



TERADATA EDUCATION OUTLINE

Coffing Data Warehousing has provided quality Teradata education, products and services for over a decade. We offer customized solutions to maximize your warehouse.

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In addition to the course material listed in this outline, we also offer Teradata classes in Teradata Basics, Implementation, SQL, Database Administration, Design and Utilities. Please contact us so we can customize a course to fit your specific needs.

PURPOSE

Coffing Data Warehousing has been providing quality Teradata education for over a decade. We offer customized courses to maximize the effectiveness of each class. The purpose of this proposal is to build a lasting relationship with your company. To this end, we have combined our comprehensive Teradata education services in a unique package that we feel best suits the diverse needs of your company while offering our high quality product at competitive pricing.

Coffing Data Warehousing is excited to offer you, our preferred partner, an innovative new way to look at training at the CoffingDW Teradata University (CDW-TU). This approach provides the ability to maximize learning potential. Our goal is to make your employees the most educated data warehouse experts in the industry.

CURRICULUM:

Coffing Data Warehousing will provide an experienced and highly qualified resource to deliver this customized educational seminar on the following topic(s):

Teradata Education

- Teradata SQL

COURSE DESCRIPTION

COURSE PREREQUISITES	There is no prerequisite for this course.
COURSE Duration/Format	This course is designed to be highly interactive with the audience.
COURSE AUDIENCE	The audience will consist of a mix of beginning, intermediate and advanced Teradata users.
OBJECTIVES	This course is designed to provide in-depth knowledge of Teradata SQL.

Tera-Tom on Teradata SQL for V2R6

Chapter 1 — The Rules of Data Warehousing

- Teradata Certification
- A Logical View of the Teradata Architecture
- The Parsing Engine (PE)
- The Parsing Engine in Detail
- The Parsing Engine Knows All
- The Access Module Processors (AMPs)
- The BYNET
- A Visual for Data Layout
- How Teradata handles Data Access
- The PE uses Statistics to come up with the Plan
- When there are NO Statistics Collected on a Table
- Teradata Understands SQL
- Teradata Maximums
- Teradata Maximums per Release

Chapter 2 — SQL Basics

- Rows and Columns
- The SELECT Command
- The SELECT Command with *
- The WHERE Clause
- The Order BY Clause
- Sorting by Multiple Columns
- Sorting In Descending Order

Chapter 3 — Teradata SQL Punctuation

- Valid Teradata Names
- Punctuation (Period .)
- How to SET your Default Database
- Punctuation (Comma ,)
- Punctuation (Single Quotes ‘ ’)
- Punctuation (Double Quotes “ ”)
- Punctuation - Placing Comments inside the SQL

Chapter 4 - Help, Show, and Explain

The HELP Command
The HELP Command continued
The SHOW Command
The EXPLAIN Command

Chapter 5 — SELECTING Rows

Checking for NULL Values with IS NULL
Checking for NULL Values with IS NOT NULL
How will NULL Values Sort?
The DISTINCT Command
The DISTINCT Command with Multiple Columns
Multiple DISTINCT statements in the same SQL
The AND Operator
The OR Operator
The NOT Operator
Order of Precedence for (), NOT, AND, or OR
USING an IN List instead of OR
The BETWEEN Operator
The LIKE Operator and Percent Wildcard
The LIKE Operator - Underscore Wildcard _
SQL that causes a Full Table Scan (FTS)

Chapter 6 — Aggregates

The Five Aggregates
Aggregate Example with NULL Values
Aggregate Example Answers
Aggregates and the GROUP BY Statement
Non-Aggregates must be Grouped
Aggregates and the HAVING Statement
WHERE, GROUP BY and HAVING Together
Aggregates
Query Results when a Table is Empty

Chapter 7 — Subqueries

The IN Statement (for review)
Normal Subqueries
Normal Subqueries using Multiple Tables
Subqueries using Multiple Tables Continued
Subqueries use values from the same Domain
Using Subqueries with Aggregates
Correlated Subquery
How a Correlated Subquery runs
EXISTS
Estimate the Number of Rows for each Query
Number of Rows Returned Quiz answers
NOT IN Returns Nothing when NULLS are Present
NOT EXISTS Vs NOT IN

Chapter 8 – Joins

Primary Key/Foreign Key Relationships
Primary Key/Foreign Key Relationships
A Join using Teradata Syntax
A Join using ANSI Syntax
A LEFT OUTER JOIN
A LEFT OUTER JOIN (Continued)
A Series of Joins (Inner)
A Series of Joins (LEFT OUTER)
A Series of Joins (RIGHT OUTER)
A Series of Joins (FULL OUTER)
Join Types vs. Join Strategies
The Key Things about Teradata and Joins
Joins need the joined rows to be on the same AMP
Another Great Join Picture
Joining Tables with matching rows on different AMPs
Redistributing a Table for Join Purposes
Big Table Small Table Join Strategy
Big Table Small Table Duplication
Nested Join
Hash Join
Exclusion Join
Product Joins
Cartesian Product Join

Cross Join
Self Join
Adding Residual Conditions to a Join
Adding Residual Conditions to a Join (AND)

Chapter 9 – Aliasing, Title, Cast, and Format

Title Function
Title Function in BTEQ adds functionality
Title Function used with Distinct
Teradata Data Types
CAST Function
CAST Examples
CAST Examples that FAIL
Derived Columns
Using and ALIAS on a Column
Formatting a Column
Trick to make ODBC use the FORMAT command
FORMAT Options for Dates
FORMAT Separators
TIME FORMAT Options
Date, Time, and Timestamp FORMAT Examples

