

2004

MS SQL Server 2000 Analysis Services

OLAP

(

)

2 0 0 4

MS SQL Server 2000 Analysis Services

OLAP

()

論文 碩士學位 論文 提出

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梨花女子大學校 情報科學大學院

專攻

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論文 碩士學位 論文
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1. MOLAP	ROLAP	14
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3.		40

SQL

1	SQL	47
2	48

OLAP

OLAP

(DSS)

(,)

가

가

가

가

SQL

Server 2000 Analysis Services

OLAP

Analysis Services

OLTP / /

OLAP .

, 가

. 가

가 .

1.

1-1.

OLAP

(Bayesian Network)

(Data Mining)

OLAP(On-line Analytical Processing) 'Analytical'

OLTP

(structure)

" "

(parsimonious)

, () .
(field, attribute)
.[1]

SQL Server 2000 Analysis Services

50,000

OLAP ,

1, 2

가 . 5 ~ 6 가

가

()

2001 5

20 , 10

가

가

OLAP

, .

가

1-2.

Windows 2000 Advanced Server
 SQL Server 2000
 SQL Server 2000 Analysis Services
 OLAP

OLAP
 OLTP , ,
 ,
 .

. 2

, OLAP

. 3

Analysis Services

OLAP

4

2.

2-1.

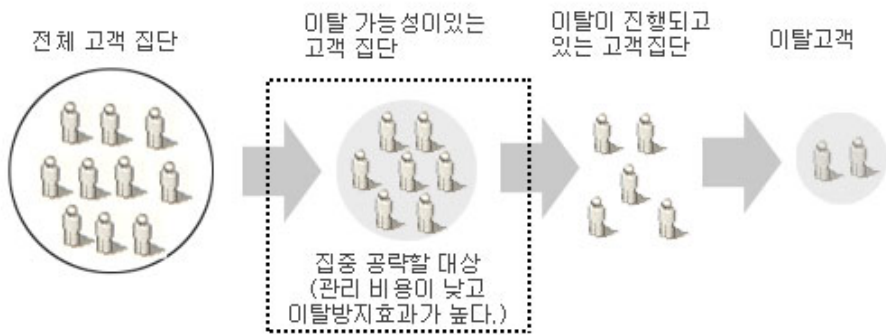
가

가

(Segmentation)

가

가



1. 가

OLAP,

CRM(Customer Relationship

Management)

OLAP

가

2-2. (Data Warehouse)

(Data Mart)

2-2-1. (Data Warehouse)

(Data Warehouse) 가'

가 가

William Inmon

A Data warehouse is a
 Subject-oriented,
 Integrated,
 Time-variant,
 Nonvolatile

Collection of data in support of management's decision –
 making process(1990)

- Subject-oriented :

가

- Integrated :

가

- Time-variant :

- Nonvolatile :

가

(Insert, Update, Delete)

가

2-2-2. (Data Mart)

(Data Mart)

가

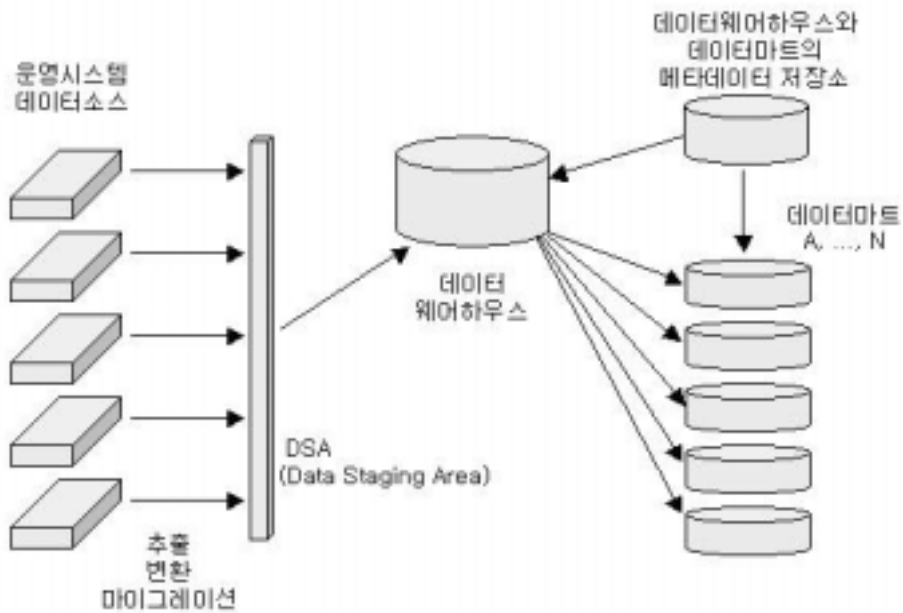
(Granular Level) 가 ,
(Refined Level) .

가 . 가
.

가
3가 . [2]

- Top-Down() :

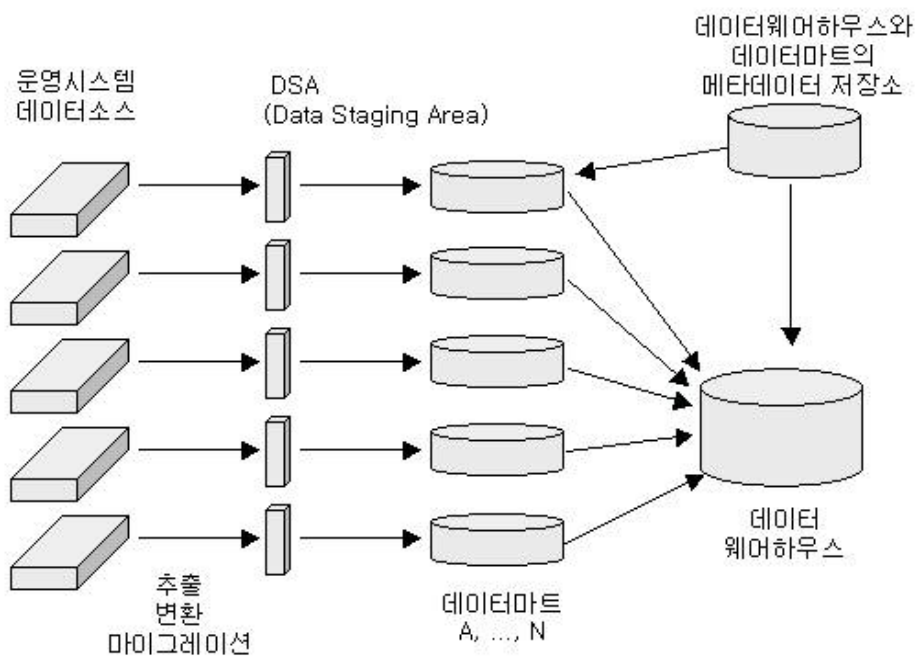
가 .



