Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)

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LAB EXPERIMENT NO. 07

AIM: Perform OLAP operations such as Roll up, Drill down, Slice and Dice, Pivot on Data Warehouse.

Theory:

OLAP is an acronym for On Line Analytical Processing. Online Analytical Processing: An OLAP system manages large amounts of historical data, provides Facilities for summarization and aggregation, and stores and manages information at different levels of granularity.
OLAP operations:

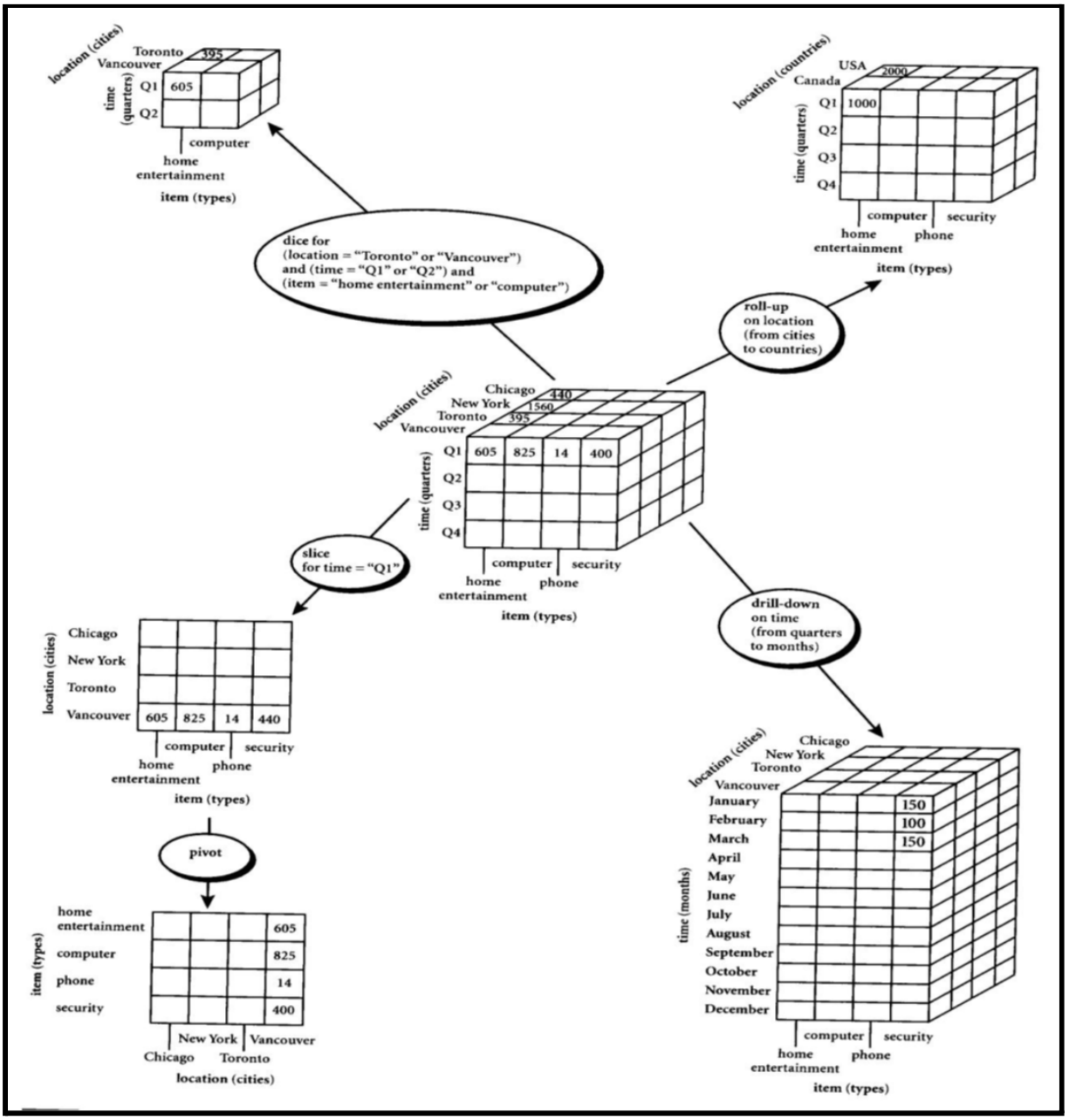
Slice: A slice is a subset of a multidimensional array corresponding to a single value for one or more members of the dimensions not in the subset.

Dice: The dice operation is a slice on more than two dimensions of a data cube (or more than two consecutive slices).

