



# WHAT IS A DATABASE?

A database is a structured, organized set of data.

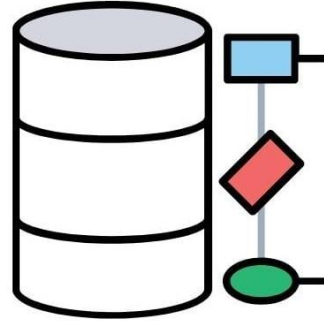
In computing terminology a database refers to a software used to store and organize data.

Think of it as a file cabinet where you store data in different sections called tables.

When you need a particular file you look into that particular section (table) and get the file (data) you need. WordPress uses MySQL as its database management system.

## What is DBMS?

A DBMS (Database Management System) is software that allows users to interact with a database.



## COMPONENTS OF DBMS

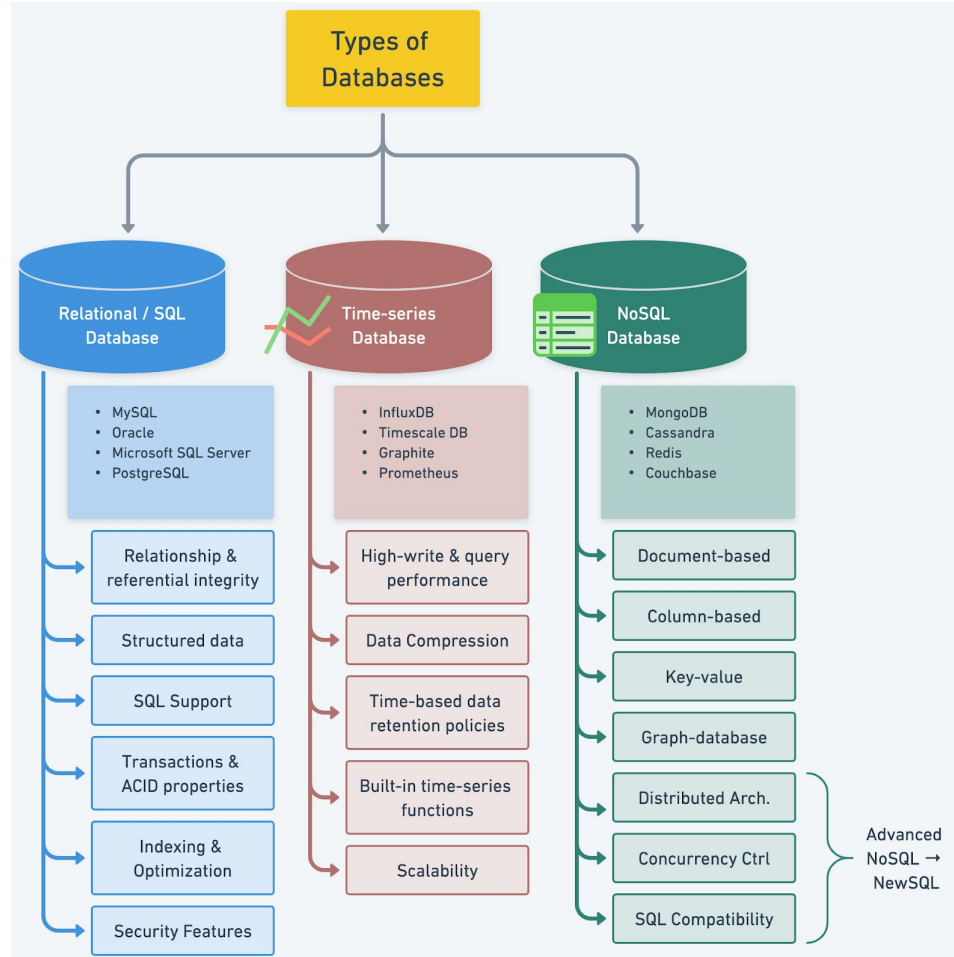
### DATA STORAGE

This component stores the data in a structured format,

### DATA SCHEMA

A schema defines the structure of the database,

# Types Of Databases



## What is RDBMS (Relational Database Management System)?



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RDBMS stands for "Relational Database Management System." An RDBMS is a DBMS designed specifically for relational databases. Therefore, RDBMSes are a subset of DBMSes.

A relational database refers to a database that stores data in a structured format, using rows and columns. This makes it easy to locate and access specific values within the database. It is "relational" because the values within each table are related to each other. Tables may also be related to other tables. The relational structure makes it possible to run queries across multiple tables at once.

