

# INTRODUCTION TO DATABASE

Roua CHAYEB

1-WHAT IS AN RDBMS ?  
2-MYSQL  
3-POSTGRESQL  
4-SQL SERVER  
COMPARISON

# 1-WHAT IS AN RDBMS ?

RDBMS stands for Relational Database Management System. RDBMS is the basis for SQL, and for all modern database systems like MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.

A Relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model as introduced by E. F. Codd.

Relational database management systems have become the most popular type of database system.

A relational database is a database that allows related data to be stored across multiple tables, and linked by establishing a relationship between the tables. This provides an efficient way to store data, as you can enter data once, then reference it from elsewhere in the database.

# 2-MYSQL : INTRODUCTION

MySQL is the most popular open source SQL database. It is typically used for web application development, and often accessed using PHP.

The main advantages of MySQL are that it is easy to use, inexpensive, reliable (has been around since 1995), and has a large community of developers who can help answer questions.

Some of the disadvantages are that it has been known to suffer from poor performance when scaling, open source development has lagged since Oracle has taken control of MySQL, and it does not include some advanced features that developers may be used to



# 2-MYSQL : FUNCTIONALITIES

**Ease of Management** : It is pretty easy to download and use the software.

**High performance** : It provides you fast loading utilities with different memory cache.

**Scalable** : With MySQL, you can scale anytime you like. It is really easy to create data warehouses including an enormous amount of data.

**Compatibility** : MySQL is compatible with all modern platforms like Windows, Linux, Unix.

**Performance** : MySQL gives you high-performance results without losing essential functionality.

**Complete Data Security** : Only the authorized users can access the database. Complete security for the data.

**Low Cost** : It is free to use.

**Memory Efficiency** : MySQL has low memory leakage.

## 2-MYSQL : DRAWBACKS

MySQL version less than 5.0 doesn't support ROLE, COMMIT, and stored procedure.

MySQL does not support a very large database size as efficiently.

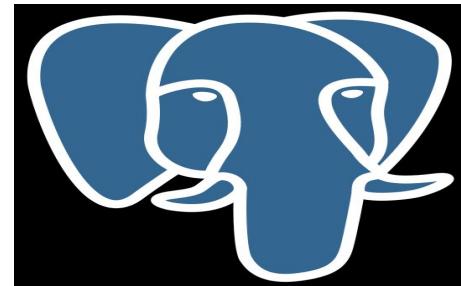
MySQL doesn't handle transactions very efficiently, and it is prone to data corruption.

MySQL is accused that it doesn't have a good developing and debugging tool compared to paid databases.

MySQL doesn't support SQL check constraints

# 3-POSTGRESQL : INTRODUCTION

POSTGRESQL is an advanced, enterprise class open source relational database that supports both SQL (relational) and JSON (non-relational) querying. It is a highly stable database management system, backed by more than 20 years of community development which has contributed to its high levels of resilience, integrity, and correctness. PostgreSQL is used as the primary data store or data warehouse for many web, mobile, geospatial, and analytics applications. The latest major version is PostgreSQL 12.



# 3-POSTGRESQL : FUNCTIONALITIES

- Free to download, Compatible on several operating systems, Compatible with various programming languages.
- Compatible with Data Integrity: Primary Keys, UNIQUE, NOT NULL, Foreign Keys, Explicit Locks, Advisory Locks, Exclusion Constraints
- Support multiple features of SQL
- Compatible with multiple data types
- Highly extensible
- Highly Reliable: It is highly reliable and also provide disaster recovery
- PostgreSQL supports Column and row-level security.
- Application Program Interface (GSSAPI), SCRAM-SHA-256, Security Support Provider Interface (SSPI), Certificate, and so on.

# 3-POSTGRESQL : DRAWBACKS

- PostgreSQL does not support the various open-source applications as compared to MySQL.
- In this, creating replication is a bit complex.
- It is not maintained by one company.
- PostgreSQL speed performance is not as good as compare to further tools.
- It is a bit slow as compared to MySQL.
- Sometimes, the installation process is not easy for the learners

# 4-SQL SERVER

SQL SERVER is a relational database management system (RDBMS) developed by Microsoft. It is primarily designed and developed to compete with MySQL and Oracle database.

SQL Server supports ANSI SQL, which is the standard SQL (Structured Query Language) language. However, SQL Server comes with its own implementation of the SQL language, T-SQL



# 4-SQL SERVER : FUNCTIONALITIES

Better security

With Always Encrypted, Row-Level Security, and Dynamic data masking.

Higher availability

Including Availability Groups, Cloud Witness, Storage Spaces Direct, Workgroup clusters.

Improved database engine

TempDB enhancements, Query Store, Stretch Database.

More analytics

Tabular enhancements, R integration)

Various improvements to reporting

Search, custom branding, optimization for modern browsers, mobile, etc

# COMPARISON

## MYSQL

MySQL is the most popular amongst the relational databases and the most widely used too. Offers a fully-managed database service for Google Cloud platform and is a scalable database with high availability and security at no extra cost.

## MySQL Server

MySQL Server has multiple editions with different feature sets and user profiles. It has some fantastic features like SQL server on Linux, resumable online index build, machine learning services, query processing improvements, and much more

## PostgreSQL

PostgreSQL is a fully managed and scalable relational database with high availability and security built in at no additional charge. It is a fully managed database service for the Google Cloud Platform. Is better in query optimization and query execution as compared to MySQL. PostgreSQL has a storage engine which is suitable for INSERT and complex search applications such as data mining