

DATABASE (SQL)

Agenda

What is a Database

Types of Database

Database management system Software

How to use MySQL RDMS

SQL basics

What is a Database

A database is an organized collection of data, generally stored and accessed electronically from a computer system.

Two main types of modern databases

*The two main types of modern databases to choose from are relational and non-relational

- Relational
/SQL

A relational database refers to a [database](#) that stores data in a structured format, using [rows](#) and [columns](#). It is "relational" because the values within each [table](#) are related to each other. Tables may also be related to other tables

- Non-relational/
NoSQL

NoSQL is a non-relational [database](#) that stores and accesses [data](#) using key-values. Instead of storing data in rows and columns like a traditional database, a NoSQL [DBMS](#) stores each item individually with a unique key. Additionally, a NoSQL database does not require a structured [schema](#) that defines each [table](#) and the related [columns](#). NoSQL provides an unstructured or "semi-structured" approach that is ideal for capturing and storing user generated content ([UGC](#)). This may include text, images, audio files, videos, click streams, [tweets](#), or other data.

Examples of Database

- RDBMS Example systems: Microsoft Access and MySQL
- Document stores/document-oriented database Example systems: MongoDB
- Key-value stores Example systems: Redis Example users: Stack Exchange
- Search engines Example systems: Elasticsearch Example users: Vimeo
- Wide column stores/extensible record stores Example systems: Cassandra Example users: Netflix
- Graph DBMS Example systems: Neo4j and Microsoft Azure Cosmos DB ,Example users: Ebay

Database management system Software

Database Management System (DBMS) is a software that is used to define, create and maintain a database and provides controlled access to the data

- RDMS

Relational Database Management System (RDBMS) is an advanced version of a DBMS. RDBMS refers to the database [program](#) itself. It is the software that executes queries on the data, including adding, updating, and searching for values. An RDBMS may also provide a visual representation of the data

RDBMS examples include : <https://www.tutorialspoint.com/sql/sql-databases.htm>

1. MySQL,
2. Microsoft SQL Server,
3. Oracle
4. PostgreSQL,
5. IBM DB2

Installing MySQL

- MySQL is an open source popular RDBMS , which is developed by a Swedish company – MySQL AB. MySQL is pronounced as "my ess-que-ell," in contrast with SQL, pronounced "sequel."
- MySQL is supporting many different platforms including Microsoft Windows, the major Linux distributions, UNIX, and Mac OS X.
- <https://dev.mysql.com/downloads/installer/>

SQL

SQL stands for Structured Query Language

- SQL is a database computer language designed for the retrieval and management of data in a relational database
- SQL lets you access and manipulate databases
- SQL is the standard language for Relational Database System. All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language.

What Can SQL do?

- SQL can execute queries against a database
- SQL can retrieve data from a database
- SQL can insert records in a database
- SQL can update records in a database
- SQL can delete records from a database
- SQL can create new databases
- SQL can create new tables in a database
- SQL can create stored procedures in a database
- SQL can create views in a database
- SQL can set permissions on tables, procedures, and views

Some of The Most Important SQL Commands

- SELECT - extracts data from a database
- UPDATE - updates data in a database
- DELETE - deletes data from a database
- INSERT INTO - inserts new data into a database
- CREATE DATABASE - creates a new database
- ALTER DATABASE - modifies a database
- CREATE TABLE - creates a new table
- ALTER TABLE - modifies a table
- DROP TABLE - deletes a table
- CREATE INDEX - creates an index (search key)
- DROP INDEX - deletes an index

READ MORE

- 1) <https://www.w3schools.com/mysql/default.asp>
- 2) https://www.youtube.com/watch?v=7S_tz1z_5bA