Lab 8: SQL Sub Queries

CS355/CE373 Database Systems
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Contents

1 Instructions

- This lab will contribute 1% towards the final grade.
- The deadline to submit this lab is at the end of your lab.
- The lab must be submitted online via CANVAS. The SQL file should be named as *Lab_08_part02_aa01234.sql* where *aa01234* will be replaced with your student id. ***Files which don't follow the appropriate naming convention will not be graded***.

1.1 Marking scheme

This lab will be marked out of 100.

- 50 Marks are for completion of the lab.
- 10 Marks are for filling the feedback form within the lab timings.
- 40 Marks are for progress and attendance during the lab.

1.2 Late submission policy

No late submissions are allowed.

2 Objective

This lab activity is prepared on Northwind Sample Database of SQL Server. The database will be analyzed for the following SQL constructs:

- Top
- Sub Queries
- Order By
- Having

Note: You are only allowed to use Sub Queries for this lab.

3 Query Syntax Examples

- **Sub Queries**
  Select * From Orders
  Where EmployeeID in (
  Select Top 3 EmployeeID
  From Orders O
  Group By EmployeeID
  Order By Count(*) Desc)
- **SQL TOP**
  SELECT TOP 3 E.FirstName + ' ' + E.LastName AS EmployeeName, Year(O.OrderDate) AS [Year], count(*) AS 'Number of Orders'
  FROM Orders O
  INNER JOIN Employees E
  ON O.EmployeeID=E.EmployeeID
  GROUP BY E.FirstName + ' ' + E.LastName, Year(O.OrderDate)
  ORDER BY COUNT(*) DESC

- **Having**
  SELECT CompanyName, COUNT(*) AS NumberOfOrders
  FROM orders o, customers c
  WHERE o.customerid = c.customerid
  GROUP BY CompanyName
  HAVING COUNT(*) > 5

4 Exercises

The ERD Diagram for the Northwind Database is as shown in Figure 1.

1. **Retrieve customers who have placed orders for products with a price higher than the average price of all products.**
   Output: CustomerID.
   Result contains 86 rows.

2. **Find the customers who have placed orders for products from the same category as 'Chai'.**
   Output: Customers.ContactName
   Result contains 83 rows.

3. **Find the customer who has placed the highest total number of orders.**
   Output: ContactName, NumberOfOrders
   Result contains 1 row.

4. **List all the customers who have placed an order for the most expensive product.**
   Output: ContactName.
   Result contains 12 rows.

5. **Find the average number of products ordered in each order.**
   Output: AverageProductsPerOrder.
   Result contains 1 row.

6. **Find the categories where the average product price is higher than the overall average product price.**
   Output: CategoryName.
   Result contains 3 rows.

7. **Find the product which has the second highest price.**
   Output: ProductName, UnitPrice.
   Result contains 1 row.

8. **Find the average order amount for customers from France.**
   Output: AverageOrderAmount
   Result contains 1 row.

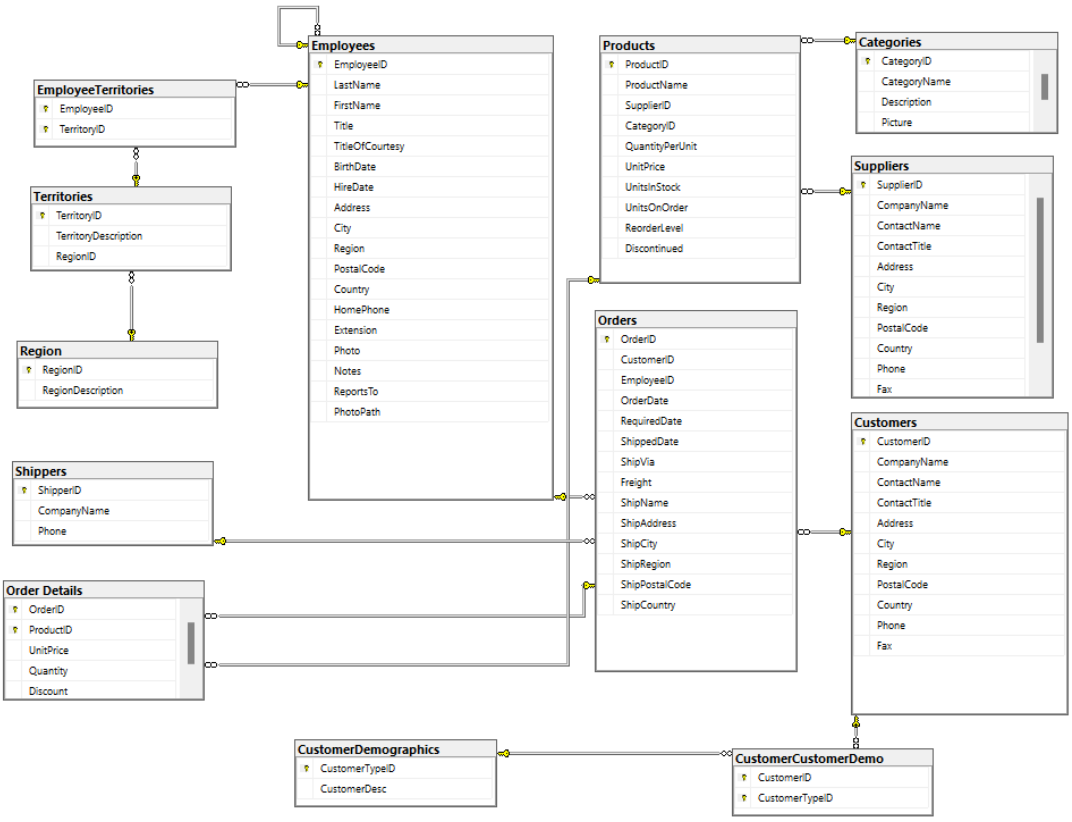

Figure 1: Northwind Database ERD