Course Summary

Description

In this course, students will learn SQL starting at the most basic level and going to the most advanced level with many examples.

Topics

- Basic SQL Functions
- The WHERE Clause
- Distinct Vs. Group By
- The TOP Command
- Review
- HELP and SHOW
- Aggregation Function
- Join Functions
- Date Functions
- Format Functions
- OLAP Functions
- The Quantile Function
- Temporary Tables
- Sub-query Functions
- Substrings and Positioning Functions
- Interrogating the Data
- View Functions
- Macro Functions
- Set Operators Functions
- Creating Tables, Secondary Indexes, and Join Indexes
- Data Manipulation Language (DML)
- Stored Procedure Functions
- Trigger Functions
- Math Functions
- Sample
- Statistical Aggregate Functions
- Explain
- Collect Statistics
- Hashing Functions
- BTEQ – Batch Teradata Query
- Top SQL Commands Cheat Sheet

Audience

This course is designed for anyone who has a desire to learn Teradata SQL from beginners to an advanced audience.

Prerequisites

There are no prerequisites for this course.

Duration

Three Days
I. Basic SQL Functions
   A. Introduction
   B. SELECT * (All Columns) in a Table
   C. SELECT Specific Columns in a Table
   D. Using the Best Form for Writing SQL
   E. Commas in the Front or in the Back?
   F. Place your Commas in front for better Debugging Capabilities
   G. Sort the Data with the ORDER BY Keyword
   H. ORDER BY Defaults to Ascending
   I. Use the Name or the Number in your ORDER BY Statement
   J. Two Examples of ORDER BY using Different Techniques
   K. Changing the ORDER BY to Descending Order
   L. NULL Values sort First in Ascending Mode (Default)
   M. NULL Values sort Last in Descending Mode (DESC)
   N. Major Sort vs. Minor Sorts
   O. Multiple Sort Keys using Names vs. Numbers
   P. Sorts are Alphabetical, NOT Logical
   Q. Using A CASE Statement to Sort Logically
   R. How to ALIAS a Column Name
   S. A Missing Comma can by Mistake become an Alias
   T. The Title Command and Literal Data
   U. Comments using Double Dashes are Single Line Comments
   V. Comments for Multi-Lines
   W. Comments for Multi-Lines as Double Dashes per Line
   X. A Great Technique for Comments to Look for SQL Errors

II. The WHERE Clause
   A. The WHERE Clause limits Returning Rows
   B. Using a Column ALIAS throughout the SQL
   C. Double Quoted Aliases are for Reserved Words and Spaces
   D. Character Data needs Single Quotes in the WHERE Clause
   E. Character Data needs Single Quotes, but Numbers Don’t
   F. NULL means UNKNOWN DATA so Equal (=) won’t Work
   G. Use IS NULL or IS NOT NULL when dealing with NULLs
   H. NULL is UNKNOWN DATA so NOT Equal won’t Work
   I. Use IS NULL or IS NOT NULL when dealing with NULLs
   J. Using Greater Than OR Equal To (>=)
   K. Using GE as Greater Than or Equal To (>=)
   L. AND in the WHERE Clause
   M. Troubleshooting AND
   N. OR in the WHERE Clause
   O. Troubleshooting OR
   P. OR must utilize the Column Name Each Time
   Q. Troubleshooting Character Data
   R. Using Different Columns in an AND Statement
   S. Quiz – How many rows will return?
   T. Answer to Quiz – How many rows will return?
   U. What is the Order of Precedence?
   V. Using Parentheses to change the Order of Precedence
   W. Using an IN List in place of OR
   X. The IN List is an Excellent Technique
   Y. IN List vs. OR brings the same Results
   Z. Using a NOT IN List
   AA. A Technique for Handling Nulls with a NOT IN List
   BB. An IN List with the Keyword ANY
   CC. A NOT IN List with the Keywords NOT = ALL
   DD. BETWEEN is Inclusive
   EE. BETWEEN Works for Character Data
   FF. LIKE uses Wildcards Percent ‘%’ and Underscore ‘_’
   GG. LIKE command Underscore is Wildcard for one Character
   HH. LIKE ALL means ALL conditions must be Met
   II. LIKE ANY means ANY of the Conditions can be Met
   JJ. IN ANSI Transaction Mode Case Matters
   KK. In Teradata Transaction Mode Case Doesn’t Matter
   LL. LIKE Command Works Differently on Char Vs. Varchar
   MM. Troubleshooting LIKE Command on Character Data
   NN. Introducing the TRIM Command
   OO. Quiz – Which Data is Left Justified and Which is Right?
   PP. Numbers are Right Justified and Character Data is Left
   QQ. Answer – Which Data is Left Justified and Which is Right?
   RR. An Example of Data with Left and Right Justification

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Teradata SQL

Course Outline (Cont.)

SS. A Visual of CHARACTER Data vs. VARCHAR Data
TT. Use the TRIM command to remove spaces on CHAR Data
UU. TRIM Eliminates Leading and Trailing Spaces
VV. Escape Character in the LIKE Command changes Wildcards
WW. Escape Characters Turn off Wildcards in the LIKE Command
XX. Quiz – Turn off that Wildcard
YY. ANSWER – To Find that Wildcard

III. Distinct Vs. Group By
A. The Distinct Command
B. Distinct vs. GROUP BY
C. Rules of Thumb for DISTINCT vs. GROUP BY
D. GROUP BY Vs. DISTINCT – Good Advice
E. Quiz – How many rows come back from the Distinct?
F. Answer – How many rows come back from the Distinct?

