

### UNIQUE FEATURES OF VINAY TECH HOUSE:

- COMPLETELY PRACTICAL, REAL TIME AND PROJECT ORIENTED
- RICH THEORY WITH OPTIMIZATION TECHNIQUES
- CERTIFICATION BASED TRAINING\*\*\*
- VIEW POINT BASED EXPLANATION \*\*\*
- TERADATA PROJECT ENVIRONMENT, EXPLAINING MULTIPLE PROJECTS
- RESUME GUIDANCE AND MOCK INTERVIEWS
- TOP NOTCH COMPANIES, MULTIPLE CMM LEVEL COMPANIES DIRECT RECRUITMENT.

### ADDITIONAL SESSIONS ALONG WITH TERADATA MAIN COURSE:

- DATAWAREHOUSE FUNDAMENTALS
- DATA MODEL FUNDAMENTALS
- DWH & BI PROJECT ENVIRONMENT EXPLANATION
- TERADATA TESTING APPROACH
- TERADATA PROJECT EXPLANATION

### SOFTWARE AND MATERIALS (FREE)

- DEMO SOFTWARE FOR PRACTICE
- PRACTICAL MATERIAL CHAPTER WISE
- SOFTCOPY MATERIAL WITH EACH TOPIC WISE THEORY, DIAGRAMS AND OPTIMIZATIONS
- PDFS AND PPTS WITH DIAGRAMATIC PRESENTATIONS.
- VIDEOS FOR MISSING CLASSES \*\*\*

### BLOGS

- [WWW.TERADATASTUDENTS.BLOGSPOT.IN](http://WWW.TERADATASTUDENTS.BLOGSPOT.IN)

### PROJECTS

- BANKING PROJECT WITH GALAXY & SNOW FLAKE SCHEMA MODELS
- RETAIL PROJECT WITH STAR SCHEMA & MIXED SCHEMA MODELS
- TELECOM PROJECT WITH 3<sup>RD</sup> NORMAL MODEL

### TERADATA DEMO, DATA WAREHOUSE AND DATA MODEL FUNDAMENTALS

#### IT Data Fundamentals & TERADATA Existence

- ❖ Data, Data Availability in IT
- ❖ IT data storage areas
- ❖ Data warehouse, BI definitions and layers
- ❖ Teradata existence in IT, Product services
- ❖ Teradata Definition
- ❖ Teradata Tools and Components
- ❖ Teradata Opportunities

Creative visualization through screen shots

#### TERADATA and Competitiveness

- ❖ What are BI, OLAP, and OLTP? Importance in the current Enterprise? Competitive advantages
- ❖ TERADATA vs Other DATABASES
- ❖ SQL History, SQL Extensions and Teradata detailed history
- ❖ Hardware, Software requirements
- ❖ Nodes and installation methods

#### Teradata practical components explanation

- ❖ Bynet Driver, Teradata Database
- ❖ Teradata Express tools
- ❖ Teradata Load, Unload & Admin Tools
- ❖ Teradata Viewpoint and other tools

#### Data warehousing fundamentals

- ❖ Data definitions
  - (Data, Information, BI, Mining, ODS, DSS, Analysis, OLTP, OLAP, OLCP)
- ❖ Dwh Characteristics, Principles
- ❖ Dwh approaches (Top down/Bottom up)
- ❖ Dwh Life Cycle steps
- ❖ Data Mart & Types
- ❖ Data Processing Types (OLAP)
- ❖ Granularity and various granularities
- ❖ Diff between OLTP and OLAP

Creative visualization through screen shots

Huge discussion on DWH projects

#### Dimensional Modeling Fundamentals

- ❖ Dimension, Dimension Table & types
- ❖ Fact, Fact Table & measures types
- ❖ Fact less fact table
- ❖ Various schemas (Star, Snow Flake, Galaxy & Hybrid )
- ❖ Surrogate key and usages in real time
- ❖ Model, Business, Conceptual, Logical, Physical Data Models

