

# WRITING SQL QUERIES

**Duration: 3 Days (24 Hours)**

## Course Agenda

### 1. SQL Quick Refresher

- SQL fundamentals
- Why SQL can be both easy and difficult
- Recommendations for thorough testing

### 2. Retrieving data with SELECT

- Expressions
- Literals
- Handling NULLs properly

### 3. Executing queries

- Analyzing query plans
- Enhancing query performance
- Retrieving partly results with FETCH and OFFSET
- Selecting the best alternatives
- Avoiding errors and pitfalls
- Querying Multiple Tables

### 4. Implementing various types of joins

- Inner joins
- Cross joins
- Left, right and full outer joins
- Equijoins vs. theta joins
- The performance implications of joins
- Adding filter conditions to outer joins

### 5. Writing self joins

- Joining a table to itself
- Chaining self joins
- Solving time-interval problems

### 6. Combining queries with set operators

- UNION
- UNION ALL
- INTERSECT
- EXCEPT
- Aggregate Functions

## 7. Summarizing data with aggregate functions

- COUNT
- SUM
- AVG
- MIN
- MAX
- Managing NULLs
- identifying duplicates

## 8. Grouping data

- GROUP BY
- Applying conditions with HAVING
- Calculating moving averages
- Building crosstab reports

## 9. Extending group queries

- Nesting grouped aggregates
- Joins and grouping
- Introducing subtotals with CUBE and ROLLUP
- Performing Extensive Analysis with Analytic Functions

## 10. The OVER clause

- Specifying the ordering before applying the function
- Splitting the result set into logical partitions
- Calculating ranks
- RANK and DENSE\_RANK
- ROW\_NUMBER with ordered sets
- Calculating percentiles

## 11. Extending the use of aggregates

- Partitioning in multiple levels
- Computing running totals
- Comparing row and aggregate values
- Top-N queries
- Defining sliding window boundaries

## 12. Building Subqueries

### 13. Self-contained subqueries

- Subqueries in conditions and column expressions
- Creating multilevel subqueries
- Avoiding problems when subqueries return NULLs
- Handling multirow subquery results
- Finding gaps in number series

## 14. Correlated subqueries

- Accessing values from the outer query
- EXISTS vs. IN
- Identifying duplicates
- Avoiding accidental correlation

## 15. Common table expressions

- Reusable subqueries
- Recursive subqueries
- Traversing hierarchies
- Breaking Down Complex Queries
- Overcoming SQL limitations
- Reducing complexity and improving performance