COURSE - 2 Database Management System and SQL

Unit 1- 4 – Database, Data Model, and SQL DDL

Instructions:

- Throughout the course, we will use the following two data themes:
  - Sales Data
  - Financial data
- In a data model, use visual diagrams to represent tables, columns, data types, and their relationships.
- The naming conventions and standards should be followed for all tables.
- Use visual representations (e.g., PPT or Visio) to develop a conceptual and logical data model.
- To develop/implement the physical data model, you must create an SQL file with all the tables, columns, data types, and appropriate constraints.
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Lab #1

In this lab, we use the sales model. Every Sunday, Google gets access to sales data throughout the country in a CSV file, and they want to load these sales data into their sales table for reporting and analysis. Google is interested in weekly sales analysis by customer, product, and location.

For the above scenarios, create a CSV file containing only the appropriate columns and load them into the sales table. Load a minimum of 100 sales records.

Hint: In the table, only the columns that Google needs for its data analysis should be loaded when the file has many columns.

Lab #2

Using the financial model, we can increase query performance and quickly achieve query response by creating table partitions. Due to the growth in data, Apple India Private Limited wanted its three (3) financial reports: Profit and Loss, Balance Sheet, and Income Statements as efficiently and quickly as possible. Their DBA team created three partitions for their GL table. This is so that each report is generated based on its own data set instead of the entire collection.

Develop an SQL script to create three partitions based on the above scenario.

Hint: You need to create three partitions, one for each report: profit and loss, balance sheet, and income statement.

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Lab #3

In this lab, we will create a physical data model for supply chain management that tracks customers, orders, and shipments. Customers should always have access to their expected delivery date and an alteration notification if there is any delay in the expected delivery date.

Use SQL commands to create the physical data model necessary to implement the above scenario. Use constraints and an audit log to keep track of who creates or modifies shipments to avoid null values.

Hint: It is important to follow proper standards and naming conventions, as well as to distinguish between master data, transaction data, and dimension tables.

Lab #4

We are using the finance model for this lab exercise. Apple India Private Limited's CFO asked the IT team to create a revenue report to look at revenue by QTR (quarterly) and the YTD (year-to-date).

Create an SQL command to display the revenue as follows: YTD revenue should be displayed cumulatively.

Revenue	QTR	YTD
1st - Revenue	100 INR	100 INR
2st – Revenue	200 INR	300 INR
3st – Revenue	300 INR	600 INR
4st – Revenue	400 INR	1000 INR

Hint: You can create a view or functions to achieve this result as needed.

Lab #5

In this lab, we use a financial model. The cost center manager wanted to see where the most expenses occurred by percentage (%) because expenses are increasing. Instead of reviewing the expenditures by line item, they wanted to see the expenditures by category and percentage (%).

Create an SQL script that displays the results according to spend %.

Total Income	100 INR	
Expense Line Item	**Expense Amount**	**Spend %**
		100%
Spend Category 1	10 INR	90%
Spend Category 2	20 INR	70%
Spend Category 3	30 INR	40%

Hint: You can create a view or functions to achieve this result as needed.

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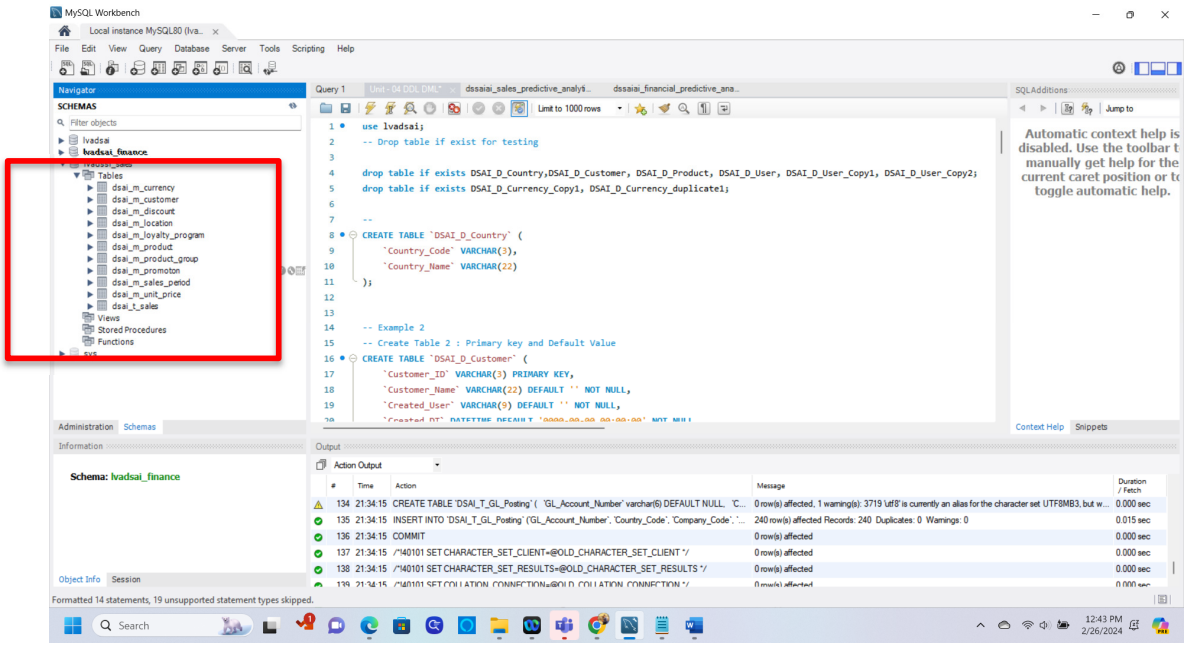
Appendix:

During session #2, we will review your physical data model in the system.

Sales Tables:



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Finance Tables: