20280083_LaiToanThang_DBM_Lab05

```sql
-- Sử dụng View trong SQL

--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

CREATE VIEW uvw_DetailProductInOrder AS
SELECT
    OrderId,
    O.OrderNumber,
    O.OrderDate,
    ProductId,
    P.ProductName + ' x ' + ISNULL(P.Package, '') AS ProductInfo,
    OI.UnitPrice,
    OI.Quantity
FROM
    [Order] O
    JOIN OrderItem OI
    ON O.Id = OI.OrderId
    JOIN Product P
    ON OI.ProductId = P.Id;

SELECT * FROM uvw_DetailProductInOrder
```

(2155 rows affected)

	OrderId	OrderNumber	OrderDate	ProductId	ProductInfo	UnitPrice	Quantity
1	1	542378	2012-07-04 00:00:00.000	11	Queso Cabrales x 1 kg pkg.	14.00	12
2	1	542378	2012-07-04 00:00:00.000	42	Singaporean Hokkien Fried Mee x 32 - 1 kg pkgs.	9.80	10
3	1	542378	2012-07-04 00:00:00.000	72	Mozzarella di Giovanni x 24 - 200 g pkgs.	34.80	5
4	2	542379	2012-07-05 00:00:00.000	14	Tofu x 40 - 100 g pkgs.	18.60	9
5	2	542379	2012-07-05 00:00:00.000	51	Manjimup Dried Apples x 50 - 300 g pkgs.	42.40	40
6	3	542380	2012-07-08 00:00:00.000	41	Jack's New England Clam Chowder x 12 - 12 oz cans	7.70	10
7	3	542380	2012-07-08 00:00:00.000	51	Manjimup Dried Apples x 50 - 300 g pkgs.	42.40	35
8	3	542380	2012-07-08 00:00:00.000	65	Louisiana Fiery Hot Pepper Sauce x 32 - 8 oz bottles	16.80	15
9	4	542381	2012-07-08 00:00:00.000	22	Gustaf's Knäckebröd x 24 - 500 g pkgs.	16.80	6
10	4	542381	2012-07-08 00:00:00.000	57	Ravioli Angelo x 24 - 250 g pkgs.	15.60	15
11	4	542381	2012-07-08 00:00:00.000	65	Louisiana Fiery Hot Pepper Sauce x 32 - 8 oz bottles	16.80	20
12	5	542382	2012-07-09 00:00:00.000	20	Sir Rodney's Marmalade x 30 gift boxes	64.80	40
13	5	542382	2012-07-09 00:00:00.000	33	Geitost x 500 g	2.00	25
14	5	542382	2012-07-09 00:00:00.000	60	Camembert Pierrot x 15 - 300 g rounds	27.20	40
15	6	542383	2012-07-10 00:00:00.000	31	Gorgonzola Telino x 12 - 100 g pkgs	10.00	20
16	6	542383	2012-07-10 00:00:00.000	39	Chartreuse verte x 750 cc per bottle	14.40	42
17	6	542383	2012-07-10 00:00:00.000	49	Maxilaku x 24 - 50 g pkgs.	16.00	40
18	7	542384	2012-07-11 00:00:00.000	24	Guaraná Fantástica x 12 - 355 ml cans	3.60	15
19	7	542384	2012-07-11 00:00:00.000	55	Pâté chinois x 24 boxes x 2 pies	19.20	21
20	7	542384	2012-07-11 00:00:00.000	74	Longlife Tofu x 5 kg pkg.	8.00	21
21	8	542385	2012-07-12 00:00:00.000	2	Chang x 24 - 12 oz bottles	15.20	20
22	8	542385	2012-07-12 00:00:00.000	16	Pavlova x 32 - 500 g boxes	13.90	35
23	8	542385	2012-07-12 00:00:00.000	36	Inlagd Sill x 24 - 250 g jars	15.20	25
24	8	542385	2012-07-12 00:00:00.000	59	Raclette Courdavault x 5 kg pkg.	44.00	30
25	9	542386	2012-07-15 00:00:00.000	53	Perth Pasties x 48 pieces	26.20	15
26	9	542386	2012-07-15 00:00:00.000	77	Original Frankfurter grüne Soße x 12 boxes	10.40	12
27	10	542387	2012-07-16 00:00:00.000	27	Schoggi Schokolade x 100 - 100 g pieces	35.10	25
28	10	542387	2012-07-16 00:00:00.000	39	Chartreuse verte x 750 cc per bottle	14.40	6
29	10	542387	2012-07-16 00:00:00.000	77	Original Frankfurter grüne Soße x 12 boxes	10.40	15
30	11	542388	2012-07-17 00:00:00.000	2	Chang x 24 - 12 oz bottles	15.20	50
31	11	542388	2012-07-17 00:00:00.000	5	Chef Anton's Gumbo Mix x 36 boxes	17.00	65
32	11	542388	2012-07-17 00:00:00.000	32	Mascarpone Fabioli x 24 - 200 g pkgs.	25.60	6
33	12	542389	2012-07-18 00:00:00.000	21	Sir Rodney's Scones x 24 pkgs. x 4 pieces	8.00	10
34	12	542389	2012-07-18 00:00:00.000	37	Gravad lax x 12 - 500 g pkgs.	20.80	1
35	13	542390	2012-07-19 00:00:00.000	41	Jack's New England Clam Chowder x 12 - 12 oz cans	7.70	16
36	13	542390	2012-07-19 00:00:00.000	57	Ravioli Angelo x 24 - 250 g pkgs.	15.60	50
37	13	542390	2012-07-19 00:00:00.000	62	Tarte au sucre x 48 pies	39.40	15

```
--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)

CREATE VIEW uvw_AllProductInOrder AS
SELECT
    O.Id AS OrderId,
    O.OrderNumber,
    O.OrderDate,
    STUFF((
        SELECT ',' + CAST(OI.ProductId AS NVARCHAR(MAX))
        FROM OrderItem OI
        WHERE OI.OrderId = O.Id
        FOR XML PATH('')
    ), 1, 1, '') AS ProductList,
```

```
        SUM(OI.UnitPrice * OI.Quantity) AS TotalAmount
FROM
    [Order] O
    JOIN OrderItem OI
    ON O.Id = OI.OrderId
GROUP BY
    O.Id,
    O.OrderNumber,
    O.OrderDate;

SELECT * FROM uvw_AllProductInOrder
```

