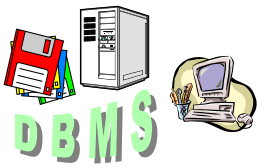


WORKSHOP

ON

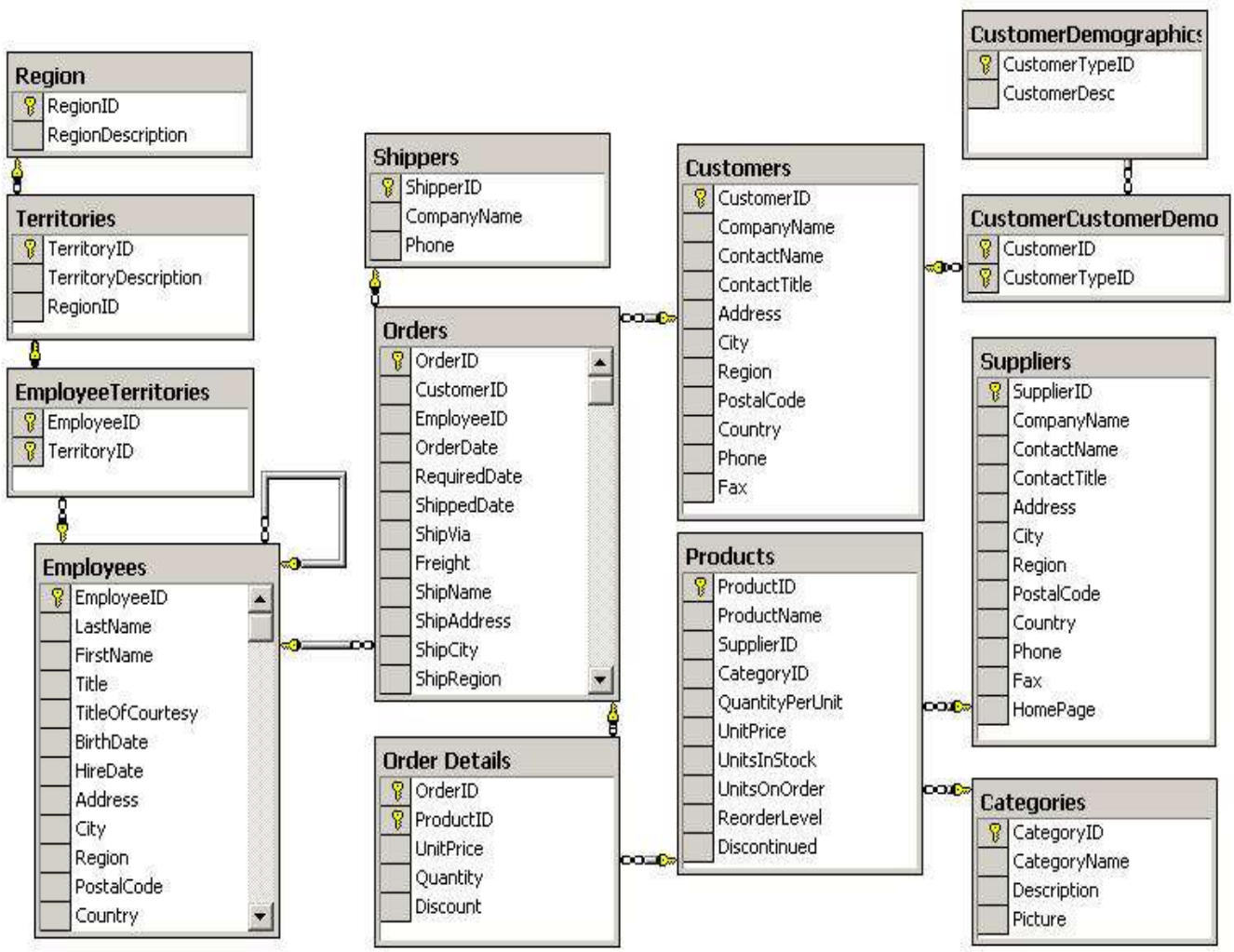
SQL Data Query

Institute of Systems Science
National University of Singapore

EXERCISE

SQL FOR DATA QUERY

All Questions in this workshop involve the Northwind Database. The ERD of the Northwind database is given in the following figure.



