

SQL Case Study



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SQL Assessment Test

Important Instructions to the candidates:

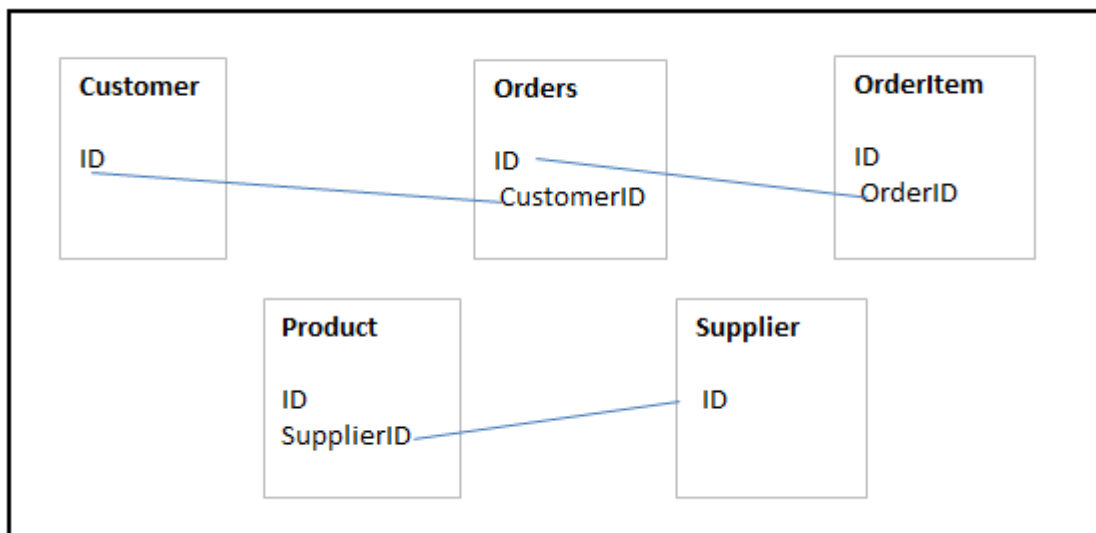
- You agree to the honor code that you will attempt and submit the exam questions by yourself. You are allowed to use Internet browser in your laptop.
- Make sure to put appropriate comments when writing the codes/queries wherever necessary.
- Some problem statements might be having multiple approaches. Candidates are allowed to use any approach at their discretion until and otherwise it has been mentioned explicitly to follow a certain approach.
- Use meaningful and appropriate variable names or field names (Aliases) wherever it is necessary.

Data Availability:

The below csv files will be used for this task. Each file will be used for creating each table. You can also find the schema (Entity Relationship Diagram) of this database for your reference.

1. **Customer.csv**
2. **Orders.csv**
3. **OrderItem.csv**
4. **Product.csv**
5. **Supplier.csv**

Sample codes have been provided for creating tables & loading data for your reference in next page.



Deliverables:

You need to share detailed code with comments & outputs along with below details on the code file.

Sample codes for creation of tables:

```

/*=====*/
/* Table: Customer                                */
/*=====*/
create table Customer (
    Id            int            identity,
    FirstName     nvarchar(40)   not null,
    LastName      nvarchar(40)   not null,
    City          nvarchar(40)   null,
    Country       nvarchar(40)   null,
    Phone         nvarchar(20)   null,
    constraint PK_CUSTOMER primary key (Id)
)
go

/*=====*/
/* Index: IndexCustomerName                       */
/*=====*/
create index IndexCustomerName on Customer (
    LastName ASC,
    FirstName ASC
)
go

/*=====*/
/* Table: "Order"                                */
/*=====*/
create table "Order" (
    Id            int            identity,
    OrderDate     datetime       not null default getdate(),
    OrderNumber   nvarchar(10)   null,
    CustomerId    int            not null,
    TotalAmount   decimal(12,2)  null default 0,
    constraint PK_ORDER primary key (Id)
)
go

/*=====*/
/* Index: IndexOrderCustomerId                   */
/*=====*/
create index IndexOrderCustomerId on "Order" (
    CustomerId ASC
)
go

```

```

/*=====*/
/* Index: IndexOrderOrderDate */
/*=====*/
create index IndexOrderOrderDate on "Order" (
OrderDate ASC
)
go

```

```

/*=====*/
/* Table: OrderItem */
/*=====*/
create table OrderItem (
    Id            int            identity,
    OrderId       int            not null,
    ProductId     int            not null,
    UnitPrice     decimal(12,2)  not null default 0,
    Quantity      int            not null default 1,
    Discount      float          not null default 0,
    constraint PK_ORDERITEM primary key (Id)
)
go

```

```

/*=====*/
/* Index: IndexOrderItemOrderId */
/*=====*/
create index IndexOrderItemOrderId on OrderItem (
OrderId ASC
)
go

```

```

/*=====*/
/* Index: IndexOrderItemProductId */
/*=====*/
create index IndexOrderItemProductId on OrderItem (
ProductId ASC
)
go

```

```

/*=====*/
/* Table: Product */
/*=====*/
create table Product (
    Id            int            identity,
    ProductName   nvarchar(50)  not null,
    SupplierId    int            not null,
    UnitPrice     decimal(12,2)  null default 0,
    Package       nvarchar(30)   null,

```

```
IsDiscontinued    bit            not null default 0,
constraint PK_PRODUCT primary key (Id)
)
go

/*=====*/
/* Index: IndexProductSupplierId */
/*=====*/
create index IndexProductSupplierId on Product (
SupplierId ASC
)
go

/*=====*/
/* Index: IndexProductName */
/*=====*/
create index IndexProductName on Product (
ProductName ASC
)
go

/*=====*/
/* Table: Supplier */
/*=====*/
create table Supplier (
    Id            int            identity,
    CompanyName   nvarchar(40)   not null,
    ContactName   nvarchar(50)   null,
    ContactTitle  nvarchar(40)   null,
    City          nvarchar(40)   null,
    Country       nvarchar(40)   null,
    Phone         nvarchar(30)   null,
    Fax          nvarchar(30)   null,
    constraint PK_SUPPLIER primary key (Id)
)
go

/*=====*/
/* Index: IndexSupplierName */
/*=====*/
create index IndexSupplierName on Supplier (
CompanyName ASC
)
go
```

```
/*=====*/
/* Index: IndexSupplierCountry */
/*=====*/
create index IndexSupplierCountry on Supplier (
Country ASC
)
go

alter table "Order"
add constraint FK_ORDER_REFERENCE_CUSTOMER foreign key (CustomerId)
references Customer (Id)
go

alter table OrderItem
add constraint FK_ORDERITE_REFERENCE_ORDER foreign key (OrderId)
references "Order" (Id)
go

alter table OrderItem
add constraint FK_ORDERITE_REFERENCE_PRODUCT foreign key (ProductId)
references Product (Id)
go

alter table Product
add constraint FK_PRODUCT_REFERENCE_SUPPLIER foreign key (SupplierId)
references Supplier (Id)
go
```

Questions will start from next page

List of Questions

1. List all customers
2. List the first name, last name, and city of all customers
3. List the customers in Sweden. Remember it is "Sweden" and NOT "sweden" because filtering value is case sensitive in Redshift.
4. Create a copy of Supplier table. Update the city to Sydney for supplier starting with letter P.
5. Create a copy of Products table and Delete all products with unit price higher than \$50.
6. List the number of customers in each country
7. List the number of customers in each country sorted high to low
8. List the total amount for items ordered by each customer
9. List the number of customers in each country. Only include countries with more than 10 customers.
10. List the number of customers in each country, except the USA, sorted high to low. Only include countries with 9 or more customers.
11. List all customers whose first name or last name contains "ill".
12. List all customers whose average of their total order amount is between \$1000 and \$1200. Limit your output to 5 results.
13. List all suppliers in the 'USA', 'Japan', and 'Germany', ordered by country from A-Z, and then by company name in reverse order.
14. Show all orders, sorted by total amount (the largest amount first), within each year.
15. Products with UnitPrice greater than 50 are not selling despite promotions. You are asked to discontinue products over \$25. Write a query to rectify this. Do this in the copy of the Product table. DO NOT perform the update operation in the Product table.
16. List top 10 most expensive products
17. Get all but the 10 most expensive products sorted by price
18. Get the 10th to 15th most expensive products sorted by price
19. Write a query to get the number of supplier countries. Do not count duplicate values.

20. Find the total sales cost in each month of the year 2013.
21. List all products with names that start with 'Ca'.
22. List all products that start with 'Cha' or 'Chan' and have one more character.
23. Your manager notices there are some suppliers without fax numbers. He seeks your help to get a list of suppliers with remark as "No fax number" for suppliers who do not have fax numbers (fax numbers might be null or blank).Also, Fax number should be displayed for customer with fax numbers.
24. List all orders, their orderDates with product names, quantities, and prices.
25. List all customers who have not placed any Orders.
26. List suppliers that have no customers in their country, and customers that have no suppliers in their country, and customers and suppliers that are from the same country.

Hint: See sample output for your reference.

FirstName	LastName	CustomerCountry	SupplierCountry	CompanyName
NULL	NULL	NULL	Netherlands	Zaanse Snoepfabriek
NULL	NULL	NULL	Singapore	Leka Trading
Patricio	Simpson	Argentina	NULL	NULL
Yvonne	Moncada	Argentina	NULL	NULL
Sergio	Gutiérrez	Argentina	NULL	NULL
Georg	Pipps	Austria	NULL	NULL
Roland	Mendel	Austria	NULL	NULL
Pascale	Cartrain	Belgium	NULL	NULL
Catherine	Dewey	Belgium	NULL	NULL
Bernardo	Batista	Brazil	Brazil	Refrescos America...
Lúcia	Carvalho	Brazil	Brazil	Refrescos America...
Janete	Limeira	Brazil	Brazil	Refrescos America...