IV. The TOP Command
A. TOP Command
B. TOP Command is brilliant when ORDER BY is used!
C. The TOP Command WITH TIES
D. How the TOP Command WITH TIES Decides
E. The TOP Command will NOT work with Certain Commands

V. Review
A. Testing Your Knowledge 1
B. Testing Your Knowledge 2
C. Testing Your Knowledge 3
D. Testing Your Knowledge 4
E. Testing Your Knowledge 5
F. Testing Your Knowledge 6
G. Testing Your Knowledge 7

VI. HELP and SHOW
A. Determining the Release of your Teradata System
B. Basic HELP Commands
C. Other HELP Commands
D. HELP DATABASE
E. HELP USER
F. HELP TABLE
G. Adding a Comment to a Table
H. Adding a Comment to a View
I. SELECT SESSION
J. USER Information Functions
K. HELP SESSION
L. HELP SQL
M. A HELP SQL Example

N. Show Commands
O. SHOW Table command for Table DDL
P. SHOW View command for View Create Statement
Q. SHOW Macro command for Macro Create Statement
R. SHOW Trigger command for Trigger Create Statement

VII. Aggregation Function
A. Quiz – You calculate the Answer Set in your own Mind
B. Answer – You calculate the Answer Set in your own Mind
C. The 3 Rules of Aggregation
D. There are Five Aggregates
E. Quiz – How many rows come back?
F. Troubleshooting Aggregates
G. GROUP BY when Aggregates and Normal Columns Mix
H. GROUP BY Delivers one row per Group
I. GROUP BY Dept_No or GROUP BY 1 the same thing
J. Limiting Rows and Improving Performance with WHERE
K. WHERE Clause in Aggregation limits unneeded Calculations
L. Keyword HAVING tests Aggregates after they are Totaled
M. Keyword HAVING is like an Extra WHERE Clause for Totals
N. Getting the Average Values per Column
O. Average Values per Column for All Columns in a Table
P. Three types of Advanced Grouping
Q. GROUP BY Grouping Sets
R. GROUP BY Rollup
S. GROUP BY Rollup Result Set
T. GROUP BY Cube
U. GROUP BY CUBE Result Set
V. Use the Nexus for all Groupings
W. Testing Your Knowledge – Basic Aggregation
X. Testing Your Knowledge – Multiple Aggregates
Y. Testing Your Knowledge- Group By

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Course Outline (Cont.)

Z. Testing Your Knowledge – Using a Where Clause
AA. Testing Your Knowledge- Using Having
BB. Final Answer to Test Your Knowledge on Aggregates

VIII. Join Functions
A. A two-table join using Non-ANSI Syntax
B. A two-table join using Non-ANSI Syntax with Table Alias
C. Aliases and Fully Qualifying Columns
D. A two-table join using ANSI Syntax
E. Both Queries have the same Results and Performance
F. Quiz – Can You Finish the Join Syntax?
G. Answer to Quiz – Can You Finish the Join Syntax?
H. Quiz – Can You Find the Error?
I. Answer to Quiz – Can You Find the Error?
J. Quiz – Which rows from both tables Won’t Return?
K. Answer to Quiz – Which rows from both tables Won’t Return?
L. LEFT OUTER JOIN
M. LEFT OUTER JOIN Brings Back All Rows in the Left Table
N. RIGHT OUTER JOIN
O. RIGHT OUTER JOIN Brings Back All Rows in the Right Table
P. FULL OUTER JOIN
Q. FULL OUTER JOIN Brings Back All Rows in All Tables
R. Which Tables are the Left and which are the Right?
S. Answer - Which Tables are the Left and which are the Right?
T. INNER JOIN with Additional AND Clause
U. ANSI INNER JOIN with Additional AND Clause
V. ANSI INNER JOIN with Additional WHERE Clause
W. OUTER JOIN with Additional WHERE Clause
X. OUTER JOIN with Additional AND Clause
Y. Results from OUTER JOIN with Additional AND Clause
Z. Quiz – Why is this considered an INNER JOIN?
AA. The DREADED Product Join
BB. Result Set of the DREADED Product Join
CC. The Horrifying Cartesian Product Join
DD. The ANSI Cartesian Join will ERROR
EE. Quiz – Do these Joins Return the Same Answer Set?
FF. Answer – Do these Joins Return the Same Answer Set?
GG. The CROSS JOIN
HH. The CROSS JOIN Answer Set
II. The Self Join
JJ. The Self Join with ANSI Syntax
KK. Quiz – Will both queries bring back the same Answer Set?
LL. Answer – Will both queries bring back the same Answer Set?
MM. Quiz – Will both queries bring back the same Answer Set?
NN. Answer – Will both queries bring back the same Answer Set?
OO. How would you Join these two tables?
PP. How would you Join these two tables? You Can’t Yet!
QQ. An Associative Table is a Bridge that Joins Two Tables
RR. Quiz – Can you Write the 3-Table Join?
SS. Answer to Quiz – Can you Write the 3-Table Join?
TT. Quiz – Can you Write the 3-Table Join to ANSI Syntax?
UU. Answer – Can you Write the 3-Table Join to ANSI Syntax?
VV. Quiz – Can you Place the ON Clauses at the End?
WW. Answer – Can you Place the ON Clauses at the End?
XX. The 5-Table Join – Logical Insurance Model
YY. Quiz - Write a Five Table Join Using ANSI Syntax
ZZ. Answer - Write a Five Table Join Using ANSI Syntax
AAA. Quiz - Write a Five Table Join Using ANSI Syntax
BBB. Answer - Write a Five Table Join Using ANSI Syntax
CCC. Quiz - Write a Five Table Join Using Non-ANSI Syntax
DDD. Answer - Write a Five Table Join Using Non-ANSI Syntax
EEE. Quiz –Re-Write this putting the ON clauses at the END
FFF. Answer –Re-Write this putting the ON clauses at the END

