PURPLE GRIFFON
The IT Service Management Training & Consultancy Specialists

Course Title: Writing Advanced SQL Queries	**Course Duration**: 3.0 Days
Exam: Included	**Exam Type**: Proctored Exam
Qualification: Writing Advanced SQL Queries Certificate	

Course Syllabus

Our Writing Advanced SQL Queries training course covers the following Modules:

Module 1: Introduction and Overview

SQL fundamentals

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

Retrieving data with SELECT

- Expressions
- Literals
- Handling NULLs properly

Executing queries

- Analysing query plans
- Enhancing query performance
- Retrieving partly results with FETCH and OFFSET
- Selecting the best alternatives
- Avoiding errors and pitfalls

Module 2: Querying Multiple Tables

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

Writing self joins

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

Combining queries with set operators

- UNION
- UNION ALL
- INTERSECT
- EXCEPT

Module 3: Aggregate Functions

Summarising data with aggregate functions

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

Grouping data

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

Extending group queries

- Nesting grouped aggregates
- Joins and grouping
- Introducing subtotals with CUBE and ROLLUP

Module 4: Performing Extensive Analysis with Analytic Functions

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

Extending the use of aggregates

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

Module 5: Building Subqueries

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

Correlated subqueries

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

Common table expressions

- Reusable subqueries
- Recursive subqueries
- Traversing hierarchies

Module 6: Breaking Down Complex Queries

- Overcoming SQL limitations
- Reducing complexity and improving performance

Course Overview

Our three-day Writing Advanced SQL Queries training course will teach you how to exploit the full potential of the SELECT statement to write robust queries using the best query method for your application, test your queries, and avoid common errors and pitfalls. It also teaches alternative solutions to given problems, enabling you to choose the most efficient solution in each situation.

Course Learning Outcomes

Our Writing Advanced SQL Queries training course will teach you to become proficient in the following:

- Maximise the potential of SQL to build powerful, complex and robust SQL queries
- Query multiple tables with inner joins, outer joins, and self joins
- Construct recursive common table expressions
- Summarise data using aggregation and grouping
- Execute analytic functions to calculate ranks
- Build simple and correlated subqueries
- Thoroughly test SQL queries to avoid common errors
- Select the most efficient solution to complex SQL problems

Audience

Our Writing Advanced SQL Queries training course will benefit several individuals and organisations including but not limited to:

- Database Administrators
- Data Analysts
- Business Intelligence

- Software Developers
- Data Scientists
- System Analysts
- IT Professionals and Data Engineers
- Researchers and Academics
- Anyone who works with databases, manages data, or needs to retrieve and analyse data can benefit from learning advanced SQL query writing

Entry-Level Requirements

Our Writing Advanced SQL Queries training course requires attendees to have experience at the level of our Introduction To SQL training course.

Recommended Reading

There is no recommended reading for our Writing Advanced SQL Queries training course.

What's Included

Our Writing Advanced SQL Queries training course contains the following:

- 3-day instructor-led training course
- One-on-one after-course instructor coaching
- End-of-course exam included
- After-course computing sandbox included
- Pre-reading
- Course Manual
- Quizzes
- Exercises

Exam Information

Writing Advanced SQL Queries Exam:

- Format: Multiple Choice
- Questions: 40
- Pass Mark: 70%

What's Next

Attendees may enjoy our Querying SQL Databases Using T-SQL training course.

T-SQL is Microsoft's implementation of SQL (Structured Query Language) used to query and manage data in the SQL Server relational database.

Our two-day Querying SQL Databases Using T-SQL training course will provide you with the basic knowledge and skills to create queries using Transact-SQL.

It will teach you how to select, filter and sort data from multiple tables and how to use views and stored procedures.

Additional Information

Our Writing Advanced SQL Queries training course offers several benefits to individuals and Organisations including but not limited to:

- **Increased Career Opportunities**: Proficiency in advanced SQL query writing is highly sought after in various industries.
- **Enhanced Data Retrieval**: Advanced SQL queries enable you to retrieve specific subsets of data from large databases efficiently.
- **Improved Data Analysis**: Advanced SQL queries empower you to perform complex calculations, aggregations, and transformations on data.
- **Optimal Query Performance**: Writing advanced SQL queries involves understanding query optimisation techniques, indexing strategies, and query execution plans.
- **Streamlined Reporting and Business Intelligence**: Advanced SQL query skills enable you to generate customised reports, build complex data models, and create interactive dashboards for business intelligence purposes.
- **Efficient Data Manipulation**: Advanced SQL queries allow you to perform sophisticated data manipulation tasks, such as data cleansing, data merging, and data transformation.
- **Better Database Administration**: For database administrators, advanced SQL query skills provide a deeper understanding of how queries interact with the database system.
- **Code Reusability and Maintainability**: Advanced SQL queries promote modular and reusable code structures.