(830 rows affected)

	OrderId	OrderNumber	OrderDate	ProductList	TotalAmount
1	1	542378	2012-07-04 00:00:00.000	11,42,72	440.00
2	2	542379	2012-07-05 00:00:00.000	14,51	1863.40
3	3	542380	2012-07-08 00:00:00.000	41,51,65	1813.00
4	4	542381	2012-07-08 00:00:00.000	22,57,65	670.80
5	5	542382	2012-07-09 00:00:00.000	20,33,60	3730.00
6	6	542383	2012-07-10 00:00:00.000	31,39,49	1444.80
7	7	542384	2012-07-11 00:00:00.000	24,55,74	625.20
8	8	542385	2012-07-12 00:00:00.000	2,16,36,59	2490.50
9	9	542386	2012-07-15 00:00:00.000	53,77	517.80
10	10	542387	2012-07-16 00:00:00.000	27,39,77	1119.90
11	11	542388	2012-07-17 00:00:00.000	2,5,32	2018.60
12	12	542389	2012-07-18 00:00:00.000	21,37	100.80
13	13	542390	2012-07-19 00:00:00.000	41,57,62,70	1746.20
14	14	542391	2012-07-19 00:00:00.000	21,35	448.00
15	15	542392	2012-07-22 00:00:00.000	5,7,56	624.80
16	16	542393	2012-07-23 00:00:00.000	16,24,30,74	2464.80
17	17	542394	2012-07-24 00:00:00.000	2,41	724.50
18	18	542395	2012-07-25 00:00:00.000	17,70	1176.00
19	19	542396	2012-07-26 00:00:00.000	12	364.80
20	20	542397	2012-07-29 00:00:00.000	40,59,76	4031.00
21	21	542398	2012-07-30 00:00:00.000	29,72	1101.20
22	22	542399	2012-07-31 00:00:00.000	33,72	676.00
23	23	542400	2012-08-01 00:00:00.000	36,43	1376.00
24	24	542401	2012-08-01 00:00:00.000	33	48.00
25	25	542402	2012-08-02 00:00:00.000	20,31,72	1456.00
26	26	542403	2012-08-05 00:00:00.000	10,31,33,...	2142.40
27	27	542404	2012-08-06 00:00:00.000	71,72	538.60
28	28	542405	2012-08-07 00:00:00.000	24,59	307.20
29	29	542406	2012-08-08 00:00:00.000	10,13	420.00
30	30	542407	2012-08-09 00:00:00.000	28,62	1200.80
31	31	542408	2012-08-12 00:00:00.000	44,59,63,73	1488.80
32	32	542409	2012-08-13 00:00:00.000	17	468.00
33	33	542410	2012-08-14 00:00:00.000	24,55,75	613.20

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

```
SELECT *
FROM uvw_DetailProductInOrder
WHERE MONTH(OrderDate) = 7;
```

(136 rows affected)

	OrderId	OrderNumber	OrderDate	ProductId	ProductInfo	UnitPrice	Quantity
1	1	542378	2012-07-04 00:00:00.000	11	Queso Cabrales x 1 kg pkg.	14.00	12
2	1	542378	2012-07-04 00:00:00.000	42	Singaporean Hokkien Fried Mee x 32 - 1 kg pkgs.	9.80	10
3	1	542378	2012-07-04 00:00:00.000	72	Mozzarella di Giovanni x 24 - 200 g pkgs.	34.80	5