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IX. Date Functions
A. Date, Time, and Current_Timestamp Keywords
B. Dates are stored internally as INTEGERS from a Formula
C. Displaying Dates for INTEGRDATE and ANSIDATE
D. DATEFORM
E. Changing the DATEFORM in Client Utilities such as BTEQ
F. Date, Time, and Timestamp Recap
G. Timestamp Differences
H. Finding the Number of Hours between Timestamps
I. Troubleshooting Timestamp
J. Add or Subtract Days from a date
K. A Summary of Math Operations on Dates
L. Using a Math Operation to find your Age in Years
M. Find What Day of the week you were Born
N. The ADD_MONTHS Command
O. Using the ADD_MONTHS Command to Add 1 Year
P. Using the ADD_MONTHS Command to Add 5 Years
Q. The EXTRACT Command
R. EXTRACT from DATES and TIME
S. CURRENT_DATE and EXTRACT or Current_Date and Math
T. CAST the Date of January 1, 2011 and the Year 1800
U. The System Calendar
V. Using the System Calendar in Its Simplest Form
W. How to really use the Sys_Calendar.Calendar
X. Storing Dates Internally
Y. Storing Time Internally
Z. Storing TIME with TIME ZONE Internally
AA. Storing Timestamp Internally
BB. Storing Timestamp with TIME ZONE Internally
CC. Storing Date, Time, and Timestamp with Zone Internally
DD. Time Zones
EE. Setting Time Zones
FF. Seeing your Time Zone
GG. Creating a Sample Table for Time Zone Examples
HH. Inserting Rows in the Sample Table for Time Zone Examples
II. Selecting the Data from our Time Zone Table
JJ. Normalizing our Time Zone Table with a CAST
KK. Intervals for Date, Time and Timestamp
LL. Interval Data Types and the Bytes to Store Them
MM. The Basics of a Simple Interval
NN. Troubleshooting the Basics of a Simple Interval
OO. Interval Arithmetic Results

X. Format Functions
A. The FORMAT Command
B. The Basics of the FORMAT Command
C. Quiz – How will the Date Appear after Formatting
D. Answer to Quiz – How will the Date Appear after Formatting
E. Quiz – How will the Date Appear after Formatting
F. Answer to Quiz – How will the Date Appear after Formatting
G. Formatting with MMM for the Abbreviated Month
H. Answer to Quiz – How will the Date Appear after Formatting
I. Formatting with MMMM for the Full Month Name
J. Formatting with MMMM for the Full Month
K. Formatting with DDD for the Julian Day
L. Formatting with DDD for the Julian Day
M. Formatting with EEE or EEEE for the Day of the Week
N. EEEE for the Abbreviated or Full Day of the Week
O. Placing Spaces inside your Formatting Commands with a B
P. Formatting Spaces with B or b
Q. Formatting with 9
R. Formatting with 9 Results
S. Troubleshooting when Formatted Data Overflows
T. Troubleshooting when Formatted Data Overflows
U. Formatting with X or x
V. Formatting with Z
W. Formatting with Z Visual
X. Formatting with 9
Y. Formatting with 9 Visual
Z. Formatting with $ AA. Formatting with $ Visual

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Teradata SQL

Course Outline (Cont.)

BB. Formatting with $ and Commas
CC. Formatting with $ and Commas Visual
DD. Formatting with $ and Commas and 9
EE. Formatting with $ and Commas and 9 with Zero Dollars
FF. A Great Formatting Example
GG. A Great Formatting Example for Day, Month, and Year
HH. A Trick to get SQL Assistant to Format Data
II. Using the CASESPECIFIC (CS) Command in Teradata Mode
JJ. Using NOT CASESPECIFIC (CS) in ANSI Mode
KK. Using the LOWER Command
LL. Using the UPPER Command

XI. OLAP Functions
A. On-Line Analytical Processing (OLAP) or Ordered Analytics
B. Cumulative Sum (CSUM) Command and how OLAP Works
C. OLAP Commands always Sort (ORDER BY) in the Command
D. Calculate the Cumulative Sum (CSUM) after Sorting the Data
E. The OLAP Major Sort Key
F. The OLAP Major Sort Key and the Minor Sort Key(s)
G. Troubleshooting OLAP – My Data isn’t coming back correct
H. GROUP BY in Teradata OLAP Syntax Resets on the Group
I. CSUM the Number 1 to get a Sequential Number
J. A Single GROUP BY Resets each OLAP with Teradata Syntax
K. A Better Choice – The ANSI Version of CSUM
L. The ANSI Version of CSUM – The Sort Explained
M. The ANSI CSUM – Rows Unbounded Preceding Explained
N. The ANSI CSUM – Making Sense of the Data
O. The ANSI CSUM – Making Even More Sense of the Data
P. The ANSI CSUM – The Major and Minor Sort Key(s)
Q. The ANSI CSUM – Getting a Sequential Number
R. Troubleshooting the ANSI OLAP on a GROUP BY
S. The ANSI OLAP – Reset with a PARTITION BY Statement
T. PARTITION BY only Resets a Single OLAP not ALL of them
U. The Moving SUM (MSUM) and Moving Window
V. How the Moving Sum is calculated
W. How the Sort works for Moving SUM (MSUM)
X. GROUP BY in the Moving SUM does a Reset

Y. Quiz – Can you make the Advanced Calculation in your mind?
Z. Answer to Quiz for the Advanced Calculation in your mind?
AA. Quiz – Write that Teradata Moving Average in ANSI Syntax
BB. Both the Teradata Moving SUM and ANSI Version
CC. The ANSI Moving Window is Current Row and Preceding
DD. How ANSI Moving Average Handles the Sort
EE. Quiz – How is that Total Calculated?
FF. Answer to Quiz – How is that Total Calculated?
GG. Moving SUM every 3-rows Vs. a Continuous Average
HH. Partition BY Resets an ANSI OLAP
II. The Moving Average (M AVG) and Moving Window
JJ. How the Moving Average is calculated
KK. How the Sort works for Moving Average (M AVG)
LL. GROUP BY in the Moving Average does a Reset
MM. Quiz – Can you make the Advanced Calculation in your mind?
NN. Answer to Quiz for the Advanced Calculation in your mind?
OO. Quiz – Write that Teradata Moving Average in ANSI Syntax
PP. Both the Teradata Moving Average and ANSI Version
QQ. The ANSI Moving Window is Current Row and Preceding
RR. How ANSI Moving Average Handles the Sort
SS. Quiz – How is that Total Calculated?
TT. Answer to Quiz – How is that Total Calculated?
UU. Quiz – How is that 4th Row Calculated?
VV. Answer to Quiz – How is that 4th Row Calculated?
WW. Moving Average every 3-rows Vs. a Continuous Average
XX. Partition BY Resets an ANSI OLAP
YY. The Moving Difference (MDIFF) Visual
ZZ. Moving Difference (MDIFF) Visual
AAA. Moving Difference using ANSI Syntax
BBB. Moving Difference using ANSI Syntax with Partition By
Teradata SQL

Course Outline (Cont.)

CCC. Trouble Shooting the Moving Difference (MDIFF)  
DDD. Using the RESET WHEN option in Teradata  
EEE. How Many Months per Product_ID has Revenue Increased?  
FFF. The RANK Command  
GGG. How to get Rank to Sort in Ascending Order  
HHH. Two ways to get Rank to Sort in Ascending Order  
III. RANK using ANSI Syntax Defaults to Ascending Order  
JJJ. Getting RANK using ANSI Syntax to Sort in DESC Order  
KKK. RANK () OVER and PARTITION BY  
LLL. RANK () OVER and QUALIFY  
MMM. RANK () OVER and PARTITION BY with a QUALIFY  
NNN. QUALIFY and WHERE  
OOO. Quiz – How can you simplify the QUALIFY Statement  
PPP. Answer to Quiz – Can you simplify the QUALIFY Statement  
QQQ. The QUALIFY Statement without Ties  
RRR. The QUALIFY Statement with Ties  
SSS. The QUALIFY Statement with Ties Brings back Extra Rows  
TTT. Mixing Sort Order for QUALIFY Statement  
UUU. Quiz – What Caused the RANK to Reset?  
VVV. Answer to Quiz – What Caused the RANK to Reset?  
WWW. Quiz – Name those Sort Orders  
XXX. Answer to Quiz – Name those Sort Orders  
YYY. PERCENT_RANK () OVER  
ZZZ. PERCENT_RANK () OVER with 14 rows in Calculation  
AAAA. PERCENT_RANK () OVER with 21 rows in Calculation  
BBBB. Quiz – What Cause the Product_ID to Reset  
CCCC. Answer to Quiz – What Causes the Product_ID to Reset  
DDDD. Answer to Quiz – What Causes the Product_ID to Reset  
EEEE. COUNT OVER for a Sequential Number  
FFFF. Troubleshooting COUNT OVER  
GGGG. Quiz – What caused the COUNT OVER to Reset?  
HHHH. Answer to Quiz – What caused the COUNT OVER to Reset?  
III. The MAX OVER Command  
JJJJ. MAX OVER with PARTITION BY Reset  
KKKK. Troubleshooting MAX OVER  
LLLL. The MIN OVER Command  
MMMM. Troubleshooting MIN OVER  
NNNN. Finding a Value of a Column in the Next Row with MIN  
OOOO. Finding a Value of a Date in the Next Row with MIN  
PPPP. Finding Gaps between Dates  
QQQQ. The CSUM for Each Product_ID for the First 3 Days  
RRRR. Quiz – Fill in the Blank  
SSSS. Answer to Quiz – Fill in the Blank  
TTTT. The Row_Number Command  
UUUU. Quiz – How did the Row_Number Reset?  
VVVV. Quiz – How did the Row_Number Reset?  
WWWW. Row_Number with Qualify to get the Typical Rows per Value  
XXX. A Second Typical Rows per Value Query on Sale_Date  
YYYY. Testing Your Knowledge  
ZZZZ. Testing Your Knowledge  
AAAAA. Testing Your Knowledge  
BBBBB. Testing Your Knowledge  
CCCCC. Testing Your Knowledge  
DDDDD. Testing Your Knowledge  

XII. The Quantile Function  
A. The Quantile Function and Syntax  
B. A Quantile Example  
C. A Quantile Example using DESC Mode  
D. QUALIFY to find Products in the top Partitions  
E. QUALIFY to find Products in the top Partitions Sorted DESC  
F. QUALIFY to find Products in the top Partitions Sorted ASC  
G. QUALIFY to find Products in top Partitions with Tiebreaker  
H. Using Tertiles (Partitions of Four)  
I. How Quantile Works
XIII. Temporary Tables
   A. There are three types of Temporary Tables
   B. CREATING A Derived Table
   C. Naming the Derived Table
   D. Aliasing the Column Names in the Derived Table
   E. Most Derived Tables Are Used To Join To Other Tables
   F. Multiple Ways to Alias the Columns in a Derived Table
   G. Our Join Example with a Different Column Aliasing Style
   H. Column Aliasing Can Default for Normal Columns
   I. CREATING a Derived Table using the WITH Command
   J. Our Join Example With the WITH Syntax
   K. The Same Derived Query shown Three Different Ways
   L. Quiz - Answer the Questions
   M. Answer to Quiz - Answer the Questions
   N. Clever Tricks on Aliasing Columns in a Derived Table
   O. A Derived Table lives only for the lifetime of a single query
   P. An Example of Two Derived Tables in a Single Query
   Q. WITH RECURSIVE Derived Table
   R. Defining the WITH Recursive Derived Table
   S. Looping Through the WITH Recursive Derived Table
   T. Looping Through the WITH Recursive Derived Table
   U. Looping Through the WITH Recursive Derived Table
   V. Looping Through the WITH Recursive Derived Table
   W. Looping Through the WITH Recursive Derived Table
   X. Creating a Volatile Table
   Y. You Populate a Volatile Table with an INSERT/SELECT
   Z. The Three Steps to Use a Volatile Table
   AA. Why Would You Use the ON COMMIT DELETE ROWS?
   BB. The HELP Volatile Table Command Shows your Volatiles
   CC. A Volatile Table with a Primary Index
   DD. The Joining of Two Tables Using a Volatile Table
   EE. You Can Collect Statistics on Volatile Tables
   FF. The New Teradata V14 Way to Collect Statistics
   GG. Four Examples of Creating a Volatile Table Quickly
   HH. Four Advanced Examples of Creating a Volatile Table Quickly
   II. Creating Partitioned Primary Index (PPI) Volatile Tables
   JJ. Using a Volatile Table to Get Rid of Duplicate Rows
   KK. Using a Simple Global Temporary Table
   LL. Two Brilliant Techniques for Global Temporary Tables
   MM. The Joining of Two Tables Using a Global Temporary Table
   NN. CREATING A Global Temporary Table