2. Top-Down Architecture (: Joseph M. Firestone)

- Bottom-Up() :

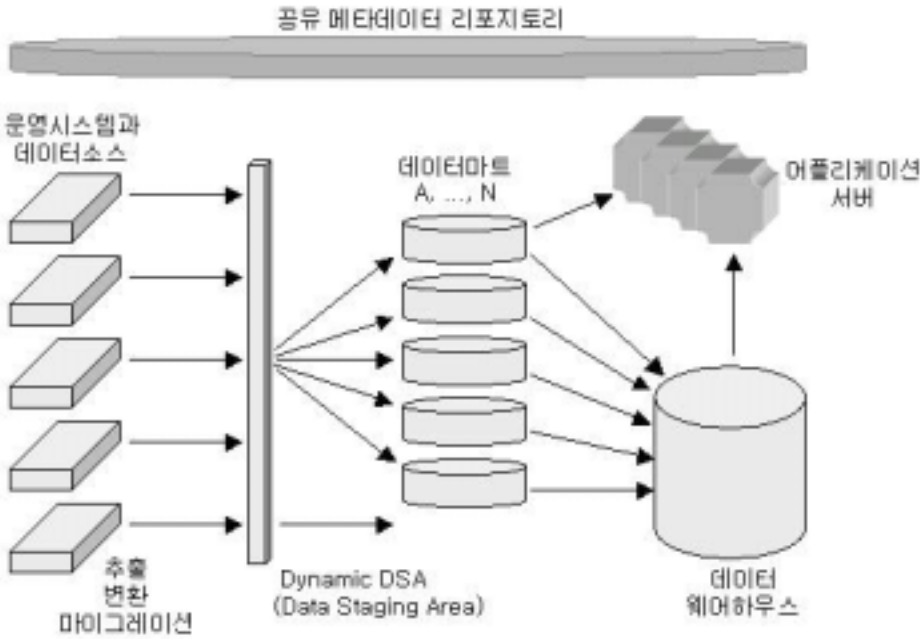
가 가
 . - 가
 가 가 . ,



3. Bottom-Up Architecture (: Joseph M. Firestone)

- Enterprise Data Mart() : -

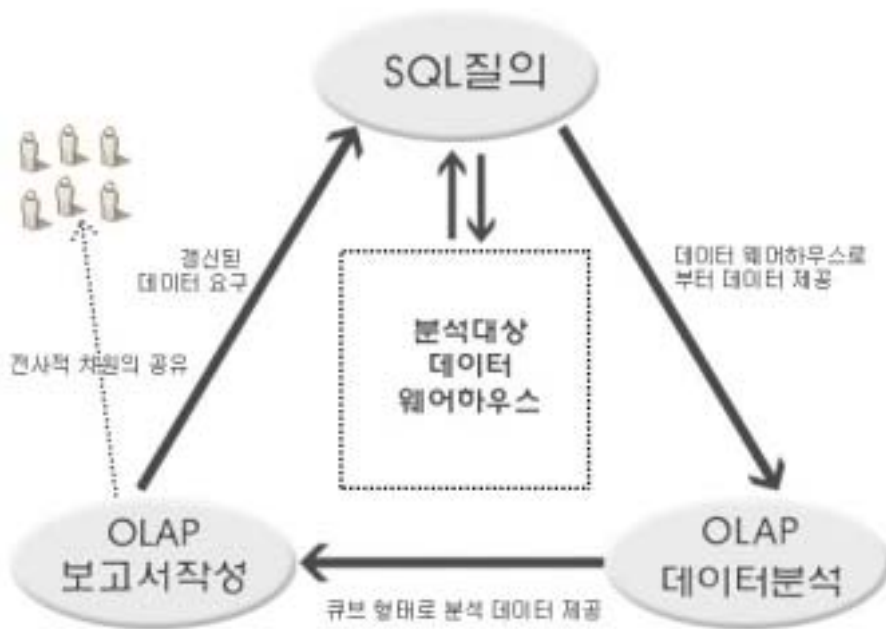
가 .



4. Enterprise Architecture (: Joseph M. Firestone)

2-3. OLAP(On-line Analytical Process)

OLAP (On-Line Analytical Processing)은
 (DSS) (Decision Support System)의
 한 형태로서, 경영 의사결정을
 지원하기 위하여, 다차원적
 데이터를 분석하고, 결과를
 가시화하는 데 사용되는
 기술이다. OLAP은
 OLAP (On-Line Analytical Processing)은



5. SQL Server

가

OLAP

가

. [3]

OLAP application . OLAP Report FASMI
Fast Analysis of Shared
Multidimensional Information()

- Fast :

가

Application

- Analysis :

- Shared :

가

(가

)

OLAP

- Multidimensional :

Hierarchy Multi-

Hierarchy

- Information :

[4]

OLAP 가

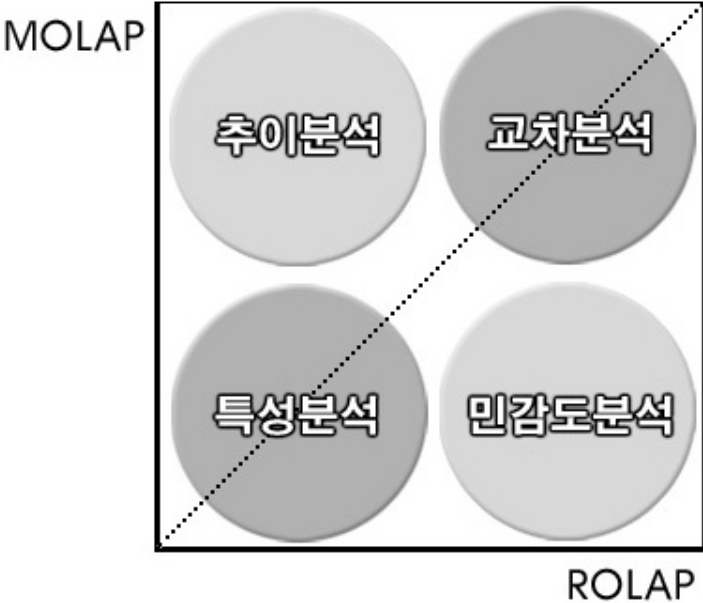
- (Profile) :

- (Trend) :

- (Cross) :

- (Sensitivity) :

Analysis Services 가
MOLAP, ROLAP, HOLAP가 2가



6. OLAP

MOLAP(Multi dimensional OLAP)

가

가

가

MOLAP

가

MOLAP

ROLAP(Relational OLAP) 가

ROALP

OLAP

가

. ROALP MOLAP

가

가

가

HOLAP(Hybrid

OLAP) . HOLAP

MOLAP

가

. [5], [7]

1. MOLAP ROLAP

	MOLAP	ROLAP
	/	

Analysis Services

MOLAP ROLAP 가

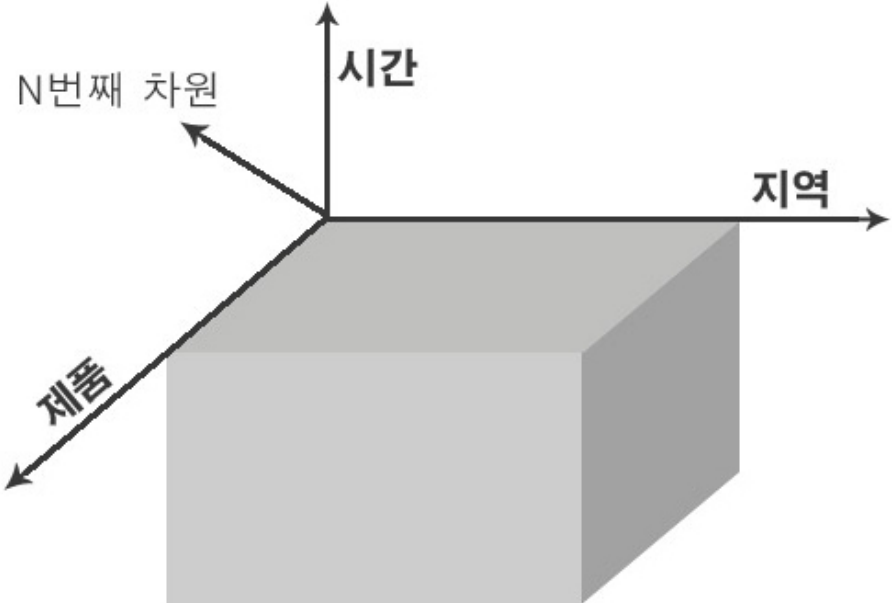
MOLAP

ROLAP

OLAP (Cube)

가

가



7. N

가

- (Dimension) :

4가

■ : MOLAP
가

가 , 가 .

■ : ROLAP
가 .

■ - :

■ 가 :

● (Measure) :

2-4. (Data Mining)

OLAP

가 .

, OLAP

(top-down) .

OLAP . ,

OLAP

; OLAP .

OLAP - (need-to-know)

,

가 가 .

OLAP . 가

. , - ,

. - (supervised learning) ,

" (clustering)"

- (unsupervised learning) . ,

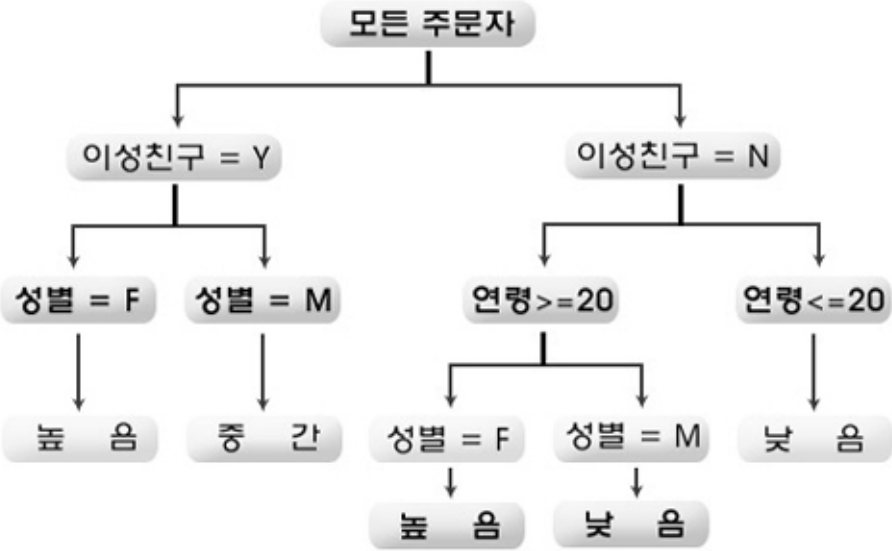
(bottom-up)

OLAP . [6]

Analysis Services 가

2-4-1. (Decision Tree)

() (Descriptive Modeling) 가 (Classification)



8. : 가 가

2-4-2. (Clustering :)

K-Means Clustering
EM(Expectation
Maximization) . Microsoft가
K-Means Clustering

K

10

K

.

.

가

. [7]

