Introtallent

Training | Analytics | Consulting

Helping People Decode Analytics for Business

SQL

Fundamentals

Key Concepts

Database: A database is a collection of data.

Relational Database: A relational database is a database divided into logical units called tables, where tables are related to one another within the database. A relational database allows data to be broken down into logical, smaller, manageable units, allowing for easier maintenance and providing more optimal database performance according to the level of organization.

Database Object : A database object is any defined object in a database that is used to store or reference data. Some examples of database objects include tables, views, clusters, sequences, indexes, and synonyms.

Schema: A *schema* is a collection of database objects associated with one particular database username.

NULL Value: A NULL value is a missing value or a column in a row of data that has not been assigned a value. NULL values are used in nearly all parts of SQL, including the creation of tables, search conditions for queries, and even in literal strings. A NULL value is represented by NULL itself

SQL Constraints

Constraints are used to specify rules for the data in a table.

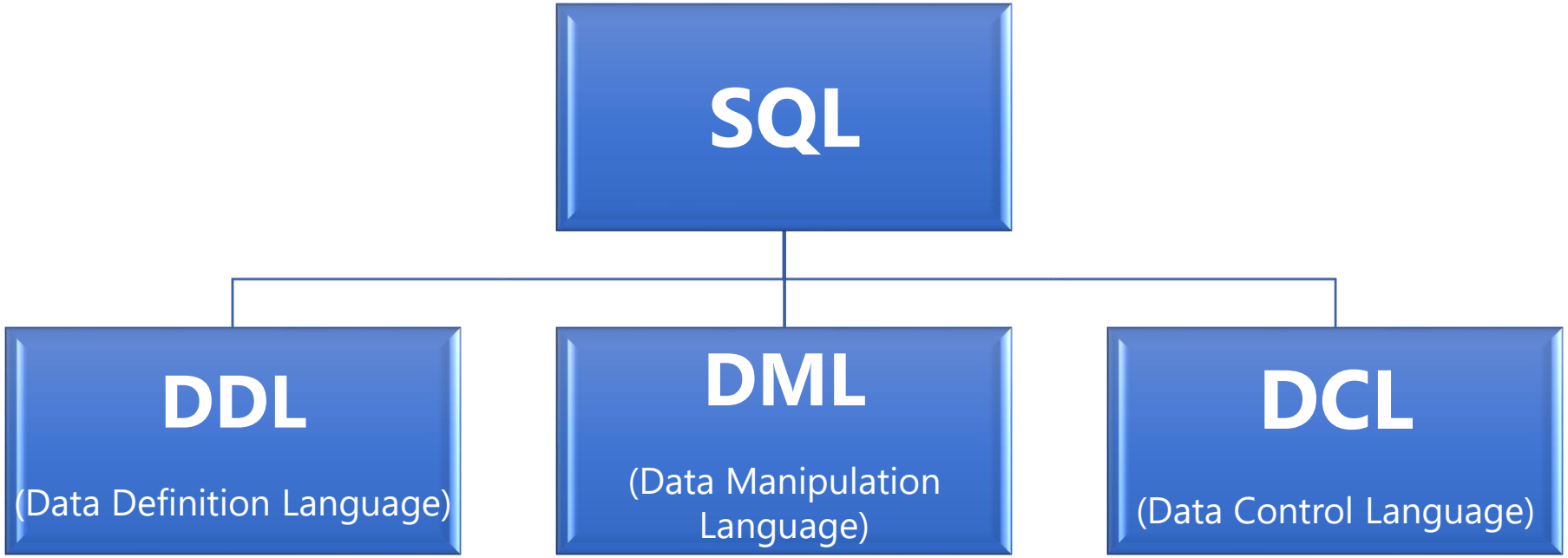
It ensures to limit the type of data that can go into a table. If there is any violation between the constraint and the data action, the action is aborted.

Constraints can be column level or table level. Column level constraints apply to a column, and table level constraints apply to the whole table.