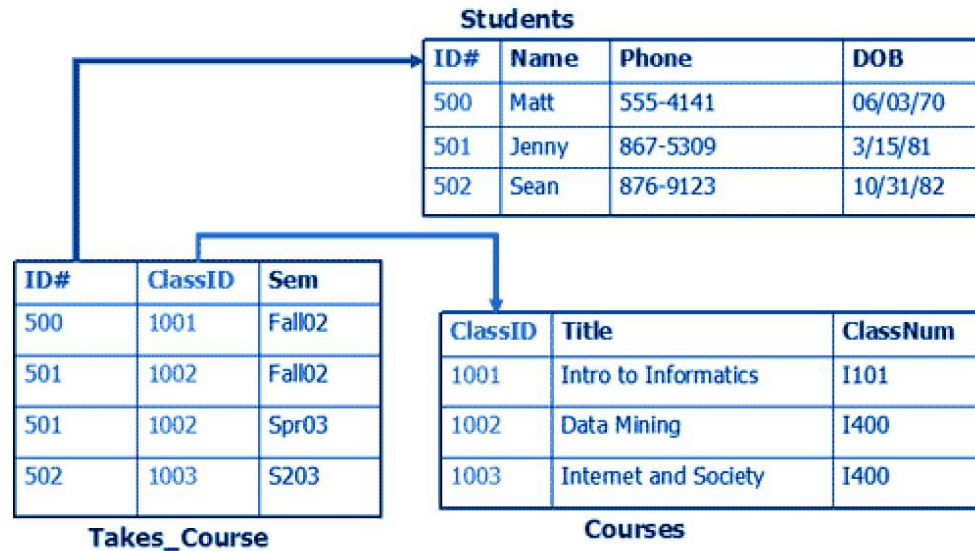
While a relational database describes the type of database an RDBMS manages, the RDBMS refers to the database program itself. It is the software that executes queries on the data, including adding, updating, and searching for values. An RDBMS may also provide a visual representation of the data. For example, it may display data in a table like a spreadsheet, allowing you to view and even edit individual values in the table. Some RDBMS programs allow you to create forms that can streamline entering, editing, and deleting data.

# What is RDBMS (Relational Database Management System)?



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## Relational Database Management System





## What is a Database Transaction?

- A transaction is an action or series of actions that are being performed by a single user or application program, which reads or updates the contents of the database.
- A **DATABASE TRANSACTION** is a logical unit of processing in a DBMS which accesses and possibly modifies the contents of a database. In a nutshell, database transactions represent real-world events of any enterprise.

- Example :

### **X's Account :**

Open\_Account(X)

Old\_Balance = X.balance

New\_Balance = Old\_Balance - 800

X.balance = New\_Balance

Close\_Account(X)

### **Y's Account :**

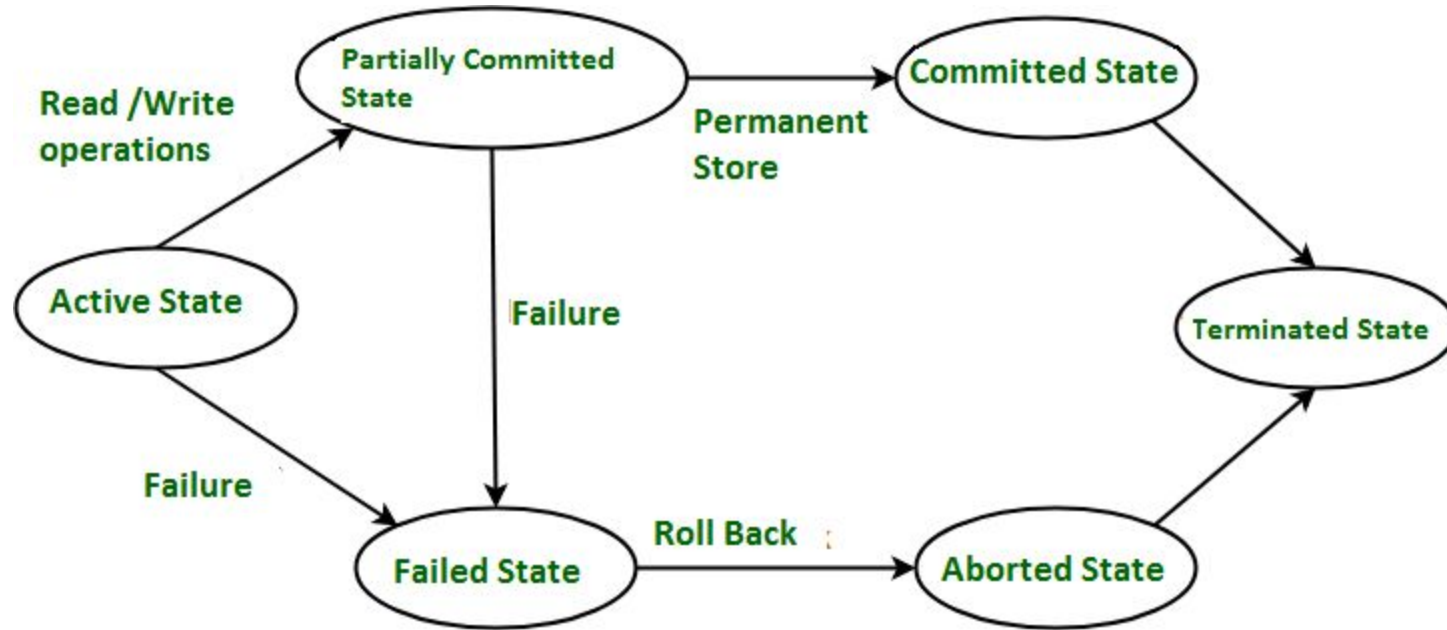
Open\_Account(Y)

Old\_Balance = Y.balance

New\_Balance = Old\_Balance + 800

Y.balance = New\_Balance

Close\_Account(Y)



Transaction States in DBMS



**A**tomicity

Each transaction is either properly carried out or the database reverts back to the state before the transaction started.

**C**onsistency

The database must be in a consistent state before and after the transaction.

**I**solation

Multiple transactions occur independently without interference.

**D**urability

Successful transactions are persisted even in the case of system failure.