Drill Down/Up: Drilling down or up is a specific analytical technique whereby the user navigates among levels of data ranging from the most summarized (up) to the most detailed (down).

Roll-up: A roll-up involves computing all of the data relationships for one or more dimensions. To do this, a computational relationship or formula might be defined.

Pivot: To change the dimensional orientation of a report or page display.


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

10/12/21

DWM

EXPERIMENT - 7

OLAP OPERATIONS

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Exercise 1

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

(i) Doctor
(ii) Patient
(iii) Time

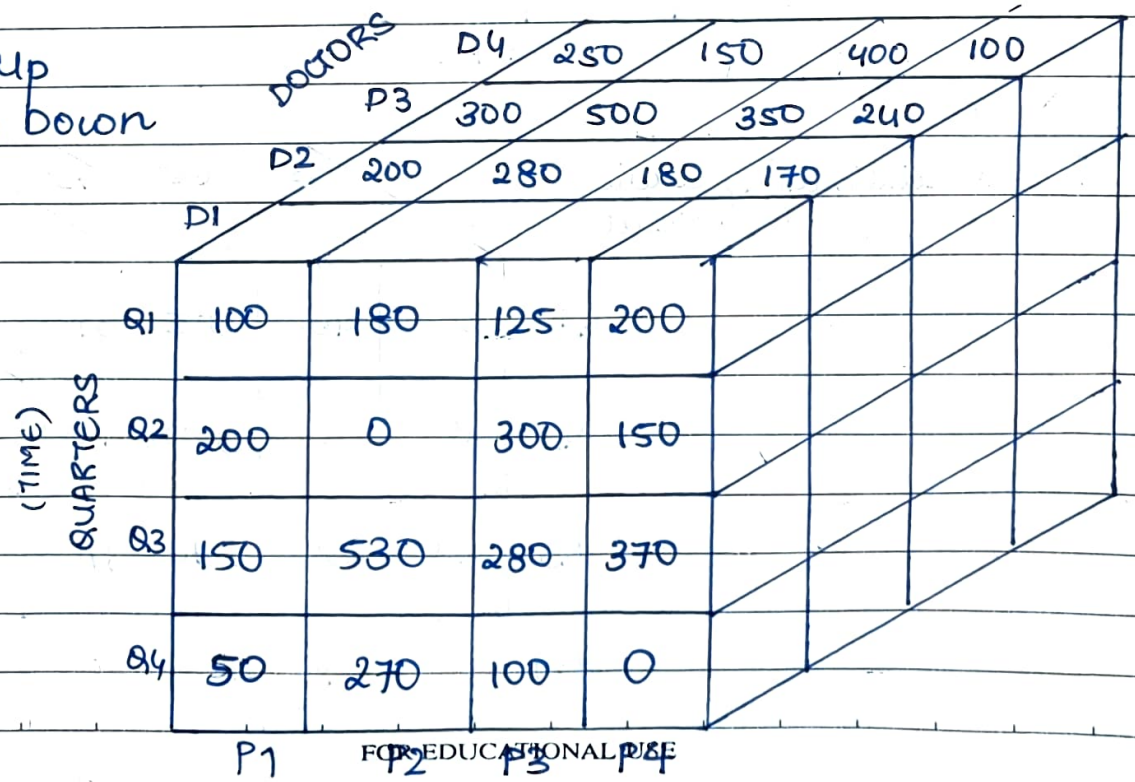
with two measures

a) Count
b) Charge

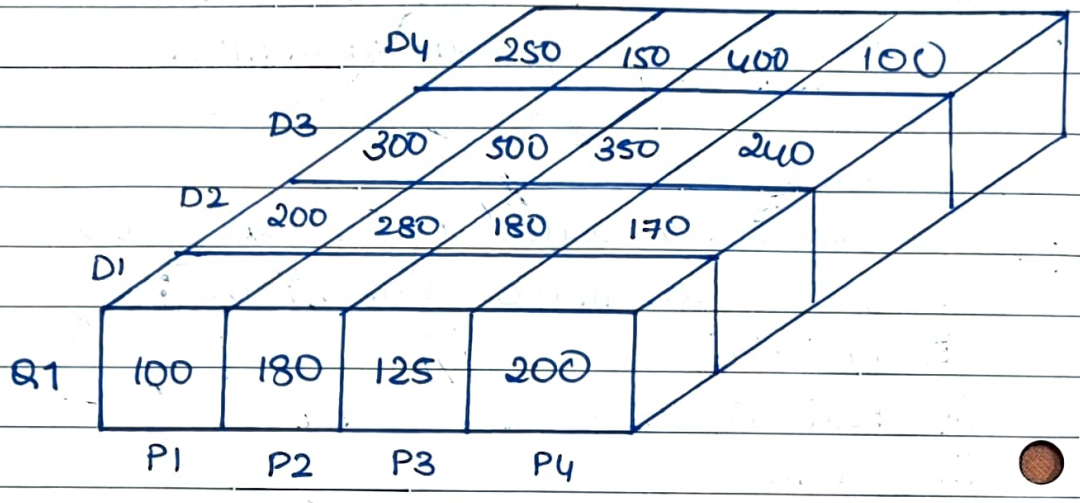
where charge is the fee that the doctor charges a patient for a visit. Using the above example describe the following operations :

