Oracle Database 10g: Introduction to SQL

Duration: 5 Days   Course Code: O10GISQL

Overview:

This class is applicable to Oracle8i, Oracle9i and Oracle Database 10g users.
This course introduces Oracle Database 10g technology and the relational database concepts and the powerful SQL programming language.
This course provides the learners with the essential SQL skills of querying the database, the meta data and creating database objects.
In addition, the course also delves into the advanced querying and reporting techniques, data warehousing concepts and manipulating large data sets in different time zones.

Target Audience:

Database Administrators
System Analysts
Forms Developer
PL/SQL Developer
Technical Consultant

Objectives:

- Search data using advanced sub queries

- Retrieve row and column data from tables with the SELECT statement

- Employ SQL functions to generate and retrieve customized data

- Run data manipulation statements (DML) to update data in the Oracle Database 10g

- Control user access and manage schema objects

Content:

Introduction

- List the Oracle Database 10g main features
- Provide an overview of: components, internet platform, apps server and developer suite
- Describe relational and object relational database designs
- Review the system development life cycle
- Describe different means of storing data
- Review the relational database concept
- Define the term data models
- Show how multiple tables can be related

Retrieving Data Using the SQL SELECT Statement

- Define projection, selection, and join terminology
- Review the syntaxes for the basic SQL SELECT statements
- Use Arithmetic and Concatenation operators in SQL statements
- List the differences between SQL and iSQL*Plus
- Log into the database using iSQL*Plus
- Explain the iSQL*Plus interface
- Categorize the different types of iSQL*Plus commands
- Save SQL statements to script files

Restricting and Sorting Data

- Limit rows using a selection
- Using the WHERE clause to retrieve specific rows
- Using the comparison conditions in the WHERE clause
- Use the LIKE condition to compare literal values
- List the logical conditions AND, OR, NOT
- Describe the rules of precedence for the conditions shown in this lesson
- Sort rows with the ORDER BY clause
- Use ampersand substitution in iSQL*Plus to restrict and sort output at run time

Using Single Row Functions to Customize Reports

- Show the differences between single row and multiple row SQL functions
- Categorize the character functions into case manipulation and character manipulation types
- Use the character manipulation functions in the SELECT and WHERE clauses
- Explain and use the DATE and numeric functions
- Use the SYSDATE function to retrieve the current date in the default format
- Introduce the DUAL table as a means to view function results
- List the rules for applying the arithmetic

Using the SET Operators

- Use the UNION operator to return all rows from multiple tables and eliminate any duplicate rows
- Use the UNION ALL operator to return all rows from multiple tables
- Describe the INTERSECT operator
- Use the INTERSECT operator
- Explain the MINUS operator
- Use the MINUS operator
- List the SET operator guidelines
- Order results when using the UNION operator

Manipulating Data

- Write INSERT statements to add rows to a table
- Copy rows from another table
- Create UPDATE statements to change data in a table
- Generate DELETE statements to remove rows from a table
- Use a script to manipulate data
- Save and discard changes to a table through transaction processing
- Show how read consistency works
- Describe the TRUNCATE statement

Using DDL Statements to Create and Manage Tables

- List the main database objects and describe the naming rules for database objects
- Introduce the schema concept
- Display the basic syntax for creating a table and show the DEFAULT option
- Explain the different types of constraints
- Show resulting exceptions when constraints are violated with DML statements
- Create a table with a sub query
- Describe the ALTER TABLE functionality
- Remove a table with the DROP statement and Rename a table

Creating Other Schema Objects

- List the main database objects and describe the naming rules for database objects
- Introduce the schema concept
- Display the basic syntax for creating a table and show the DEFAULT option
- Explain the different types of constraints
- Show resulting exceptions when constraints are violated with DML statements
- Create a table with a sub query and remove a table with the DROP statement
- Describe the ALTERTABLE functionality
- Rename a table

Manipulating Large Data Sets

- Using the MERGE Statement
- Performing DML with Sub queries
- Performing DML with a RETURNING Clause
- Overview of Multitable INSERT Statements
- Tracking Changes in DML

Generating Reports by Grouping Related Data

- Overview of GROUP BY and Having Clause
- Aggregating data with ROLLUP and CUBE Operators
- Determine subtotal groups using GROUPING Functions
- Compute multiple groupings with GROUPING SETS
- Define levels of aggregation with Composite Columns
- Create combinations with Concatenated Groupings

Managing Data in Different Time Zones

- TIME ZONES
- Oracle9i Date time Support
- Conversion operations

Searching Data Using Advanced Sub queries

- Sub query Overview
- Using a Sub query
- Comparing several columns using Multiple-Column Sub queries
- Defining a Data source Using a Sub query in the FROM Clause
- Returning one Value using Scalar Sub query Expressions
- Performing ROW by-row processing with Correlated Sub queries
- Reusing query blocks using the WITH Clause

Hierarchical Data Retrieval

- Sample Data from the EMPLOYEES Table
- The Tree Structure of Employee data
- Hierarchical Queries
- Ranking Rows with LEVEL
- Formatting Hierarchical Reports Using LEVEL and LPAD
- Pruning Branches with the WHERE and CONNECT BY clauses

Performing Regular Expression Support and Case Insensitive

- Regular Expression Support Overview
- Describing simple and complex patterns

operators on dates
- Use the arithmetic operators with dates in the SELECT clause

Reporting Aggregated Data Using the Group Functions

- Describe and categorize the group functions
- Use the group functions
- Utilize the DISTINCT keyword with the group functions
- Describe how nulls are handled with the group functions
- Create groups of data with the GROUP BY clause
- Group data by more than one column
- Avoid illegal queries with the group functions
- Exclude groups of data with the HAVING clause

Displaying Data From Multiple Tables

- Show the join tables syntax using SQL 99 syntax
- Use table aliases to write shorter code and explicitly identify columns from multiple tables
- Issue a SQL CROSS JOIN statement to produce a Cartesian product
- Use the NATURAL JOIN clause to retrieve data from tables with the same named columns
- Create a join with the USING clause to identify specific columns between tables
- Create a three way join with the ON clause to retrieve information from 3 tables
- List the types of outer joins LEFT, RIGHT, and FULL
- Add additional conditions when joining tables with the AND clause

Using Sub queries to Solve Queries

- List the syntax for sub queries in a SELECT statements WHERE clause
- List the guidelines for using sub queries
- Describe the types of sub queries
- Execute single row sub queries and use the group functions in a sub query
- Identify illegal statements with sub queries
- Execute multiple row sub queries
- Analyze how the ANY and ALL operators work in multiple row sub queries
- Explain how null values are handled in sub queries

Managing Objects with Data Dictionary Views

- Describe the structure of each of the dictionary views
- List the purpose of each of the dictionary views
- Write queries that retrieve information from the dictionary views on the schema objects

Controlling User Access

- Controlling user access
- System versus objects privileges
- Creating user sessions and granting system privileges
- Using roles to define user groups
- Creating and granting privileges to a role
- Granting and revoking object privileges
- Changing your password
- Using Database Links

Manage Schema Objects

- Creating directories
- Creating and querying external tables
- Creating Index Organized Tables
- Creating Function based indexes
- Dropping Columns
- Altering the structure of tables and adding constraints
- Performing FLASHBACK Statement
- Materialized Views overview

for searching and manipulating data

Further Information: