# DSO 552: SQL Databases for Business Analysts

Homework 3

## Northwind Traders Company

Northwind Traders is a company that imports and exports food globally. The database captures all the sales transactions that occurs between the company i.e. Northwind traders and its customers as well as the purchase transactions between Northwind and its suppliers.

The following explains each table (used in this assignment) in the Northwind database:

| Table | Description |
|---|---|
| **Customers** | who buy from Northwind |
| **Orders** | stores transaction sale orders from customers |
| **OrderDetails** | stores line items of sale orders |
| **Products** | the products that Northwind trades in |
| **Suppliers** | who supply to the company |
| **Shippers** | details of the shippers who ship the products from the traders to the end-customers |
| **Employees** | who work for Northwind |

Check Figure 1 (on the last page) for more details for each of the above tables.

1. ***(1 point)*** **Show the top 5 countries with the highest number of Customers. However, do not include customers from Oregon (OR) or Texas (TX) in the counts for USA.**

*Sample Output:*

| country | numberofcustomers |
|---|---|
| Brazil | 9 |
| USA | 9 |
| Venezuela | 4 |
| Canada | 3 |
| UK | 1 |

2. ***(1 point)*** **Find the total number of products in each category of products. Show the categories with the most products first.**

*Sample Output:*

| categoryname | totalproducts |
|---|---|
| Confections | 13 |
| Condiments | 12 |
| Beverages | 12 |
| Seafood | 12 |
| Dairy Products | 10 |
| Grains/Cereals | 7 |
| Meat/Poultry | 6 |
| Produce | 5 |

3. ***(1 point)*** **Northwind Traders will prioritze re-ordering a certain product if: (1) UnitsInStock plus UnitsOnOrder are less than or equal to ReorderLevel, (2) the product is not discontinuted (Discontinued = 0), and 3) the product has been ordered more than 1 time. Which products need to be prioritized for reordering?**

*Sample Output:*

| productid | productname |
|---|---|
| 30 | Nord-Ost Matjeshering |
| 70 | Outback Lager |

4. ***(1 points)*** **How many orders were shipped by United Package and Speedy Express (combined) in 1997? (Hint: shipvia is the shipper id in the orders table)**

*Sample Output:*

| ship_year | total |
|---|---|
| 1997 | 273 |

5. ***(1 points)*** **Northwind's operations team has noted the high cost of freight charges for Speedy Express shipments. For 1996, return the three ship countries with the highest average freight overall, in descending order by average freight, for orders fulfilled by Speedy Express.**

*Sample Output:*

| shipcountry | avg_freight |
|---|---|
| Finland | 136.53999 |
| Austria | 130.99750 |
| Germany | 77.84833 |

6. ***(1 point)*** **Some salespeople have more orders arriving late than other salespeople (defined as `RequiredDate <= ShippedDate`). Which salespeople have at least 5 orders arriving late? Do not show any employees with less than 5 late orders**

*Sample Output:*

| lastname | firstname | totallateorders |
|---|---|---|
| Peacock | Margaret | 10 |
| Callahan | Laura | 5 |
| Dodsworth | Anne | 5 |
| Leverling | Janet | 5 |

7. ***(1 points)*** **Suppose that the company wants to send all of the high-value customers a special VIP gift. A high-value customer is anyone who've made at least 1 order with a**

**total value (quantity x unit price) equal to $10,000 or more. Query all of these high-value customer in 1996.**

*Sample Output:*

| companyname | orderid | totalorderamount |
|---|---|---|
| Queen Cozinha | 10372 | 12281.2 |
| Piccolo und mehr | 10353 | 10741.6 |

8. ***(1 points)*** **Northwind's inventory supply chain team wants a report each day of products that have unit prices above the average unit price for all products but below average units on order. This helps them better plan restock and purchasing decisions. Product this report for them.**

*Sample Output:*

| productname | unitprice | unitsinstock |
|---|---|---|
| Uncle Bob's Organic Dried Pears | 30.00 | 15 |
| Northwoods Cranberry Sauce | 40.00 | 6 |
| Mishi Kobe Niku | 97.00 | 29 |
| Ikura | 31.00 | 31 |
| Alice Mutton | 39.00 | 0 |
| Sir Rodney's Marmalade | 81.00 | 40 |
| Gumbär Gummibärchen | 31.23 | 15 |
| Rössle Sauerkraut | 45.60 | 26 |
| Thüringer Rostbratwurst | 123.79 | 0 |
| Mascarpone Fabioli | 32.00 | 9 |
| Côte de Blaye | 263.50 | 17 |
| Ipoh Coffee | 46.00 | 17 |
| Manjimup Dried Apples | 53.00 | 20 |
| Perth Pasties | 32.80 | 0 |
| Gnocchi di nonna Alice | 38.00 | 21 |
| Camembert Pierrot | 34.00 | 19 |
| Tarte au sucre | 49.30 | 17 |
| Vegie-spread | 43.90 | 24 |
| Wimmers gute Semmelknödel | 33.25 | 22 |
| Gudbrandsdalsost | 36.00 | 26 |
| Mozzarella di Giovanni | 34.80 | 14 |

