Oracle18c SQL (5 Day)

Course Summary

Description
This course provides a complete, hands-on introduction to SQL including the use of both SQL Developer and SQL*Plus. This coverage is appropriate for users of Oracle11g and higher. A full presentation of the basics of relational databases and their use are also covered.

Topics
- Basic RDBMS Principles
- The SQL Language and Tools
- Using SQL Developer
- SQL Query Basics
- WHERE and ORDER BY
- Functions
- ANSI 92 JOINS
- ANSI 99 JOINS
- GROUP BY and HAVING
- Subqueries
- Regular Expressions
- Analytics
- Analytics II
- Basic Reporting
- Security
- Data Import and Export
- Data Manipulation
- Advanced Data Manipulation
- Introduction to Data Definition
- Advanced Data Definition

Audience
This course is appropriate for anyone needing to interface with an Oracle database or those needing a general understanding of Oracle database functionality. That would include end users, business analysts, application developers, and database administrators.

Prerequisites
Before taking this course, basic computer skills are needed. A basic knowledge of databases is desired, but not required.

Duration
Five days
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Course Outline

I. Basic RDBMS Principles
   A. Relational Design Principles
   B. Accessing Data Through A Structured Query Language
   C. Entity Relationship Diagrams
   D. Data Domains
   E. Null Values
   F. Indexes
   G. Views
   H. Denormalization
   I. Data Model Review

Lab: Basic RDBMS Principles

II. The SQL Language and Tools
   A. Using SQL*PLUS
      1. Why Use SQL*Plus When Other Tools Are Available?
      2. Starting SQL*Plus
      3. EZConnect
      4. SQL Commands
      5. PL/SQL Commands
      6. SQL*Plus Commands
   B. The COLUMN Command
      1. The HEADING Clause
      2. The FORMAT Clause
      3. The NOPRINT Clause
      4. The NULL Clause
      5. The CLEAR Clause
   C. Predefined Define Variables
   D. Login.SQL
   E. We Have History!
   F. Performance Settings
   G. CSV Option for Markup
   H. Feedback Only
   I. Support for Long Identifiers
   J. Copy and Paste in SQL*PLUS
   K. Entering SQL Commands
   L. Entering PL/SQL Commands
   M. Entering SQL*PLUS Commands
   N. Default Output from SQL*PLUS
   O. Entering Queries
   P. What about PL/SQL?
   Q. Introducing SQLCL: The Death of SQL*PLUS?
      1. Installation
      2. Editing / Autocomplete
      3. SQLFORMAT ANSICONSOLE
      4. New Commands
         a) ALIAS
         b) Search
         c) APEX
         d) BRIDGE

Lab: SQL Language and Tools

III. Using SQL Developer
   A. Choosing a SQL Developer Version
   B. Configuring Connections
      1. Creating a Basic Connection
      2. Creating a TNS Connection
      3. Connecting
   C. Configuring Preferences
   D. Using SQL Developer
      1. The Columns Tab
      2. The Data Tab
      3. The Constraints Tab
      4. The Grants Tab
      5. The Statistics Tab
      6. Other Tabs
      7. Queries in SQL Developer
      8. Saving Typing
      9. Query Builder
      10. Modifying Your Query with the Drawer Pullout
      11. Accessing Objects Owned by Other Users
      12. The Actions Pulldown Menu
   E. Differences Between SQL Developer and SQL*PLUS
      1. Reporting Commands Missing in SQL Developer
      2. General Commands Missing in SQL Developer
   F. Spooling in SQL Developer
   G. Data Dictionary Reports
   H. User Defined Reports
   I. Using Scripts in SQL Developer

Lab: Using SQL Developer

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Course Outline (cont’d)

