

RDBMS

What is RDBMS?

RDBMS stands for Relational Database Management System.

RDBMS is a program used to maintain a relational database.

RDBMS is the basis for all modern database systems such as MySQL, Microsoft SQL Server, Oracle, and Microsoft Access.

RDBMS uses SQL queries to access the data in the database.

Advantages of RDBMS

- Sharing of data across applications and users
- Backup and recovery features
- Ease of use
- **Entity Integrity:** No two records of a table can be duplicate
- **Referential Integrity:** For example – Permit the rows to be deleted only if the rows are not referenced by other tables.
- **Access Integrity:** Restrict access to functionality (e.g., create new table) and access to data, based on user role and information confidentiality

- **Domain integrity:** The columns of a tables have defined data types. Additionally, default values, permitted value ranges can be defined for columns.
- RDBMS ensures “ACID” (Atomicity, Consistency, Isolation, and Durability) for transaction Processing.

In the context of transaction processing, the acronym *ACID* refers to the four key properties of a transaction: atomicity, consistency, isolation, and durability.

Atomicity

All changes to data are performed as if they are a single operation. That is, all the changes are performed, or none of them are.

For example, in an application that transfers funds from one account to another, the atomicity property ensures that, if a debit is made successfully from one account, the corresponding credit is made to the other account.

Consistency

Data is in a consistent state when a transaction starts and when it ends.

For example, in an application that transfers funds from one account to another, the consistency property ensures that the total value of funds in both the accounts is the same at the start and end of each transaction.

Isolation

The intermediate state of a transaction is invisible to other transactions. As a result, transactions that run concurrently appear to be serialized.

For example, in an application that transfers funds from one account to another, the isolation property ensures that

another transaction sees the transferred funds in one account or the other, but not in both, nor in neither.

Durability

After a transaction successfully completes, changes to data persist and are not undone, even in the event of a system failure.

For example, in an application that transfers funds from one account to another, the durability property ensures that the changes made to each account will not be reversed.