-- Q1

select t1.ProductID, t1.Name, t1.Color, t1.ListPrice, t1.Size

from Production.Product t1

left join Sales.SalesOrderDetail t2

on t1.ProductID = t2.ProductID

where t2.ProductID is null

order by t1.ProductID

-- Q2

select t1.CustomerID,

case

when t3.LastName IS NULL then 'Unknown'

else t3.LastName

end 'LastName',

case

when t3.FirstName IS NULL then 'Unknown'

else t3.FirstName

end 'FirstName'

from Sales.Customer t1

left join Sales.SalesOrderHeader t2

on t1.CustomerID = t2.CustomerID

left join Person.Person t3

on t1.CustomerID = t3.BusinessEntityID

where t2.CustomerID is null

order by CustomerID asc

--Q3

select top 10\* from

(select t1.CustomerID, t2.FirstName, t2.LastName, count(t3.SalesOrderID) 'CountOfOrders'

from Sales.Customer t1

left join Person.Person t2

on t1.PersonID = t2.BusinessEntityID

left join Sales.SalesOrderHeader t3

on t1.CustomerID = t3.CustomerID

group by t1.CustomerID, t2.FirstName, t2.LastName) t0

order by CountOfOrders desc, CustomerID

--Q4

select t2.FirstName, t2.LastName, t1.JobTitle, t1.HireDate,

count(t1.JobTitle) over(partition by JobTitle order by JobTitle) 'CountOfTitle'

from HumanResources.Employee t1

left join Person.Person t2

on t1.BusinessEntityID = t2.BusinessEntityID

--Q5 – 19,119

select SalesOrderID, CustomerID, LastName, FirstName, LastOrder, PreviousOrder

from

(select t3.SalesOrderID, t1.CustomerID, t2.FirstName, t2.LastName, t3.OrderDate 'LastOrder',

lead(OrderDate) over(partition by t1.CustomerID order by OrderDate desc) 'PreviousOrder',

ROW\_NUMBER()over(partition by t1.CustomerID order by OrderDate desc) 'RN'

from Sales.Customer t1

left join Person.Person t2

on t1.PersonID = t2.BusinessEntityID

left join Sales.SalesOrderHeader t3

on t1.CustomerID = t3.CustomerID

where OrderDate is not null) t0

where RN = 1

order by CustomerID

--Q5 – 19,127

select SalesOrderID, CustomerID, LastName, FirstName, OrderDate, lagging

from

(select SalesOrderID, t2.CustomerID, OrderDate,

RANK() over(partition by t2.CustomerID order by OrderDate desc) RNK,

LAG(OrderDate) over(partition by t2.CustomerID order by SalesOrderID) lagging,

LastName, FirstName

from Sales.SalesOrderHeader t1

join Sales.Customer t2

on t1.CustomerID = t2.CustomerID

join Person.Person t3

on t2.PersonID = t3.BusinessEntityID) t0

where RNK=1

order by CustomerID

--Q6

select Year, SalesOrderID, LastName, FirstName,

format(max(SubTotal) over(partition by Year order by SubTotal desc), '#,#.#') 'Total'

from

(select YEAR(t2.OrderDate) 'Year', t1.SalesOrderID, t3.FirstName, t3.LastName , t4.CustomerID,

sum((UnitPrice\*(1-UnitPriceDiscount)\*OrderQty)) 'SubTotal',

ROW\_NUMBER() over(partition by YEAR(t2.OrderDate) order by YEAR(t2.OrderDate)) RN

from Sales.SalesOrderDetail t1

join Sales.SalesOrderHeader t2

on t1.SalesOrderID = t2.SalesOrderID

join Sales.Customer t4

on t2.CustomerID = t4.CustomerID

join Person.Person t3

on t4.PersonID = t3.BusinessEntityID

group by YEAR(t2.OrderDate), t4.CustomerID, t1.SalesOrderID, t3.FirstName, t3.LastName) t0

where RN = 1

--Q7

select Month, isnull("2011", 0) '2011', "2012", "2013", isnull("2014", 0) '2014'

from

(select year(OrderDate) 'Year', MONTH(OrderDate) 'Month', count(SalesOrderID) 'Total'

from Sales.SalesOrderHeader

group by year(OrderDate), MONTH(OrderDate) )src

pivot (sum(Total) for Year in("2011", "2012", "2013", "2014")) pvt

--Q8

select YEAR(t2.OrderDate) 'Year', cast(MONTH(T2.OrderDate) AS VARCHAR(20)) 'Month', ROUND(SUM(UnitPrice), 2) 'Sum\_Price',

ROUND(SUM(SUM(UnitPrice)) over (partition by YEAR(t2.OrderDate) order by cast(MONTH(T2.OrderDate) as int)), 2) 'CumSum',

ROW\_NUMBER() over(partition by YEAR(t2.OrderDate) order by cast(MONTH(T2.OrderDate) as int)) RN

from Sales.SalesOrderDetail t1

join Sales.SalesOrderHeader t2

on t1.SalesOrderID = t2.SalesOrderID

group by YEAR(t2.OrderDate), cast(MONTH(T2.OrderDate) as int)

UNION

select YEAR(t2.OrderDate) 'Year', 'Grand\_Total:', null, ROUND(SUM(UnitPrice), 2), 13

from Sales.SalesOrderDetail t1

join Sales.SalesOrderHeader t2

on t1.SalesOrderID = t2.SalesOrderID

GROUP BY YEAR(t2.OrderDate)

order by Year, RN

--Q9

select t0.\*,

DATEDIFF(DD, PreviousEmpHDate, HireDate) 'DiffDays'

from

(select t3. name 'DepartmentName', t1.BusinessEntityID [Employee'sID], t4.FirstName + ' ' + t4.LastName [Employee'sFullName],

t1.HireDate, DATEDIFF(MM, HireDate, GETDATE()) 'Seniority',

LEAD(t4.FirstName + ' ' + t4.LastName) over(partition by t3. name order by t1.HireDate desc) 'PreviousEmpName',

LEAD(HireDate) over(partition by t3. name order by t1.HireDate desc) 'PreviousEmpHDate'

from HumanResources.Employee t1

left join HumanResources.EmployeeDepartmentHistory t2

on t1.BusinessEntityID = t2. BusinessEntityID

left join HumanResources.Department t3

on t2.DepartmentID = t3.DepartmentID

left join Person.Person t4

on t1.BusinessEntityID = t4.BusinessEntityID) t0

order by DepartmentName, HireDate desc

--Q10 – פתרון עם string\_agg

select HireDate, DepartmentID,

STRING\_AGG([Employee'sInfo] , ', ') as 'TeamEmployees'

from

(select t1.HireDate, t2.DepartmentID, (cast(t1.BusinessEntityID as nvarchar) + ' ' + t4.LastName + ' ' + t4.FirstName) [Employee'sInfo], EndDate

from HumanResources.Employee t1

left join HumanResources.EmployeeDepartmentHistory t2

on t1.BusinessEntityID = t2. BusinessEntityID

left join Person.Person t4

on t1.BusinessEntityID = t4.BusinessEntityID

where EndDate is null) t0

group by HireDate, DepartmentID

order by HireDate desc