TERADATA
ADVANCED
SQL

# TERADATA ADVANCED SQL

**Lecture/Lab**

| ILT 25966 | 4 Days |
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## COURSE DESCRIPTION

Designed for senior programmers and data analysts, this course focuses on advanced and analytic SQL features and techniques. Extensive hands-on labs help reinforce learning.

## AUDIENCE

~ Application Developers
~ Data Analysts
~ Database Administrators
~ Architects/Designers

## PREREQUISITES

To get the most out of this training, you should have the following knowledge or experience.

~ **Introduction to Teradata Database**
(ILT #25964 or WBT #26438)
~ **Teradata SQL**
(Instructor-led (#25965) or WBT (#54458))

## COURSE OBJECTIVES

After successfully completing this course, you will be able to:

~ Use various forms of derived, volatile and global temporary tables
~ Work with the Window Aggregate and Extended Grouping functions
~ Use the ANSI Merge syntax to merge data from source to target
~ Write SQL using the RANK, QUANTILE and WIDTH_BUCKET analytic functions
~ Work with advanced features, such as recursive subqueries, scalar subqueries, and interval data types
~ Understand and use Date, Time and Timestamp

| COURSE OUTLINE* | | | |
|---|---|---|---|
| **DAY 1** | **DAY 2** | **DAY 3** | **DAY 4** |
| ~ Introduction<br>~ Creating Tables from Existing Tables<br>~ Global Temporary Tables<br>~ Window Aggregates | ~ Window Aggregates<br>~ Rank<br>~ Extended Grouping Functions<br>~ QUANTILE and WIDTH_BUCKET<br>~ Correlated Subqueries | ~ Scalar Subqueries<br>~ Recursive Queries<br>~ Date-Time Data Types<br>~ Interval Data Types and Manipulations | ~ Timestamps and Timezones<br>~ Advanced Date and Time Formatting<br>~ Other Formatting Options<br>~ SQL Functions |

* Timing and topics covered by day may vary

**COURSE CONTENT**

**Module 0 – Introduction**
~ Recommended Prerequisite Knowledge
~ Course Objectives
~ Course Modules

**Module 1 - Creating Tables from Existing Tables**
~ SQL Assistant Cloned Table
~ Create Table AS
~ Cloning Attributes
~ Changing Table Attributes
~ Using Subqueries to Customize Tables
~ Renaming Columns
~ Changing Column Attributes
~ Using Inner Joins in a Subquery
~ Using Other Joins in a Subquery
~ Using Expressions for Columns
~ Using CAST
~ Aliases Having Non-Standard Characters
~ Adding Unique and Primary Key Constraints
~ Adding Default Values
~ Populating Default Column Values
~ Copying Statistics
~ Summary
~ Review Questions
~ Lab Exercises

**Module 2 - Derived and Volatile Tables**
~ Permanent Tables for Ad Hoc Queries
~ Pros and Cons for Ad Hoc Perm Tables
~ Temporary Table Choices
~ Derived Tables
~ "WITH" Derived Table Syntax Form
~ Derived Tables and Joins
~ Multiple "WITH" Derived Table Syntax Form
~ CREATE TABLE AS and Derived Tables
~ Volatile Table Syntax
~ Pros and Cons of Volatile Tables
~ Volatile Table Restrictions
~ HELP and SHOW (Volatile) TABLE
~ ON COMMIT DELETE ROWS
    ~ Implicit Transactions
    ~ Explicit Transactions
~ ON COMMIT PRESERVE ROWS
~ Limitations
~ Volatile Tables from Derived Tables
~ Use with Views and Macros
~ Another View and Macro Strategy
~ Volatile Table Quiz
~ Summary
~ Review Questions
~ Lab Exercises

**Module 3 - Global Temporary Tables**
~ What Are They?
~ Creating Global Temporary Tables
~ Materializing Global Temporary Tables
~ Space Allocation
~ Getting HELP Table Manipulations
~ Secondary Indexes on Base Tables
~ Secondary Indexes on Instances
~ Dropping Indexes on Base Tables
~ Dropping Indexes on Instances
~ Collecting Statistics on Base Tables
~ Collecting Statistics on Instances
~ Dropping Statistics on Base Tables
~ Dropping Statistics on Instances
~ Using CREATE TABLE AS
~ Summary
~ Review Questions
~ Lab Exercises

**Module 4 - Window Aggregates - Part 1**
~ Window Aggregate Functions
~ The GROUP COUNT Window
~ Relating the Result to the Syntax
~ GROUP COUNT and Null
~ GROUP COUNT(*)
~ Group SUM and AVG Window
~ Group MIN and MAX Window
~ Group AVG and QUALIFY
~ Qualifying a Non-Projected Column
~ GROUP COUNT and PARTITION
~ GROUP COUNT, PARTITION, and Null
~ GROUP COUNT and Null Partitions
~ GROUP SUM and Partition
~ GROUP SUM and Reordering
~ GROUP SUM Reorder Explanation
~ SQL ORDER BY to Preserve Order
~ Window ORDER BY to Preserve Order
~ Qualifying on a Windowed Non-Aggregated
~ Multiple Column Partitions
~ Partitioning on Literals
~ WHERE vs. QUALIFY
~ Order of Group SUM and Aggregation
~ Projecting Multiple Window Aggregates
~ Summary
~ Review Questions
~ Lab Exercises

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**Module 14 - Timestamps and Time zones**
~ Timestamp Review
~ Time and Timestamp Literals
~ Timestamp-Interval Arithmetic
~ Timestamp Subtraction
~ Timestamp Castings
~ Time Zones
~ Data Types with Time Zones
~ A Tale of Three Cities
~ Los Angeles Adds a Row
~ Normalizing Timestamps
~ Hong Kong Adds a Row
~ The View from L.A.
~ The View from London
~ Extracting from Timestamp Expressions
~ OVERLAPS Function
~ Overlapping Data Type Options
~ Summary
~ Review Questions
~ Lab Exercises

**Module 15 - Advanced Date and Time Formatting**
~ Year, Month, Day Options
~ Day of Week Options
~ Hours, Minutes, and Seconds Options
~ The 12-Hour Clock (AM-PM)
~ Time Precision Formatting
~ Time Zone Placement
~ Timestamp Formatting
~ Formatting and Qualification
~ Getting Dates from Strings
~ LIKE and Formatting
~ ODBC and JDBC Methods for FORMAT
~ Summary
~ Review Questions
~ Lab Exercises

**Module 16 - Other Formatting Options**
~ FORMAT
~ Basic Formatting Options
~ Basic Numeric Formats
~ Character Formats
~ Group Separator and Radix
~ Decimal Fractions and Zero Suppress
~ Fixed Currency Symbol – Local
~ Dual Currency Symbol – Local

~ Floating Currency Symbols – Local
~ ISO Currency Abbreviations
~ Currency Names
~ Signed Amounts
~ Summary
~ Review Questions
~ Lab Exercise

**Module 17 - SQL Functions**
~ Module Description
~ LAST_DAY
~ NEXT_DAY
~ TRUNC
~ Using TRUNC with Dates
~ ROUND
~ Using ROUND with Dates
~ REGEXP_SUBSTR
~ REGEXP_REPLACE
~ REGEXP_INSTR
~ REGEXP_SIMILAR
~ LTRIM
~ RTRIM
~ LPAD
~ RPAD
~ NGRAM
~ NVP
~ OREPLACE
~ OTRANSLATE
~ INITCAP
~ INSTR
~ NVL
~ CEILING and FLOOR
~ DECODE
~ GREATEST
~ LEAST
~ TO_NUMBER
~ TO_CHAR
~ TO_CHAR (DateTime)
~ TO_CHAR (DateTime Example)
~ TO_DATE
~ TO_TIMESTAMP
~ Other Conversion Functions
~ LEAD and LAG Ordered Analytic Functions
~ Summary
~ Review Questions
~ Lab Exercises