

# Oracle Database: SQL Fundamentals

**Length:** 2 days without exam / 3 days with exam

This course introduces participants to the fundamentals of SQL using Oracle Database 11g database technology. In this course participants learn the concepts of relational databases and the powerful SQL programming language. This course provides the essential SQL skills that allow developers to write queries against single and multiple tables, manipulate data in tables, and create database objects.

The participants also learn to use single row functions to customize output, use conversion functions and conditional expressions. In addition, the usage of group functions to report aggregated data is also dealt with. Demonstrations and hands-on practice reinforce the fundamental concepts.

In this course, participants use Oracle SQL Developer as the main tool and SQL\*Plus is available as an optional tool.

This is appropriate for a 10g and 11g audience. There are minor changes between 10g and 11g features in SQL.

## Learn to:

- Create reports of sorted and restricted data.
- Retrieve row and column data from tables with the SELECT statement.
- Display data from multiple tables.
- Use DML statements to manage data.
- Use DDL statements to manage database objects.
- Prerequisites:
- Required Prerequisites:
- Familiarity with data processing concepts and techniques

## Course Objectives:

- Retrieve data from tables.
- Create reports of sorted and restricted data.
- Employ SQL functions to generate customized data.
- Display data from multiple tables using the ANSI SQL 99 JOIN syntax.
- Create reports of aggregated data.
- Use the SET operators to create subsets of data.
- Run data manipulation statements (DML) to update data in the Oracle Database 11g.
- Identify the major structural components of the Oracle Database 11g.
- Run data definition language (DDL) statements to create schema objects.

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## Course Content

1. Introduction

2. Overview of Oracle Database 11g and related products
  3. Overview of relational database management concepts and terminologies
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4. Introduction to SQL and its development environments
  5. The HR schema and the tables used in this course
  6. Oracle Database documentation and additional resources
  7. Retrieve Data Using the SQL SELECT Statement
  8. List the capabilities of SQL SELECT statements.
  9. Generate a report of data from the output of a basic SELECT statement
  10. Usage of arithmetic expressions and NULL values
  11. Implement Column aliases
  12. Describe the concatenation operator, literal character strings, alternative quote operator, and the DISTINCT keyword
  13. Display the table structure using the DESCRIBE command
  14. Restrict and Sort Data
  15. Write queries with a WHERE clause to limit the output retrieved
  16. Use the comparison operators and logical operators
  17. Identify the rules of precedence for comparison and logical operators
  18. Usage of character string literals in the WHERE clause
  19. Write queries with an ORDER BY clause
  20. Sort output in descending and ascending order
  21. Substitution Variables
  22. Use Single-Row Functions to Customize Output
  23. Differentiate between single row and multiple row functions
  24. Manipulate strings using character functions
  25. Manipulate numbers with the ROUND, TRUNC and MOD functions
  26. Perform arithmetic with date data
  27. Manipulate dates with the date functions
  28. Conversion Functions and Conditional Expressions
  29. Describe implicit and explicit data type conversion
  30. Describe TO\_CHAR, TO\_NUMBER, and TO\_DATE conversion functions
  31. Nesting multiple functions
  32. Apply the NVL, NULLIF, and COALESCE functions to data
  33. Use conditional IF THEN ELSE logic in a SELECT statement
  34. Aggregated Data Using the Group Functions
  35. How aggregation functions help to produce meaningful reports?
  36. Use the AVG, SUM, MIN, and MAX function
  37. How to handle Null Values in a group function?
  38. Divide the data in groups by using the GROUP BY clause
  39. Exclude groups of data by using the HAVING clause
  40. Display Data From Multiple Tables Using Joins
  41. Write SELECT statements to access data from more than one table
  42. Join Tables Using SQL:1999 Syntax
  43. View data that does not meet a join condition by using outer joins
  44. Join a table by using a self join
  45. Create Cross Joins
  46. Use Sub-queries to Solve Queries
  47. Use a Subquery to Solve a Problem
  48. Execute Single-Row Sub-queries
  49. Deploy Group Functions in a Sub-query
  50. Multiple-Row Subqueries
  51. Use the ANY and ALL Operator in Multiple-Row Sub-queries
  52. Use EXISTS Operator
  53. SET Operators
  54. What are SET operators?
  55. Use a SET operator to combine multiple queries into a single query
  56. Use UNION, UNION ALL, INTERSECT, and MINUS Operator
  57. Use the ORDER BY Clause in Set Operations
  58. Data Manipulation
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59. Add New Rows to a Table
  60. Change the Data in a Table
  61. Use DELETE and TRUNCATE Statements
  62. Save and discard changes with the COMMIT and ROLLBACK statements
  63. Implement Read Consistency
  64. Describe the FOR UPDATE Clause
  65. Use DDL Statements to Create and Manage Tables
  66. Categorize Database Objects
  67. Create Tables using the CREATE TABLE Statement
  68. Identify the data types
  69. Describe Constraints
  70. Create a table using a subquery
  71. How to alter a table?
  72. Drop a table
  73. Other Schema Objects
  74. Create, modify, and retrieve data from a view
  75. Perform Data manipulation language (DML) operations on a view
  76. Drop a view
  77. Create, use, and modify a sequence
  78. Create and maintain indexes
  79. Create and drop synonyms
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