Assignment Day2 –SQL: Comprehensive practice

# Answer following questions

1. What is a result set?

Result set is a set of rows from a query.

1. What is the difference between Union and Union All?

Union will remove all duplicate records where Union ALL will keep all of them.

1. What are the other Set Operators SQL Server has?

Set Operators in SQL Server: UNION, UNION ALL, INTERSECT, EXCEPT

1. What is the difference between Union and Join?

They both are used to combine data from tables. Whereas a join is used to combine columns from tables, the union is used to combine rows.

1. What is the difference between INNER JOIN and FULL JOIN?

INNER JOIN will only return the matching rows between both the tables, non-matching rows are eliminated. FULL JOIN will return all rows from both the tables, including non-matching rows from both the tables.

1. What is difference between left join and outer join

Left join returns all the rows from the left table and matching records between both the tables. Outer join will return both matching and non-matching rows between the two tables.

1. What is cross join?

CROSS JOIN returns paired combination of each row of the left table with each row of the right table, also known as cartesian join.

1. What is the difference between WHERE clause and HAVING clause?

* WHERE clause can be used without the GROUP BY clause, HAVING clause cannot be used without the GROUP BY clause.
* WHRE clause selects rows before grouping, HAVING clause selects rows after grouping.
* WHERE clause cannot contain aggregate functions, HAVING clause can.
* WHERE clause is used to impose condition on SELECT statement as well as single row function and is used before GROUP BY clause. HAVING clause is used to impose condition on GROUP Function and is used after GROUP BY clause in the query.

1. Can there be multiple group by columns?

Yes. Group By X means put all those with the same value for X in the one group.

Group By X, Y means put all those with the same values for both X and Y in the one group.

# Write queries for following scenarios

1. How many products can you find in the Production.Product table?

select COUNT(1) from Production.Product

1. 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.

select ProductSubcategoryID, COUNT(1) as 'Number' from Production.Product where ProductSubcategoryID is not null group by ProductSubcategoryID

1. How many Products reside in each SubCategory? Write a query to display the results with the following titles.

ProductSubcategoryID CountedProducts

-------------------- ---------------

select ProductSubcategoryID, COUNT(1) as 'CountedProducts' from Production.Product where ProductSubcategoryID is not null group by ProductSubcategoryID

1. How many products that do not have a product subcategory.

209

select ProductSubcategoryID, COUNT(1) as 'CountedProducts' from Production.Product where ProductSubcategoryID is null group by ProductSubcategoryID

1. Write a query to list the summary of products quantity in the Production.ProductInventory table.

select 'Product sub category(id: ' + cast(ProductSubcategoryID as varchar) + ') has ' + cast(COUNT(1) as varchar) + ' products.' as 'Summary' from Production.Product where ProductSubcategoryID is not null group by ProductSubcategoryID

1. 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

----------- ----------

select ProductID, Quantity as TheSum

from Production.ProductInventory where LocationID = 40 and Quantity < 100

1. 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

---------- ----------- -----------

select Shelf, ProductID, Quantity as TheSum

from Production.ProductInventory where LocationID = 40 and Quantity < 100

1. Write the query to list the average quantity for products where column LocationID has the value of 10 from the table Production.ProductInventory table.

select avg(Quantity) as AverageQuantity

from Production.ProductInventory where LocationID = 10

1. Write query to see the average quantity of products by shelf from the table Production.ProductInventory

ProductID Shelf TheAvg

----------- ---------- -----------

select ProductId, Shelf, avg(1) as Number

from Production.ProductInventory group by ProductId, Shelf

1. 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

----------- ---------- -----------

select ProductId, Shelf, avg(1) as Number

from Production.ProductInventory group by ProductId, Shelf having Shelf != 'N/A'

1. 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

-------------- - ----- ----------- ---------------------

select Color, Class, COUNT(1) as TheCount, 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

--------- ----------------------

select CR.Name as Country, SP.StateProvinceCode as Province

from person.CountryRegion CR inner join person.StateProvince SP

ON CR.CountryRegionCode = SP.CountryRegionCode

1. 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

--------- ----------------------

select CR.Name as Country, SP.StateProvinceCode as Province

from person.CountryRegion CR inner join person.StateProvince SP

ON CR.CountryRegionCode = SP.CountryRegionCode

where CR.Name in ('Germany', '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.

select distinct ProductName

from

Orders o inner join [Order Details] od on o.OrderID = od.OrderID

inner join Products p on od.ProductID = p.ProductID

where DATEDIFF(YEAR, o.OrderDate, GETDATE()) < 25

1. List top 5 locations (Zip Code) where the products sold most.

select top 5 ShipPostalCode, Quantity from

Orders o inner join [Order Details] od on o.OrderID = od.OrderID

group by ShipPostalCode,Quantity

order by Quantity desc

1. List top 5 locations (Zip Code) where the products sold most in last 20 years.

select top 5 ShipPostalCode, Quantity

from

Orders o inner join [Order Details] od on o.OrderID = od.OrderID

where DATEDIFF(YEAR, o.OrderDate, GETDATE()) < 25

group by ShipPostalCode,Quantity

order by Quantity desc

1. List all city names and number of customers in that city.

  select City, Count(1)

from Customers

group by City

1. List city names which have more than 10 customers, and number of customers in that city

select City, COUNT(1) as NumOfCustomers

from Customers

group by City

having COUNT(1) > 10

1. List the names of customers who placed orders after 1/1/98 with order date.

select distinct c.ContactName

from Customers c inner join Orders o on c.CustomerID = o.CustomerID

where o.OrderDate > Convert(datetime, '1998-01-01')

1. List the names of all customers with most recent order dates

select distinct c.ContactName, o.OrderDate

from Customers c inner join Orders o on c.CustomerID = o.CustomerID

where o.OrderDate = (select max(OrderDate) from Orders)

1. Display the names of all customers along with the count of products they bought

select c.ContactName, COUNT(1)

from Customers c inner join Orders o on c.CustomerID = o.CustomerID

group by c.ContactName

1. Display the customer ids who bought more than 100 Products with count of products.

select c.CustomerID

from Customers c inner join Orders o on c.CustomerID = o.CustomerID

group by c.CustomerID

having COUNT(1) > 100

1. List all of the possible ways that suppliers can ship their products. Display the results as below

Supplier Company Name Shipping Company Name

--------------------------------- ----------------------------------

select sup.CompanyName as 'Supplier Company Name', shi.CompanyName as 'Shipping Company Name'

from Suppliers sup left join Shippers shi on sup.CompanyName = sup.CompanyName

Can also use “right join” and “full join”.

1. Display the products order each day. Show Order date and Product Name.

select OrderDate, ProductName

from orders o inner join [Order Details] od on o.OrderID = od.OrderID

inner join Products p on od.ProductID = p.ProductID

order by OrderDate

1. Displays pairs of employees who have the same job title.

select e1.EmployeeID, e2.EmployeeID

from Employees e1 left join Employees e2 on e1.Title = e2.Title

1. Display all the Managers who have more than 2 employees reporting to them.

select e.FirstName, e.LastName

from Employees e where e.EmployeeID in (select ReportsTo from Employees group by ReportsTo having COUNT(1) > 2)

1. Display the customers and suppliers by city. The results should have the following columns

City

Name

Contact Name,

Type (Customer or Supplier)

select \* from (select c.City, c.CompanyName as Name, c.ContactName as ContactName, 'Customer' as Type

from Customers c) as cm union (select s.City, s.CompanyName as Name, s.ContactName as ContactName, 'Supplier' as Type

from Suppliers s)

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.

Select F1, F2 from T1 inner join T2 on T1.F1 = T2.F2

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.

GOOD LUCK.