3. OLAP

OLTP

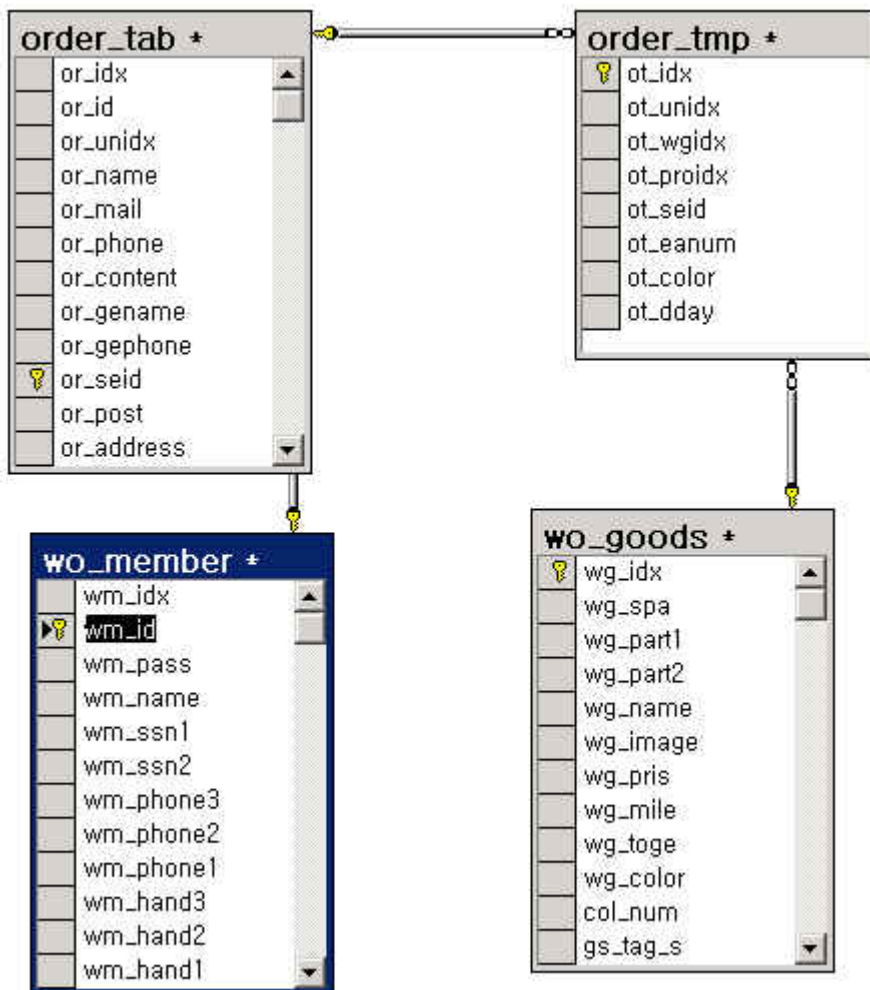
OLAP

1. (,)
2. () 가
3. 가
4. 가

3-1.

3-1-1.

OLTP
OLAP



9. OLTP

(order_tab), (order_tmp),
 (wo_member), (wo_goods) .
 order_tab order_tmp ,
 wo_member order_tab , order_tmp

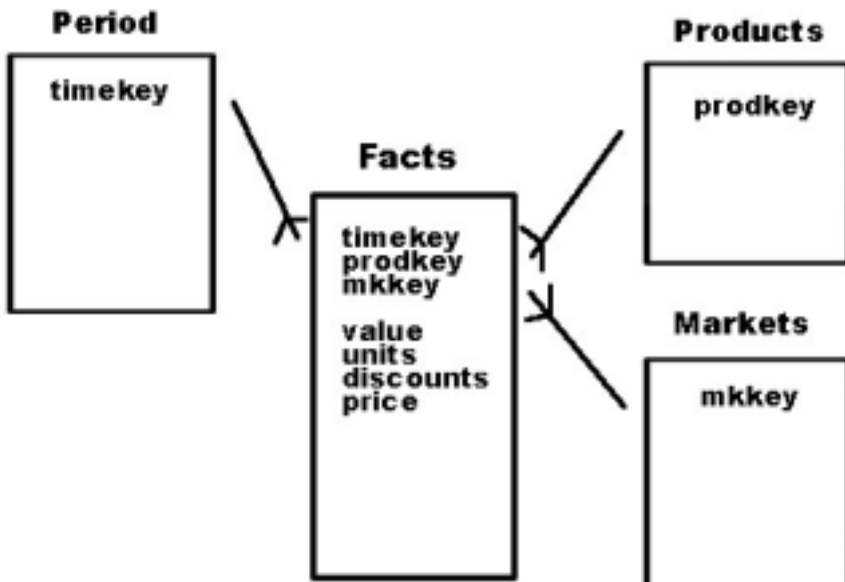
wo_goods

SQL

. [1]

OLAP

. [11]



Fact table primary key = {timekey:prodkey:mkkey}

10.

OLAP

가

order_tab

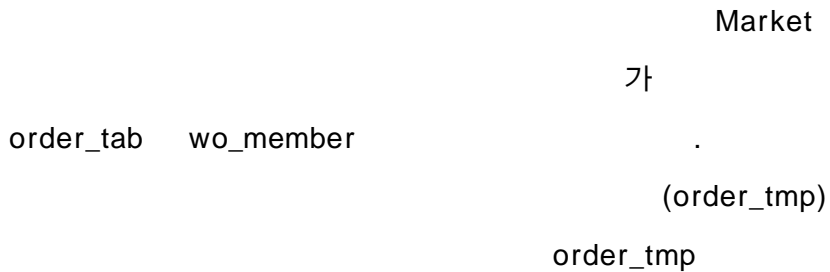
order_tab

가

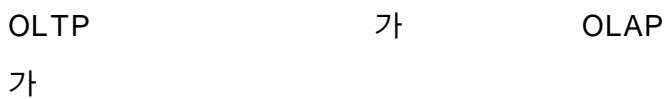
.

Period

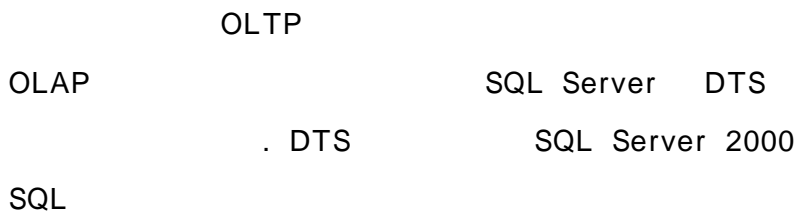
order_tab



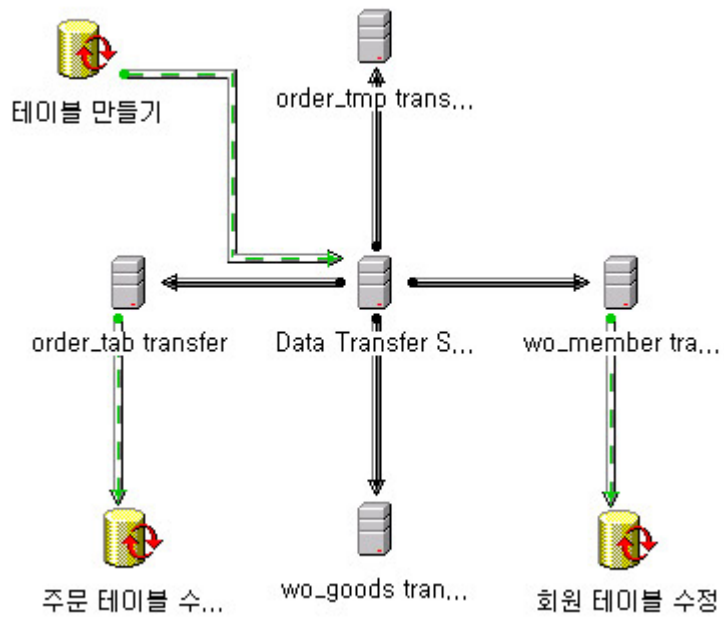
3-1-2. ETT -



11.



DTS
DTS
(, , ,)
OLAP
SQL
DTS
가



12. DTS

SQL

or_address
 “ 2 331-9 ” 가
 or_address addr1(, ,) ,
) addr2(, ,) .

.[2] 가
 가 .

“ ” “ ”

가

.

DTS

OLAP

가

.

3-2.

(Standard Dimension)

(Time Dimension)

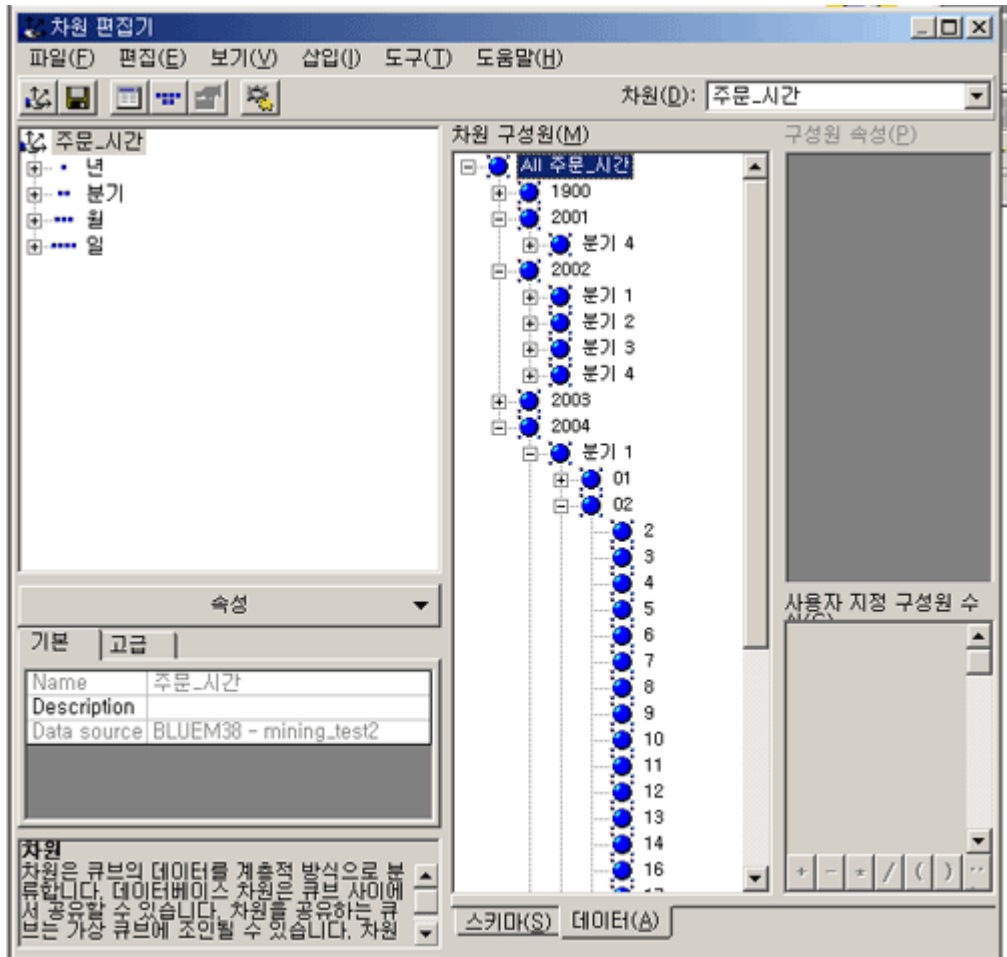
Date

3-2-1. _ (Time Dimension)

(order_tab) 3

, 가 . 가

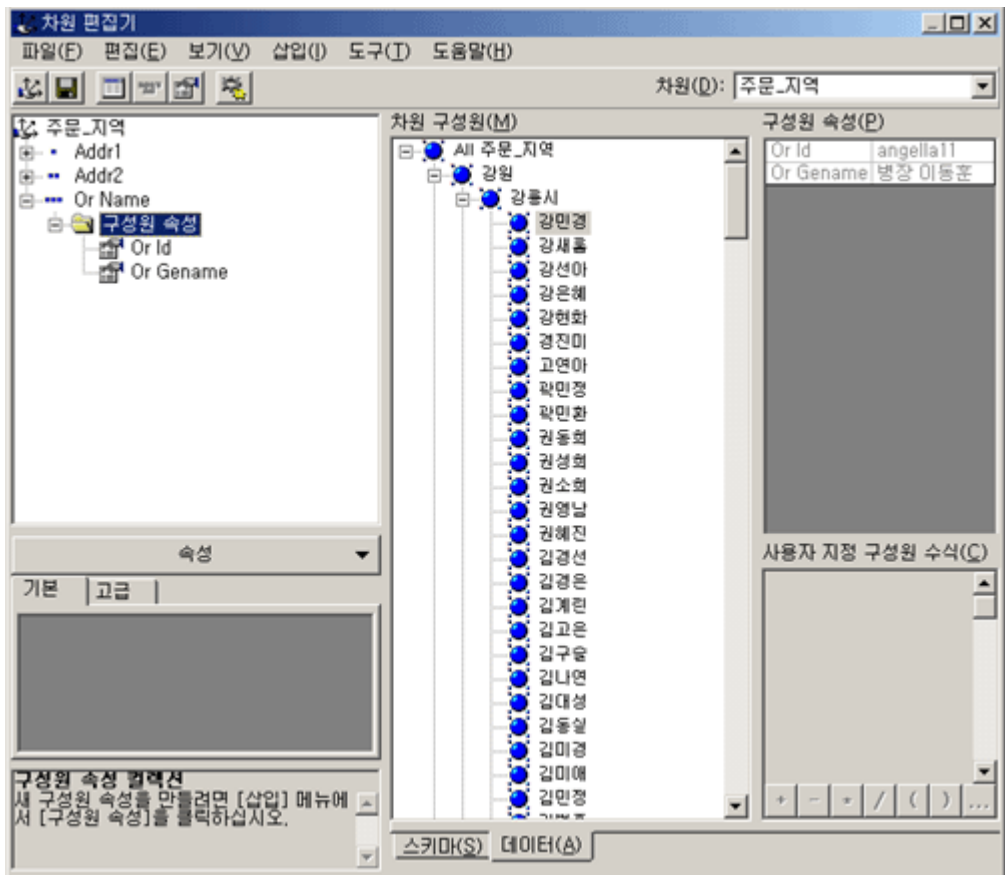
(or_bday)



13.

1900

3-2-2. (Standard Dimension)



14.