i) slice
ii) Dice
iii) Roll up
iv) Drill down
v) Pivot

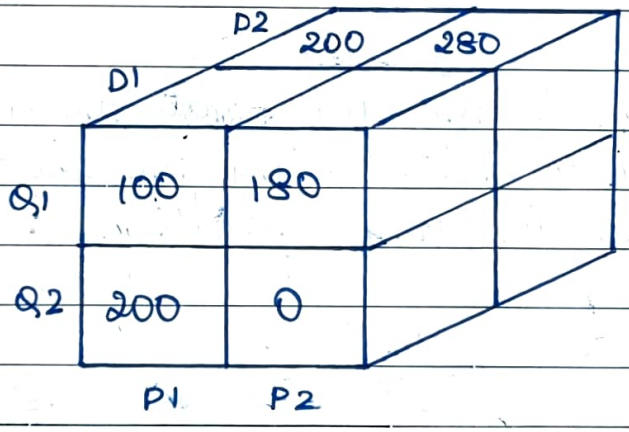
ANS.



SLICE

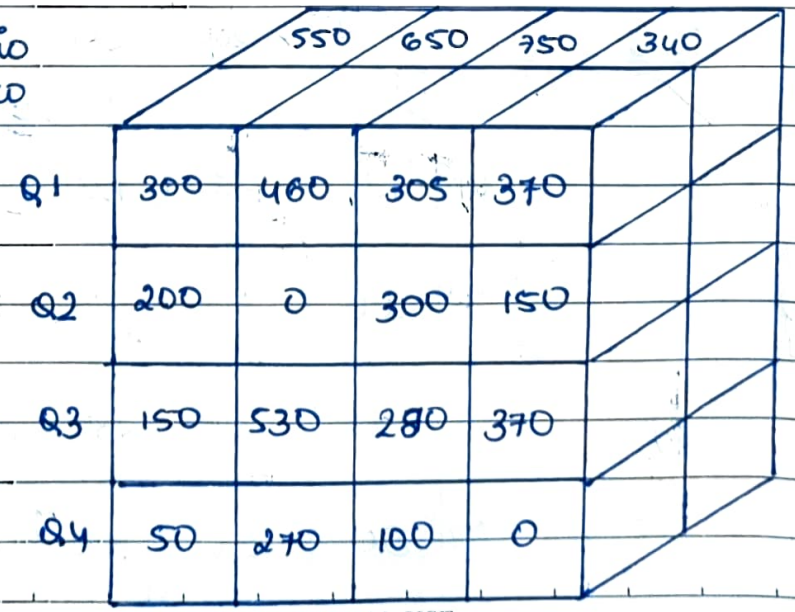


DICE



ROLL UP

Specialization { Cardio, Neuro



2

DRILL DOWN

	D1	D2	D3	D4
	200	280	180	170
	300	500	350	240
	250	150	400	100
January	70	90	75	100
February	15	45	25	50
March	15	45	25	50
April	50	0	100	75
May	100	0	150	25
June	50	0	50	50
July	50	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
	P1	P2	P3	P4

PIVOT

	P1	P2	P3	P4
	200	170	240	100
	125	180	350	400
	180	280	500	150
	100	200	300	250
	D1	D2	D3	D4

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.

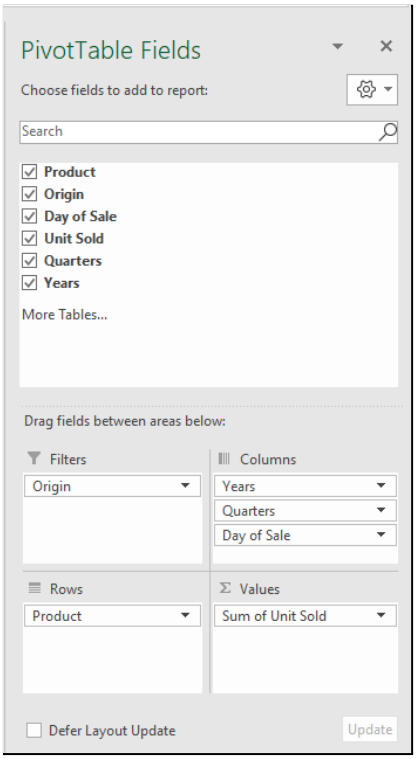
It contains all columns of our table that we created.
Select product in rows,
Days in column,
Unit sold in ∑ values.
Later apply filter using Origin.

