

## Developing SQL Queries for Oracle® Databases: Hands-On - 4 Days

### An Advanced Workshop

*Course 234 Overview*

- You Will Learn How To**
- Formulate complex queries with Oracle SQL
  - Apply the full range of complex query types
  - Use the analytic OLAP functions of Oracle
  - Test SQL queries completely
  - Select the most efficient solution to complex SQL problems
  - Choose between Oracle and ANSI style joins

**Course Benefits** SQL forms the cornerstone of all relational database operations. Taking full advantage of its power requires an in-depth understanding of the language. In this course, you learn to use the full potential of SQL to write complex queries for Oracle databases. You gain the practical skills to choose the best query method for each application to ensure accuracy and avoid common errors or pitfalls.

**Who Should Attend** Consultants, engineers, developers, analysts and others who are developing systems using Oracle databases. Course 926, "Oracle Database 11g Comprehensive Introduction", Course 593, "Oracle Database 10g Comprehensive Introduction", or equivalent SQL knowledge is assumed.

**Hands-On Training** Exercises provide you with practical experience formulating complex queries, including:

- Developing and testing queries with SQL Developer or SQL\*Plus
- Handling NULL values in expressions and conditions
- Simplifying complex expressions with virtual columns in Oracle 11g
- Joining multiple tables with ANSI standard or native Oracle syntax
- Applying CASE and DECODE to simulate IF...THEN...ELSE
- Producing statistics and aggregate results
- Embedding subqueries in expressions

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### Course 234 Outline

#### Introduction and Overview

##### The uses of SQL queries

- SQL's central role
- Why SQL can be both easy and difficult
- Recommendations for thorough testing

#### Enhancing query performance

- Query optimisation
- Choosing the best query method

#### Using Advanced SQL Functions to Build Queries

##### Aggregate functions

- Grouping in several levels
- Grouping and NULLs
- CUBE and ROLLUP
- Building crosstab reports
- Utilising the PIVOT operator in Oracle 11g
- Calculating percentiles
- Performance and grouping

##### Single-row functions

- String manipulation functions
- Functions for date and time manipulation
- Simulating IF...THEN...ELSE with functions
- Handling regular expressions with Oracle 10g functions

#### Performing Extensive Analysis with Analytical Functions

##### Calculating ranks

- RANK and DENSE\_RANK
- ROW\_NUMBER depending on ORDER BY

##### Extending the use of aggregates

- Partitioning in multiple levels
- Computing running totals
- Comparing row and aggregate values

##### Defining sliding window boundaries

- By row number
- By value
- By time interval

#### Developing Complex Joins

##### Using inner and outer joins

- Building multiple table joins
- When to use theta joins
- Grouping and joins
- Joins and performance

##### How and when to use self-joins

- Joining a table to itself

- Implementing recursive self-joins with CONNECT BY
- CONNECT BY and join simultaneously
- Oracle 10g enhancements to CONNECT BY

#### Applying the ANSI standard join syntax

- INNER JOIN
- CROSS JOIN
- LEFT, RIGHT and FULL OUTER JOIN
- Overcoming OUTER JOIN limitations
- Subtle differences between new ANSI and old Oracle style

#### Using the set operators

- UNION and UNION ALL
- INTERSECT
- MINUS

#### Building Subqueries

##### Noncorrelated subqueries

- Subqueries in several levels
- Subqueries that return NULL
- Multiple-row subqueries
- Multiple-column subqueries

##### Using correlated subqueries

- Fetching main query values
- The EXISTS operator
- Avoiding accidental correlation

##### Subqueries in the FROM clause

- Breaking up a complex problem into manageable pieces
- Factoring subqueries for reusability
- An alternative to views

##### Subqueries as expressions

- Subqueries in the column list
- Subqueries as parameters to functions
- Correlated and noncorrelated subqueries in expressions

#### Using Views and Temporary Tables

##### Overcoming obstacles with views

- Multiple group levels in one query
- How views impact performance

##### Temporary tables as alternatives to views

- Avoiding interference from other users
- Tailoring temporary tables