Chapter 10 – Interrogating Data

SUBSTRING
SUBSTR
Concatenation of Character Strings
Using SUBSTRING and Concatenation Together
CHARACTER Vs VARCHAR
The TRIM Function
CHARACTERS Command
Output Results for Multiple Commands Mixed
The POSITION Function
The INDEX Function
SUBSTRING and POSITION Together
COALESCE
COALESCE with Literals
ZEROIFNULL

NULLIFZERO
NULLIF Command
The CASE Command (Valued CASE)
The CASE Command (Searched CASE)
Nested CASE Statement

Chapter 11 – Temporary Tables

Derived Tables
Derived Tables
Derived Tables Continued
Multiple Columns in a Derived Table
Derived Table using with a Different Format
Volatile Table
Volatile Table Restrictions
Global Temporary Tables

Chapter 12 — SET Operators

INTERSECT
INTERSECT Example
UNION
UNION with INSERT SELECT to Eliminate Transient Journal
EXCEPT or MINUS

Chapter 13 — Views

View Basics
How to CREATE a View
You SELECT from a View
Change a View with the Keyword REPLACE
Drop View
Placing Aggregates inside a View
Using “Locking for Access” in Views
You can UPDATE Tables through Views
Restricting UPDATE rows WITH CHECK OPTION

Chapter 14 — Macros

Macro Basics

How to CREATE a Macro

How to EXECute a Macro

How to CREATE a Macro with Input Parameters

How to change a Macro

Drop Macro

Macros that will not work

Chapter 15 – Dates and Times

RESERVED Words such as DATE and TIME

How Dates are Stored on Disk

How Teradata Displays the Date

How to change the DATEFORM

Teradata Dates stored as Integers for a Reason

ADD_MONTHS Command

EXTRACT Command with Dates

EXTRACT Command with TIME

The System Calendar

Using the System Calendar for Date Comparison

INTERVAL Processing for Arithmetic and Conversion

INTERVAL Processing that Fails

INTERVAL Arithmetic with Date and Time

TIMESTAMP

CURRENT_TIMESTAMP

Chapter 16 – Creating Tables

A Simple CREATE Statement

A Simple INSERT Statement

CREATING SET TABLES

CREATING MULTiset TABLES

UNIQUE PRIMARY INDEX

A Quick Way to Copy Tables

CREATE Table Options

Defining Constraints at the Column Level

Defining Constraints at the Table Level

Partitioned Primary Index Tables

Partitions can eliminate full table scans

Partitioning with CASE_N
Partitioning with RANGE_N
NO CASE, NO RANGE, or UNKNOWN

Chapter 17 – WITH and WITH BY for Totals and Subtotals

The WITH Statement
The WITH BY Statement
Combining WITH BY and WITH
Combining Multiple WITH BY statements and WITH
Combining Multiple WITH BY statements and WITH (Continued)

Chapter 18 – Sampling

Random Sampling – Number of Rows Sample
Random Sampling – Percentage of the Table Sample
Multiple Samples
SAMPLE WITH REPLACEMENT
SAMPLE
SAMPLE WITH REPLACEMENT and RANDOMIZED ALLOCATION
together
SAMPLE with Conditional Test using WHEN
SAMPLE example that Errors

Chapter 19 – Rank and Quantile

RANK
RANK in ASC Order
QUALIFY RANK is like a HAVING Statement
QUALIFY RANK with a GROUP BY
QUANTILE Function
QUANTILE Function Example using 5
QUANTILE Function using 100 (Percentile)
QUANTILE Function sorted ASC
QUANTILE Function with Percentile (100)

Chapter 20 – OLAP

Cumulative Sum (CSUM)

Cumulative Sum (CSUM)
Cumulative Sum (CSUM) with Multiple Sort Keys
Cumulative Sum (CSUM) with GROUP BY
CSUM to Generate Sequential Numbers
CSUM using ANSI SUM OVER
ANSI SUM OVER with PARTITION BY for Grouping
Moving Sum (MSUM)
Moving Sum (MSUM) with Multiple Sort Keys
Moving Sum (MSUM) with GROUP BY
Moving Sum (MSUM) with ANSI SUM OVER
MSUM with ANSI SUM OVER and PARTITION BY for Grouping
Moving Average (MAVG)
Moving Average (MAVG) with Multiple Sort Keys
Moving Average (MAVG) with GROUP BY
MAVG with ANSI AVG OVER
MAVG with ANSI AVG OVER and PARTITION BY for Grouping
Moving Difference (MDIFF)
Moving Difference (MDIFF) with Multiple Sort Keys
Moving Difference (MDIFF) with GROUP BY

Chapter 21 – New V2R5.1 and V2R6 Features

New GROUP BY specifications
Original GROUP BY Example
GROUPING SETS
CUBE
ROLLUP
TOP Rows Option
QUEUE Tables
FROM TABLE UDF Tables

Chapter 22 – Miscellaneous

Single Row MERGE INTO Command
Single Row MERGE INTO Command
Compression
Implementing Compression
How Compression Works
Teradata and ANSI Mode

Teradata Mode Transactions (Called BTET)
ANSI Mode Transactions
SQRT Function
INSERT/SELECT on two exact tables.
INSERT/SELECT on Tables that Don't Match
Triggers
Row Triggers or Statement Triggers
Trigger Examples
ORDERING Multiple Triggers in a Sequence
Trigger Enable or Disable with ALTER Trigger
Trigger Enable or Disable with ALTER Trigger

Chapter 23 – Stored Procedures

Stored Procedures
CREATE Procedure
Nesting BEGIN and END Statements
Passing a Stored Procedure Parameters
An Example of all Three Parameters
DECLARE and SET
ELSEIF for Speed
The SCOOP is the LOOP and it LEAVES like a Tree
The WHILE and END WHILE