tables).
- Possibility of adding extensions at will: user types, user functions in C, etc.

PRESENTATION OF PostgreSQL

Microsoft SQL Server is a database management system (DBMS) in SQL language incorporating, among other things, a RDBMS (relational DBMS) developed and marketed by Microsoft.
It works under Windows and Linux OS (since March 2016), but it is possible to launch it on macOS via Docker , because there is a version for download on the Microsoft site.
SQL Server Express is a free, entry-level version of the database, ideal for learning, as well as for creating desktop applications and small servers up to 10 GB of data.

Features offered by SQL Server

SQL functions allow you to perform more elaborate queries, for example adapting the results so that a string is displayed in uppercase or to save a string with the current date.

- SUM() calculate the sum of a result set.
- MAX() get the maximum result (works well for an integer)
- MIN() get the minimum result.
- COUNT() count the number of rows in a result.
- ROUND() round the value.

- UPPER() display an uppercase string.
- LOWER() display a lowercase string.