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DMW - Experiment 7

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DMW Experiment 7

Aim : Perform OLAP operations such as Roll up, Drill down, slice & dice, Pivot on data warehouse.

Theory : 1. OLAP is an acronym for On Line Analytical Processing. It manages large amount of historical data, provides facilities for summarization & aggregation, & stores & manages information at different levels of granularity.

OLAP Operations :

1. Slice — It is a subset of multi-dimensional array corresponding to a single value for one or more ~~dimensions of~~ members of the dimensions not in the subset.
2. Dice — It is a slice on more than 2 dimensions of a data cube (or more than 2 consecutive slices)
3. Drill Down / Up — Drilling down / up is a specific drilling technique whereby the user navigates ~~along the~~ among levels of data ranging from most summarized (up) to the most detailed (down).
4. Roll-up — It involves computing all of the data relationships for one or more dimensions. To do this, a computational relationship / formula might be defined.
5. Pivot — To change dimensional orientation of a report or page display.

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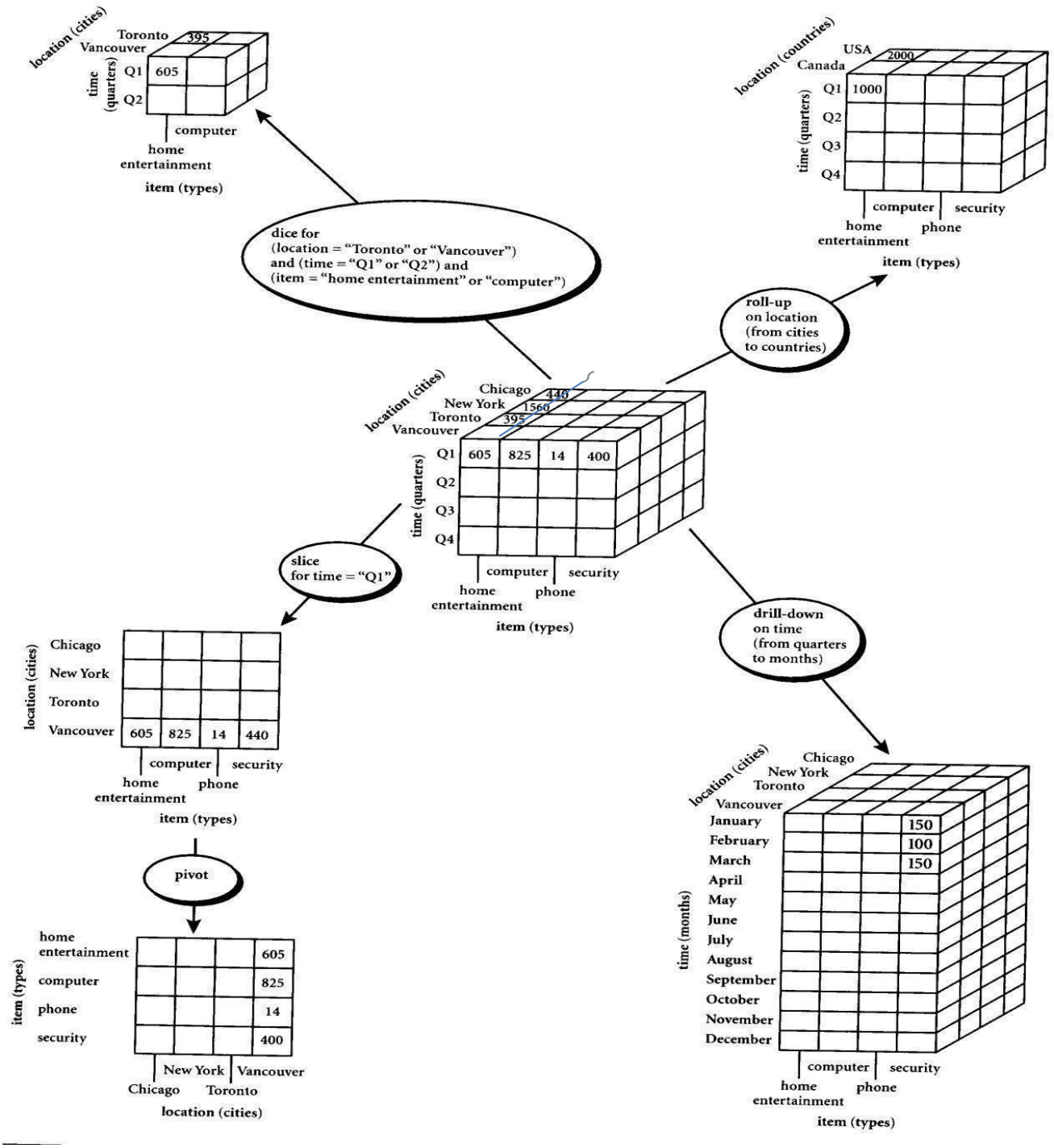
location (cities)
Toronto
Vancouver
395
time (quarters)
Q1
605
Q2
computer
home entertainment
item (types)
dice for
(location = "Toronto" or "Vancouver")
and (time = "Q1" or "Q2") and
(item = "home entertainment" or "computer")
location (countries)
USA
2000
Canada
Q1
1000
Q2
Q3
Q4
time (quarters)
computer
security
home entertainment
phone
item (types)
roll-up
on location
(from cities
to countries)
location (cities)
Chicago
440
New York
1560
Toronto
Vancouver
395
Q1
605
825
14
400
Q2
Q3
Q4
time (quarters)
computer
security
home entertainment
phone
item (types)
slice
for time = "Q1"
drill-down
on time
(from quarters
to months)
location (cities)
Chicago
New York
Toronto
Vancouver
605
825
14
440
computer
security
home entertainment
phone
item (types)
pivot
item (types)
home entertainment
computer
phone
security
605
825
14
400
Chicago
New York
Toronto
Vancouver
location (cities)
location (cities)
Chicago
New York
Toronto
Vancouver
January
February
March
April
May
June
July
August
September
October
November
December
150
100
150
time (months)
computer
security
home entertainment
phone
item (types)