XIV. Sub-query Functions
   A. An IN List is much like a Subquery
   B. An IN List Never has Duplicates – Just like a Subquery
   C. An IN List Ignores Duplicates
   D. The Subquery
   E. How a Basic Subquery Works
   F. The Final Answer Set from the Subquery
   G. Quiz - Answer the Difficult Question
   H. Answer to Quiz - Answer the Difficult Question
   I. Should you use a Subquery of a Join?
   J. Quiz - Write the Subquery
   K. Answer to Quiz - Write the Subquery
   L. Quiz - Write the More Difficult Subquery
   M. Answer to Quiz - Write the More Difficult Subquery
   N. Quiz - Write the Subquery with an Aggregate
   O. Answer to Quiz - Write the Subquery with an Aggregate
   P. Quiz - Write the Correlated Subquery
   Q. Answer to Quiz - Write the Correlated Subquery
   R. The Basics of a Correlated Subquery
   S. The Top Query always runs first in a Correlated Subquery
   T. The Bottom Query runs last in a Correlated Subquery
   U. Quiz - Who is coming back in the Final Answer Set?
   V. Answer - Who is coming back in the Final Answer Set?
   W. Correlated Subquery Example vs. a Join with a Derived Table
Teradata SQL

Course Outline (Cont.)

X. Quiz - A Second Chance to Write a Correlated Subquery
Y. Answer - A Second Chance to Write a Correlated Subquery
Z. Quiz - A Third Chance to Write a Correlated Subquery
AA. Answer - A Third Chance to Write a Correlated Subquery
BB. Quiz - Last Chance to Write a Correlated Subquery
CC. Answer - Last Chance to Write a Correlated Subquery
DD. Correlated Subquery that Finds Duplicates
EE. Quiz - Write the NOT Subquery
FF. Answer to Quiz - Write the NOT Subquery
GG. Quiz - Write the Subquery using a WHERE Clause
HH. Answer - Write the Subquery using a WHERE Clause
II. Quiz - Write the Subquery with Two Parameters
JJ. Answer to Quiz - Write the Subquery with Two Parameters
KK. How the Double Parameter Subquery Works
LL. More on how the Double Parameter Subquery Works
MM. Quiz - Write the Triple Subquery
NN. Answer to Quiz - Write the Triple Subquery
OO. Quiz - How many rows return on a NOT IN with a NULL?
PP. How to handle a NOT IN with Potential NULL Values
QQ. IN is equivalent to =ANY
RR. Using a Correlated Exists
SS. How a Correlated Exists matches up
TT. The Correlated NOT Exists
UU. The Correlated NOT Exists Answer Set
VV. Quiz - How many rows come back from this NOT Exists?
WW. Answer - How many rows come back from this NOT Exists?

XV. Substrings and Positioning Functions
A. The CHARACTERS Command Counts Characters
B. The CHARACTERS Command - Spaces can Count too
C. The CHARACTERS Command and Char (20) Data
D. Troubleshooting the CHARACTERS Command
E. TRIM for Troubleshooting the CHARACTERS Command
F. CHARACTERS and CHARACTER_LENGTH equivalent
G. OCTET_LENGTH
H. The TRIM Command trims both Leading and Trailing Spaces
I. Trim and Trailing is Case Sensitive
J. Trim and Trailing works if Case right
K. Trim Combined with the CHARACTERS Command
L. How to TRIM only the Trailing Spaces
M. How to TRIM Trailing Letters
N. How to TRIM Trailing Letters and use CHARACTER_LENGTH
O. The SUBSTRING Command
P. How SUBSTRING Works with NO ENDING POSITION
Q. Using SUBSTRING to move Backwards
R. How SUBSTRING Works with a Starting Position of -1
S. How SUBSTRING Works with an Ending Position of 0
T. An Example using SUBSTRING, TRIM and CHAR Together
U. SUBSTRING and SUBSTR are equal, but use different syntax
V. The POSITION Command finds a Letters Position
W. The POSITION Command is brilliant with SUBSTRING
X. Quiz - Name that SUBSTRING Starting and For Length
Y. The POSITION Command is brilliant with SUBSTRING
Z. Quiz - Name that SUBSTRING Starting and For Length
AA. Answer to Quiz - Name that Starting and For Length
BB. Answer to Quiz - Name that Starting and For Length
CC. Using the SUBSTRING to Find the Second Word On
DD. Quiz - Why did only one Row Return
EE. Answer to Quiz - Why Did only one Row Return
FF. Concatenation
GG. Concatenation and SUBSTRING
HH. Four Concatenations Together
II. Troubleshooting Concatenation

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Course Outline (Cont.)

XVI. Interrogating the Data
A. Quiz – What would the Answer be?
B. Answer to Quiz – What would the Answer be?
C. The NULLIFZERO Command
D. Quiz – Fill in the Blank Values in the Answer Set
E. Answer to Quiz – Fill in the Blank Values in the Answer Set
F. Answer to Quiz – Fill in the Blank Values in the Answer Set
G. Quiz – Fill in the Answers for the NULLIF Command
H. Quiz – Fill in the Answers for the NULLIF Command
I. The ZEROIFNULL Command
J. Answer to the ZEROIFNULL Question
K. The COALESCE Command
L. The COALESCE Answer Set
M. The Coalesce Quiz
N. Answers to the Coalesce Quiz
O. The Basics of CAST (Convert and Store)
P. Some Great CAST (Convert and Store) Examples
Q. Some Great CAST (Convert and Store) Examples
R. Some Great CAST (Convert and Store) Examples
S. A Teradata Extension – The Implied Cast
T. The Basics of the CASE Statements
U. The Basics of the CASE Statement shown visually
V. Valued Case vs. Searched Case
W. Quiz - Valued Case Statement
X. Answer - Valued Case Statement
Y. Quiz - Searched Case Statement
Z. Answer - Searched Case Statement
AA. Quiz - When NO ELSE is present in CASE Statement
BB. Answer - When NO ELSE is present in CASE Statement
CC. When an ELSE is present in CASE Statement
DD. When NO ELSE is present in CASE Statement
EE. When an Alias is NOT used in a CASE Statement
FF. When an Alias is NOT used in a CASE Statement
GG. When NO ELSE is present in CASE Statement
HH. Combining Searched Case and Valued Case
II. A Trick for getting a Horizontal Case
JJ. Nested Case
KK. Put a CASE in the ORDER BY