9. ***(1 points)*** **What is the average number of orders processed by a Northwind employee?**

*Sample Output:*

| avg_orders_per_employee |
|---|
| 92.22222 |

10. ***(1 points)*** **Which product categories have the above average line item total discounted value (this is defined as `discount` * unitprice‘ * `quantity` at the order details level). Hint: first find the average total discounted value for all order details, you'll then need to plug this into a `HAVING` filter.**

*Sample Output:*

| categoryname | avg_line_item_discount |
|---|---|
| Beverages | 46.18507 |
| Meat/Poultry | 87.66729 |
| Dairy Products | 45.96507 |

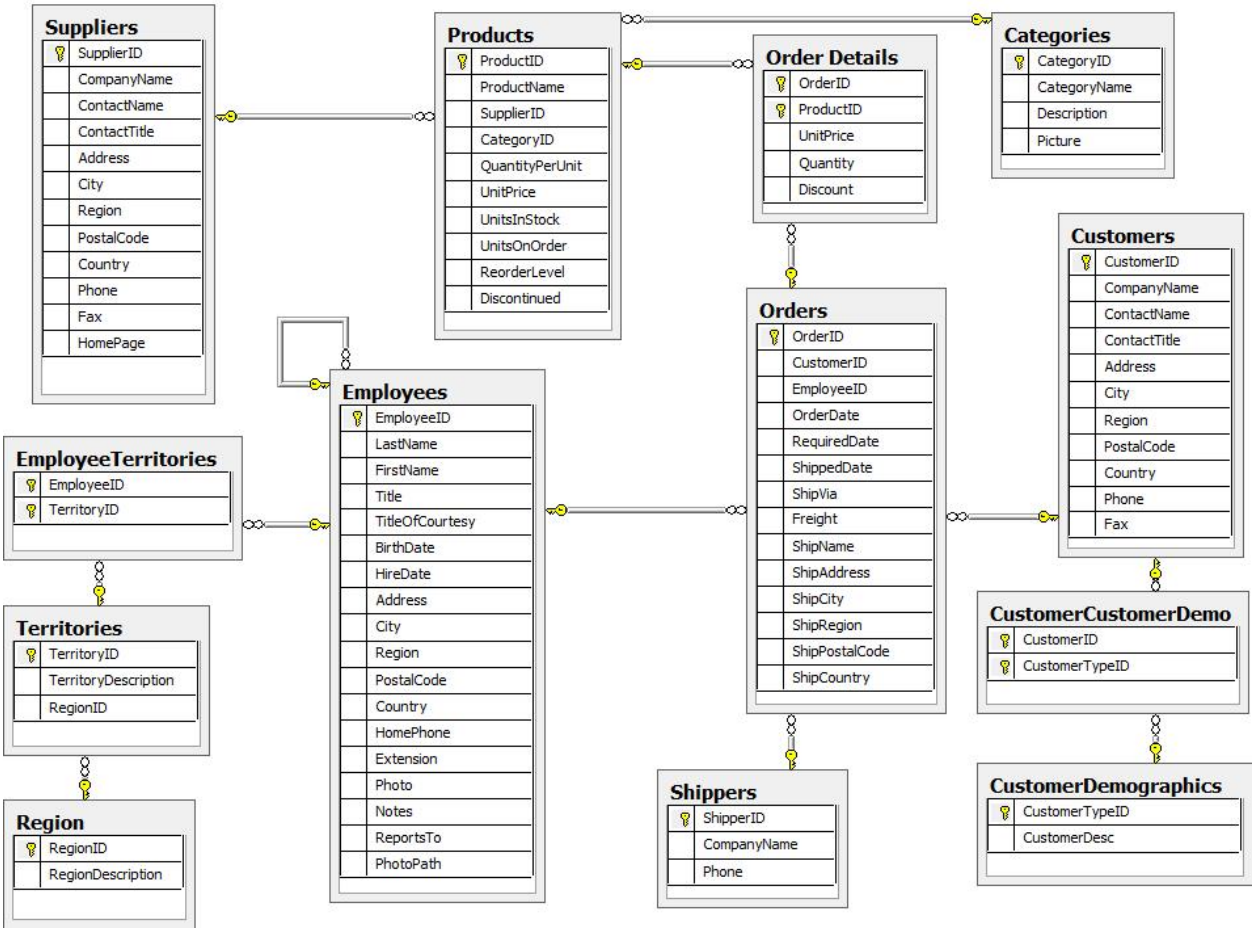


Figure 1: Northwind ERD