

Oracle Database 11g: Introduction to SQL

Duration: 5 Days

What you will learn

In this course students learn the concepts of relational databases. 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. Students learn to control privileges at the object and system level.

This course covers creating indexes and constraints, and altering existing schema objects. Students also learn how to create and query external tables. Students learn to use the advanced features of SQL in order to query and manipulate data within the database, use the dictionary views to retrieve metadata and create reports about their schema objects. Students also learn some of the date-time functions available in the Oracle Database. This course discusses how to use the regular expression support in SQL.

This course is a combination of Oracle Database 11g: SQL Fundamentals I and Oracle Database 11g: SQL Fundamentals II courses.

In this course, students use Oracle SQL Developer as the main development tool. SQL*Plus is introduced as an optional development tool.

This course counts towards the Hands-on course requirement for the Oracle Database 11g Administrator Certification. Only instructor-led inclass or instructor-led online formats of this course will meet the Certification Hands-on Requirement. Self Study CD-Rom and Knowledge Center courses DO NOT meet the Hands-on Requirement. This is appropriate for a 10g audience too. There are few minor changes between 10g and 11g features.

Learn To: Create reports of sorted and restricted data
Run data manipulation statements (DML) to update data
Control database access to specific objects
Manage schema objects
Manage objects with data dictionary views
Retrieve row and column data from tables

Audience

Application Developers
Business Analysts
Data Warehouse Administrator
Developer
Forms Developer
PL/SQL Developer
System Analysts

Prerequisites

Suggested Prerequisites

Familiarity with data processing concepts and techniques
Data processing

Course Objectives

Employ SQL functions to generate and retrieve customized data
Display data from multiple tables using the ANSI SQL 99 JOIN syntax

Identify the major structural components of the Oracle Database 11g
Create reports of aggregated data
Write SELECT statements that include queries
Retrieve row and column data from tables with the SELECT statement
Run data manipulation statements (DML) to update data in the Oracle Database 11g
Create tables to store data
Utilize views to display and retrieve data
Control database access to specific objects
Manage schema objects
Manage objects with data dictionary views
Write multiple-column sub-queries
Use scalar and correlated sub-queries
Use the regular expression support in SQL
Create reports of sorted and restricted data

Course Topics

Introducing Oracle Database 11g

List the features of Oracle Database 11g
Discuss the basic design, theoretical and physical aspects of a relational database
Categorize the different types of SQL statements
Describe the data set used by the course
Log onto the database using the SQL Developer environment
Save queries to files and use script files in SQL Developer

Retrieving Data Using the SQL SELECT Statement

List the capabilities of SQL SELECT statements
Generate a report of data from the output of a basic SELECT statement
Select All Columns
Select Specific Columns
Use Column Heading Defaults
Use Arithmetic Operators
Understand Operator Precedence
Learn the DESCRIBE command to display the table structure

Restricting and Sorting Data

Write queries that contain a WHERE clause to limit the output retrieved
List the comparison operators and logical operators that are used in a WHERE clause
Describe the rules of precedence for comparison and logical operators
Use character string literals in the WHERE clause
Write queries that contain an ORDER BY clause sort the output of a SELECT statement
Sort output in descending and ascending order

Using Single-Row Functions to Customize Output

Describe the differences between single row and multiple row functions
Manipulate strings with character function in the SELECT and WHERE clauses
Manipulate numbers with the ROUND, TRUNC and MOD functions
Perform arithmetic with date data
Manipulate dates with the date functions

Using Conversion Functions and Conditional Expressions

Describe implicit and explicit data type conversion
Use the TO_CHAR, TO_NUMBER, and TO_DATE conversion functions
Nest multiple functions
Apply the NVL, NULLIF, and COALESCE functions to data
Use conditional IF THEN ELSE logic in a SELECT statement

Reporting Aggregated Data Using the Group Functions

Use the aggregation functions in SELECT statements to produce meaningful reports
Create queries that divide the data in groups by using the GROUP BY clause
Create queries that exclude groups of data by using the HAVING clause

Displaying Data From Multiple Tables

Write SELECT statements to access data from more than one table
View data that generally does not meet a join condition by using outer joins
Join a table by using a self join

Using Sub-queries to Solve Queries

Describe the types of problem that sub-queries can solve
Define sub-queries
List the types of sub-queries
Write single-row and multiple-row sub-queries

Using the SET Operators

Describe the SET operators
Use a SET operator to combine multiple queries into a single query
Control the order of rows returned when using the SET operators

Manipulating Data

Describe each DML statement
Insert rows into a table with the INSERT statement
Use the UPDATE statement to change rows in a table
Delete rows from a table with the DELETE statement
Save and discard changes with the COMMIT and ROLLBACK statements
Explain read consistency

Using DDL Statements to Create and Manage Tables

Categorize the main database objects
Review the table structure
List the data types available for columns
Create a simple table
Decipher how constraints can be created at table creation
Describe how schema objects work

Creating Other Schema Objects

Create a simple and complex view
Retrieve data from views
Create, maintain, and use sequences
Create and maintain indexes
Create private and public synonyms

Controlling User Access

Differentiate system privileges from object privileges

- Grant privileges on tables
- View privileges in the data dictionary
- Grant roles
- Distinguish between privileges and roles

Managing Schema Objects

- Add constraints
- Create indexes
- Create indexes using the CREATE TABLE statement
- Create function-based indexes
- Drop columns and set column UNUSED
- Perform FLASHBACK operations
- Create and use external tables

Managing Objects with Data Dictionary Views

- Explain the data dictionary
- Find table information
- Report on column information
- View constraint information
- Find view information
- Verify sequence information
- Understand synonyms
- Add comments

Manipulating Large Data Sets

- Manipulate data using sub-queries
- Describe the features of multi-table inserts
- Use the different types of multi-table inserts
- Merge rows in a table
- Track the changes to data over a period of time

Managing Data in Different Time Zones

- Use data types similar to DATE that store fractional seconds and track time zones
- Use data types that store the difference between two date-time values
- Practice using the multiple data-time functions for globalize applications

Retrieving Data Using Sub-queries

- Write a multiple-column sub-query
- Use scalar sub-queries in SQL
- Solve problems with correlated sub-queries
- Update and delete rows using correlated sub-queries
- Use the EXISTS and NOT EXISTS operators
- Use the WITH clause

Regular Expression Support

- List the benefits of using regular expressions
- Use regular expressions to search for, match, and replace strings