4	2	542379	2012-07-05 00:00:00.000	14	Tofu x 40 - 100 g pkgs.	18.60	9
5	2	542379	2012-07-05 00:00:00.000	51	Manjimup Dried Apples x 50 - 300 g pkgs.	42.40	40
6	3	542380	2012-07-08 00:00:00.000	41	Jack's New England Clam Chowder x 12 - 12 oz cans	7.70	10
7	3	542380	2012-07-08 00:00:00.000	51	Manjimup Dried Apples x 50 - 300 g pkgs.	42.40	35
8	3	542380	2012-07-08 00:00:00.000	65	Louisiana Fiery Hot Pepper Sauce x 32 - 8 oz bottles	16.80	15
9	4	542381	2012-07-08 00:00:00.000	22	Gustaf's Knäckebröd x 24 - 500 g pkgs.	16.80	6
10	4	542381	2012-07-08 00:00:00.000	57	Ravioli Angelo x 24 - 250 g pkgs.	15.60	15
11	4	542381	2012-07-08 00:00:00.000	65	Louisiana Fiery Hot Pepper Sauce x 32 - 8 oz bottles	16.80	20
12	5	542382	2012-07-09 00:00:00.000	20	Sir Rodney's Marmalade x 30 gift boxes	64.80	40
13	5	542382	2012-07-09 00:00:00.000	33	Geitost x 500 g	2.00	25
14	5	542382	2012-07-09 00:00:00.000	60	Camembert Pierrot x 15 - 300 g rounds	27.20	40
15	6	542383	2012-07-10 00:00:00.000	31	Gorgonzola Telino x 12 - 100 g pkgs	10.00	20
16	6	542383	2012-07-10 00:00:00.000	39	Chartreuse verte x 750 cc per bottle	14.40	42
17	6	542383	2012-07-10 00:00:00.000	49	Maxilaku x 24 - 50 g pkgs.	16.00	40
18	7	542384	2012-07-11 00:00:00.000	24	Guaraná Fantástica x 12 - 355 ml cans	3.60	15
19	7	542384	2012-07-11 00:00:00.000	55	Pâté chinois x 24 boxes x 2 pies	19.20	21
20	7	542384	2012-07-11 00:00:00.000	74	Longlife Tofu x 5 kg pkg.	8.00	21
21	8	542385	2012-07-12 00:00:00.000	2	Chang x 24 - 12 oz bottles	15.20	20
22	8	542385	2012-07-12 00:00:00.000	16	Pavlova x 32 - 500 g boxes	13.90	35
23	8	542385	2012-07-12 00:00:00.000	36	Inlagd Sill x 24 - 250 g jars	15.20	25
24	8	542385	2012-07-12 00:00:00.000	59	Raclette Courdavault x 5 kg pkg.	44.00	30
25	9	542386	2012-07-15 00:00:00.000	53	Perth Pasties x 48 pieces	26.20	15
26	9	542386	2012-07-15 00:00:00.000	77	Original Frankfurter grüne Soße x 12 boxes	10.40	12

```
--3. Dùng view "uvw_AllProductInOrder" truy vấn những hóa đơn Order có ít nhất 3 product trở lên
-- Truy vấn những hóa đơn có số dấu phẩy trong ProductList nhiều hơn hoặc bằng 2
-- tức chiều dài của ProductList trừ chiều dài của ProductList khi replace dấu phẩy bằng space >= 2
SELECT *
FROM uvw_AllProductInOrder
WHERE LEN(ProductList) - LEN(REPLACE(ProductList, ',', '')) >= 2;
```

