

What is a Relational Database?

A **relational database** is a way of storing data in **tables**. Each table is made up of **rows** and **columns**, much like a spreadsheet.

- Each **table** represents a specific type of data (e.g., *Customers*, *Orders*, *Products*).
- Each **row** is a single record.
- Each **column** represents a field or attribute (e.g., name, date, price).

The word "**relational**" means that the data in different tables can be **related** or **linked** using **keys**.

Example:

You might have:

- A `Customers` table with `CustomerID`, `Name`, `Email`
- An `Orders` table with `OrderID`, `CustomerID`, `Date`

Here, `CustomerID` is a common column that connects both tables. This helps you find which customer placed which order.



What is RDBMS?

RDBMS stands for **Relational Database Management System**. It's the software used to create, manage, and work with relational databases.

Popular RDBMS software includes:

- MySQL
 - PostgreSQL
 - SQLite
 - Oracle Database
 - Microsoft SQL Server
-



Key Concepts

- **Table**: The basic unit of data storage (like a spreadsheet).
 - **Primary Key**: A unique identifier for each row in a table.
 - **Foreign Key**: A field that links one table to another.
 - **SQL**: The language used to interact with RDBMS (stands for **Structured Query Language**).
-



Why Use a Relational Database?

- **Organized:** Data is stored in structured formats.
- **Connected:** Related data can be joined easily.
- **Secure:** RDBMS handles permissions and access control.
- **Efficient:** Optimized for speed and data integrity.

A Brief History of Relational Databases

- **1970:** The idea of a **relational model** was first introduced by **Dr. E.F. Codd**, a British computer scientist working at IBM. He published a paper titled "*A Relational Model of Data for Large Shared Data Banks*", which laid the foundation for relational databases.
- **1970s–1980s:** IBM developed one of the first relational database prototypes called **System R**, and later came **Oracle**, which became the first commercial RDBMS in **1979**.
- **1986:** The **SQL** language (Structured Query Language) became a standard, officially adopted by ANSI (American National Standards Institute).
- **1990s–2000s:** Relational databases grew in popularity with the rise of business software and web applications. Systems like **MySQL**, **PostgreSQL**, and **SQL Server** became widely used.
- **Today:** RDBMSs are everywhere—from websites and apps to banking and enterprise systems. Even as newer models like NoSQL have emerged, relational databases remain a core technology due to their reliability, consistency, and structured approach to data.