Lab 7: SQL Joins and Aggregates

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_07_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:

- Joins (Inner / Outer)
- Aggregates

3 Query Syntax Examples

- **Join**
  - select Customers.CompanyName, Customers.CustomerID, Orders.OrderID, Orders.OrderDate
    from Customers,Orders
    where Customers.CustomerID = Orders.CustomerID
    and Country = 'Germany'
- **Table Alias**
  - Select C.customerID, OrderID,OrderDate , E.FirstName
    from Orders O
    Inner Join Customers C On C.CustomerID = O.CustomerID
    Inner Join Employees E On E.EmployeeID = O.EmployeeID
    Where C.country = 'Germany'
- **Left Outer Join**
  - Select C.customerID, OrderID,OrderDate, E.FirstName
    from Customers C
    Left Outer Join Orders O On C.CustomerID = O.CustomerID
    Left Outer Join Employees E On E.EmployeeID = O.EmployeeID
    Order by O.OrderID

- **Cross Join**
  - Select * from Employees Cross Join Products;
- **Aggregates**
  - Select count(*) from customers
  - Select sum(Quantity) as 'Total Inventory' from [Order Details]

4 Exercises

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

1. **Retrieve total number of customers do not have a fax number.**
   Output: Count of Customers with no fax number.
2. **Retrieve the total number of orders placed in 1997.**
   Output: Count of Orders in 1997.
3. **Find the number of customers who are 'Sales Representative'.**
   Output: Count of Customers.
4. **Select total number of products ordered in Order ID 11070.**
   Output: Total number of products.
5. **Retrieve total number of customers from the 'UK' or 'USA'.**
   Output: Total number of customers.
6. **Retrieve the total number of units of all available items.**
   Output: Sum of all units.
7. **Retrieve the worth of all available stock (total number of available units $\times$ their prices).**
   Output: Worth of all available products.
8. **Find the total number of Employees who live in London.**
   Output: Total number of employees.
9. **Find the total number of Female Employees who are not doctors.**
   Output: Total number of employees.
10. **Fetch the following details:**
    Output: OrderID, OrderDate, ProductName.
    Result contains 2155 rows.
11. **Fetch the following details:**
    Output: Order ID, Order Date, Product Name, Customer Name.
    Result contains 2155 rows.
12. **Select all orders having products belonging to 'Seafood' category.**
    Output: OrderID, OrderDate, ProductName, CategoryName.
    Result contains 330 rows.
13. **Fetch Customers who have not placed any order.**
    Output: CustomerName.
    Result contains 2 rows.
14. **Select orders that contain products in either 'Meat/Poultry' or 'Dairy Products' categories.**

Output: (Order ID)
Result contains 423 row.

15. **Find all possible combinations of employees and customer.**
Output: Employee Full Name, Customer Name.
Note: The Full name is generated by concatenating First Name and Last Name.
Result contains 819 rows.

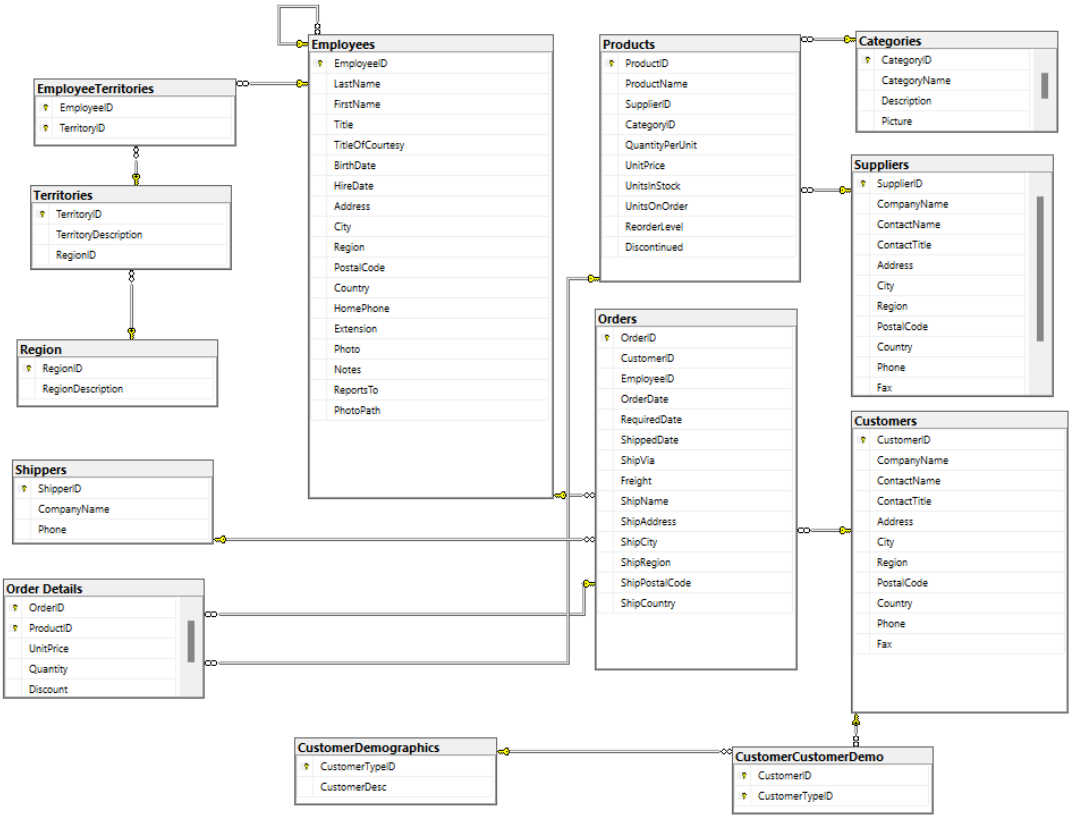

Figure 1: Northwind Database ERD