

Relational Database



What is MySQL?

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation.

The MySQL software delivers a very fast, multi-threaded, multi-user, and robust SQL (Structured Query Language) database server. MySQL Server is intended for missioncritical, heavy-load production systems as well as for embedding into mass-deployed software.



What is PostgreSQL?

PostgreSQL is an advanced object-relational database management system that supports an extended subset of the SQL standard, including transactions, foreign keys, subqueries, triggers, user-defined types and functions.




What is SQL Server?







Microsoft® SQL Server is a database management and analysis system for e-commerce, line-of-business, and data warehousing solutions.







Comparison between the three relational database

Name	Microsoft SQL Server X	MySQL X	PostgreSQL X
Description	Microsofts relational DBMS	Widely used open source RDBMS	Widely used open source RDBMS ⓘ
Primary database model	Relational DBMS	Relational DBMS ⓘ	Relational DBMS ⓘ
Secondary database models	Document store Graph DBMS	Document store	Document store
DB-Engines Ranking ⓘ 	Score 1062.76 Rank #3 Overall #3 Relational DBMS	Score 1264.25 Rank #2 Overall #2 Relational DBMS	Score 542.29 Rank #4 Overall #4 Relational DBMS
Website	www.microsoft.com/en-us/sql-server	www.mysql.com	www.postgresql.org
Technical documentation	docs.microsoft.com/en-ie/sql/sql-server/sql-server-technical-documentation	dev.mysql.com/doc	www.postgresql.org/docs/manuals
Developer	Microsoft	Oracle ⓘ	PostgreSQL Global Development Group ⓘ
Initial release	1989	1995	1989 ⓘ
Current release	SQL Server 2019, November 2019	8.0.21, 2020	12.4, August 2020
License ⓘ	commercial ⓘ	Open Source ⓘ	Open Source ⓘ
Cloud-based only ⓘ	no	no	no
DBaaS offerings (sponsored links) ⓘ		<ul style="list-style-type: none"> • ScaleGrid for MySQL: Fully managed MySQL hosting on AWS, Azure and DigitalOcean with high availability and SSH access on the #1 multi-cloud DBaaS. • Azure Database for MySQL: A fully managed, scalable MySQL relational database with high availability and security built in at no extra cost 	<ul style="list-style-type: none"> • Azure Database for PostgreSQL: A fully managed, scalable PostgreSQL relational database with high availability and security built in at no extra cost • ScaleGrid for PostgreSQL: Fully managed PostgreSQL hosting on AWS, Azure and DigitalOcean with high availability and SSH access on the #1 multi-cloud DBaaS.

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Implementation language	C++	C and C++	C
Server operating systems	Linux Windows	FreeBSD Linux OS X Solaris Windows	FreeBSD HP-UX Linux NetBSD OpenBSD OS X Solaris Unix Windows
Data scheme	yes	yes	yes
Typing 	yes	yes	yes
XML support 	yes	yes	yes 
Secondary indexes	yes	yes	yes
SQL 	yes	yes 	yes 
APIs and other access methods	ADO.NET JDBC ODBC OLE DB Tabular Data Stream (TDS)	ADO.NET JDBC ODBC Proprietary native API	ADO.NET JDBC native C library ODBC streaming API for large objects

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Supported programming languages	C# C++ Delphi Go Java JavaScript (Node.js) PHP Python R Ruby Visual Basic	Ada C C# C++ D Delphi Eiffel Erlang Haskell Java JavaScript (Node.js) Objective-C OCaml Perl PHP Python Ruby Scheme Tcl	.Net C C++ Delphi Java  JavaScript (Node.js) Perl PHP Python Tcl
Server-side scripts 	Transact SQL, .NET languages, R, Python and (with SQL Server 2019) Java	yes 	user defined functions 
Triggers	yes	yes	yes

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Partitioning methods ⓘ	tables can be distributed across several files (horizontal partitioning); sharding through federation	horizontal partitioning, sharding with MySQL Cluster or MySQL Fabric	partitioning by range, list and (since PostgreSQL 11) by hash
Replication methods ⓘ	yes, but depending on the SQL-Server Edition	Multi-source replication Source-replica replication	Source-replica replication ⓘ
MapReduce ⓘ	no	no	no
Consistency concepts ⓘ	Immediate Consistency	Immediate Consistency	Immediate Consistency
Foreign keys ⓘ	yes	yes ⓘ	yes
Transaction concepts ⓘ	ACID	ACID ⓘ	ACID
Concurrency ⓘ	yes	yes ⓘ	yes
Durability ⓘ	yes	yes	yes
In-memory capabilities ⓘ	yes	yes	no
User concepts ⓘ	fine grained access rights according to SQL-standard	Users with fine-grained authorization concept ⓘ	fine grained access rights according to SQL-standard