Assignment Day2 –SQL: Comprehensive practice

# Answer following questions

1. What is a result set?

The output of a query, a table of data.

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

Union all will not remove any duplicate rows

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

Intersect except

1. What is the difference between Union and Join?

Union is used to combine the result of multiple select statements, it is used to combine rows.

Join is used to combine data from different tables under certain conditions, it is used to combine columns from different tables.

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

Inner join will only select the intersection of two tables while full join will return every row from the two tables even there is no matching.

1. What is difference between left join and outer join

Left join will only return the intersection of two tables and every row from the first table while outer join will return every row from both tables.

1. What is cross join?

Cross join returns the Cartesian product of two tables, combining every row from the first table with every row from the second table.

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

Where is used to filter rows before group by clause and having is used to filter records after group by clause

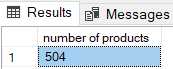
1. Can there be multiple group by columns?

Yes

# Write queries for following scenarios

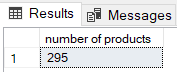
1. How many products can you find in the Production.Product table?

select count(ProductID) as [number of products] 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 count(ProductID) as [number of products] from Production.Product where ProductSubcategoryID is not null



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

ProductSubcategoryID CountedProducts

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select ProductSubcategoryID, count(ProductID) as [Counted Products] from Production.Product

group by ProductSubcategoryID

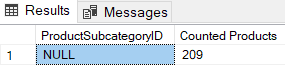
having ProductSubcategoryID is not null

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

select ProductSubcategoryID, count(ProductID) as [Counted Products] from Production.Product

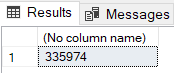
group by ProductSubcategoryID

having ProductSubcategoryID is null



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

select sum(Quantity) from Production.ProductInventory



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

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select productID ,sum(quantity) as TheSUM from Production.ProductInventory

group by ProductID

having sum(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

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select Shelf,productID ,sum(quantity) as TheSUM from Production.ProductInventory

group by Shelf,ProductID

having sum(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 productID ,avg(Quantity) as[average quantity] from Production.ProductInventory

where LocationID=10

group by ProductID

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

ProductID Shelf TheAvg

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select productID ,Shelf,avg(Quantity) as[TheAvg] from Production.ProductInventory

where LocationID=10

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

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select productID ,Shelf,avg(Quantity) as[The AVG] from Production.ProductInventory

where LocationID=10

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

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select Color,Class,count(\*) as TheCount,avg(ListPrice) as AvgPrice from Production.Product

group by Color,Class

having Color is not null and Class is not null

**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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select person.CountryRegion.Name as Country ,person.StateProvince.Name as Province

from person.CountryRegion join person.StateProvince

on person.CountryRegion.CountryRegionCode=person.StateProvince.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

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select person.CountryRegion.Name as Country ,person.StateProvince.Name as Province

from person.CountryRegion join person.StateProvince

on person.CountryRegion.CountryRegionCode=person.StateProvince.CountryRegionCode

where person.CountryRegion.Name in ('Canada','Germany')

**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 Products as p join [Order Details] as od on p.ProductID=od.ProductID

join Orders as o on od.OrderID=o.OrderID

where DATEDIFF(year, OrderDate, getdate())<25

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

select top 5 ShipPostalCode, sum(quantity) as quantity from [Order Details] as od join Orders as o

on od.OrderID=o.OrderID

group by ShipPostalCode

order by quantity desc

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

select top 5 ShipPostalCode, sum(quantity) as quantity

from Products as p join [Order Details] as od on p.ProductID=od.ProductID

join Orders as o on od.OrderID=o.OrderID

where DATEDIFF(year, OrderDate, getdate())<25

group by ShipPostalCode

having ShipPostalCode is not null

order by quantity desc

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

select City,count(CustomerID) as CustomerNumber 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(CustomerID) as numberofcustomers from Customers

group by City

having count(CustomerID)>10

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

select ContactName, OrderDate from Customers as c join Orders as o on o.CustomerID=c.CustomerID

where DATEDIFF(DAY,OrderDate,'1998/01/01')<0

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

select ContactName, OrderDate

from Customers as c

inner join Orders as o

on c.CustomerID = o.CustomerID

and OrderID = (

SELECT TOP 1 so.OrderID

FROM Orders so

WHERE so.CustomerID = o.CustomerID

ORDER BY so.OrderDate DESC

)

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

select ContactName, sum(Quantity) as 'count of products'

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

join [Order Details] as od on o.OrderID=od.OrderID

group by ContactName

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

select o.CustomerID, sum(Quantity) as 'count of products'

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

join [Order Details] as od on o.OrderID=od.OrderID

group by o.CustomerID

having sum(Quantity)>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

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select distinct su.CompanyName as 'Supplier Company Name', sh.CompanyName as 'Shipping Company Name'

from Shippers sh join orders o on sh.ShipperID=o.ShipVia join Suppliers su on o.ShipCountry=su.Country

order by su.CompanyName

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

select OrderDate , ProductName from Orders o join [Order Details] od on o.OrderID=od.OrderID join Products p on p.ProductID=od.ProductID

order by OrderDate

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

select e1.EmployeeID as e1ID, e2.EmployeeID as e2ID, e1.title as Title

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

where e1.EmployeeID <e2.EmployeeID

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

select e1.EmployeeID,e1.LastName as LastName,e1.FirstName as FirstName, count(e2.employeeID) as empNum

from Employees e1 join employees e2 on e1.EmployeeID=e2.ReportsTo

group by e1.EmployeeID,e1.LastName,e1.FirstName

having count(e2.employeeID)>=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 City as City, CompanyName as Name,ContactName as'Contact Name' , 'Customer' as 'Type' from Customers

Union

select City as City, CompanyName as Name,ContactName as'Contact Name' , '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.

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

|  |  |
| --- | --- |
| F1.T1 | F2.T2 |
| 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.

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

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

GOOD LUCK.