	OrderId	OrderNumber	OrderDate	ProductList	TotalAmount
1	1	542378	2012-07-04 00:00:00.000	11,42,72	440.00
2	3	542380	2012-07-08 00:00:00.000	41,51,65	1813.00
3	4	542381	2012-07-08 00:00:00.000	22,57,65	670.80
4	5	542382	2012-07-09 00:00:00.000	20,33,60	3730.00
5	6	542383	2012-07-10 00:00:00.000	31,39,49	1444.80
6	7	542384	2012-07-11 00:00:00.000	24,55,74	625.20
7	8	542385	2012-07-12 00:00:00.000	2,16,36,59	2490.50
8	10	542387	2012-07-16 00:00:00.000	27,39,77	1119.90
9	11	542388	2012-07-17 00:00:00.000	2,5,32	2018.60
10	13	542390	2012-07-19 00:00:00.000	41,57,62,70	1746.20
11	15	542392	2012-07-22 00:00:00.000	5,7,56	624.80
12	16	542393	2012-07-23 00:00:00.000	16,24,30,74	2464.80
13	20	542397	2012-07-29 00:00:00.000	40,59,76	4031.00
14	25	542402	2012-08-02 00:00:00.000	20,31,72	1456.00
15	26	542403	2012-08-05 00:00:00.000	10,31,33,40,76	2142.40
16	31	542408	2012-08-12 00:00:00.000	44,59,63,73	1488.80
17	33	542410	2012-08-14 00:00:00.000	24,55,75	613.20
18	34	542411	2012-08-14 00:00:00.000	19,24,35	86.50
19	36	542413	2012-08-16 00:00:00.000	15,19,60,72	1414.80
20	37	542414	2012-08-19 00:00:00.000	27,44,60,67	1452.00
21	38	542415	2012-08-20 00:00:00.000	1,40,53	2179.20
22	40	542417	2012-08-22 00:00:00.000	16,34,46	924.00
23	43	542420	2012-08-27 00:00:00.000	5,29,49,77	2169.00
24	44	542421	2012-08-27 00:00:00.000	13,44,51	552.80
25	46	542423	2012-08-29 00:00:00.000	18,24,63,75	848.70
26	47	542424	2012-08-30 00:00:00.000	1,17,43,60,75	1887.60
27	49	542426	2012-09-03 00:00:00.000	11,16,69	1050.60
28	51	542428	2012-09-05 00:00:00.000	2,36,59,62	3127.00
29	55	542432	2012-09-10 00:00:00.000	17,28,43	2708.80
30	56	542433	2012-09-11 00:00:00.000	40,65,68	1242.00
31	57	542434	2012-09-12 00:00:00.000	49,59,71	954.40

