LAB 5 – HQTCSDL – Sử dụng View trong SQL

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- Truy vấn cơ sở dữ liệu Northwind

```sql
use Northwind
```

1. Tạo các view sau :
   o uvw_DetailProductInOrder với các cột sau OrderId, OrderNumber, OrderDate, ProductId, ProductInfo (= ProductName + Package. Ví dụ: Chai 10 boxes x 20 bags), UnitPrice và Quantity

```sql
create view uvw_DetailProductInOrder
as
    select oi.OrderId, od.OrderNumber, od.OrderDate, ProductId,
           ProductInfo = pr.ProductName + space(1) + pr.Package,
           oi.UnitPrice, oi.Quantity
    from OrderItem as oi
    inner join [Order] as od on od.Id = oi.OrderId
    inner join Product as pr on pr.Id = oi.ProductId
go
```

```
☐ ◼ Views
    ⊞ ◼ System Views
    ⊞ ▣ dbo.uvw_AllProductInOrder
    ⊞ ▣ dbo.uvw_DetailProductInOrder
```

   o uvw_AllProductInOrder với các cột sau OrderId, OrderNumber, OrderDate, ProductList (ví dụ "11,42,72" với OrderId 1), và TotalAmount (= SUM(UnitPrice * Quantity)) theo mỗi OrderId (Gợi ý dùng FOR XML PATH để tạo cột ProductList)

```sql
create view uvw_AllProductInOrder
as
    select oi.OrderId, od.OrderNumber, od.OrderDate,
           stuff((select ', ' + cast(ProductId as nvarchar(10))
                  from OrderItem as ot
                  where oi.OrderId = ot.OrderId
                  for xml path('')), 1, 2, '') as ProductList,
           sum(oi.UnitPrice) * sum(oi.Quantity) as TotalAmount
    from OrderItem as oi
    inner join [Order] as od on od.Id = oi.OrderId
    group by oi.OrderId, od.OrderNumber, od.OrderDate
go
```

2. Dùng view "uvw_DetailProductInOrder" truy vấn những thông tin có OrderDate trong tháng 7

```
select *
from uvw_DetailProductInOrder
where month(OrderDate) = 7
```

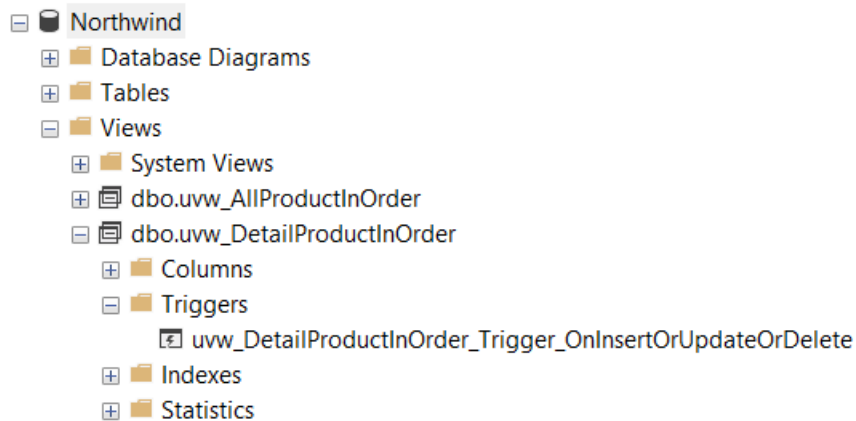|	OrderId	OrderNumber	OrderDate	ProductId	ProductInfo	UnitPrice	Quantity
1	1	542378	2012-07-04 00:00:00.000	11	Queso Cabrales 1 kg pkg.	14.00	12
2	1	542378	2012-07-04 00:00:00.000	42	Singaporean Hokkien Fried Mee 32 - 1 kg pkgs.	9.80	10
3	1	542378	2012-07-04 00:00:00.000	72	Mozzarella di Giovanni 24 - 200 g pkgs.	34.80	5
4	2	542379	2012-07-05 00:00:00.000	14	Tofu 40 - 100 g pkgs.	18.60	9
5	2	542379	2012-07-05 00:00:00.000	51	Manjimup Dried Apples 50 - 300 g pkgs.	42.40	40
6	3	542380	2012-07-08 00:00:00.000	41	Jack's New England Clam Chowder 12 - 12 oz cans	7.70	10
7	3	542380	2012-07-08 00:00:00.000	51	Manjimup Dried Apples 50 - 300 g pkgs.	42.40	35
8	3	542380	2012-07-08 00:00:00.000	65	Louisiana Fiery Hot Pepper Sauce 32 - 8 oz bottles	16.80	15
9	4	542381	2012-07-08 00:00:00.000	22	Gustaf's Knäckebröd 24 - 500 g pkgs.	16.80	6
10	4	542381	2012-07-08 00:00:00.000	57	Ravioli Angelo 24 - 250 g pkgs.	15.60	15
11	4	542381	2012-07-08 00:00:00.000	65	Louisiana Fiery Hot Pepper Sauce 32 - 8 oz bottles	16.80	20
12	5	542382	2012-07-09 00:00:00.000	20	Sir Rodney's Marmalade 30 gift boxes	64.80	40
13	5	542382	2012-07-09 00:00:00.000	33	Geitost 500 g	2.00	25
14	5	542382	2012-07-09 00:00:00.000	60	Camembert Pierrot 15 - 300 g rounds	27.20	40
15	6	542383	2012-07-10 00:00:00.000	31	Gorgonzola Telino 12 - 100 g pkgs	10.00	20
16	6	542383	2012-07-10 00:00:00.000	39	Chartreuse verte 750 cc per bottle	14.40	42