D. Exceptions to the ORDER BY Rule inside a View
E. How to Get HELP with a View
F. Views sometimes CREATED for Formatting or Row Security
G. Another Way to Alias Columns in a View
H. Resolving Aliasing Problems in a View
I. Resolving Aliasing Problems in a View
J. Resolving Aliasing Problems in a View
K. CREATING Views for Complex SQL such as Joins
L. WHY certain columns need Aliasing in a View
M. Aggregates on View Aggregates
N. Locking Row for Access
O. Creating Views for Temporal Tables
P. Altering a Table
Q. Altering a Table after a View has been created
R. A View that errors After an ALTER
S. Troubleshooting a View
T. Updating Data in a Table through a View
U. Maintenance Restrictions on a Table through a View

XVIII. Macro Functions
A. The 14 rules of Macros
B. CREATING and EXECUTING a Simple Macro
C. Multiple SQL Statements inside a Macro
D. Complex Joins inside a Macro
E. Passing an INPUT Parameter to a Macro
F. Troubleshooting a Macro with INPUT Parameters
G. Troubleshooting a Macro with INPUT Parameters
H. An UPDATE Macro with Two Input Parameters
I. Executing a Macro with Named (Not Positional) Parameters
J. Troubleshooting a Macro

XIX. Set Operators Functions
A. Rules of Set Operators
B. INTERSECT Explained Logically
C. INTERSECT Explained Logically
D. UNION Explained Logically
E. UNION Explained Logically
F. UNION ALL Explained Logically
G. UNION Explained Logically
H. EXCEPT Explained Logically
I. EXCEPT Explained Logically

XVII. View Functions
A. Creating a Simple View
B. Basic Rules for Views
C. How to Modify a View

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Teradata SQL

Course Outline (Cont.)

J. Minus Explained Logically
K. Minus Explained Logically
L. Testing Your Knowledge
M. Testing Your Knowledge
N. An Equal Amount of Columns in both SELECT List
O. Columns in the SELECT list should be from the same Domain
P. The Top Query handles all Aliases
Q. The Bottom Query does the ORDER BY (a Number)
R. Great Trick: Place your Set Operator in a Derived Table
S. UNION vs. UNION ALL
T. UNION vs. UNION ALL Example
U. Using UNION ALL and Literals
V. A Great Example of how EXCEPT works
W. USING Multiple SET Operators in a Single Request
X. Changing the Order of Precedence with Parentheses
Y. Using UNION ALL for speed in Merging Data Sets
Z. Using UNION to be same as GROUP BY GROUPING SETS
AA. Using UNION to be same as GROUP BY ROLLUP
BB. Using UNION to be the same as GROUP BY Cube
CC. Using UNION to be same as GROUP BY Cube
DD. Using UNION to be same as GROUP BY Cube

XX. Creating Tables, Secondary Indexes, and Join Indexes

A. Creating a Table with a Unique Primary Index
B. Creating a Table with a Non-Unique Primary Index
C. Creating a Table without entering a Primary Index
D. Creating a Table with NO Primary Index
E. Creating a Set Table
F. Creating a Multiset Table
G. Creating a Set Table with a Unique Primary Index
H. Creating a Set Table with a Unique Secondary Index
I. Creating a Table with an UPI and USI
J. Creating a Table with a Multicolumn Primary Index
K. Creating a Unique Secondary Index (USI) after a table is created
L. Creating a Non-Unique Secondary Index (NUSI) after a table is created
M. Creating a Value-Ordered NUSI
N. Data Types
O. Data Types Continued
P. Data Types Continued
Q. Major Data Types and the number of Bytes they take up
R. Making an exact copy a Table
S. Making a NOT-So-Exact Copy a Table
T. Copying a Table
U. Troubleshooting Copying and Changing the Primary Index
V. Copying only specific columns of a table
W. Copying a Table and Keeping the Statistics
X. Copying a Table with Statistics
Y. Copying a table Structure with NO Data but Statistics
Z. Creating a Table with Fallback
AA. Creating a Table with No Fallback
BB. Creating a Table with a Before Journal
CC. Creating a Table with a Dual Before Journal
DD. Creating a Table with an After Journal
EE. Creating a Table with a Dual After Journal
FF. Creating a Table with a Journal Keyword Alone
GG. Why Use Journaling?
HH. Why Use Journaling?
II. Creating a Table with Customization of the Data Block Size
JJ. Creating a Table with Customization with FREESPACE Percent
KK. Creating a QUEUE Table
LL. Example of how a Queue Table Works
MM. Example of how a Queue Table Works
NN. Creating a Columnar Table
OO. Creating a Columnar Table with Multi-Column Containers
PP. Creating a Columnar Table with a Row Hybrid
QQ. Creating a Columnar Table with both Row and Column Partitions
RR. How to Load into a Columnar Table
SS. Creating a Columnar Table with NO AUTO COMPRESS
TT. CREATING a Bi-Temporal Table
UU. Explaining Bi-Temporal PERIOD Data Types
VV. Creating a PPI Table with Simple Partitioning

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PT0061_TERADATASQL
Course Outline (Cont.)