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

Dataset:-

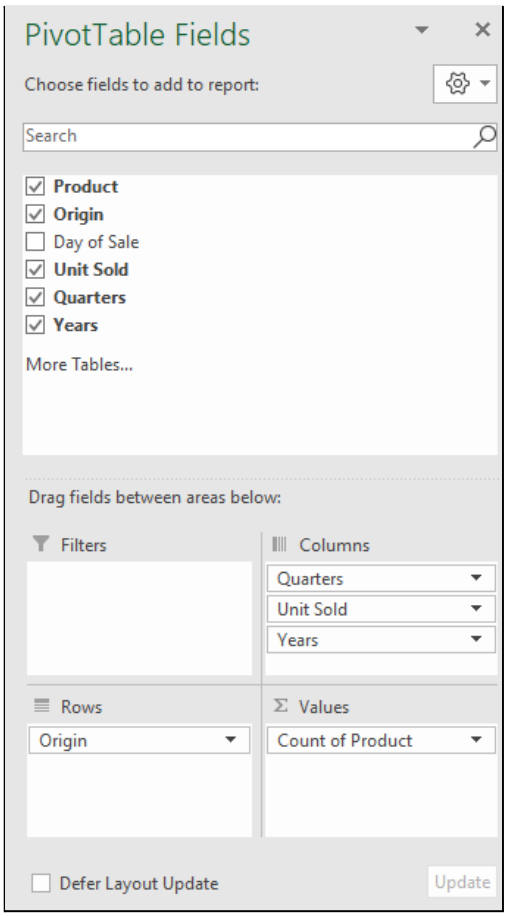
	A	B	C	D
1	**Product**	**Origin**	**Day of Sale**	**Unit Sold**
2	WHITE HANGING HEART T-LIGHT HOLDER	United Kingdom	01-12-2010 8.26	6
3	WHITE METAL LANTERN	United Kingdom	01-12-2010 8.26	6
4	CREAM CUPID HEARTS COAT HANGER	United Kingdom	01-12-2010 8.26	8
5	KNITTED UNION FLAG HOT WATER BOTTLE	United Kingdom	01-12-2010 8.26	6
6	RED WOOLLY HOTTIE WHITE HEART.	United Kingdom	01-12-2010 8.26	6
7	SET 7 BABUSHKA NESTING BOXES	United Kingdom	01-12-2010 8.26	2
8	GLASS STAR FROSTED T-LIGHT HOLDER	United Kingdom	01-12-2010 8.26	6
9	HAND WARMER UNION JACK	United Kingdom	01-12-2010 8.28	6
10	HAND WARMER RED POLKA DOT	United Kingdom	01-12-2010 8.28	6
11	ASSORTED COLOUR BIRD ORNAMENT	United Kingdom	01-12-2010 8.34	32
12	POPPY'S PLAYHOUSE BEDROOM	United Kingdom	01-12-2010 8.34	6
13	POPPY'S PLAYHOUSE KITCHEN	United Kingdom	01-12-2010 8.34	6
14	FELTCRAFT PRINCESS CHARLOTTE DOLL	United Kingdom	01-12-2010 8.34	8
15	IVORY KNITTED MUG COSY	United Kingdom	01-12-2010 8.34	6
16	BOX OF 6 ASSORTED COLOUR TEASPOONS	United Kingdom	01-12-2010 8.34	6
17	BOX OF VINTAGE JIGSAW BLOCKS	United Kingdom	01-12-2010 8.34	3
18	BOX OF VINTAGE ALPHABET BLOCKS	United Kingdom	01-12-2010 8.34	2
19	HOME BUILDING BLOCK WORD	United Kingdom	01-12-2010 8.34	3
20	LOVE BUILDING BLOCK WORD	United Kingdom	01-12-2010 8.34	3
21	RECIPE BOX WITH METAL HEART	United Kingdom	01-12-2010 8.34	4
22	DOORMAT NEW ENGLAND	United Kingdom	01-12-2010 8.34	4
23	JAM MAKING SET WITH JARS	United Kingdom	01-12-2010 8.34	6
24	RED COAT RACK PARIS FASHION	United Kingdom	01-12-2010 8.34	3
25	YELLOW COAT RACK PARIS FASHION	United Kingdom	01-12-2010 8.34	3
26	BLUE COAT RACK PARIS FASHION	United Kingdom	01-12-2010 8.34	3
27	BATH BUILDING BLOCK WORD	United Kingdom	01-12-2010 8.35	3
28	ALARM CLOCK BAKELIKE PINK	France	01-12-2010 8.45	24
29	ALARM CLOCK BAKELIKE RED	France	01-12-2010 8.45	24