EXERCISE 1

Consider a data Warehouse for a hospital, where there are three dimensions:

(i) Doctor

(ii) Patient

(iii) Time

With two measures

(a) Count

(b) Charge

Where Charge is the fee that the Doctor charges a patient for a visit.

Using the above example describe the following operations:

(i) Slice

(ii) Dice

(iii) Roll Up

(iv) Drill Down (v) Pivot

NOTE: Assume data according to the dimensions and measures and explore individual tasks diagrammatically.

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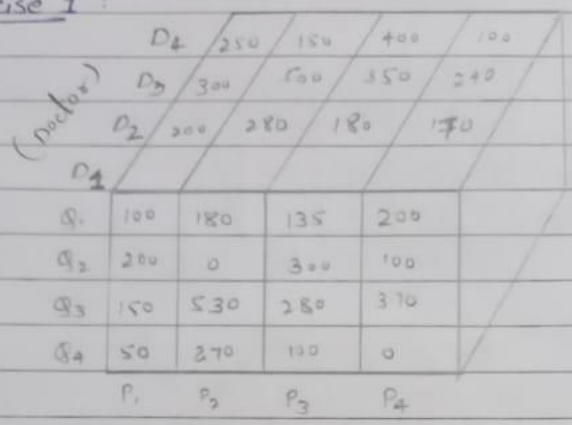
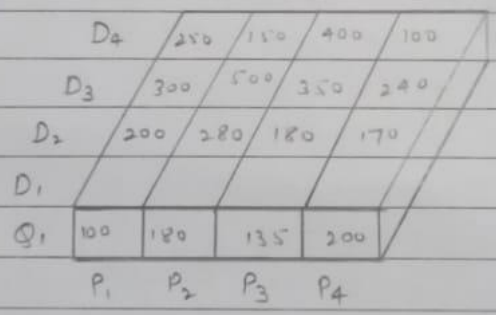
DMW - Experiment 7

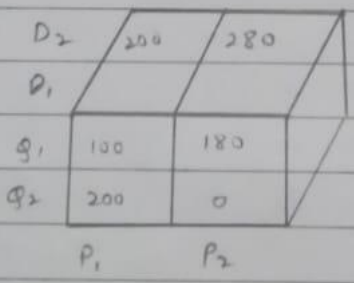
Exercise 1 :



Slice :



Dice :



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Roll up :

	450	550	700	340
Q_1	300	480	305	370
Q_2	200	0	300	150
Q_3	150	530	280	330
Q_4	50	270	100	0
	P_1	P_2	P_3	P_4

Drill down :

D_4	250	150	400	100
D_3	300	500	350	240
D_2	200	280	100	170
D_1				
January	70	90	75	100
February	15	23	45	50
March	15	45	25	50
April	50	0	180	75
May	100	0	150	25
June	50	0	50	50
July	500	200	70	100
August	50	100	140	200
September	50	230	70	70
October	10	90	50	0
November	20	100	30	0
December	20	80	20	0
	P_1	P_2	P_3	P_4

Pivot :

P_1	100	200	300	250
P_2	180	280	500	150
P_3	125	180	350	400
P_4	200	110	240	100
	D_1	D_2	D_3	D_4

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EXERCISE 2

To create Pivot of Table using MS Excel

Follow these steps …

1. Start with M.S Excel.
2. In excel sheet create 4 columns PRODUCT, ORIGIN, DAY OF SALE, SOLD UNITS (FACT COLUMN).
3. Insert around fifty rows of data.
4. Save the table data.
5. Go to Insert Tab-> click on Pivot Table-> New work sheet-> Ok.
6. Right side you will find pivot table fields.