Real time project tables, models and design

Huge discussion on Project Data Designs

### (TERADATA PART-1: DATABASE & SYSTEMS)

#### 1) Teradata Warehouse and Competitiveness

- ❖ Opportunities of Teradata in the enterprise.
- ❖ What is Teradata-RDBMS/DWH & BI?
- ❖ Teradata 15 & Other versions( 14,13.10,13,12)
- ❖ Teradata History and Real time running versions.
- ❖ Teradata View Point Features (Web based management tool) \*\*\*.
- ❖ Descriptions on Golden Gate and Data Mover\*\*\*
- ❖ Teradata competitiveness' and differences with other RDBMS

#### Discussion on Interview and Certification questions

#### 2) Teradata Single ,Multi and Cloud System

- ❖ Node Architecture(Shared Nothing)
- ❖ SMP Architecture
- ❖ MPP Architecture
- ❖ Cloud Architecture (Teradata 14)
- ❖ Discussion on real time no of AMPs and Nodes

#### Real time Project Configurations

#### 3) Teradata Components and Explanation

- ❖ PDE(Parallel Data Extension),
- ❖ Vprocs (Virtual Processors)
- ❖ TPA (Trusted Parallel Application)
- ❖ PE(Parsing Engine)
- ❖ AMP(Access Module Processing)
- ❖ BYNETs (Board less, Board Oriented)
- ❖ TDP (Teradata Directory Program)
- ❖ CLI(Call Level Interface),
- ❖ VSS (Virtual Storage System)\*\*\*

#### Discussion on Certification & Interview questions

#### Discussion on various organizations configurations

#### 4) Teradata Storage and Retrieval Architecture

##### Request Processing

- ❖ a. Syntaxer b. Resolver
- ❖ c. Security Module d. Optimizer
- ❖ e. Step Generator f. GNC Apply g. Dispatcher

##### Hashing approach

- ❖ Hash algorithm, Row Hash, Row ID
- ❖ DSW, Hash Map , Hash Bucket, Reaching Vdisk

#### 5) Teradata Indexes (Primary, Secondary)

##### Primary Index

- ❖ Unique Primary Index (UPI)
- ❖ Non Unique Primary Index (NUPI)
- ❖ Partitioned Primary Index (PPI) (Range\_N, Case\_N, Multi Valued PPI \*\*\*)
- ❖ NOPI (No Primary Index)\*\*\*
- ❖ Full Uniform Distribution vs Skewed distribution.
- ❖ Skewness and Skewfactor

##### Secondary Index

- ❖ Unique Secondary Index (USI)
- ❖ Non Unique Secondary Index(NUSI)
- ❖ Value Ordered Secondary Index (VOSI)
- ❖ Hash Index (HI)
- ❖ Join Index (JI) and Types

##### Full Table Scan(FTS) - Execution process

#### Diagrammatic explanation, syntaxes and practical

#### Performance improvement indexes and tuning them

### (TERADATA PART-2: TERADATA-SQL)

#### 1) Teradata Server, Client and Pre-requisites

- ❖ Server start, stop, pause in Linux & Windows
- ❖ Client tools to operate [GUI, Wizard, CUI]
- ❖ Teradata Sql-Assistant, BTEQ, Query Studio
- ❖ Open Database Connectivity (ODBC), OLEDB
- ❖ Working with Sql-Assistant, BTEQ
- ❖ Transaction Modes [BTET, ANSI]
- ❖ Single, Multi Statement request operations
- ❖ Command, Query and Request Processing

#### Practical on this with case studies

#### 2) Teradata DBA concepts

- ❖ Databases creation, manipulation and removal
- ❖ Users creation, manipulation and removal
- ❖ Memory management (Spool, Perm and Temp)
- ❖ Privileges management
- ❖ Working with other memory areas
- ❖ Working on DDL commands to implement
- ❖ Working with Teradata Administrator tool
- ❖ Working on ViewPoint Portal (Optional)