IV. SQL Query Basics
A. Understanding the Data Dictionary
   1. Exporting Key Data Dictionary Information
   2. An Alternative Approach to a Quick ERD
B. The Dictionary View
C. Components of a Select Statement
   1. The SELECT Clause
   2. The FROM Clause
   3. The WHERE Clause
   4. The HAVING Clause
   5. The ORDER BY Clause
   6. The GROUP BY Clause
   7. The START WITH And CONNECT BY Clauses
   8. The FOR UPDATE Clause
D. Column Aliases
E. Fully Qualifying Tables and Columns
F. Table Aliases
G. A Neat Trick
H. Using Distinct and All in Select Statements

Lab: SQL Query Basics

V. WHERE and ORDER BY
A. WHERE Clause Basics
B. Comparison Operators
C. Literals and Constants in SQL
D. Simple Pattern Matching
E. Logical Operators
F. The Dual Table
G. Arithmetic Operators
H. Expressions in SQL
I. Character Operators
J. Pseudo Columns
K. Order by Clause Basics
L. Ordering Nulls
M. Accent and Case Insensitive Sorts
N. Data Bound Collation
O. Case-Insensitive Database
P. Sampling Data
Q. WHERE and ORDER BY in SQL Developer
R. All, Any, Some

Lab: WHERE and ORDER BY

VI. Functions
A. The Basics of Oracle Functions
B. Number Functions
C. Character Functions
D. Date Functions
E. Conversion Functions
F. Other Functions
G. Large Object Functions
H. Error Functions
I. The RR Format Model
J. Leveraging Your Knowledge

Lab: Functions

VII. ANSI 92 JOINS
A. Basics Of ANSI 92 JOINS
B. Using Query Builder with Multiple Tables
C. Table Aliases
D. OUTER JOINS
   1. Outer Joins in Query Builder
E. Set Operators
F. SELF-REFERENTIAL JOINS
G. NON-EQUIJOINS

Lab: ANSI 92 JOINS

VIII. ANSI 99 JOINS
A. Changes with ANSI99
B. CROSS JOIN
C. NATURAL JOIN
D. JOIN USING
E. JOIN ON
F. LEFT / RIGHT OUTER JOIN
G. FULL OUTER JOIN

Lab: ANSI 99 JOINS

IX. GROUP BY and HAVING
A. Introduction to Group Functions
   1. Limiting Rows
   2. Including NULL
   3. Using DISTINCT with Group Functions
B. Group Function Requirements
C. The HAVING Clause
D. Other Group Function Rules
E. Using Query Builder with Group Clauses
F. ROLLUP and CUBE
G. The GROUPING Function
H. GROUPING Sets

Lab: GROUP BY and HAVING

X. Subqueries
A. Why Use Subqueries?
B. WHERE Clause Subqueries
C. FROM Clause Subqueries
D. HAVING Clause Subqueries
E. Correlated Subqueries
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Course Outline (cont’d)

F. Scalar Subqueries
G. DML and Subqueries
H. Exists Subqueries
I. Hierarchical Queries
J. TOP N and BOTTOM N Queries
K. Creating Subqueries Using Query Builder

Lab: Subqueries

XI. Regular Expressions
A. Available Regular Expression Functions
B. Regular Expression Operators
C. Character Classes
D. Pattern Matching Options
E. REGEX_LIKE
F. REGEXP_SUBSTR
G. REGEXP_INSTR
H. REGEXP_REPLACE
I. REGEXP_COUNT

Lab: Regular Expressions

XII. Analytics
A. The WITH Clause
B. Reporting Aggregate Functions
C. Analytical Functions
D. User-Defined Bucket Histograms
E. The MODEL Clause
F. PIVOT and UNPIVOT
G. Temporal Validity

Lab: Analytics

XIII. Analytics II
A. Ranking Functions
B. RANK
C. DENSE_RANK
D. CUME_DIST
E. PERCENT_RANK
F. ROW_NUMBER
G. Windowing Aggregate Functions
H. RATIO_TO_REPORT
I. LAG / LEAD
J. Linear Regression Functions
K. Inverse Percentile Functions
L. Hypothetical Ranking Functions
M. Pattern Matching

