

Hands-on course , 3
day(s)
Ref : SIF

Participants

People in charge of reporting or analysis, assistants, anyone who needs to carry out simple queries or updates on a database with SQL language

Pre-requisites

No particular knowledge. Education common to all relational databases (Oracle, SQL Server, DB2, PostgreSQL, MySQL, Access, SQL Lite, etc.)

Next sessions

SQL databases and language for nonIT people

This "discovery" course will enable you to understand so-called relational databases and how they operate. You'll work with the SQL language to query the data in a base. You'll also become familiar with more advanced queries to analyze information.

OBJECTIVES

Understand the principle and contents of a relational database
Create queries to extract data based on different criteria
Produce queries with joins in order to get information from multiple tables
Use simple calculations and data aggregation
Combine results from multiple queries
Instructional methods

[1\) Introduction to databases](#)

[2\) Extracting data from a table](#)

[3\) Querying data from multiple tables](#)

[4\) Ranking and statistics](#)

[5\) Presenting and sorting data](#)

[6\) Using subqueries](#)

Workshop

Many sequential exercises for extracting data from an example database.

1) Introduction to databases

- What are a database and a database server?
- Reading a relational model.
- Creating a table. Notions of columns and types
- Primary key and uniqueness
- Links between tables and referential integrity.
- Metadata of tables, columns, and keys.
- Tool for querying a database.

Exercise

Investigating the database by searching for tables, views, columns, and keys.

2) Extracting data from a table

- What is an extraction query?
- List the values to be returned.
- The WHERE clause for filtering data.
- The absence of a value (NULL marker).
- Returning unduplicated rows (DISTINCT).
- Restriction operators (BETWEEN, IN, LIKE, etc.).

Exercise

Querying multiple tables on different criteria.

3) Querying data from multiple tables

- Concept of joins: Returning information from multiple tables.
- Internal join. External join.
- The "natural" join... and its difficulties.
- Assembly operators (UNION, INTERSECT...).

Exercise

Creating queries with joins and assembly operators.

4) Ranking and statistics

- Finding aggregate values (MIN, MAX, AVG, SUM, etc.).
- Calculating relative aggregates with GROUP BY.
- Filtering aggregate values with HAVING.
- Mixing aggregates and details with OVER.
- Ranking results with RANK, ROW_NUMBER and NTILE.

Exercise

Creating queries using simple and aggregate calculations. Subtotals and numbering.

5) Presenting and sorting data

- Presenting data from columns with aliases
- Converting from one type to another.
- Making choices using the CASE operator.
- Sorting data with ORDER BY.

- Operations on character strings and dates.

Exercise

Using functions to improve the presentation of the query result.

6) Using subqueries

- What is a subquery?
- Different types of results.
- Subqueries of lists and IN, ANY/SOME and ALL operators.
- Correlated subqueries.
- Using CTE (Common Table Expressions) to factor subqueries.

Exercise

Writing queries that include subqueries of different forms. Creating views.