(order_tab)

addr1,

addr2, or_name . or_name

가

ID가 'angella11' ' ,

.

3-2-3.

— —

.

“order_tab”

or_sendsum() or_idx(

)

.

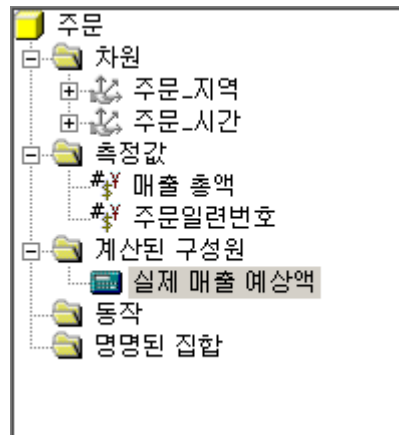
“Sum”

“Aggregate Function” “Count” .

.

or_sendsum() 30% .

.



15.

MOLAP

		* (All)	MeasuresLevel	
		All 주문_지역		
- 분기	+ 월	매출 총액	주문일련번호	실제 예상 수익
All 주문_시간 합계		910,540,330	37,050	273,162,099
1900 합계				
2001 합계		39,389,100	1,586	11,816,730
2002 합계		350,753,950	14,379	105,226,005
2003 합계		381,161,970	15,496	114,348,591
+ 분기 1	분기 1 합계	70,472,050	3,270	23,541,055
+ 분기 2	분기 2 합계	74,995,550	3,111	22,498,665
+ 분기 3	분기 3 합계	101,057,290	4,179	30,317,184
	분기 4 합계	126,636,290	4,936	37,990,887
- 분기 4	* 10	36,700,890	1,529	11,610,264
	* 11	37,235,690	1,421	11,170,707
	* 12	50,699,720	1,986	15,209,916
2004 합계		139,235,910	5,597	41,770,773

16.

2003

4

4

12

12

12

13

23

17

2003

2. 2003

1	30,219,350	1,258	9,065,805
2	28,443,350	1,179	8,533,005
3	19,810,150	833	5,943,045
4	23,255,650	945	6,976,695
5	24,657,850	1,022	7,397,355
6	27,082,050	1,144	8,124,615
7	36,136,540	1,495	10,840,962
8	35,193,790	1,467	10,558,137
9	29,726,950	1,217	8,918,085
10	38,700,880	1,529	11,610,264
11	37,235,690	1,421	11,170,707
12	50,699,720	1,986	15,209,916

3 4

2

3, 4

3

7, 8

10, 11, 12

.

가

가

()

24,000 25,000 .

가 25,000

.

-

가

가

,

,

가

가

가

가

.

시 주문_시간			
MeasuresLevel			
+ Addr2	매출 금액	주문일련번호	실제 예상 수익
강원 합계	77,701,640	2,829	23,310,492
경기 합계	213,821,470	8,261	64,146,441
경남 합계	99,075,270	1,466	11,722,581
경북 합계	98,861,260	1,633	11,658,378
광주 합계	18,371,890	748	5,511,567
대구 합계	32,624,360	1,383	9,787,308
대전 합계	24,698,290	1,061	7,409,787
부산 합계	56,623,870	2,397	16,987,161
서울 합계	203,515,940	8,396	61,054,782
+ 강남구	22,461,820	908	6,738,546
+ 강동구	7,498,740	302	2,249,622
+ 강북구	4,610,270	178	1,383,081
+ 강서구	8,617,530	365	2,585,259
+ 관악구	7,091,120	300	2,127,336
+ 광진구	6,777,520	313	2,033,256
+ 구로구	6,190,500	266	1,857,150
+ 금천구	4,733,950	214	1,420,185
+ 노원구	11,268,180	478	3,380,454
+ 도봉구	5,937,120	255	1,781,136
+ 동대문구	7,406,750	294	2,222,025
+ 동작구	6,114,410	252	1,834,323
+ 마포구	6,112,210	256	1,833,663
+ 서대문구	5,829,970	218	1,748,991
+ 서초구	11,808,040	491	3,542,412
+ 성동구	5,277,270	213	1,593,181
+ 성북구	7,344,100	295	2,203,230
+ 송파구	12,200,850	507	3,660,255
+ 양천구	8,286,610	319	2,485,983
+ 영등포구	10,823,460	446	3,247,098
+ 용산구	5,037,110	208	1,511,133
+ 은평구	5,862,670	235	1,758,601
+ 중로구	7,914,470	326	2,374,341
+ 중구	12,385,460	511	3,715,638
+ 중랑구	5,925,810	246	1,777,743
없음 합계	40,461,790	2,099	12,138,537
울산 합계	20,185,750	798	6,055,725
인천 합계	43,227,190	1,748	12,968,157
전남 합계	15,486,310	635	4,645,893
전북 합계	22,767,160	964	6,830,148
제주 합계	7,148,310	290	2,144,493

17.

가

20000

가

가

가

가

3-3.

order_tmp

가

order_tmp

3-3-1.

(order_tmp) ot_dday()

‘ , , , ’

[13]

3-3-2. —

(order_tmp)

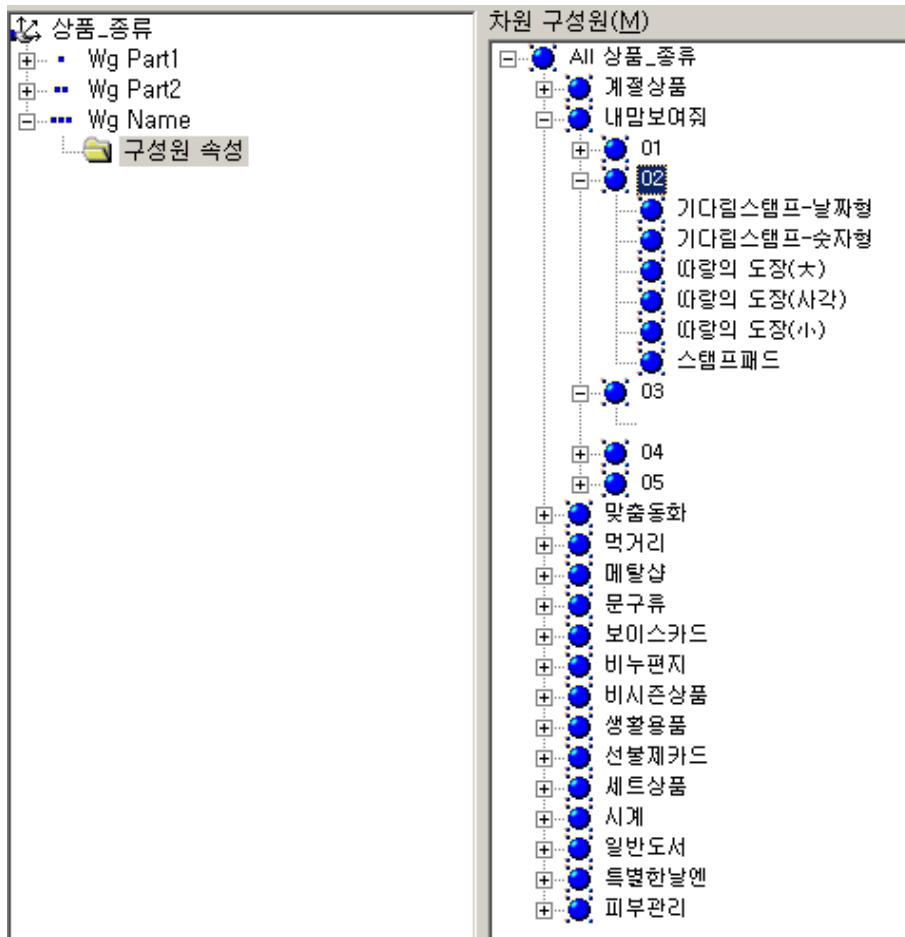
(wo_goods)

