Databases

Some definitions:

DBMS:

“system software for creating and managing databases. A DBMS makes it possible for end users to create, protect, read, update and delete data in a database.”

ACID:

ACID is an acronym that stands for atomicity, consistency, isolation, and durability.

Together, these ACID properties ensure that a set of database operations (grouped together in a transaction) leave the database in a valid state even in the event of unexpected errors.

Relational/ SQL:

- Oracle / Microsoft SQL server

+ a lot of features/ working well with other paid-products

- the cost (not suitable due to sanctions as same as Microsoft SQL server)

- MySQL

+ it’s freeware

+ fast and simple

+ ideal for frequent read operations

- there’s not some features in freeware version

- PostgreSQL

+ open-source

+ fully ACID compatibility

+ ideal for lots of write operations

+ ideal for enterprise

- challenging

- requiring memory-intensive resources (due to allocation lots of memory for a single connection)

Another difference is that PostgreSQL is completely object relational(entries are objects with properties), while MySQL is pure relational(passing primary keys to refer other models as a simple field).

Summary of differences: PostgreSQL vs MySQL

Category	MySQL	PostgreSQL
Database technology	MySQL is a purely relational database management system.	PostgreSQL is an object-relational database management system.
Features	MySQL has limited support of database features like views, triggers, and procedures.	PostgreSQL supports most advanced database features like materialized views, *INSTEAD OF* triggers, and stored procedures in multiple languages.
Data types	MySQL supports numeric, character, date and time, spatial, and JSON data types.	PostgreSQL supports all MySQL data types along with geometric, enumerated, network address, arrays, ranges, XML, hstore, and composite.
ACID Compliance	MySQL is ACID compliant only with InnoDB and NDB Cluster storage engines.	PostgreSQL is always ACID compliant.
Indexes	MySQL has B-tree and R-tree index support.	PostgreSQL supports multiple index types like expression indexes, partial indexes, and hash indexes along with trees.
Performance	MySQL has improved performance for high-frequency read operations.	PostgreSQL has improved performance for high-frequency write operations.
Beginner support	MySQL is easier to get started with. It has a wider tool set for non-technical users.	PostgreSQL is more complex to get started with. It has a limited tool set for non-technical users.

- MariaDB

+ community-driven

+ fast

Non-relational/ No-SQL:

- MongoDB

+ fast

- SQL is not used as a query lang

- Redis

+ fast due to being in-memory database

+ advance cache functionalities

- key-value pair based(it's not general purpose)

- require a lot of memory