Relational Data Base Management Systems

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What is an Relational Data Base Management Systems

A relational database management system (RDBMS or just RDB) is a common type of database that stores data in tables, so it can be used in relation to other stored datasets. Most databases used by businesses these days are relational databases, as opposed to a flat file or hierarchical database. The majority of current IT systems and applications are based on a relational DBMS.

Relational databases have the muscle to handle multitudes of data and complex queries. Multiple tables are standard usage for modern databases. The data is often stored in many tables, also called 'relations'. These tables are divided into rows, also called records and columns (fields). There can be millions of rows in a database. Columns are made up of one specific data type, like name or price.

Key factors to consider when selecting a relational database

Initial Setup

Setting up a DBMS, optimizing it for ideal operations, and future-proofing it for growth requires adequate flexibility for integration into the current data infrastructure. Synchronization with other platforms is also essential for uninterrupted workflow.

Data security

Every DBMS will provide different security methods, like encryption, customizable routines, and access rights, to protect your data. These should all be carefully considered during the evaluation process. You probably want access controls like authorization and authentication to be default features, meaning data in tables within a RDBMS is limited to access by specific users.

Key factors to consider when selecting a relational database

Data model

How will you tell which model is right for your data? If you need to work with unstructured data, then a relational model won't work. NoSQL databases are often available as open source, whereas a RBDMS is usually a commercial purchase.

Data accuracy/reliability

Some of the questions you will be asking yourself here are your accuracy requirements, and whether to rely on business logic. Financial data and government reports, for example, will have more stringent requirements. What gives RBDMSes their robust reliability is support of the ACID properties — atomicity, consistency, durability and isolation — which are the basis of reliable transaction processing.

My SQL

MySQL is a freely available open source Relational Database Management System (RDBMS) that uses Structured Query Language (**SQL**).

SQL is the most popular language for adding, accessing and managing content in a database. It is most noted for its quick processing, proven reliability, ease and flexibility of use.

MySQL is an essential part of almost every open source **PHP** application. Good examples for PHP & MySQL-based scripts are WordPress, Joomla!, and Drupal.

PostgreSQL

PostgreSQL is a powerful, open source object-relational database system that uses and extends the SQL language combined with many features that safely store and scale the most complicated data workloads.

The origins of PostgreSQL date back to 1986 as part of the **POSTGRES** project at the University of California at Berkeley and has more than 30 years of active development on the core platform.

PostgreSQL has earned a strong reputation for its proven architecture, reliability, data integrity, robust feature set, extensibility, and the dedication of the open source community behind the software to consistently deliver performant and innovative solutions.

PostgreSQL runs on **all major operating systems**, has been **ACID**-compliant since 2001, and has powerful add-ons such as the popular **Post GIS** geospatial database extender. It is no surprise that PostgreSQL has become the open source relational database of choice for many people and organisations.

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 (Transact-SQL).

T-SQL is a Microsoft propriety Language known as **Transact-SQL.** It provides further capabilities of declaring variable, exception handling, stored procedure, etc.

SQL Server Management Studio (SSMS) is the main interface tool for SQL Server, and it supports both 32-bit and 64-bit environments.

MySQL vs PostgreSQL vs SQL Server