WW. Creating a PPI Table with RANGE_N Partitioning per Day
XX. Creating a PPI Table with RANGE_N Partitioning per Month
YY. A Visual of One Year of Data with Range_N per Month
ZZ. Creating a PPI Table with RANGE_N Partitioning per Week
AAA. A Clever Range_N Option
BBB. Creating a PPI Table with CASE_N
CCC. A Visual of Case_N Partitioning
DDD. Number of PPI Partitions Allowed
EEE. NO CASE and UNKNOWN Partitions Together
FFF. Combining Older Data and Newer Data in PPI
GGG. Visual for Combining Older Data and Newer Data in PPI
HHH. Multi-Level Partitioning Combining Range_N and Case_N
III. A Visual of Multi-Level Partitioning
JJJ. NON-Unique Primary Indexes (UPI) in PPI
KKK. PPI Table with a Unique Primary Index (UPI)
LLL. Tricks for Non-Unique Primary Indexes (UPI)
MMM. A Brilliant Technique for a Unique Secondary Index
NNN. A Brilliant Technique for a Non-Unique Secondary Index
OOO. Character Based PPI for RANGE_N
PPP. Character-Based PPI for CASE_N
QQQ. Dates and Character-Based Multi-Level PPI
RRR. TIMESTAMP Partitioning
SSS. Using CURRENT_DATE to define a PPI
TTT. ALTER to CURRENT_DATE the next year
UUU. ALTER to CURRENT_DATE with Save
VVV. Altering a PPI Table to Add or Drop Partitions
WWW. Deleting a Partition
XXX. Deleting a Partition and saving its contents
YYY. Using the PARTITION Keyword in your SQL
ZZZ. SQL for RANGE_N
AAAA. SQL for CASE_N
BBBB. SQL - User Defined Functions (UDF)
CCCC. User Defined Functions
DDDD. Creating a Multi-Table Join Index
EEEE. Visual of a Join Index
FFFF. Outer Join Multi-Table Join Index
GGGG. Visual of a Left Outer Join Index
HHHH. Compressed Multi-Table Join Index
IIII. Creating a Single-Table Join Index
JJJJ. Compressed Single-Table Join Index
KKKK. Aggregate Join Index
LLLL. Sparse Join Index
MMMM. A Global Multi-Table Join Index
NNNN. Creating a Hash Index

XXI. Data Manipulation Language (DML)

A. INSERT Syntax # 1
B. INSERT Example with Syntax 1
C. INSERT Syntax # 2
D. INSERT Example with Syntax 2
E. INSERT Example with Syntax 3
F. Using NULL for Default Values
G. INSERT/SELECT Command
H. INSERT/SELECT Example using All Columns (*)
I. INSERT/SELECT Example with Less Columns
J. INSERT/SELECT to Build a Data Mart
K. Fast Path INSERT/SELECT
L. NOT quite the Fast Path INSERT/SELECT
M. UNION for the Fast Path INSERT/SELECT
N. BTEQ for the Fast Path INSERT/SELECT
O. The UPDATE Command Basic Syntax
P. Two UPDATE Examples
Q. Subquery UPDATE Command Syntax
R. Example of Subquery UPDATE Command
S. Join UPDATE Command Syntax
T. Example of an UPDATE Join Command
U. Fast Path UPDATE
V. The DELETE Command Basic Syntax
W. Two DELETE Examples to DELETE ALL Rows in a Table
X. A DELETE Example Deleting only Some of the Rows
Y. Subquery and Join DELETE Command Syntax
Z. Example of Subquery DELETE Command
AA. Example of Join DELETE Command
BB. Fast Path DELETE
CC. Fast Path DELETE Example # 1
DD. Fast Path DELETE Example # 2
EE. Fast Path DELETE Example # 3
FF. MERGE INTO
GG. MERGE INTO Example that Matches
HH. MERGE INTO Example that does NOT Match
II. OReplace

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Course Outline (Cont.)

XXII. Stored Procedure Functions
A. Stored Procedures vs. Macros
B. Creating a Stored Procedure
C. How you CALL a Stored Procedure
D. Label all BEGIN and END statements except the first ones
E. How to Declare a Variable
F. How to Declare a Variable and then SET the Variable
G. An IN Variable is passed to the Procedure during the CALL
H. The IN, OUT and INOUT Parameters
I. Using IF inside a Stored Procedure
J. Example of two Stored Procedures with different techniques
K. Using Loops in Stored Procedures
L. You can Name the First Begin and End if you choose
M. Using Keywords LEAVE vs. UNTIL for LEAVE vs. REPEAT
N. Stored Procedure Basic Assignment
O. Answer - Stored Procedure Basic Assignment
P. Stored Procedure Advanced Assignment
Q. Answer - Stored Advanced Assignment

XXIII. Trigger Functions
A. The Fundamentals of Triggers
B. CREATING A Trigger
C. FOR EACH STATEMENT vs. FOR EACH ROW
D. Using ORDER when Similar Triggers Exist

XXIV. Math Functions
A. What is the Order of Precedents?
B. What is the Answer to this Math Question?
C. What is the Answer to this Math Question?
D. What is the Answer to this Math Question?

XXV. Sample
A. The SAMPLE Function and Syntax
B. SAMPLE Function Examples
C. A SAMPLE Example that asks for Multiple Samples
D. A SAMPLE Example with the SAMPLEID
E. A SAMPLE Example WITH REPLACEMENT
F. A SAMPLE Example with Four 10% Samples
G. A Randomized SAMPLE
H. A SAMPLE with Conditional Logic
I. Aggregates and A SAMPLE using a Derived Table
J. Random Number Generator
K. Using Random to SELECT a Percentage of Rows
L. Using Random and Aggregations

XXVI. Statistical Aggregate Functions
A. The Stats Table
B. The KURTOSIS Function
C. A Kurtosis Example
D. The SKEW Function
E. A SKEW Example
F. The STDDEV_POP Function
G. A STDDEV_POP Example
H. The STDDEV_SAMP Function
I. A STDDEV_SAMP Example
J. The VAR_POP Function
K. A VAR_POP Example
L. The VAR_SAMP Function
M. A VAR_SAMP Example
N. The CORR Function
O. A CORR Example
P. Another CORR Example so you can compare
Q. The COVAR_POP Function
R. A COVAR_POP Example
S. Another COVAR_POP Example so you can compare
T. The REGR_INTERCEPT Function
U. A REGR_INTERCEPT Example
V. Another REGR_INTERCEPT Example so you can compare
W. The REGR_SLOPE Function
X. A REGR_SLOPE Example
Y. Another REGR_SLOPE Example so you can compare
Z. Using GROUP BY
AA. No Having Clause vs. Use of HAVING

XXVII. Explain
A. EXPLAIN Keywords
B. EXPLAIN Keywords Continued
C. Explain Example – Full Table Scan
D. Explain Example – Unique Primary Index (UPI)
E. Explain Example – Non-Unique Primary Index (NUPI)
F. Explain Example – Unique Secondary Index (USI)
G. Explain Example – Redistributed to All-AMPS
H. Explain Example – Row Hash Match Scan
I. Explain Example – Duplicated on All-AMPS

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Course Outline (Cont.)