   It contains all columns of our table that we created.

   Select product in rows,

   Days in column,

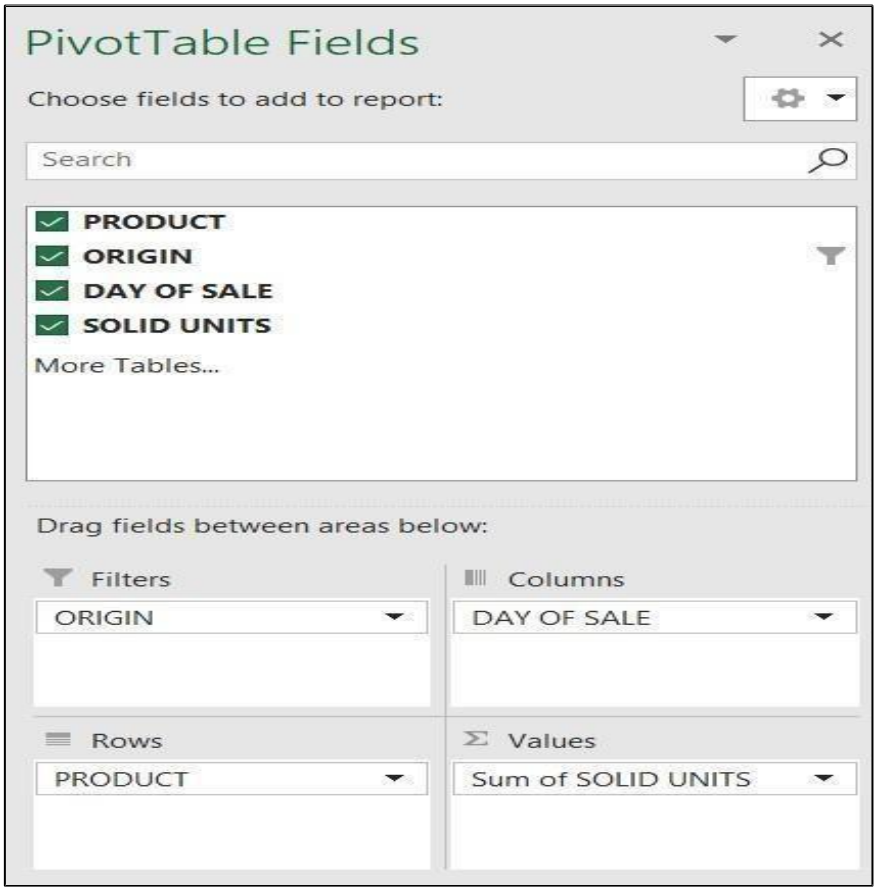
   Unit sold in ∑ values.

   Later apply filter using Origin.

   Also, we can flip the rows & columns or combine together as rows only to see different views of same data.

   Dataset:

A	B	C	D
PRODUCT	ORIGIN	DAY OF SALE	SOLID UNITS
A	East	01-01-2023	8
B	Central	02-01-2023	4
C	Central	03-01-2023	2
D	Central	04-01-2023	5
E	West	05-01-2023	6
F	East	06-01-2023	9
G	Central	07-01-2023	9
H	Central	08-01-2023	1
I	West	09-01-2023	1
J	East	01-01-2023	8
K	Central	02-01-2023	4
L	East	03-01-2023	6
M	East	04-01-2023	7
N	East	05-01-2023	9
O	Central	06-01-2023	5
P	East	07-01-2023	2
Q	Central	08-01-2023	1
R	East	09-01-2023	3
S	East	01-01-2023	6
T	Central	02-01-2023	5
U	Central	03-01-2023	8
V	East	04-01-2023	4
X	Central	05-01-2023	8
Y	Central	06-01-2023	9
Z	East	07-01-2023	2



ORIGIN	East							
Sum of SOLID UNITS	Column Labels							
Row Labels	01-01-2023	03-01-2023	04-01-2023	05-01-2023	06-01-2023	07-01-2023	09-01-2023	Grand Total
A	8							8
F					9			9
J	8							8
L		6						6
M			7					7
N				9				9
P						2		2
R							3	3
S	6							6
V			4					4
Z						2		2
Grand Total	22	6	11	9	9	4	3	64

Conclusion: Thus, we performed various OLAP instructions.