Lab: Data Manipulation

XIV. Basic Reporting
A. Basic Reporting
   1. The COLUMN Command
   2. Setting Column Width
B. PRINT | NOPRINT
C. TTITLE | BTITLE

D. REPHEADER / REPFOOTER
E. NEW_VALUE / OLD_VALUE
F. The COMPUTE Command
G. Comments in Script Files
H. Substitution Variables
   1. Named Substitution Variables
   2. Numbered Substitution Variables
   3. Dealing With Multiple References
   4. Using The DEFINE Command
   5. The ACCEPT And PROMPT Commands
I. Running Scripts Unattended

Lab: Basic Reporting

XV. Security
A. Basic Security
   1. SYSTEM Privileges
   2. OBJECT Privileges
B. Schema Only Accounts
C. The Data Dictionary and Security
D. Using Roles for Privilege Management
E. Using Profiles
   1. Kernel Limits
   2. Password Limits
   3. Creating and Using Profiles

Lab: Security

XVI. Data Import and Export
A. Using SQL*LOADER with Field Delimited Data
B. Using SQL*LOADER with Comma Delimited Data
C. Data Loading Using SQL Developer
D. Exporting Oracle Data into Excel
E. Doing an ODBC Query
F. Exporting Data Sets
G. Data Validation
H. A Word About DATA PUMP

Lab: Data Import and Export

XVII. Data Manipulation
A. The Data Manipulation Language
   1. The INSERT Command
   2. The UPDATE Command
   3. The DELETE Command
   4. Using The DEFAULT Keyword With Updates And Inserts
B. Using SQL Developer for DML
C. The Transaction Control Language (TCL)
D. Implicit TCL

Lab: Data Manipulation

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Course Outline (cont’d)

XVIII. Advanced Data Manipulation
A. The MERGE Command
B. Multiple Column Subquery Updates and Deletes
C. DML Against Views
D. Transactions and Read Consistency
E. DML Locks
F. Flashback Technologies
G. Inserting Large Objects
H. Changed Data Tracking
   1. Flashback Versions Query
   2. LOG MINER
   3. Change Data Capture
   4. Flashback Data Archive
Lab: Advanced Data Manipulation

XIX. Introduction to Data Definition
A. Introduction TO DDL Commands
B. Key Objects
C. Object Naming Rules
D. The Data Dictionary
E. Available Datatypes
   1. Using Extended Datatypes
F. The Create Table Statement
G. Naming Constraints
H. Integrity Constraints
   1. Primary Keys
   2. Foreign Keys
   3. NOT NULL Constraints
   4. UNIQUE Constraints
   5. CHECK Constraints
   6. DEFAULT Values
I. IDENTITY Columns
J. Constraints and CREATE TABLE… AS SELECT
K. Constraint Limitations
L. JSON Support
M. Creating Tables in SQL Developer
N. Other DDL Actions in SQL Developer
O. The ALTER TABLE Command
P. Dropping Objects
Q. Renaming Objects
R. The TRUNCATE Command
S. The COMMENT Command
T. Creating Simple Views
Lab: Introduction to Data Definition

XX. Advanced Data Definition
A. DDL and THE Data Dictionary
B. Disabling Constraints
C. Enabling Constraints
D. Handling Constraint Exceptions
E. Using Deferrable Constraints
F. Sequences
   1. Scalable Sequences
G. External Tables for Data Storage
   1. Why Are External Tables Useful
   2. Privileges Needed
   3. Syntax for Creating External Tables
   4. Inline External Tables
H. External Tables and the ORACLE_DATAPUMP Driver
I. Indexes
   1. Guidelines
   2. Index Creation Syntax
   3. Rebuilding Indexes
   4. Function Based Indexes
J. Comments
K. Synonyms
   1. CREATE SYNONYM Syntax
L. Complex Views
   1. Syntax for Views
M. Virtual Columns
N. Compressed Tables
O. Invisible Indexes
P. Online DDL Enhancements
Q. Invisible Columns
R. Creating Multiple Indexes on Columns
Lab: Advanced Data Definition

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