J. Explain Example – Low Confidence
K. Explain Example – High Confidence
L. Explain Example – Product Join
M. Explain Example – BMSMS
N. Explain Terminology for Partitioned Primary Index Tables
O. Explain Example – From a Single Partition
P. Explain Example – From N Partitions
Q. Explain Example – Partitions and Current Date

XXVIII. Collect Statistics
A. Statistics is Cost Based
B. The Purpose of Collect Statistics
C. When Teradata Collects Statistics, it creates a Histogram
D. The Interval of the Collect Statistics Histogram
E. Histogram Quiz
F. Answers to Histogram Quiz
G. What to COLLECT STATISTICS On?
H. Why Collect Statistics?
I. How do you know if Statistics were collected on a Table?
J. A Huge Hint that No Statistics Have Been Collected
K. The Basic Syntax for COLLECT STATISTICS
L. COLLECT STATISTICS Examples for a better Understanding
N. Where Does Teradata Keep the Collected Statistics?
O. The Official Syntaxes for COLLECT STATISTICS
P. How to Recollect STATISTICS on a Table
Q. Teradata Always Does a Random AMP Sample
R. Random Sample is kept in the Table Header in FSG Cache
S. Multiple Random AMP Samplings
T. How a Random AMP gets a Table Row count
U. Random AMP Estimates for NUSI Secondary Indexes
V. USI Random AMP Samples are Not Considered
W. There’s No Random AMP Estimate for Non-Indexed Columns
X. Summary of the PE Plan if No Statistics Were Collected
Y. Stale Statistics Detection and Extrapolation
Z. Extrapolation for Future Dates
AA. How to Copy a Table with Data and the Statistics?
BB. COLLECT STATISTICS Directly From another Table
CC. How to Copy a Table with NO Data and the Statistics?
DD. When to COLLECT STATISTICS Using only a SAMPLE

EE. Examples of COLLECT STATISTICS Using only a SAMPLE
FF. Examples of COLLECT STATISTICS for V14
GG. How to Collect Statistics on a PPI Table on the Partition
HH. Teradata V12 and V13 Statistics Enhancements
II. Teradata V14 Statistics Enhancements
JJ. Teradata V14 Summary Statistics
KK. Teradata V14 MaxValueLength
LL. Teradata V14 MaxIntervals
MM. Teradata V14 Sample N Percent
NN. Teradata Statistics Wizard

XXIX. Hashing Functions
A. Hashing Functions on Teradata
B. The HASHROW Function
C. The HASHROW Function in a real-world Example
D. The HASHBUCKET Function
E. The HASHBUCKET Function in a real-world Example
F. The HASHAMP Function
G. The HASHAMP Function in a real-world Example
H. A Great HASHAMP Function for Large Tables
I. The HASHBAHKAMP Function
J. A Real-World HASHBAHKAMP Function Example
K. A Great way to see distribution for Primary and Fallback rows

XXX. BTEQ – Batch Teradata Query
A. BTEQ – Batch Teradata Query Tool
B. How to Logon to BTEQ in Interactive Mode
C. Running Queries in BTEQ in Interactive Mode
D. BTEQ Commands vs. BTEQ SQL Statements
E. WITH BY Command for Subtotals
F. WITH Command for a Grand Total
G. WITH and WITH BY Together for Subtotals and Grand Totals
H. How to Logon to BTEQ in a SCRIPT
I. Running Queries in BTEQ through a Batch Script
J. Running a BTEQ Batch Script through the Command Prompt
K. Running a BTEQ Batch Script through the Run Command
Teradata SQL

Course Outline (Cont.)

L. Using Nexus to Build Your BTEQ Scripts
M. Using Nexus to Build Your BTEQ Scripts
N. Using BTEQ Scripts to IMPORT Data
O. What Keywords Mean in a BTEQ Script
P. Creating a BTEQ IMPORT for a Comma Separated Value File
Q. Four Great Examples/Ways to Run a Teradata BTEQ Script
R. BTEQ Export – Four types of Export Variations
S. Creating a BTEQ Export Script in Record Mode
T. Creating a BTEQ Export Script in Report Mode
U. The Appearance of Record Mode Vs Report Mode Data
V. Using Report Mode to Create a Comma Separated Report
W. Creating a BTEQ IMPORT for a Comma Separated Value File
X. Using Multiple Sessions in BTEQ
Y. BTEQ Fast Path Inserts
Z. BTEQ Can Use Conditional Logic
AA. Using a BTEQ Export and Setting a Limit In a UNIX System

XXXI. Top SQL Commands Cheat Sheet
A. SELECT All Columns from a Table and Sort
B. Select Specific Columns and Limiting the Rows
C. Changing your Default Database
D. Keywords that describe you
E. Select TOP Rows in a Rank Order
F. A Sample number of rows
G. Getting a Sample Percentage of rows
H. Find Information about a Database
I. Find information about a Table
J. Using Aggregates
K. Performing a Join
L. Performing a Join using ANSI Syntax
M. Using Date, Time and Timestamp
N. Using Date Functions
O. Using the System Calendar
P. Using the System Calendar in a Query
Q. Formatting Data
R. Using Rank
S. Using a Derived Table
T. Using a Subquery
U. Correlated Subquery
V. Using Substring
W. Basic CASE Statement
X. Advanced CASE Statement
Y. Using an Access Lock in your SQL
Z. Collect Statistics
AA. CREATING a Volatile Table with a Primary Index
BB. CREATING a Volatile Table that is Partitioned (PPI)
CC. CREATING a Volatile Table that is deleted after the Query

DD. Finding the Typical Rows per Value for specific column
EE. Finding out how much Space you have
FF. How much Space you have Per AMP
GG. Finding your Space
HH. Finding Space Skew in Tables in a Database
II. Finding the Number of rows per AMP for a Column
JJ. Finding Account Information
KK. Ordered Analytics