Dr Edgar F. Codd, after his extensive research on the Relational Model of database systems, came up with twelve rules of his own, which according to him, a database must obey in order to be regarded as a true relational database.

**Rule 1:** Information Rule

The data stored in a database, may it be user data or metadata, must be a value of some table cell. **Everything** in a database must be stored **in a table format**.

**Rule 2:** Guaranteed Access Rule

Every single data element (value) is guaranteed to be accessible logically with a combination of table-name, primary-key (row value), and attribute-name (column value). **No other means**, such as pointers, can be used to access data.

**Rule 3:** Systematic Treatment of NULL Values

The NULL values in a database must be given a systematic and uniform treatment. This is a very important rule because a NULL can be interpreted as one of the following − data is **missing**, data is **not known**, or data is **not applicable**.

**Rule 4:** Active Online Catalog

The structure description of the entire database must be stored in an online catalog, known as **data dictionary**, which can be accessed by authorized users. Users can use the **same query language** **to access** the catalog which they use to access the database itself.

**Rule 5:** Comprehensive Data Sub-Language Rule

There must be at least one language whose statements are expressible, per some well-defined syntax, as character strings and that is comprehensive in supporting all of the following items:

* Data definition. (create table, alter table, drop table)
* View definition. (create view)
* Data manipulation (insert, delete, update).
* Integrity constraints. (primary key, foreign key, check)
* Authorization. (grant, revoke)
* Transaction boundaries (commit, rollback, savepoint).

**Rule 6:** View Updating Rule

All the views of a database, which can theoretically be updated, must also be updatable by the system.

**Rule 7:** High-Level Insert, Update, and Delete Rule

A database must support high-level insertion, update, and deletion. This must not be limited to a single row, that is, it must also support union, intersection, and minus operations to yield sets of data records.

**Rule 8:** Physical Data Independence

The data stored in a database must be independent of the applications that access the database. **Any change in the physical structure** of a database must not have any impact on how the data is being accessed by external applications.

**Rule 9:** Logical Data Independence

The logical data in a database must be independent of its user’s view (application). **Any change in logical data** must not affect the applications using it. For example, if two tables are **merged** or one is **split into two** different tables, there should be no impact or change on the user application.

**Rule 10:** Integrity Independence

Integrity constraints specific to a particular relational data base must be definable in the relational data sublanguage and storable in the catalog, not in the application programs.

**Rule 11:** Distribution Independence

The end-user must not be able to see that the data is distributed over various locations. Users should always get the impression that the data is located at one site only. This rule has been regarded as the foundation of distributed database systems.

**Rule 12:** Non-Subversion Rule

If a system has an interface that provides access to low-level records, then the interface must not be able to subvert the system and bypass security and integrity constraints.