# BlackBird FOR TRAINING

## Comprehensive Structured Query Language (SQL)

*London (UK)*

*13 - 24 October 2025*

## UK Traininig
# PARTNER

# Comprehensive Structured Query Language (SQL)

Code: IT28  From: 13 - 24 October 2025  City: London (UK)  Fees: 8600  Pound

## Introduction

In today's data-centric landscape, SQL Structured Query Language is indispensable for managing and analyzing data. This comprehensive course covers the basics of SQL, advancing to intermediate topics, enabling participants to efficiently create, manipulate, and query databases. Through practical exercises and real-world scenarios, attendees will develop robust SQL skills for data analytics, database administration, and software development.

## Objectives

- Grasp the fundamental concepts of databases and SQL.

- Create, manage, and query relational databases.

- Utilize SQL functions and operators for advanced data analysis.

- Optimize database performance and ensure data integrity.

- Implement intermediate SQL techniques, including advanced querying, transactions, and database security.

- Apply SQL skills to real-world problems and case studies.

## Course Outline

Day 1

Introduction to Databases and SQL

- Overview of databases and their importance

- Introduction to relational databases

- Understanding SQL and its role in database management

- Setting up a database environment installation and configuration

- Basic SQL syntax and structure

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- Creating and managing tables

- Hands-on exercises

## Day 2

### SQL Data Retrieval and Manipulation

- Writing basic SQL queries

- Using SELECT, FROM, WHERE, and ORDER BY clauses

- Filtering data with WHERE conditions

- Sorting and limiting result sets

- Inserting, updating, and deleting data

- Practical examples and exercises

## Day 3

### Advanced SQL Query Techniques

- Using joins to combine data from multiple tables

- Inner joins, outer joins, and self-joins

- Grouping and aggregating data with GROUP BY and HAVING clauses

- Subqueries and nested queries

- Using common SQL functions e.g., COUNT, SUM, AVG, MIN, MAX

- Case studies and hands-on practice

## Day 4

### Database Design and Optimization

- Principles of database design

- Normalization and denormalization

- Creating and using indexes

- Understanding and optimizing query performance

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- Using views and stored procedures

- Practical exercises on database optimization

## Day 5

### SQL in Practice and Security

- Implementing transactions and ensuring data integrity

- Handling database security and permissions

- Backup and recovery strategies

- Introduction to advanced topics e.g., SQL triggers, user-defined functions

- Real-world scenarios and problem-solving

- Final project: Designing and querying a sample database

## Day 6

### Advanced Data Retrieval and Functions

- Advanced SELECT statements

- Window functions e.g., RANK, DENSE_RANK, ROW_NUMBER

- Advanced string functions and date/time manipulation

- Using CASE statements for conditional logic

- Hands-on exercises with complex queries

## Day 7

### Complex Joins and Subqueries

- Advanced join techniques e.g., cross joins, self-joins

- Advanced subquery techniques

- Correlated subqueries

- Common Table Expressions CTEs

- Recursive queries

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- Practical examples and case studies

## Day 8

### Performance Tuning and Optimization

- Analyzing query performance

- Index strategies and optimization

- Query execution plans

- Tips for writing efficient SQL queries

- Database maintenance tasks

- Hands-on optimization exercises

## Day 9

### Transactions and Concurrency Control

- Understanding transactions and ACID properties

- Implementing transaction control COMMIT, ROLLBACK, SAVEPOINT

- Managing concurrency with locks and isolation levels

- Deadlocks and how to handle them

- Practical exercises on transaction management

## Day 10

### Advanced Database Management and Security

- Advanced security practices e.g., roles, privileges

- Data encryption and secure access

- Automating tasks with triggers and scheduled jobs

- Advanced stored procedures and user-defined functions

- Final project: Developing and managing a secure, optimized database

- Review and Q&A

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