DSO 552: SQL Databases for Business Analysts

Homework 03

Due Date: Thursday Oct 3, 2019 (at the end of the day at 11:59pm)

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. Your output should have two columns: country, number_of_customers.**

```
select Country, count(*) NumberOfCustomers
from Customers
Group by Country
order by NumberOfCustomers desc
limit 5
```

Sample Output:

country	numberofcustomers
USA	13
France	11
Germany	11
Brazil	9
UK	7

2. ***(1 point)*** **Find the total number of products in each category of products.Your output should have two columns: categoryname and totalproducts.**

```
select c.categoryname, count(*) TotalProducts
from products p
join categories c
on p.categoryid = c.categoryid
```

```
group by c.categoryname
order by totalproducts desc
```

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 re-order a certain product if: (1) UnitsInStock plus UnitsOnOrder are less than or equal to ReorderLevel, and (2) the product is not discontinuted (Discontinued = 0). Which products need to be reordered? Your output should have two columns: productid and productname.**

```
select productID, productname
from products
where UnitsInStock + UnitsOnOrder <= Reorderlevel AND Discontinued = 0
order by productID
```

Sample Output:

productid	productname
30	Nord-Ost Matjeshering
70	Outback Lager

4. ***(1.5 points)*** **How many orders were shipped by United Package in 1997. (Hint: shipvia is the shipper id in the orders table). Your output should have two columns: ship_year and total.**

```
select date_part('year', shippeddate) as ship_year, count(*) total
from orders o
join shippers s
on o.shipvia = s.shipperid
where date_part('year', shippeddate) = 1997 and s.companyname = 'United Package'
group by ship_year
```

Sample Output:

ship_year	total
1997	143

5. ***(1.5 points)*** **Some of the countries have a very high freight charges. For 1996, return the three ship countries with the highest average freight overall, in descending order by average freight. Your output should have two columns: shipcountry, avg_freight.**

```
select shipcountry, avg(freight) avg_freight
from orders
where orderDate >= '1996-01-01' and orderdate < '1997-01-01'
group by shipcountry
```

```
order by avg(freight) desc
limit 3
```

Sample Output:

shipcountry	avg_freight
Austria	156.88625
Brazil	94.14539
Norway	93.63000

6. ***(2 point)*** **Some salespeople have more orders arriving late than other salespeople (`RequiredDate <= ShippedDate`). Which salespeople have at least 5 orders arriving late? Your output should have three columns: firstname, lastname, and totalorders.**

```
select e.lastname, e.firstname, count(*) totallateorders
from employees e
join orders o
on e.employeeid = o.employeeid
where o.requireddate <= o.shippeddate
group by e.lastname, e.firstname
having count(*) >=5
order by totallateorders desc
```

Sample Output:

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

7. ***(2 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. Your output should have companyname, orderid, and total_order_amount**

```
select c.companyname, o.orderid, sum(quantity*unitprice) totalorderamount
from customers c
join orders o
on o.customerid = c.customerid
join orderdetails od
on od.orderid = o.orderid
where orderdate >= '1996-01-01' and orderdate < '1997-01-01'
group by c.companyname, o.orderid
having sum(quantity*unitprice) >= 10000
order by totalorderamount desc
```

Sample Output:

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

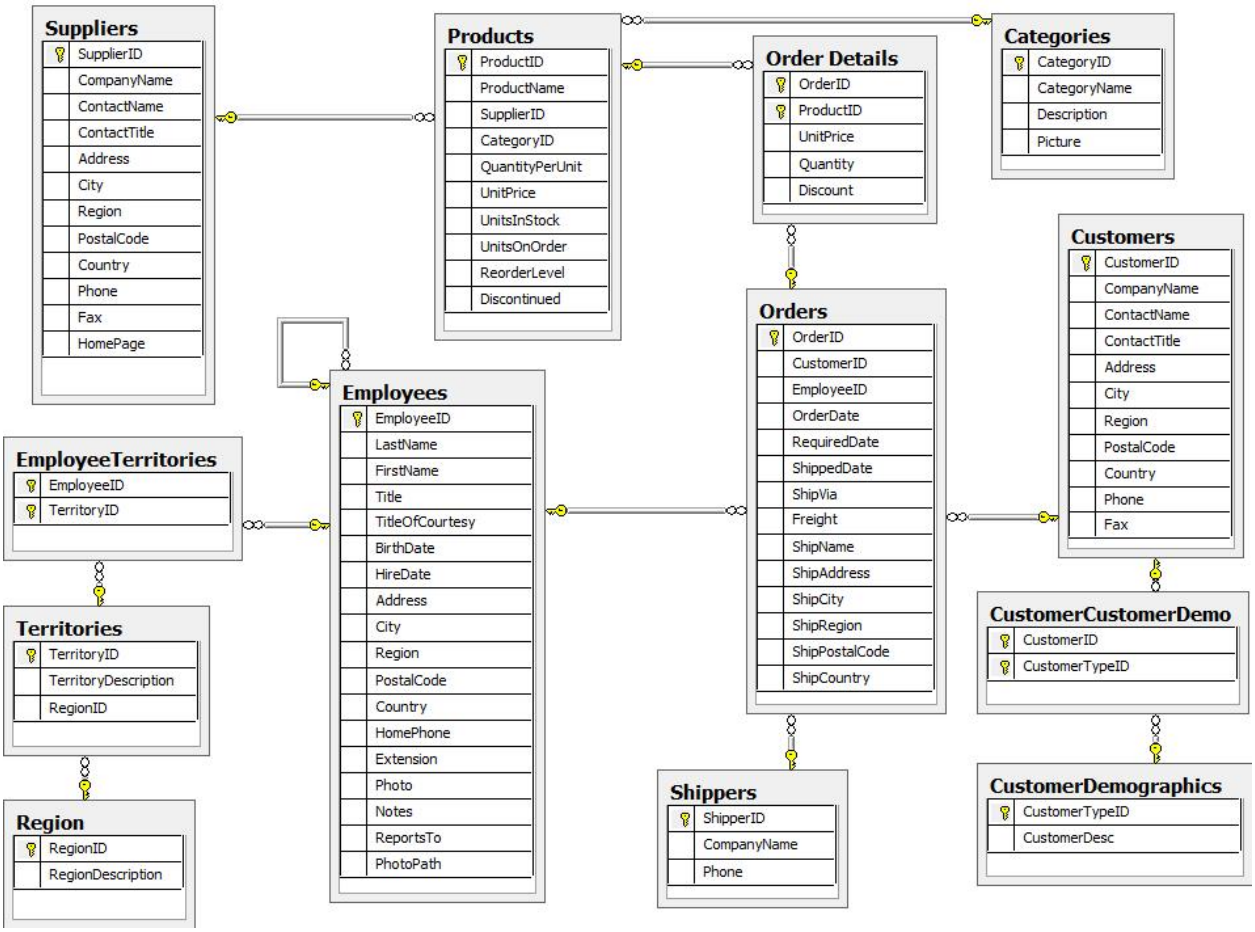

Figure 1: Northwind ERD