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# What is a Query?

A **query**is a structured request for information from a database. It allows users or applications to retrieve or manipulate data stored in the database. Queries allow users to interact with databases effectively. They retrieve data from different tables, arrange it, and display it based on specific commands.

Queries can be simple or complex, depending on the information you need and the structure of the database. They typically involve selecting certain fields or columns from one or more tables, filtering rows based on specific conditions, sorting the results, and sometimes performing calculations or aggregations on the data.

# What is the SELECT statement?

The **SELECT statement** in SQL is fundamental for retrieving data from a database. It allows you to specify which columns of a table to fetch and the criteria for selecting rows.

The basic syntax of a SELECT statement is:

Syntax: SELECT column1, column2, ...

FROM table\_name;

Here's what each part of the SELECT statement does:

**SELECT**: This keyword indicates that you are about to specify the columns you want to retrieve from the database.

**column1, column2, ...**: These are the names of the columns you want to retrieve data from. You can specify one or more columns separated by commas. If you want to retrieve all columns, you can use the asterisk (\*) wildcard symbol instead of listing individual column names.

**FROM**: This keyword indicates the table or tables from which you want to retrieve data.

**table\_name**: This is the name of the table from which you want to retrieve data. If you're retrieving data from multiple tables, you would list them here, separated by commas.

# What is the WHERE clause?

The **WHERE clause** in SQL is a powerful component used to filter records based on specific conditions. It allows you to extract only those records that meet a specified criterion.

The basic syntax of a WHERE clause is as follows:

Syntax: SELECT column1, column2, ...

FROM table\_name

WHERE condition;

Here's what each part of the WHERE clause does:

**SELECT**: This keyword indicates that you are about to specify the columns you want to retrieve from the database.

**column1, column2, ...**: These are the names of the columns you want to retrieve data from. You can specify one or more columns separated by commas. If you want to retrieve all columns, you can use the asterisk (\*) wildcard symbol instead of listing individual column names.

**FROM**: This keyword indicates the table or tables from which you want to retrieve data.

**table\_name**: This is the name of the table from which you want to retrieve data.

**WHERE**: This keyword introduces the WHERE clause, which is used to specify the conditions that must be met for rows to be included in the query results.

**condition**: This is the condition or set of conditions that determine which rows will be included in the query results. Conditions can include comparisons between column values (such as age > 30), logical operators (such as AND, OR, NOT), and other expressions.

# What is the Primary key?

[A primary key is a field or a set of fields with values that remain**unique throughout the entire table**](https://www.lifewire.com/primary-key-definition-1019179)**.** It serves as a unique identifier for a particular record within the table. The primary key constraint ensures that the values in the primary key column(s) are unique for every row and cannot contain null values.

Example:

In a table named "employees," the column "employee\_id" could be designated as the primary key. Each employee record would have a unique value in the "employee\_id" column, allowing you to uniquely identify and access any employee's information using their respective employee ID.

**CREATE TABLE employees (**

**employee\_id INT PRIMARY KEY,**

**name VARCHAR(50),**

**department VARCHAR(50)**

**);**

In this example, the "employee\_id" column is specified as the primary key for the "employees" table. This means that each employee must have a unique "employee\_id" value, and the "employee\_id" column cannot contain null values.

# What is a Database?

A **database** is an organized collection of **structured information** or **data**, typically stored in a computer system. It is designed to efficiently manage, retrieve, and manipulate large volumes of data according to specific requirements and objectives. Databases serve as centralized repositories for storing various types of information, such as customer data, product catalogs, financial records, and much more. Data in a database is organized into structured formats, such as tables, rows, and columns. This structure allows for easy retrieval, manipulation, and analysis of data.

Databases are widely used in various applications and industries, including business, finance, healthcare, education, and e-commerce, to store and manage critical data for decision-making, analysis, and operations. They serve as the backbone of modern information systems, enabling organizations to store, retrieve, and manipulate data effectively and securely.

Examples of databases include relational databases like MySQL, PostgreSQL, Oracle, and SQL Server, as well as non-relational databases (NoSQL databases) like MongoDB, Cassandra, and Redis.