Relational database structure

Last Updated: 2021-03-02

The database and the database structure are defined in the installation process. The structure of the database depends on whether the database is Oracle Database, IBM® DB2®, or Microsoft SQL Server.

A database that can be perceived as a set of tables and manipulated in accordance with the relational model of data. Each database includes:
– a set of system catalog tables that describe the logical and physical structure of the data
– a configuration file containing the parameter values allocated for the database
– a recovery log with ongoing transactions and archivable transactions

Table 1. Database hierarchy

Component	Description
Data dictionary	A repository of information about the application programs, databases, logical data models, and authorizations for an organization. When you change the data dictionary, the change process includes edit checks that can prevent the data dictionary from being corrupted. The only way to recover a data dictionary is to restore it from a backup.
Container	A data storage location, for example, a file, directory, or device that is used to define a database.
Storage partition	A logical unit of storage in a database such as a collection of containers. Database storage partitions are called *table spaces* in DB2 and Oracle, and called *file groups* in SQL Server.
Business object	A tangible entity within an application that users create, access, and manipulates while performing a use case. Business objects within a system are typically stateful, persistent, and long-lived. Business objects contain business data and model the business behavior.
Database object	An object that exists in an installation of a database system, such as an instance, a database, a database partition group, a buffer pool, a table, or an index. A database object holds data and has no behavior.
Table	A database object that holds a collection of data for a specific topic. Tables consist of rows and columns.
Column	The vertical component of a database table. A column has a name and a particular data type for example, character, decimal, or integer.

Component	Description
Row	The horizontal component of a table, consisting of a sequence of values, one for each column of the table.
View	A logical table that is based on data stored in an underlying set of tables. The data returned by a view is determined by a SELECT statement that is run on the underlying tables.
Index	A set of pointers that is logically ordered by the values of a key. Indexes provide quick access to data and can enforce uniqueness of the key values for the rows in the table.
Relationship	A link between one or more objects that is created by specifying a join statement.
Join	An SQL relational operation in which data can be retrieved from two tables, typically based on a join condition specifying join columns.

- **Data dictionary tables**
  The structure of a relational database is stored in the data dictionary tables of the database.
- **Integrity checker**
  The integrity checker is a database configuration utility that you can use to assesses the health of the base layer data dictionary. The tool compares the data dictionary with the underlying physical database schema. If errors are detected, the tool produces error messages detailing how to resolve the issues.
- **Storage partitions**
  A database storage partition is the location where a database object is stored on a disk. Database storag partitions are called *table spaces* in DB2 and Oracle, and called *file groups* in SQL Server.
- **Business objects**
  A business object is an object that has a set of attributes and values, operations, and relationships to other business objects. Business objects contain business data and model the business behaviour.
- **User-defined objects**
  Objects can be created in two ways: you can create an object in the database or an object can be nativel defined in the database. User-defined objects are always created in the Database Configuration application.
- **Configuration levels for objects**
  Levels describe the scope of objects and must be applied to objects. Depending on the level that you assign to objects, you must create certain attributes. For users to access an object, an attribute value must exist at the level to which they have authority. The level that you assign to an object sometimes depends on the level of the record in the database.
- **Database relationships**
  Database relationships are associations between tables that are created using join statements to retriev data.
- **Business object attributes**
  Attributes of business objects contain the data that is associated with a business object. A persistent

attribute represents a database table column or a database view column. A nonpersistent attribute exist in memory only, because the data that is associated with the attribute is not stored in the database.

- **Attribute data types**
  Each database record contains multiple attributes. Every attribute has an associated data type.
- **Database views**
  A *database view* is a subset of a database and is based on a query that runs on one or more database tables. Database views are saved in the database as named queries and can be used to save frequently used, complex queries.
- **Indexes**
  You can use indexes to optimize performance for fetching data. Indexes provide pointers to locations of frequently accessed data. You can create an index on the columns in an object that you frequently query
- **Primary keys**
  When you assign a primary key to an attribute, the key uniquely identifies the object that is associated with that attribute. The value in the primary column determines which attributes are used to create the primary key.

Parent topic:

→ Database design