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

- Để biết hai view trên đã readonly chưa. Kiểm tra bằng câu lệnh query sau

```
UPDATE uvw_DetailProductInOrder SET Quantity = 21
WHERE OrderId = 7;
```

Messages

(3 rows affected)

⇒ View [uvw_DetailProductInOrder] chưa đặt thuộc tính read-only

```
UPDATE uvw_AllProductInOrder
SET TotalAmount = 1000
WHERE OrderId = 1
```

Msg 4406, Level 16, State 1, Line 98
Update or insert of view or function 'uvw_AllProductInOrder' failed because it contains a derived or constant field.

⇒ View [uvw_DetailProductInOrder] đã đặt thuộc tính read-only

- Set read-only như sau:

  - Tạo trigger

    ```
    CREATE TRIGGER [uvw_DetailProductInOrder_A_Trigger_OnInsertOrUpdateOrDelete]
    ON uvw_DetailProductInOrder
    INSTEAD OF INSERT, UPDATE, DELETE
    AS
    BEGIN
      RAISERROR('You are not allowed to udpate information through this view', 16, 1)
    END
    ```

    Kiểm tra thuộc tính read-only của uvw_DetailProductInOrder

    Msg 50000, Level 16, State 1, Procedure uvw_DetailProductInOrder_A_Trigger_OnInsertOrUpdateOrDelete, Line 7 [Batch Start Line 91]
    You are not allowed to udpate information through this view

  - Với SCHEMABINDING

    ```
    CREATE VIEW uvw_DetailProductInOrder
    WITH SCHEMABINDING
    AS
    SELECT
        OrderId,
        O.OrderNumber,
        O.OrderDate,
        ProductId,
        P.ProductName + ' x ' + ISNULL(P.Package, '') AS ProductInfo,
        OI.UnitPrice,
        OI.Quantity
    FROM
        [Order] O
        JOIN OrderItem OI ON O.Id = OI.OrderId
        JOIN Product P ON OI.ProductId = P.Id;
    ```

- Nếu 2 view ở trên không ở read-only, top những cách để đảm bảo chúng trở lại và duy trì read-only

a. Grant cấp quyền thích hợp cho user. Đảm bảo user chỉ được phép xem và select dữ liệu, không được update, insert hay delete khi ở view.

b. Check constrains: Khi tạo view, thêm một số tính toán truy vấn con, aggregate function, distinct, top, group by, having hay union... để không thể update view được

c. Tắt triggers

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

```
-- Đo thời gian execute khi gọi view 'uvw_DetailProductInOrder'
 SET STATISTICS TIME ON
 SELECT * FROM uvw_DetailProductInOrder
 SET STATISTICS TIME OFF;
```

```
        (2155 rows affected)

         SQL Server Execution Times:
           CPU time = 0 ms,  elapsed time = 58 ms.
```

```
-- Đo thời gian execute khi gọi view 'uvw_DetailProductInOrder'
 SET STATISTICS TIME ON
 SELECT * FROM uvw_AllProductInOrder
 SET STATISTICS TIME OFF
```

```
        (830 rows affected)

         SQL Server Execution Times:
           CPU time = 15 ms,  elapsed time = 79 ms.
```

💡 Thời gian execute của view 'uvw_DetailProductInOrder' nhiều hơn view 'uvw_DetailProductInOrder'