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Roll No:-64 **Batch:**T3

Class: TY(CSE-AIML)

Experiment No. 10

Title :- Demonstrate all OLAP operations and cube operator in OLAP.

Aim:- To understand all OLAP operations and cube operator in OLAP Theory

Implementation:

Execute the following queries:
1) Create relations with appropriate schema.

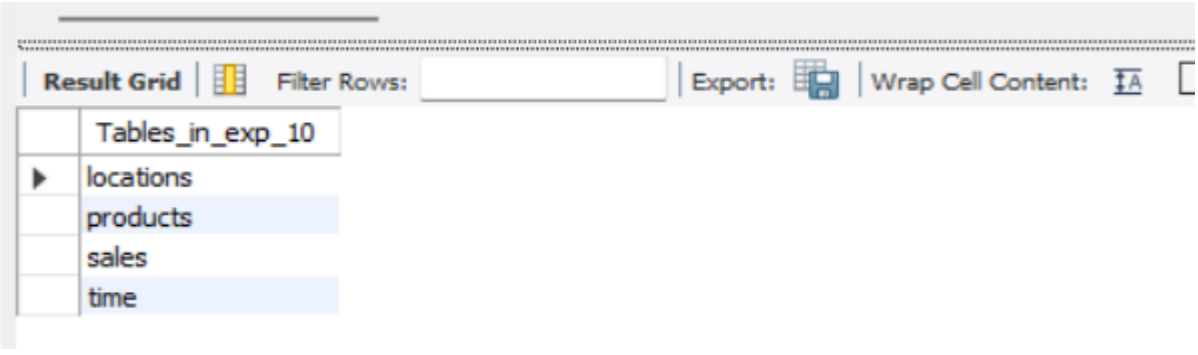
```
CREATE TABLE locations (
  locid VARCHAR(5),
  city VARCHAR(20),
  state VARCHAR(10),
  country VARCHAR(15)
);

CREATE TABLE sales (
  pid VARCHAR(5),
  timeid VARCHAR(5),
  locid VARCHAR(5),
  sales INT
);

CREATE TABLE products (
  pid VARCHAR(5),
  pname VARCHAR(15),
  category VARCHAR(15),
  price INT
);

CREATE TABLE time (
  timeid VARCHAR(5),
  year VARCHAR(5)
);
```

Output:-



2) Insert at least 10 tuples in it.

```
INSERT INTO locations VALUES
('1', 'Kolhapur', 'MH', 'India'),
('2', 'Pune', 'MH', 'India'),
('3', 'Mumbai', 'MH', 'India'),
('4', 'Bengaluru', 'KA', 'India'),
('5', 'Delhi', 'DL', 'India'),
('6', 'Nashik', 'MH', 'India'),
('7', 'Nagpur', 'MH', 'India'),
('8', 'Hydrabad', 'TS', 'India'),
('9', 'Ahmedabad', 'GJ', 'India'),
('10', 'Chennai', 'TN', 'India');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Co

locid	city	state	country
1	Kolhapur	MH	India
2	Pune	MH	India
3	Mumbai	MH	India
4	Bengaluru	KA	India
5	Delhi	DL	India
6	Nashik	MH	India
7	Nagpur	MH	India
8	Hydrabad	TS	India
9	Ahmedabad	GJ	India
10	Chennai	TN	India

```
INSERT INTO time VALUES
('1', '2021'),
('2', '2022'),
('3', '2023');
```

Result Grid | Filter Rows:

timeid	year
1	2021
2	2022
3	2023

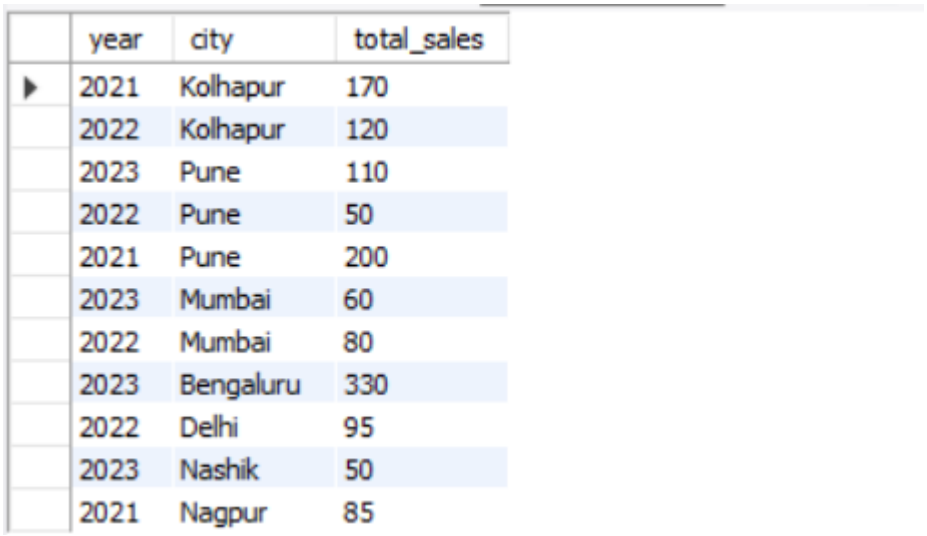
```
INSERT INTO products VALUES
('101', 'Laptop', 'Electronics', 50000),
('102', 'Smartphone', 'Electronics', 30000),
('103', 'Notebook', 'Stationery', 50),
('104', 'Toy Car', 'Toys', 800),
('105', 'Lipstick', 'Cosmetics', 250),
('106', 'Novel', 'Books', 500),
('107', 'Headphones', 'Electronics', 2000),
('108', 'T-shirt', 'Fashion', 700),
('109', 'Action Figure', 'Toys', 1200),
('110', 'Textbook', 'Books', 800);
```

pid	pname	category	price
101	Laptop	Electronics	50000
102	Smartphone	Electronics	30000
103	Notebook	Stationery	50
104	Toy Car	Toys	800
105	Lipstick	Cosmetics	250
106	Novel	Books	500
107	Headphones	Electronics	2000
108	T-shirt	Fashion	700
109	Action Figure	Toys	1200
110	Textbook	Books	800

3) Execute the CUBE & ROLLUP operator.

CUBE:

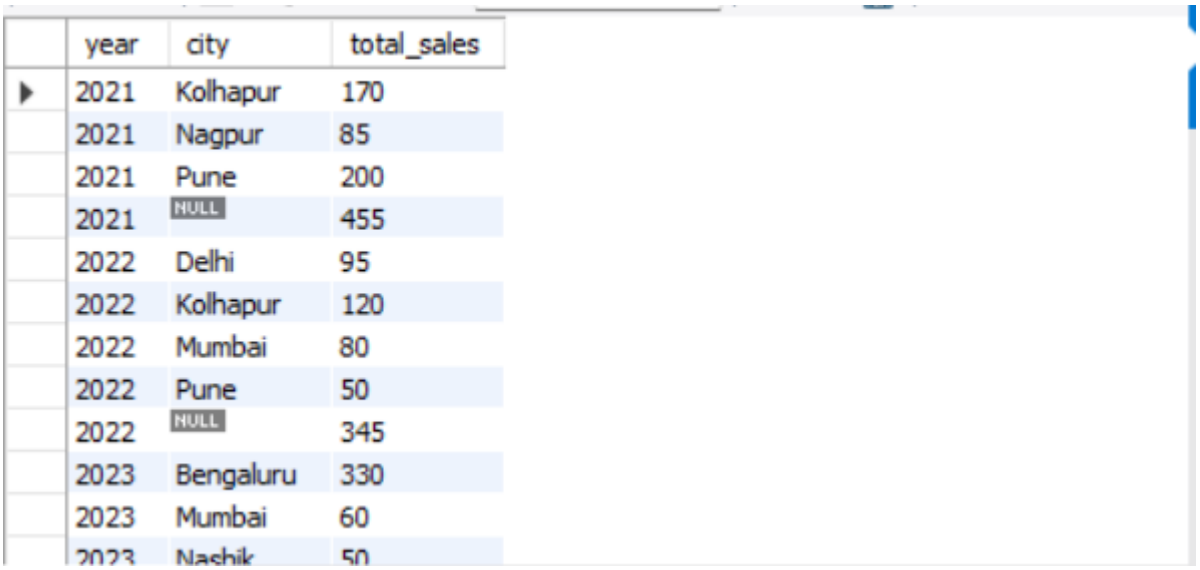
```
SELECT T.year, L.city, SUM(S.sales) AS total_sales
FROM sales S
JOIN time T ON S.timeid = T.timeid
JOIN locations L ON S.locid = L.locid
GROUP BY CUBE(T.year, L.city);
```



year	city	total_sales
2021	Kolhapur	170
2022	Kolhapur	120
2023	Pune	110
2022	Pune	50
2021	Pune	200
2023	Mumbai	60
2022	Mumbai	80
2023	Bengaluru	330
2022	Delhi	95
2023	Nashik	50
2021	Nagpur	85

ROLLUP:

```
SELECT T.year, L.city, SUM(S.sales) AS total_sales
FROM sales S
JOIN time T ON S.timeid = T.timeid
JOIN locations L ON S.locid = L.locid
GROUP BY T.year, L.city WITH ROLLUP;
```



year	city	total_sales
2021	Kolhapur	170
2021	Nagpur	85
2021	Pune	200
2021	NULL	455
2022	Delhi	95
2022	Kolhapur	120
2022	Mumbai	80
2022	Pune	50
2022	NULL	345
2023	Bengaluru	330
2023	Mumbai	60
2023	Nashik	50

Conclusion: OLAP tool can be used to take decision in an organization.