#### 3) Teradata SQL Languages

- ❖ Data Definition Language (DDL)
- ❖ Data Manipulation Language (DML)
- ❖ Data Control Language (DCL)
- ❖ Stored Procedure Language (SPL)
- ❖ ANSI commands (COMMIT, ROLLBACK, ABORT)
- ❖ Teradata Extensions a. HELP b. SHOW c. EXPLAIN d. COLLECT STATISTICS

#### 4) Data Manipulation Language (DML)

- ❖ Retrieval of data from objects (SELECT)
- ❖ Manipulation of data from objects

(Insert, Update, Delete, Merge, Upsert)

#### Real time usages and detailed practices

#### 5) Data Definition Language (CREATE, ALTER, DROP)

- ❖ Create/alter table with all possible options (Free space, Data Block Size)

#### Create different types of tables

- ❖ Set table
- ❖ Multi Set table
- ❖ Derived table
- ❖ Volatile table (VT)
- ❖ Global Temporary table (GTT)
- ❖ Error table (ET)
- ❖ Queue
- ❖ System Calendar
- ❖ Temporal tables (TD 14)\*\*\*

i. Valid Time ii. Transaction Time iii. Bi Temporal

#### Real time usages and detailed practices

#### 6) Data Control Language (DBA Related Concepts)

- ❖ GRANTing privileges (GRANT)
- ❖ REVOKing privileges (REVOKE)
- ❖ GIVING Privileges (GIVE)

#### Real time usages and detailed practices

#### 7) Locks, Data Recovery and Protection

- ❖ Object Locks - Access, Read, Write, Exclusive
- ❖ Hut, NO Wait, Pseudo table lock
- ❖ HSA, HSN (Hot Stand By AMP, NODE)
- ❖ RAID1, RAID5, Disk Arrays
- ❖ Fall Back, AMP Clustering
- ❖ Clique
- ❖ Images (Single, Dual, Before, After)
- ❖ Journals (Recovery, Transient and Permanent Journals, Write ahead logging)

## 8) Other Components of table

- ❖ Data Types (ANSI, Teradata)
- ❖ Data Type Attributes
- ❖ Column Storage Attributes (COMPRESS)
- ❖ COMPRESS (Block, Row, Column)
- ❖ Constraints
  - Primary / Unique / References / Check
- ❖ Soft Referential Integrity (SOFT RI)
- ❖ COLUMNAR FEATURE

## Real time practices and performance improvements

## 9) Teradata Transactions

- ❖ Implicit & Explicit Transaction
- ❖ Interactive & Batch Modes

Semantic Modes a. BTET b. ANSI

## 10) Conditional Expressions and Operators

- ❖ Conditional Expressions (IN, NOT IN, LIKE, EXISTS, BETWEEN AND, IS NULL etc...)
- ❖ Arithmetic Operators and order of precedence
- ❖ Logical Operators and order of precedence
- ❖ Conditional Operators and order of precedence

## 11) Teradata Other Objects

- ❖ Sub Queries : Simple, Nested & Correlated
- ❖ Set Operations : Union, Union All, Intersect, Except
- ❖ Joins : Cross, Inner, Left, Right and Full Joins

## Detailed discussion on Real Time Queries and Tips

- ❖ Views
- ❖ Macros
- ❖ Stored Procedures
- ❖ Triggers
- ❖ Cursors

## Detailed discussion on Real Time Queries and Tips

## 12) Teradata Functions

### a) Niladic Functions b) Table Functions

### c) Scalar Functions d) Aggregate Functions

### e) Oracle functions in Teradata

### ETL (Normal) Functions :

Format, Cast, Coalesce, Nullif, Trim, Substr, Position, Length, Chars, Upper, Lower, Sample, Random, Rank, Type, Named, Title, Index, Trim, Add\_Months etc...

