

SQL - Introduction

What is Data?

Data is a collection of raw, unorganized facts and figures that have no meaning or value on their own. It can be anything from numbers and text to images and audio files. Data is only useful when it is organized and analyzed to extract meaningful information.

What is a Database?

A database is an organized collection of data, typically stored electronically in a computer system. A database is designed to store, retrieve, manage, and analyze data efficiently. Databases are used by a wide variety of applications, including e-commerce websites, banking systems, and customer relationship management (CRM) systems.

Types of Databases :

Type of Database	Description	Example
Relational database	Stores data in tables	MySQL, PostgreSQL
NoSQL database	Stores unstructured data	MongoDB, Cassandra
Cloud database	Hosted on a cloud computing platform	Amazon RDS, Azure SQL Database

Benefits of Using a Database :

There are many benefits to using a database, including:

- **Data organization:** Databases store data in an organized and structured way, making it easy to find and retrieve information.
- **Data integrity:** Databases ensure that data is accurate and consistent.
- **Data security:** Databases protect data from unauthorized access.
- **Data scalability:** Databases can be easily scaled to store more data as needed.
- **Data efficiency:** Databases can efficiently store and retrieve data, even for large datasets.

SQL

- **SQL stands for Structured Query Language** and is a computer language defined by the ANSI (American National Standards Institute) that we use to interact with a relational database.
- SQL is a tool for *organizing, managing, and retrieving* archived data from a computer database.
- The original name was given by IBM as Structured English Query Language, abbreviated by the acronym **SEQUEL**

Uses of SQL

- **Data definition:** It is used to define the structure and organization of the stored data and the relationships among the stored data items.
- **Data retrieval:** SQL can also be used for data retrieval.
- **Data manipulation:** If the user wants to add new data, remove data, or modify existing data then SQL provides this facility also.
- **Access control:** SQL can be used to restrict a user's ability to retrieve, add, and modify data, protecting stored data against unauthorized access.
- **Data sharing:** SQL is used to coordinate data sharing by concurrent users, ensuring that changes made by one user do not inadvertently wipe out changes made at nearly the same time by another user.

SQL also differs from other computer languages because it describes what the user wants the computer to do rather than how the computer should do it. (In more technical terms, SQL is a declarative or descriptive language rather than a procedural one.)