CASE 1:



Origin	(All)														
Sum of Unit Sold	Column La														
	Jan		Feb	Feb Total	Mar Total	Apr Total	May Total	Jun Total	Jul Total	Aug Total	Sep Total	Oct Total	Nov Total	Dec Total	Grand Total
	2011	2011 Total	2011												
20 DOLLY PEGS RETROSPOT	77	77	256	256	179	735		-2	77	203	125	210	127	457	2444
200 BENDY SKULL STRAWS	14	14	2	2	16	194	218	23	14	102	2	2	28	45	660
200 RED + WHITE BENDY STRA	78	78	46	46	30	115	35	48	130	121	136	31	70	78	918
20713 wrongly marked												-200			-200
3 BIRDS CANVAS SCREEN						1			1						2
3 BLACK CATS W HEARTS BLANK CARD										6			18		24
3 DRAWER ANTIQUE WHITE WOOD CABINET										25	163	160	264	89	701
3 GARDENIA MORRIS BOXED C	21	21	3	3	6		9	2	1	4	12	330	96	13	497
3 HEARTS HANGING DECORAT	10	10	-5	-5	-1	10	19	20	23	416	301	703	1318	624	3438
3 HOOK HANGER MAGIC GARI	264	264	175	175	152	221	195	45	58	342	139	-2		100	1689
3 HOOK PHOTO SHELF ANTIQU	80	80	98	98	150	67	173	391	388	106	27	9	103	107	1699
3 PIECE SPACEBOY COOKIE CU	323	323	427	427	406	77	73	50	193	131	251	154	276	253	2614
3 PINK HEN+CHICKS IN BASKE	5	5	3	3	3	1									12
3 RAFFIA RIBBONS 50'S CHRISTMAS											478	576	887	154	2095
3 RAFFIA RIBBONS VINTAGE CHRISTMAS											361	212	189	65	827
3 ROSE MORRIS BOXED CANDL	100	100	20	20		4		5	1		1	271	573	138	1113
3 STRIPEY MICE FELTCRAFT	49	49	223	223	225	86	184	321	140	310	272	302	421	486	3019
3 TIER CAKE TIN GREEN AND C	24	24	39	39	58	15	52	29	27	21	71	20	40	37	433
3 TIER CAKE TIN RED AND CRE	125	125	-47	-47	128		88	23	7	15	70	27	95	30	561
3 TIER SWEETHEART GARDEN S	3	3	4	4	11	6	8	7	2	5	5	0	1	2	54
3 TRADITIONAI BISCUIT CUTTE	95	95	79	79	86	78	70	78	152	47	125	95	178	90	1173
3 TRADITIONAL COOKIE CUTTE	144	144												18	162
3 WHITE CHOC MORRIS BOXEI	113	113	4	4			8	5	1		15	198	465	141	950
3 WICK CHRISTMAS BRIAR CAI	-2	-2												1	-1

CASE 2:



Count of Product	Column Labels				
	Qtr1	Qtr2	Qtr3	Qtr4	Grand Total
Row Labels					
Australia	328	309	428	194	1259
Austria	39	79	143	140	401
Bahrain	1	17		1	19
Belgium	346	503	511	709	2069
Brazil		32			32
Canada	10	58	83		151
Channel Islands	224	127	207	200	758
Cyprus	221	49	1	351	622
Czech Republic	15	2		13	30
Denmark	39	125	82	143	389
EIRE	1194	1593	2644	2765	8196
European Community		32	29		61
Finland	239	56	178	222	695
France	1651	1571	2079	3256	8557
Germany	1780	1926	2414	3375	9495
Greece	54	31	25	36	146
Hong Kong	59	141	51	37	288
Iceland	29	42	22	89	182
Israel	30	6	225	36	297
Italy	213	58	122	410	803
Japan	113	73	51	121	358
Lebanon	45				45
Lithuania				35	35

Conclusion:.

From this experiment, we learn about the OLAP Operations. We also understand how the OLAP system manages a large amount of historical data, provides facilities for summarization and aggregation, and stores and manages information at different levels of granularity. We also learn about the PivotTable function in MS Excel and how it helps us in making meaningful conclusions.