27. Match customers that are from the same city and country. That is you are asked to give a list of customers that are from same country and city. Display firstname, lastname, city and country of such customers.

Hint See sample output for your reference.

FirstName1	LastName1	FirstName2	LastName2	City	Country
Yvonne	Moncada	Patricio	Simpson	Buenos Aires	Argentina
Sergio	Gutiérrez	Patricio	Simpson	Buenos Aires	Argentina
Patricio	Simpson	Yvonne	Moncada	Buenos Aires	Argentina
Sergio	Gutiérrez	Yvonne	Moncada	Buenos Aires	Argentina
Patricio	Simpson	Sergio	Gutiérrez	Buenos Aires	Argentina
Yvonne	Moncada	Sergio	Gutiérrez	Buenos Aires	Argentina
Lúcia	Carvalho	Anabela	Domingues	Sao Paulo	Brazil
Aria	Cruz	Anabela	Domingues	Sao Paulo	Brazil
Pedro	Afonso	Anabela	Domingues	Sao Paulo	Brazil
Janete	Limeira	Bernardo	Batista	Rio de Janeiro	Brazil
Mario	Pontes	Bernardo	Batista	Rio de Janeiro	Brazil

28. List all Suppliers and Customers. Give a Label in a separate column as 'Suppliers' if he is a supplier and 'Customer' if he is a customer accordingly. Also, do not display firstname and lastname as two fields; Display Full name of customer or supplier.

Hint: See sample output for your reference.

Type	ContactName	City	Country	Phone
Customer	Alejandra Camino	Madrid	Spain	(91) 745 6200
Customer	Alexander Feuer	Leipzig	Germany	0342-023176
Customer	Ana Trujillo	México D.F.	Mexico	(5) 555-4729
Customer	Anabela Domingues	Sao Paulo	Brazil	(11) 555-2167
Customer	André Fonseca	Campinas	Brazil	(11) 555-9482
Customer	Ann Devon	London	UK	(171) 555-0297
Customer	Annette Roulet	Toulouse	France	61.77.61.10
Customer	Antonio Moreno	México D.F.	Mexico	(5) 555-3932

29. Create a copy of orders table. In this copy table, now add a column city of type varchar (40). Update this city column using the city info in customers table.

30. Suppose you would like to see the last OrderID and the OrderDate for this last order that was shipped to 'Paris'. Along with that information, say you would also like to see the OrderDate for the last order shipped regardless of the Shipping City. In addition to this, you would also like to calculate the difference in days between these two OrderDates that you get. Write a single query which performs this.

(Hint: make use of max (columnname) function to get the last order date and the output is a single row output.)

ID	LastParisOrder	LastOrderDate	DifferenceInDays
796	2014-04-22	2014-05-06	14

31. Find those customer countries who do not have suppliers. This might help you provide better delivery time to customers by adding suppliers to these countries. Use SubQueries.

32. Suppose a company would like to do some targeted marketing where it would contact customers in the country with the fewest number of orders. It is hoped that this targeted marketing will increase the overall sales in the targeted country. You are asked to write a query to get all details of such customers from top 5 countries with fewest numbers of orders. Use Subqueries.

33. Let's say you want report of all distinct "OrderIDs" where the customer did not purchase more than 10% of the average quantity sold for a given product. This way you could review these orders, and possibly contact the customers, to help determine if there was a reason for the low quantity order. Write a query to report such orderIDs.

34. Find Customers whose total orderitem amount is greater than 7500\$ for the year 2013. The total order item amount for 1 order for a customer is calculated using the formula $\text{UnitPrice} * \text{Quantity} * (1 - \text{Discount})$. DO NOT consider the total amount column from 'Order' table to calculate the total orderItem for a customer.

35. Display the top two customers, based on the total dollar amount associated with their orders, per country. The dollar amount is calculated as $OI.unitprice * OI.Quantity * (1 - OI.Discount)$. You might want to perform a query like this so you can reward these customers, since they buy the most per country.

Please note: if you receive the error message for this question "This type of correlated subquery pattern is not supported yet", that is totally fine.

Sample output is as below for your response

Id	FirstName	LastName	Country
54	Yvonne	Moncada	Argentina
64	Sergio	Gutiérrez	Argentina
59	Georg	Pipps	Austria
20	Roland	Mendel	Austria
50	Catherine	Dewey	Belgium
76	Pascale	Cartrain	Belgium
62	Lúcia	Carvalho	Brazil
34	Mario	Pontes	Brazil
10	Elizabeth	Lincoln	Canada
51	Jean	Fresnière	Canada

36. Create a View of Products whose unit price is above average Price.

37. Write a store procedure that performs the following action:

Check if Product_copy table (this is a copy of Product table) is present. If table exists, the procedure should drop this table first and recreated.

Add a column Supplier_name in this copy table. Update this column with that of 'CompanyName' column from Supplier tab