3. Dùng view "uvw_AllProductInOrder" truy vấn những hóa đơn Order có ít nhất 3 product trở lên

```
select *
from uvw_AllProductInOrder
where OrderId in (select OrderId
                  from OrderItem
                  group by OrderId
                  having count(OrderId) >= 3)
```

	OrderId	OrderNumber	OrderDate	ProductList	TotalAmount
1	1	542378	2012-07-04 00:00:00.000	11, 42, 72	1582.20
2	3	542380	2012-07-08 00:00:00.000	41, 51, 65	4014.00
3	4	542381	2012-07-08 00:00:00.000	22, 57, 65	2017.20
4	5	542382	2012-07-09 00:00:00.000	20, 33, 60	9870.00
5	6	542383	2012-07-10 00:00:00.000	31, 39, 49	4120.80
6	7	542384	2012-07-11 00:00:00.000	24, 55, 74	1755.60
7	8	542385	2012-07-12 00:00:00.000	2, 16, 36, 59	9713.00
8	10	542387	2012-07-16 00:00:00.000	27, 39, 77	2755.40
9	11	542388	2012-07-17 00:00:00.000	2, 5, 32	6993.80
10	13	542390	2012-07-19 00:00:00.000	41, 57, 62, 70	7619.40
11	15	542392	2012-07-22 00:00:00.000	5, 7, 56	2070.60
12	16	542393	2012-07-23 00:00:00.000	16, 24, 30, 74	8500.80
13	20	542397	2012-07-29 00:00:00.000	40, 59, 76	9868.50
14	25	542402	2012-08-02 00:00:00.000	20, 31, 72	7182.00
15	26	542403	2012-08-05 00:00:00.000	10, 31, 33, 40, 76	10016.80
16	31	542408	2012-08-12 00:00:00.000	44, 59, 63, 73	6822.40

4. Hai view trên đã readonly chưa ? Có những cách nào làm hai view trên thành readonly ?

```
create trigger uvw_DetailProductInOrder_Trigger_OnInsertOrUpdateOrDelete
on uvw_DetailProductInOrder
instead of insert, update, delete
as
begin
    raiserror('You are not allowed to insert, update, or delete through this view', 16, 1)
end
```

```
□ ▣ Northwind
    ⊞ ■ Database Diagrams
    ⊞ ■ Tables
    □ ■ Views
        ⊞ ■ System Views
        ⊞ ▣ dbo.uvw_AllProductInOrder
        □ ▣ dbo.uvw_DetailProductInOrder
            ⊞ ■ Columns
            □ ■ Triggers
                ▣ uvw_DetailProductInOrder_Trigger_OnInsertOrUpdateOrDelete
            ⊞ ■ Indexes
            ⊞ ■ Statistics
```

```
update uvw_DetailProductInOrder set Quantity = 20
where month(OrderDate) = 7 and OrderId = 26
```

```
Msg 50000, Level 16, State 1, Procedure uvw_DetailProductInOrder_Trigger_OnInsertOrUpdateOrDelete, Line 50 [Batch Start Line 0]
You are not allowed to insert, update, or delete through this view

(0 rows affected)

Completion time: 2023-05-30T12:33:05.4489860+07:00
```

```sql
create view uvw_DetailProductInOrder_ReadOnly
as
    select oi.OrderId, od.OrderNumber, od.OrderDate, ProductId,
            ProductInfo = pr.ProductName + space(1) + pr.Package,
            oi.UnitPrice, oi.Quantity
    from OrderItem as oi
    inner join [Order] as od on od.Id = oi.OrderId
    inner join Product as pr on pr.Id = oi.ProductId
    union
    select null, null, null, null, null, null, null where 1 = 0
go
```

- Northwind
  - Database Diagrams
  - Tables
  - Views
    - System Views
    - dbo.uvw_AllProductInOrder
    - dbo.uvw_DetailProductInOrder
    - dbo.uvw_DetailProductInOrder_ReadOnly

```sql
update uvw_DetailProductInOrder_ReadOnly set Quantity = 20
where month(OrderDate) = 7 and OrderId = 26
```

Msg 4406, Level 16, State 1, Line 109
Update or insert of view or function 'uvw_DetailProductInOrder_ReadOnly' failed because it contains a derived or constant field.

Completion time: 2023-05-30T13:08:49.1801909+07:00

```sql
create trigger uvw_AllProductInOrder_Trigger_OnInsertOrUpdateOrDelete
on uvw_AllProductInOrder
instead of insert, update, delete
as
begin
    raiserror('You are not allowed to insert, update, or delete through this view', 16, 1)
end
```

- Northwind
  - Database Diagrams
  - Tables
  - Views
    - System Views
    - dbo.uvw_AllProductInOrder
      - Columns
      - Triggers
        - uvw_AllProductInOrder_Trigger_OnInsertOrUpdateOrDelete

```sql
update uvw_AllProductInOrder set TotalAmount = 1000
where month(OrderDate) = 7 and OrderId = 26
```

```
Msg 50000, Level 16, State 1, Procedure uvw_AllProductInOrder_Trigger_OnInsertOrUpdateOrDelete, Line 61 [Batch Start Line 0]
You are not allowed to insert, update, or delete through this view

(0 rows affected)

Completion time: 2023-05-30T13:20:26.7421667+07:00
```

```sql
create view uvw_AllProductInOrder_ReadOnly
as
    select oi.OrderId, od.OrderNumber, od.OrderDate,
            stuff((select ', ' + cast(ProductId as nvarchar(10))
                from OrderItem as ot
                where oi.OrderId = ot.OrderId
                for xml path('')), 1, 2, '') as ProductList,
            sum(oi.UnitPrice) * sum(oi.Quantity) as TotalAmount
    from OrderItem as oi
    inner join [Order] as od on od.Id = oi.OrderId
    group by oi.OrderId, od.OrderNumber, od.OrderDate
    union
    select null, null, null, null, null where 1 = 0
go
```

- Northwind
  - Database Diagrams
  - Tables
  - Views
    - System Views
    - dbo.uvw_AllProductInOrder
    - dbo.uvw_AllProductInOrder_ReadOnly
    - dbo.uvw_DetailProductInOrder
    - dbo.uvw_DetailProductInOrder_ReadOnly

```sql
update uvw_AllProductInOrder_ReadOnly set TotalAmount = 1000
where month(OrderDate) = 7 and OrderId = 26
```

```
Msg 4406, Level 16, State 1, Line 115
Update or insert of view or function 'uvw_AllProductInOrder_ReadOnly' failed because it contains a derived or constant field.

Completion time: 2023-05-30T13:24:20.0549120+07:00
```

5. Thống kê về thời gian thực thi khi gọi hai view trên. View nào chạy nhanh hơn ?

```sql
set statistics io, time on
go

select *
from uvw_DetailProductInOrder
go

set statistics io, time off
go
```

```
SQL Server Execution Times:
  CPU time = 0 ms,  elapsed time = 239 ms.

set statistics io, time on
go

select *
from uvw_AllProductInOrder
go

set statistics io, time off
go
```

SQL Server Execution Times:
  CPU time = 0 ms, elapsed time = 175 ms.