The commonly used constraints are :
NOT NULL - Ensures that a column cannot have a NULL value
UNIQUE - Ensures that all values in a column are different
PRIMARY KEY - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table
FOREIGN KEY - Uniquely identifies a row/record in another table
CHECK - Ensures that all values in a column satisfies a specific condition
DEFAULT - Sets a default value for a column when no value is specified
INDEX - Used to create and retrieve data from the database very quickly

SQL (Structured Query Language)

Structured Query Language (SQL) is the standard language used to communicate with a relational database. It is used for storing, manipulating and retrieving data in databases.



DDL (Data Definition Language)

Data Definition Language (DDL) is the part of SQL that allows a database user to create and restructure database objects, such as the creation or the deletion of a table.

Some of the most fundamental DDL commands are:

- CREATE TABLE
- ALTER TABLE
- DROP TABLE
- CREATE INDEX
- ALTER INDEX
- DROP INDEX
- CREATE VIEW
- DROP VIEW

DML (Data Manipulation Language)

Data Manipulation Language (DML) is the part of SQL used to manipulate data within objects of a relational database.

DML commands are:

- INSERT
- UPDATE
- DELETE

Data Query Language (DQL)

- SELECT

Select is the only command in DQL and is used for data extraction.

DCL (Data Control Language)

Data control commands in SQL allow you to control access to data within the database. These *Data Control Language (DCL)* commands are normally used to create objects related to user access and also control the distribution of privileges among users.

DCL commands are:

- ALTER PASSWORD
- GRANT
- REVOKE

Data Types: Text

The data type of a column defines what value the column can hold: integer, character, currency, date and time, binary etc.

Frequently used Test data type

Data type	Description
CHAR(size)	Holds a fixed length string (can contain letters, numbers, and special characters). The fixed size is specified in parenthesis. Can store up to 255 characters
VARCHAR(size)	Holds a variable length string (can contain letters, numbers, and special characters). The maximum size is specified in parenthesis. Can store up to 255 characters. **Note:** If you put a greater value than 255 it will be converted to a TEXT type
TEXT	Holds a string with a maximum length of 65,535 characters
BLOB	For BLOBs (Binary Large OBjects). Holds up to 65,535 bytes of data

Data Types: Number

Frequently used number data type

Data type	Description
INT(size)	-2147483648 to 2147483647 normal. 0 to 4294967295 UNSIGNED*. The maximum number of digits may be specified in parenthesis
BIGINT(size)	-9223372036854775808 to 9223372036854775807 normal. 0 to 18446744073709551615 UNSIGNED*. The maximum number of digits may be specified in parenthesis
FLOAT(size,d)	A small number with a floating decimal point. The maximum number of digits may be specified in the size parameter. The maximum number of digits to the right of the decimal point is specified in the d parameter
DOUBLE(size,d)	A large number with a floating decimal point. The maximum number of digits may be specified in the size parameter. The maximum number of digits to the right of the decimal point is specified in the d parameter
DECIMAL(size,d)	A DOUBLE stored as a string , allowing for a fixed decimal point. The maximum number of digits may be specified in the size parameter. The maximum number of digits to the right of the decimal point is specified in the d parameter

Data Types: Date & Time

Frequently used date data type

Data type	Description
DATE()	A date. Format: YYYY-MM-DD **Note:** The supported range is from '1000-01-01' to '9999-12-31'
DATETIME()	*A date and time combination. Format: YYYY-MM-DD HH:MI:SS **Note:** The supported range is from '1000-01-01 00:00:00' to '9999-12-31 23:59:59'
TIMESTAMP()	*A timestamp. TIMESTAMP values are stored as the number of seconds since the Unix epoch ('1970-01-01 00:00:00' UTC). Format: YYYY-MM-DD HH:MI:SS **Note:** The supported range is from '1970-01-01 00:00:01' UTC to '2038-01-09 03:14:07' UTC
TIME()	A time. Format: HH:MI:SS **Note:** The supported range is from '-838:59:59' to '838:59:59'

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We would love to hear back!

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