Using Northwind Database provided by SQL Server, write SQL statements for the following data retrieval operations.

Note: You may need to refer to the schema for the exact field names while framing the queries to the following questions. While framing the question, the words 'code', 'number' or 'ID' may have been synonymously used. For instance 'Customer Number' when used may refer to a field called CustomerID. Similarly, wherever the word 'name' is used, appropriate interpretation may be needed based on the schema – for instance if 'customer name' is required to be printed, you may need to retrieve CompanyName field from the Customers Table; likewise when 'employee name' is required (without any further qualification, you may retrieve the lastname field of Employees table.

1)
   a. List all details of all Shippers that the company is dealing with.
   b. List all details of Shippers with the output presented in ascending order of shipper names.

2)
   a. List all employees - you need to display only the details of their First Name, Last Name, Title, Date of birth and their city of residence.
   b. Based on the designations (Titles) available in the employees table, can you extract the designation list?

3) Retrieve the details of all orders made on 19 May 1997

4) Retrieve details of all customers that are located in the cities of London or Madrid.

5) List all customers (Customer number and names) who are located in UK. The list should be produced in alphabetical order of customer names.

6) Provide a list of Orders (Order IDs and order dates) made by customer whose ID is 'Hanar'.

7) List the Fully Qualified Names of All Northwind Employees as a single column. Fully qualified Names should look like this: Dr. Venkat Raman OR Ms Esther Tan, where Ms is the Title of courtesy Esther is first name and Tan is last name.
   Hint: You may need to use string concatenation.

   Is it possible that this is listed in alphabetical order of the last names?

8) List all Orders (Order number and date) of the orders made by the Customer "Maison Dewey" (column: company name). Note: Maison Dewey is the name of the customer.

9) Retrieve the details of all Products' having the word "lager" in the product name.

10) Retrieve the Customer IDs and contact names of all customers who have yet to order any products.

11) Display the average product price.

12) Prepare a list of cities where customers reside in. The list should not contain any duplicate cities.

13) Retrieve the number of customers who has made orders.

14) Retrieve the company name and phone number of customers that do not have any fax number captured.

15) Retrieve the total sales made. Assume sales is equal to unit price * quantity.

16) List order ids made by customer 'Alan Out' and 'Blone Coy'

Note: Attempt the rest of the questions after the topic on Advance Queries has been covered.

17) Prepare a list of customer ids and the number of orders made by the customers.

18) Retrieve company name for the customer id 'BONAP', and also order ids made by him.

19)
   a. Retrieve the number of orders made, IDs and company names of all customers that have made more than 10 orders. The retrieved list should be display in the descending order of 'number of orders made'.

   b. Retrieve the number of orders made, IDs and company names for the customer with customer id 'BONAP'.

   c. Retrieve the number of orders made, IDs and company names of all customers that have more orders than customer with customer id 'BONAP'.

20)
   a. Prepare a Product list belonging to Beverages and Condiments categories (you may use in your SQL statement Categories Codes 1 and 2). The list should be sorted on Product code and Product Name.

   b. How would the above query change if you are not provided category codes but only the names "Beverages", "Condiments" for retrieval. Would this require a join or subquery?

21)
   a. How many employees do we have in our organization?

   b. How many employees do we have in USA?

22) Retrieve all details of Orders administered by persons who hold the designation Sales Representative and shipped by United Package.

23) Retrieve the names of all employee. For each employee list the name of his/her manager in adjacent columns.

24) Retrieve the five highest ranking discounted product. "Discounted Product" indicates products with the total largest discount (in dollars) given to customers.

