

Codd's Rules in DBMS

Rule 1: The Information Rule

All information, whether it is user information or metadata, that is stored in a database must be entered as a value in a cell of a table. It is said that everything within the database is organized in a table layout.

Rule 2: The Guaranteed Access Rule

Each data element is guaranteed to be accessible logically with a combination of the table name, primary key (row value), and attribute name (column value).

Rule 3: Systematic Treatment of NULL Values

Every Null value in a database must be given a systematic and uniform treatment.

Rule 4: Active Online Catalog Rule

The database catalog, which contains metadata about the database, must be stored and accessed using the same relational database management system.

Rule 5: The Comprehensive Data Sublanguage Rule

A crucial component of any efficient database system is its ability to offer an easily understandable data manipulation language (DML) that facilitates defining, querying, and modifying information within the database.

Rule 6: The View Updating Rule

All views that are theoretically updatable must also be updatable by the system.

Rule 7: High-level Insert, Update, and Delete

A successful database system must possess the feature of facilitating high-level insertions, updates, and deletions that can grant users the ability to conduct these operations with ease through a single query.

Rule 8: Physical Data Independence

Application programs and activities should remain unaffected when changes are made to the physical storage structures or methods.

Rule 9: Logical Data Independence

Application programs and activities should remain unaffected when changes are made to the logical structure of the data, such as adding or modifying tables.

Rule 10: Integrity Independence

Integrity constraints should be specified separately from application programs and stored in the catalog. They should be automatically enforced by the database system.

Rule 11: Distribution Independence

The distribution of data across multiple locations should be invisible to users, and the database system should handle the distribution transparently.

Rule 12: Non-Subversion Rule

If the interface of the system is providing access to low-level records, then the interface must not be able to damage the system and bypass security and integrity constraints.