### Advanced OLAP Functions (Ordered Analytical)

- ❖ Moving SUM/AVG/DIFF
- ❖ Cumulative SUM/AVG/DIFF
- ❖ With, With By
- ❖ Rank(), Qualify
- ❖ Row\_Number(), Qualify
- ❖ Format
- ❖ Extract
- ❖ Top
- ❖ Csum

## Detailed discussion on Real Time Queries and Tips

## 13) Teradata Performance Tuning

- ❖ Explain Request Modifier (EXPLAIN PLAN)
- ❖ Collecting Statistics, Confidence Levels (High, Low, NO, JOIN), DIAGNOSTICS HELP STATS
- ❖ Tuning SQL Queries & Utilities
- ❖ Usage of PMON, Index & Statistics wizards
- ❖ Various Indexes (Hash, Join),
- ❖ Teradata Join Strategies (Merge, Product, Nested, Row hash)
- ❖ Skew Factor, Skewness and remedies
- ❖ Spool space Issues
- ❖ System Level Bottlenecks identification.

### (TERADATA PART-3: UTILITIES [ETL & ADMIN] )

#### 1) Teradata SQL ASSISTANT (SQLA)

- ❖ Import and Export data
- ❖ Working on various Data & Formation options

#### 2) Teradata BTEQ

- ❖ Features, Command Sets, Modes, Formats
- ❖ Scripts with Fixed, Vartext and Report.
- ❖ Branching and Looping
- ❖ Load/Un Load with ETL operations
- ❖ Multi Statement Requests \*\*
- ❖ Table –Table data loading
- ❖ Exception handling and examples
- ❖ **Questions and error handling**

#### 3) Teradata FASTLOAD

- ❖ Features, Phases and Limitations of Fast Load
- ❖ Advantages , Process, Error tables
- ❖ Working with Fixed and Variable text scripts.
- ❖ Real time Issues and resolving it.
- ❖ **Questions and error handling**

#### 4) Teradata MULTILOAD

- ❖ Features, Phases ,Limitations of Multi Load
- ❖ Tables and Tasks in Multi Load
- ❖ INSERT/UPDATE/DELETE/UPSERT/RELEASE
- ❖ SCDs implementation(Type1, Type2, Type3)
- ❖ Multi file and Multi table loading
- ❖ Real time Issues and solving it.

**Questions and error handling**

#### 5) Teradata TPUMP

- ❖ Features, Limitations, Process of TPump
- ❖ Diff between MLOAD and T pump
- ❖ SCDs Implementation(Type1,Type2, Type3)

**Real time & Sample scripts, Issues Resolution.**

#### 6) Teradata FASTEXPORT

- ❖ Features, Process ,Limitations
- ❖ Exporting data to Single, Multiple tables
- ❖ Passing Parameters (Internal, External)

**Real time usages & scripts.**

#### 7) TPT (Teradata Parallel Transporter) & API

- ❖ Load, Export, Update, Stream Operators
- ❖ TPT Streaming Process
- ❖ TPT Wizard Implementation
- ❖ Implementing LOAD operator with multiple examples
- ❖ Implementing UPDATE operator with multiple examples
- ❖ Implementing STREAM operator with multiple examples
- ❖ Implementing FILTER operator with multiple examples
- ❖ Implementing STANDALONE operator with multiple examples
- ❖ Implementing Data Connector Operator
- ❖ Sessions and Instances

**Real time usages, scripts and recommendations**

#### 8) Teradata OLELOAD

Moving data between Heterogeneous Sources

(Flat Files, Excel Files and Databases)

#### 9) Teradata other utilities and tools (over view)

- ❖ Backup Archive and Recovery Solutions
- ❖ Teradata Performance Monitor (PMON)
- ❖ TERADATA Administrator
- ❖ TERADATA Index WIZARD
- ❖ TERADATA statistics wizard
- ❖ Teradata System Emulation tool (TSET)
- ❖ Teradata Viewpoint (**portals and portlets**)

**VINAY TECH HOUSE**

**TERADATA COURSE CONTENT**

Email: [vinaytechhouse.info@gmail.com](mailto:vinaytechhouse.info@gmail.com) Contact: +91 9573168449/040 66638869 Website: [www.vinaytechhouse.com](http://www.vinaytechhouse.com)

Vinay Tech House