25) Retrieve a list of Northwind's Customers (names) who are located in cities where there are no suppliers.

26) List all those cities that have both Northwind's Supplier and Customers.

27)
   a. Northwind proposes to create a mailing list of its business associates. The mailing list would consist of all Suppliers and Customers collectively called Business Associates here. The details that need to be captured are the Business Associates' Names, Address and Phone.

   b. Is it possible for you to add on to the same list Northwind's Shippers also. Since we do not have address of shippers, it is sufficient only phone is included leaving the address column blank.

28) Retrieve the manager's name of the employee who has handled the order 10248.

29) List the product name and product id with unit price greater than average unit product price.

To understand the answers to the following questions a sample data is provided and a sample output is provided for each question. This is only a rough sample - the northwind database should be used for framing SQL queries to obtain the answers.

Customer Table:

CustomerID	Name	Phone
C001	ABC	11223
C002	PQR	34232
C003	XYZ	78223

C004	RST	73874

Order Table:

OrderID	CustomerID	OrderDate
100	C001	06 May 97
101	C003	07 July 97
102	C001	09 July 97
103	C003	04 Sep 97
104	C004	12 Oct 97
105	C001	30 Dec 97
106	C001	05 Jan 98

Order Details Table:

OrderID	ProductID	UnitPrice	Quantity
100	P1	5.80	1200
100	P2	2.50	5000
100	P4	3.25	3000
100	P7	1.25	2000
101	P2	2.75	230
101	P6	3.40	2200
101	P2	2.50	500
102	P3	1.80	2000
102	P8	7.00	500
102	P9	4.00	750
103	P1	5.80	1000
103	P4	3.25	2030
104	P2	2.50	200
104	P4	3.25	600
104	P5	10.00	250
105	P4	3.25	3200
105	P5	10.50	490
105	P6	3.40	1500
106	P3	1.80	2000
106	P8	7.00	1000

Not part of table -These are provided for reference only

Amount	CustID
6960	C001
12500	C001
9750	C001
2500	C001
632.5	C003
7480	C003
1250	C003
3600	C001
3500	C001
3000	C001
5800	C003
6597.5	C003
500	C004
1950	C004
2500	C004
10400	C001
5145	C001
5100	C001
3600	C001
7000	C001

30) List all the orders (order number and amount) that exceed $10000 value per order. Amount means Quantity*Price.

For the above data: 101 (9362.50) and 104 ($4950) do not qualify.

31) List all the orders that exceed $10000 value per order. Your list should include order number and customer id.

For the above data: 101 and 104 do not qualify.

Since CustomerID is not part of the table, you should extract CustomerID by Joining the Order and OrderDetails table.

32) List all the orders that exceed $10000 value per order. Your list should include order number and customer id and customer name.

For the above data: 101 and 104 do not qualify.
Since CustomerID is not part of the table, you should extract CustomerID by Joining the Order and OrderDetails table. Since Customer name is not part of either of these tables, this is obtained by further joining Customer Table also.

33) List the total orders made by each customer. Your list should have customer id and Amount (Quantity * Price) for each customer.

Since CustomerID is not part of the table, you should extract CustomerID by Joining the Order and OrderDetails table. For the above data:

CustomerID	Amount
C001	73055
C003	21760
C004	4950

34) Retrieve the Average Amount of business that a northwind customer provides. The Average Business is total amount for each customer divided by the number of customer.

For the above data, the Average Amount is: (73055 + 23460 + 4950) / 3 = **33821.67**

35) List all customers (Customer id, Customer name) who have placed orders more than the average business that a northwind customer provides.

For the above data only customer C001 stands above the average of 33828.67.

36) List the total orders made by each customer. Your list should have customer id and Amount (Quantity * Price) for each customer in the year 1997. *(Use year(orderdate) to retrieve the year of the column orderdate)*

Since Order Number 106 was in Jan 98, it is not included

CustomerID	Amount
C001	62455
C003	23460
C004	4950