—

(wg_part1),

(wg_part2),

(wg_name)



18. -

3-3-3.

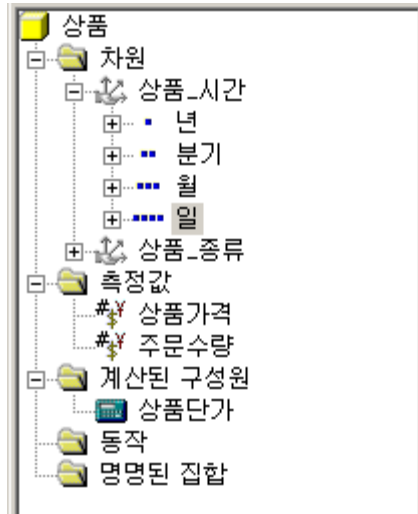
“order_tmp”

ot_price(가) ot_eanum() .

가

Join

가
가



19.

+ 년		+ 2001	+ 2002	+ 2003
+ Wg Part	시 상품_시간			
All 상품_종류	927,980,310	36,630,500	398,970,850	361,329,420
+ 계절상품	19,282,400	194,000	8,362,000	10,104,800
+ 내입모데일	284,172,650	7,445,450	142,953,750	99,938,850
+ 맞춤문화	17,085,500			12,246,000
+ 액거리	36,602,200	616,200	15,500,300	14,889,250
+ 생활실	13,802,000	884,000	8,190,000	5,805,000
+ 문구류	77,949,450	959,250	13,605,950	41,209,750
+ 보이스카드	19,828,000		8,538,000	10,301,000
+ 비누면지	4,296,000	220,000	1,301,000	2,085,000
+ 비시즌상품	196,676,050	22,484,600	95,574,850	60,790,350
+ 생활용품	20,545,550	1,215,250	13,043,050	10,269,100
+ 생활카드	40,428,000		820,000	27,054,000
+ 세트상품	27,931,300	1,012,000	15,607,100	8,647,300
+ 시계	33,441,000	382,000	18,479,500	13,521,500
+ 일반도서	8,223,260			5,398,170
+ 특별한날엔	109,970,050	3,311,350	60,785,350	35,485,550
+ 최무관건	9,240,900	198,400	4,132,000	3,771,800

20. ,
가

가가 가
가 가

“ ” “ ” “ ”

가 2002 100%
2003

2002

가

3.

	2001	2002	2003	2004
	3,311,350	60,785,350	35,485,550	10,327,800
	7,445,450	142,953,750	99,938,850	34,434,600
	194,000	6,362,000	10,104,800	2,631,600
	959,250	13,685,950	41,209,750	22,094,500

2002

가 가

3-4.

