Assignment Day2 –SQL: Comprehensive practice

# Answer following questions

1. What is a result set?
2. The output received after executing an SQL query is called a result set.
3. What is the difference between Union and Union All?
4. Union will retrieve only distinct records from the queries while union all will return all the records generated by the queries including duplicate records.
5. What are the other Set Operators SQL Server has?
6. The other set operators SQL Server has are Intersect and Except.
7. What is the difference between Union and Join?
8. A union operation is used to combine resultsets from multiple queries into a single resultset, while join operation is used to retrieve data from multiple tables based on some relationship.
9. What is the difference between INNER JOIN and FULL JOIN?
10. Inner join returns only rows which satisfy the join condition, while full join return all rows from both tables. Rows which do not satisfy the join condition are paired with null values in a full join.
11. What is difference between left join and outer join
12. In left join all rows from the left table will be returned, rows which do not satisfy join condition will be paired with null values. In outer join all rows from both the tables will be returned, rows which do not satisfy the join condition will be paired with null values.
13. What is cross join?
14. A cross join generates a paired combination of each row from first table with each row of second table. So, a cross join between a table with m rows and a table with n rows will create a resultset containing m\*n rows.
15. What is the difference between WHERE clause and HAVING clause?
16. The Where clause is used to filter records before any grouping is done while the Having clause is used filter values from a group.
17. Can there be multiple group by columns?
18. Yes

# Write queries for following scenarios

1. How many products can you find in the Production.Product table?
2. select count(Name)as "Product Count" from Production.Product;
3. Write a query that retrieves the number of products in the Production.Product table that are included in a subcategory. The rows that have NULL in column ProductSubcategoryID are considered to not be a part of any subcategory.
4. select count(ProductSubcategoryID)as "Subcategory Products" from Production.Product;
5. How many Products reside in each SubCategory? Write a query to display the results with the following titles.

ProductSubcategoryID CountedProducts

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1. select ProductSubcategoryID ,count(Name) as "CountedProducts" from Production.Product group by ProductSubcategoryID;
2. How many products that do not have a product subcategory.
3. select count(Name) as "No Subcategories" from Production.Product where ProductSubcategoryID is null;
4. Write a query to list the summary of products quantity in the Production.ProductInventory table.
5. select ProductID,sum(Quantity) as "Total Quantity" from Production.ProductInventory group by ProductID;
6. Write a query to list the summary of products in the Production.ProductInventory table and LocationID set to 40 and limit the result to include just summarized quantities less than 100.

ProductID TheSum

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1. select ProductId,sum(Quantity) as "TheSum" from Production.ProductInventory where LocationID = 40 group by ProductID having sum(Quantity)<100;
2. Write a query to list the summary of products with the shelf information in the Production.ProductInventory table and LocationID set to 40 and limit the result to include just summarized quantities less than 100

Shelf ProductID TheSum

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1. select Shelf,ProductID,sum(Quantity) as "TheSum" from Production.ProductInventory where LocationID = 40 group by ProductID,shelf having sum(Quantity)<100;
2. Write the query to list the average quantity for products where column LocationID has the value of 10 from the table Production.ProductInventory table.
3. select ProductID,avg(Quantity) as "avgQuantity" from Production.ProductInventory where LocationID = 10 group by ProductID;
4. Write query to see the average quantity of products by shelf from the table Production.ProductInventory

ProductID Shelf TheAvg

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1. select ProductID,Shelf,avg(Quantity) as "TheAvg" from Production.ProductInventory group by ProductID,Shelf;
2. Write query to see the average quantity of products by shelf excluding rows that has the value of N/A in the column Shelf from the table Production.ProductInventory

ProductID Shelf TheAvg

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1. select ProductID,Shelf,avg(Quantity) as "TheAvg" from Production.ProductInventory where Shelf <> 'N/A' group by ProductID,Shelf;
2. List the members (rows) and average list price in the Production.Product table. This should be grouped independently over the Color and the Class column. Exclude the rows where Color or Class are null.

Color Class TheCount AvgPrice

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1. select Color,Class,count(Name),AVG(ListPrice) as "AvgPrice" from Production.Product where color is not null and class is not null group by Color,Class;

**Joins:**

1. Write a query that lists the country and province names from person. CountryRegion and person. StateProvince tables. Join them and produce a result set similar to the following.

Country Province

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1. select c.Name as "Country",s.Name as "Province" from Person.CountryRegion c inner join Person.StateProvince s on c.CountryRegionCode=s.CountryRegionCode;
2. Write a query that lists the country and province names from person. CountryRegion and person. StateProvince tables and list the countries filter them by Germany and Canada. Join them and produce a result set similar to the following.

Country Province

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1. select c.Name as "Country",s.Name as "Province" from Person.CountryRegion c inner join Person.StateProvince s on c.CountryRegionCode=s.CountryRegionCode where c.Name = 'Germany' or c.Name='Canada';

**Using Northwnd Database: (Use aliases for all the Joins)**

1. List all Products that has been sold at least once in last 25 years.
2. select distinct p.ProductName from orders o inner join [Order Details] od on o.OrderID=od.OrderID inner join Products p on od.ProductID = p.ProductID where year(o.OrderDate) > year(GETDATE())-25;
3. List top 5 locations (Zip Code) where the products sold most.
4. select top 5 o.ShipPostalCode from Orders o inner join [Order Details] od on o.OrderID=od.OrderID group by o.ShipPostalCode order by sum(od.Quantity) desc;
5. List top 5 locations (Zip Code) where the products sold most in last 20 years.
6. select top 5 o.ShipPostalCode from Orders o inner join [Order Details] od on o.OrderID=od.OrderID where year(o.OrderDate)>year(GETDATE())-20 group by o.ShipPostalCode order by sum(od.Quantity) desc;
7. List all city names and number of customers in that city.
8. select City,count(CustomerID) as "NumOfCustomers" from Customers group by City;

1. List city names which have more than 10 customers, and number of customers in that city
2. select City,count(CustomerID) as "NumOfCustomers" from Customers group by City having count(CustomerID)>10;
3. List the names of customers who placed orders after 1/1/98 with order date.
4. select c.CompanyName from orders o inner join customers c on o.CustomerID = c.CustomerID where o.OrderDate > '1/1/1998' group by c.CompanyName;
5. List the names of all customers with most recent order dates
6. select c.CompanyName,max(o.OrderDate) as "RecentOrderDate" from orders o left join customers c on o.CustomerID = c.CustomerID group by c.CompanyName;
7. Display the names of all customers along with the count of products they bought
8. select c.CompanyName,sum(Quantity) as "ProductBought" from orders o inner join customers c on o.CustomerID = c.CustomerID inner join [Order Details] od on o.OrderID = od.OrderID group by c.CompanyName;
9. Display the customer ids who bought more than 100 Products with count of products.
10. select c.CustomerID,sum(Quantity) as "ProductBought" from orders o inner join customers c on o.CustomerID = c.CustomerID inner join [Order Details] od on o.OrderID = od.OrderID group by c.CustomerID having sum(Quantity)>100;
11. List all of the possible ways that suppliers can ship their products. Display the results as below

Supplier Company Name Shipping Company Name

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1. select s.CompanyName as "Supplier Company Name",sh.CompanyName as "Shipping Company Name" from Suppliers s,Shippers sh;
2. Display the products order each day. Show Order date and Product Name.
3. select o.OrderDate,p.ProductName, count(p.ProductID) from Orders o inner join [Order Details] od on o.OrderID = od.OrderID inner join Products p on od.ProductID = p.ProductID group by o.OrderDate,p.ProductName;
4. Displays pairs of employees who have the same job title.
5. select e1.FirstName+' '+e1.LastName as "Employee1",e2.FirstName+' '+e2.LastName as "Employee2" from Employees e1 left join Employees e2 on e1.Title = e2.Title and e1.EmployeeID<>e2.EmployeeID;
6. Display all the Managers who have more than 2 employees reporting to them.
7. select e1.FirstName+' '+e1.LastName as "Manager" from Employees e1 inner join Employees e2 on e1.EmployeeID = e2.ReportsTo group by e1.EmployeeID,e1.FirstName,e1.LastName having count(e1.EmployeeID)>2;
8. Display the customers and suppliers by city. The results should have the following columns

City

Name

Contact Name,

Type (Customer or Supplier)

**A.** select City,CompanyName,ContactName,'Customer' as "Type" from Customers union select City,CompanyName,ContactName,'Supplier' as "Type" from Suppliers order by city;

28. Have two tables T1 and T2

|  |  |
| --- | --- |
| F1.T1 | F2.T2 |
| 1 | 2 |
| 2 | 3 |
| 3 | 4 |

Please write a query to inner join these two tables and write down the result of this query.

1. Assuming T1 and T2 as table names and F1 and F2 as their respective columns, the query will be:

select T1.F1,T2.F2 from T1 inner join T2 on T1.F1 = T2.F2;

Resultset:

|  |  |
| --- | --- |
| T1.F1 | T2.F2 |
| 2 | 2 |
| 3 | 3 |

29. Based on above two table, Please write a query to left outer join these two tables and write down the result of this query.

**A.** select T1.F1,T2.F2 from T1 left join T2 on T1.F1 = T2.F2;

Resultset:

|  |  |
| --- | --- |
| T1.F1 | T2.F2 |
| 1 | NULL |
| 2 | 2 |
| 3 | 3 |

GOOD LUCK.