Introduction:

The relational data model, which organizes data in tables of rows and columns, predominates in database management tools. Today there are other data models, including [NoSQL](https://en.wikipedia.org/wiki/NoSQL) , [NewSQL](https://en.wikipedia.org/wiki/NewSQL) and SQL server, but relational database management systems (RDBMSs) [remain dominant](https://db-engines.com/en/ranking_categories) for storing and managing data worldwide.

**MySQL**

According to the [DB-Engines Ranking](https://db-engines.com/en/), MySQL has been the most popular open-source RDBMS since the site began tracking database popularity in 2012. It is a feature-rich product that powers many of the world’s largest websites and applications, including Twitter, Facebook, Netflix, and Spotify. Getting started with MySQL is relatively straightforward, thanks in large part to its [exhaustive documentation](https://dev.mysql.com/doc/) and large [community of developers](https://forums.mysql.com/), as well as the abundance of MySQL-related resources online.

MySQL was designed for speed and reliability, at the expense of full adherence to standard SQL. The MySQL developers continually work towards closer adherence to standard SQL, but it still lags behind other SQL implementations. It does, however, come with various SQL modes and extensions that bring it closer to compliance.

Unlike applications using SQLite, applications using a MySQL database access it through a separate daemon process. Because the server process stands between the database and other applications, it allows for greater control over who has access to the database.

MySQL has inspired a wealth of third-party applications, tools, and integrated libraries that extend its functionality and help make it easier to work with. Some of the more widely-used of these third-party tools are [phpMyAdmin](https://www.phpmyadmin.net/), [DBeaver](https://dbeaver.io/), and [HeidiSQL](https://www.heidisql.com/).

## PostgreSQL

PostgreSQL, also known as Postgres, bills itself as “the most advanced open-source relational database in the world.” It was created with the goal of being highly extensible and standards compliant. PostgreSQL is an object-relational database, meaning that although it’s primarily a relational database it also includes features — like table inheritance and function overloading — that are more often associated with [object databases](https://en.wikipedia.org/wiki/Object_database).

Postgres is capable of efficiently handling multiple tasks at the same time, a characteristic known as concurrency. It achieves this without read locks thanks to its implementation of [Multiversion Concurrency Control (MVCC)](https://en.wikipedia.org/wiki/Multiversion_concurrency_control), which ensures the atomicity, consistency, isolation, and durability of its transactions, also known as ACID compliance.

PostgreSQL isn’t as widely used as MySQL, but there are still a number of third-party tools and libraries designed to simplify working with with PostgreSQL, including [pgAdmin](https://www.pgadmin.org/) and [Postbird](https://github.com/paxa/postbird).

**SQL Server**is also a Relational Database Management System (**RDBMS)**developed by Microsoft in 1989. SQL stands for Structured Query Language. It is a basic programming language used to manage data stored in RDBMS. Different databases may require minor changes in the SQL syntax, but most of them remain the same. SQL operates via simple, declarative statements. It keeps your data secure and accurate, whilst maintaining the integrity of databases, regardless of their size.

**ANSI** (American National Standards Institute) considers SQL as the standard language to run your relational database systems such as MySQL. It is used to access, upgrade and manipulate data across your entire database system. Besides, it can also be used to control data accessibility and to build and manage database schemas. SQL Server supports Microsoft Windows and Linux operating systems. With its language drivers, you can easily connect with any code. It is available in multiple languages including French, English, Japanese, Chinese, Spanish, and more

### Advantages of MySQL

### **Popularity and ease of use**

### As one of the world’s most popular database systems, there’s no shortage of database administrators who have experience working with MySQL. Likewise, there’s an abundance of documentation in print and online on how to install and manage a MySQL database. This includes a number of third-party tools — such as phpMyAdmin — that aim to simplify the process of getting started with the database.

**Security**

MySQL comes installed with a script that helps you to improve the security of your database by setting the installation’s password security level, defining a password for the **root** user, removing anonymous accounts, and removing test databases that are, by default, accessible to all users. Also, unlike SQLite, MySQL does support user management and allows you to grant access privileges on a user-by-user basis.

**Speed**

By choosing not to implement certain features of SQL, the MySQL developers were able to prioritize speed. While more recent benchmark tests show that other RDBMSs like PostgreSQL can match or at least come close to MySQL in terms of speed, MySQL still holds a reputation as an exceedingly fast database solution.

**Replication**

MySQL supports a number of different types of [replication](https://en.wikipedia.org/wiki/Replication_(computing)#Database_replication), which is the practice of sharing information across two or more hosts to help improve reliability, availability, and fault-tolerance. This is helpful for setting up a database backup solution or [horizontally scaling](https://en.wikipedia.org/wiki/Scalability#HORIZONTAL-SCALING) one’s database.