OLTP

OLAP

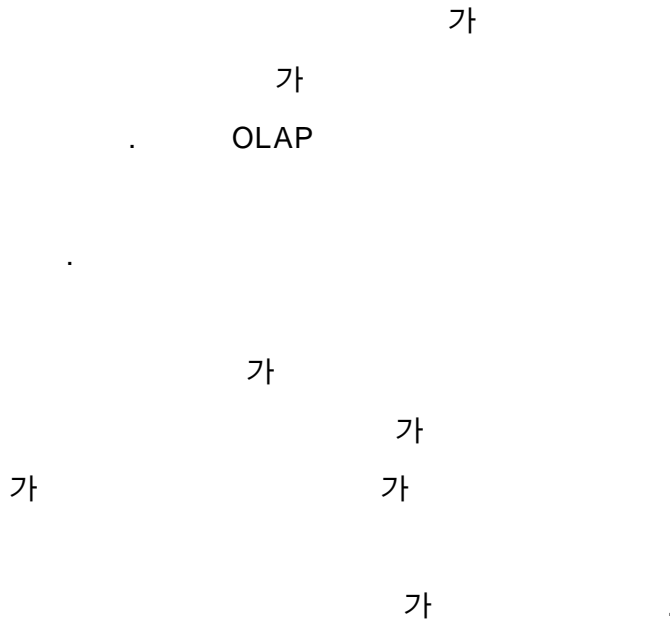
가

가 25000

OLAP

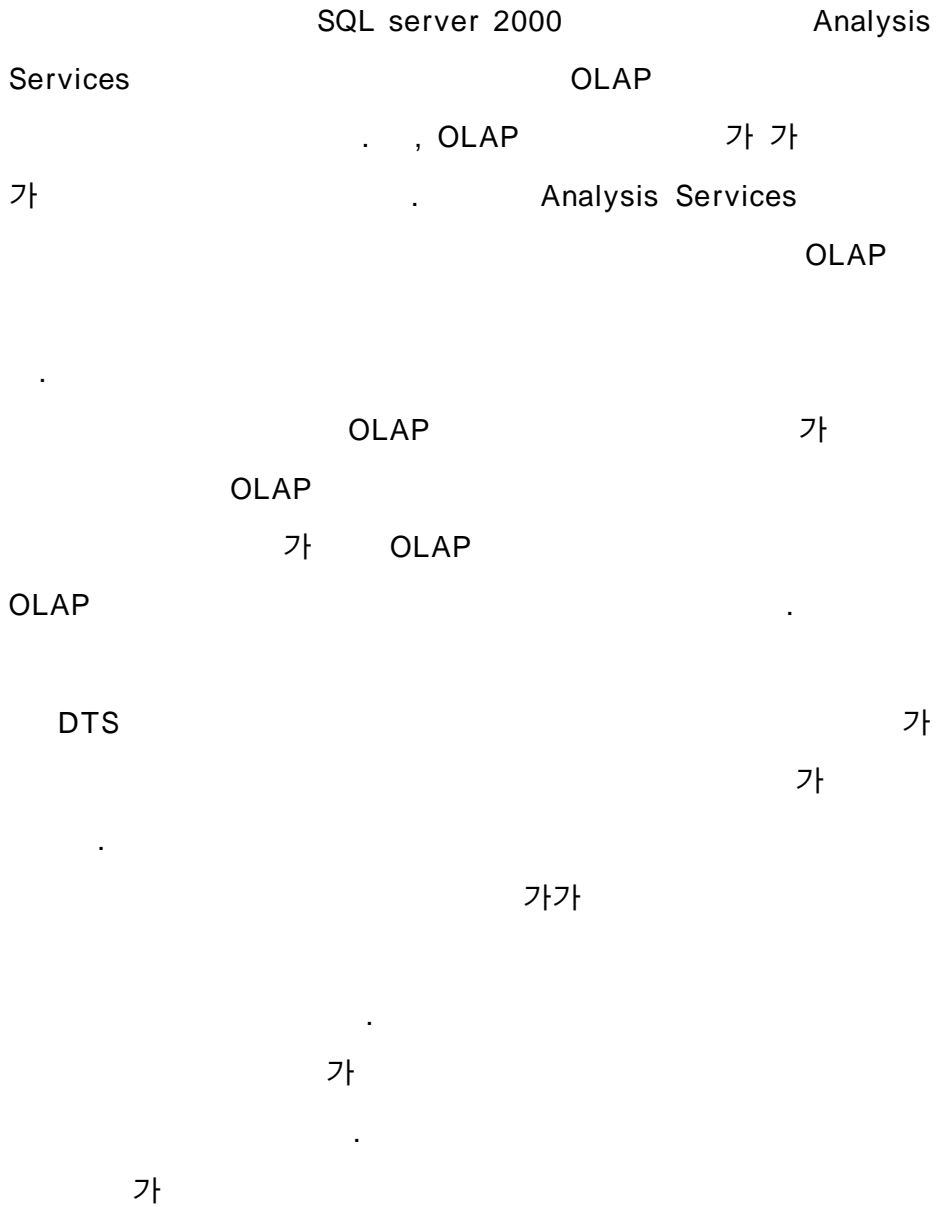
가

가



4.

4-1.



가 가

OLAP
3

가

25000 가

가

가

4-2.

OLAP

가

OLAP

가

가

가

(Association)

가

가

Analysis Services

OLAP

MS

가

SQL

```
CREATE TABLE [dbo].[order_tab] ( --
    [or_idx] [int] NOT NULL , --
    [or_id] [varchar] (20) NOT NULL , --
    [or_name] [varchar] (20) NOT NULL , --
    [or_gename] [varchar] (20) NOT NULL , --
    [or_seid] [varchar] (20) NOT NULL , --
    [addr1] [varchar] (20) NOT NULL , --      ( , )
    [addr2] [varchar] (20) NOT NULL , --      ( , , )
    [or_address] [varchar] (200) NULL , --
    [or_sendsum] [bigint] NOT NULL , --
    [or_dday] [smalldatetime] NOT NULL , --
    [or_bday] [smalldatetime] NOT NULL , --
    ...
) ON [PRIMARY]

CREATE TABLE [dbo].[order_tmp] ( --
    [ot_idx] [int] NOT NULL , --
    [ot_wgidx] [int] NULL , --
    [ot_seid] [varchar] (20) NULL , --
    [ot_eanum] [int] NULL , --
    [ot_color] [varchar] (30) NULL , --
    [ot_dday] [smalldatetime] NOT NULL --
    ...
) ON [PRIMARY]

CREATE TABLE [dbo].[wo_goods] ( --
    [wg_idx] [int] NOT NULL , --
    [wg_part1] [varchar] (20) NOT NULL , --
```



```

    [wg_part2] [varchar] (20) NOT NULL ,      --
    [wg_name] [varchar] (30) NOT NULL ,      --
    [wg_pris] [int] NOT NULL ,                --      가
    [wg_color] [varchar] (40) NOT NULL ,      --
    ...
) ON [PRIMARY]
GO

CREATE TABLE [dbo].[wo_member] (           --
    [wm_id] [varchar] (20) NOT NULL , --
    [wm_name] [varchar] (20) NOT NULL , --
    [addr1] [varchar] (10) NULL ,          --      ( , )
    [addr2] [varchar] (20) NULL ,          --      ( , , )
    [wm_address1] [varchar] (150) NULL , --
    [wm_ename] [varchar] (50) NULL ,      --
    [dday] [smalldatetime] NOT NULL , --가
    [wm_sex] [char] (1) NOT NULL         --
    ...
) ON [PRIMARY]
GO

```

1

SQL

```

Create procedure update_order as
    declare @cnt_order int
    Set @cnt_order = (Select Count(or_idx) From order_tab where addr1
is NULL)
    declare @or_idx int
    declare @postno1 int
    declare @postno2 int

```

```

declare @num int
Set @num = 1
declare @addr1 varchar(20)
declare @addr2 varchar(40)
declare @SQL varchar(500)
declare orderCursor Cursor for
        Select or_idx, left(or_post, 3), substring(or_post, 5, 2),
addr1, addr2 from order_tab where addr1 is NULL order by or_idx desc
Open orderCursor
While (@num <= @cnt_order) Begin
        Fetch Next From orderCursor into @or_idx, @postno1,
@postno2, @addr1, @addr2
                Select @SQL = 'Update order_tab '
                Select @SQL = @SQL + 'Set addr1=(Select distinct
addr1 from postbook where left(postno, 5)=' + convert(varchar(3), @postno1)
+ convert(varchar(3), @postno2) + '), '
                Select @SQL = @SQL + '        addr2=(Select
distinct addr2 from postbook where left(postno, 5)=' + convert(varchar(3),
@postno1) + convert(varchar(3), @postno2) + ') '
                Select @SQL = @SQL + 'Where or_idx =' +
convert(varchar(8), @or_idx)
                --Select @SQL
                Exec (@SQL)
                Set @num = @num + 1
End
Select @num
Close orderCursor
Deallocate orderCursor

```

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