### Advantages of PostgreSQL

**SQL compliance**

More so than SQLite or MySQL, PostgreSQL aims to closely adhere to SQL standards, According to the official PostreSQL documentation .  PostgreSQL supports 160 out of the 179 features required for full core SQL:2011 compliance, in addition to a long list of optional features.

**Open-source and community-driven**

A fully open-source project, PostgreSQL’s source code is developed by a large and devoted community. Similarly, the Postgres community maintains and contributes to numerous online resources that describe how to work with the DBMS, including the [official documentation](https://www.postgresql.org/docs/), the [PostgreSQL wiki](https://wiki.postgresql.org/wiki/Main_Page), and various online forums.

**Extensible**

Users can extend PostgreSQL programmatically and on the fly through its [catalog-driven operation](https://www.postgresql.org/docs/9.0/extend-how.html) and its use of [dynamic loading](https://en.wikipedia.org/wiki/Dynamic_loading). One can designate an object code file, such as a shared library, and PostgreSQL will load it as necessary.

## MS SQL Server Advantages

The MS SQL Server advantages elucidate the fundamentals of what it offers. Reading ahead will give you a clearer picture, you will get to know all about MS SQL Server and its features.  Like other Microsoft products, MS SQL Server benefits average users.

### Easy Installation

All the Microsoft products are easy to install with the one-click installation procedure and readable GUI with lots of instructions for the layman. MS SQL Server contains all these characteristics and it was an extremely user-friendly installation interface, unlike other database servers that require extensive command-line configurations.

Principally to download MS SQL Server, you require a net framework, a minimum of 1GB memory, and NTFS system.

### Improved Performance

MS SQL server contains  excellent compression and encryption capabilities that result in improved data storage and retrieval functions.

**Security**

MS SQL server is considered one of the most secure database servers with complex encryption algorithms making it virtually impossible to crack the security layers enforced by the user.

### Multiple Editions and Price Variations

A good thing about the MS SQL server is that it is available in multiple editions in order to cater to the needs of huge corporate sector organizations to a domestic user. The price range also varies which allows anyone to buy the product which meets their price range. **It mainly includes:**

**Enterprise**

**Standard**

**Workgroup**

**Express**

**Developer**

### Excellent Data Restoration and Recovery Mechanism

**MS SQL server is fully aware of the importance of your data. Hence MS SQL Server contains many sophisticated features that allow you to recover and restore the data which has been lost or damaged.**

**The MS SQL controls data storage through its core component, which is, SQL Server Database Engine. Security, processing, and storage of data come under the server.**

Disadvantages of MySQL

**Known limitations**

Because MySQL was designed for speed and ease of use rather than full SQL compliance, it comes with certain functional limitations. For example, it [lacks support for FULL JOIN clauses](https://fthiella.github.io/mysql-full-outer-join/).

**Licensing and proprietary features**

MySQL is dual-licensed software, with a free and open-source community edition licensed under [GPLv2](https://en.wikipedia.org/wiki/GNU_General_Public_License#Version_2) and several paid commercial editions released under proprietary licenses. Because of this, some features and plugins are only available for the proprietary editions.

**Slowed development**

Since the MySQL project was acquired by Sun Microsystems in 2008, and later by Oracle Corporation in 2009, there have been complaints from users that the development process for the DBMS has slowed down significantly, as the community no longer has the agency to quickly react to problems and implement changes.

### Disadvantages of PostgreSQL

**Memory performance**

For every new client connection, PostgreSQL forks a new process. Each new process is allocated about 10MB of memory, which can add up quickly for databases with lots of connections. Accordingly, for simple read-heavy operations, PostgreSQL is typically less performant than other RDBMSs, like MySQL.

**Popularity**

Although more widely used in recent years, PostgreSQL has historically lagged behind MySQL in terms of popularity. One consequence of this is that there are still fewer third-party tools that can help manage a PostgreSQL database. Similarly, there aren’t as many database administrators with experience managing a Postgres database compared to those with MySQL experience.

## Disadvantages of SQL

Now let's talk about of the disadvantages of SQL.

### 1. Poor Interface

SQL has a poor interface as it makes look everything very complex even when it's not! Due to its difficult interfacing, users find it difficult to deal with the databases.

### 2. Cost Inefficient

SQL Server Standard costs around $1,418/year. The high cost makes it difficult for some programmers to use it.

### 3. Partial Control

SQL doesn't grant the complete control over databases to its users. This is due to some hidden business rules.

### 4. Security

### Regardless of the SQL version, databases in SQL is constantly under threat as it holds huge amounts of sensitive data.