

### **EXPERIMENT 3**

**AIM:**

Implement an OLAP & perform all OLAP operations. Execute simple & Complex queries / managerial level queries.

**THEORY:**

In computing, online analytical processing, or OLAP, is an approach to answering multi-dimensional analytical (MDA) queries swiftly. OLAP is part of the broader category of

business intelligence, which also encompasses relational database, report writing and data

mining. Typical applications of OLAP include business reporting for sales, marketing, management reporting, business process management, budgeting and forecasting, financial

reporting and similar areas, with new applications coming up, such as agriculture. The term

OLAP was created as a slight modification of the traditional database term online transaction

processing (OLTP). OLAP is the technology behind many Business Intelligence applications.

OLAP is a powerful technology for data discovery, including capabilities for limitless report viewing, complex analytical calculations, and predictive “what if” scenario (budget, forecast)

planning.

**Operations in OLAP:**

**Slice:**

The slice operation produces a sliced OLAP cube by allowing the analyst to pick specific value

for one of the dimensions. For example, for sales data one can slice the cube for location; the

location dimension is removed from the cube and only sales of the stores in a particular store are

considered. Slicing the cube for the year implies removing the time dimension and only considering sales in that particular year.

- Performs a selection on one dimension of the given cube, resulting in a sub-cube.
- Reduces the dimensionality of the cubes.
- Sets one or more dimensions to specific values and keeps a subset of dimensions for selected values.

### **Dice:**

The dice operation produces a sub-cube by allowing the analyst to pick specific values for multiple dimensions. For example, one could dice the sales OLAP cube for years “2012” and “2013” and locations “A” and “B”. No dimensions are removed, but only sales in 2012 and

2013 in stores in A and B are considered.

- Define a sub-cube by performing a selection of one or more dimensions.
- Refers to range select condition on one dimension, or to select condition on more than one dimension.
- Reduces the number of member values of one or more dimensions.

### **Roll up:**

The roll-up operation performs aggregation on a data cube, either by climbing up a concept hierarchy for a dimension or by climbing down a concept hierarchy, i.e. dimension reduction.

- Takes the current aggregation level of fact values and does a further aggregation

on one or more of the dimensions.

- Equivalent to doing GROUP BY to this dimension by using attribute hierarchy.
- Decreases a number of dimensions - removes row headers.

### **Drill Down:**

Drill Down allows the user to navigate among levels of data ranging from the most summarized

(up) to the most detailed (down). The analyst moves from the summary category Outdoor to see

the sales figures for the individual products.

- Opposite of roll-up.
- Summarizes data at a lower level of a dimension hierarchy, thereby viewing data in a more specialized level within a dimension.
- Increases a number of dimensions - adds new headers.

### **CONCLUSION:**

OLAP makes data access very quick by using of multidimensional data model. When you have

huge amount of data and report generation is extremely long you could use OLAP to prepare the

report. Then each request to already processed data would be fast. And we have studied OLAP

and executed simple and complex queries on it.

### **OUTPUT:**

1)

SQLQuery5.sql - L...12B7 (D12B7 (54))		SQLQuery4.sql - L...12B7 (D12B7 (56))*	
<pre> select state_name,station_name   from Water_Quality,State,Station  where Water_Quality.state_key=State.state_key     and Water_Quality.station_key = Station.station_key     and State.state_key = 'st4'; </pre>			
Results		Messages	
	state_name	station_name	
1	Utarakhand	BHAGIRATHI AT GANGOTRI	
2	Utarakhand	ALAKNANDA B/C MANDAKINI	
3	Utarakhand	ALAKNANDA B/C MANDAKINI	
4	Utarakhand	MANDAKINI B/C ALAKNANDA	
5	Utarakhand	ALAKNANDA A/C MANDAKINI	
6	Utarakhand	ALAKNANDA B/C TO BHAGIRATHI	
7	Utarakhand	MANDAKINI B/C ALAKNANDA	
8	Utarakhand	ALAKNANDA A/C MANDAKINI	
9	Utarakhand	ALAKNANDA B/C TO BHAGIRATHI	
10	Utarakhand	BHAGIRATHI B/C WITH ALAKNANDA	
11	Utarakhand	ALAKNANDA A/C WITH BHAGIRATHI	
12	Utarakhand	GANGA AT RISHIKESH U/S	
13	Utarakhand	GANGA D/S HARIDWAR	

2)

SQLQuery4.sql - L...12B7 (D12B7 (56))*		LAB302-50.D12B7 - dwm_expt2	
<pre> /***** Script for SelectTopNRows command from SSM select count(state_key) from State </pre>			
Results		Messages	
	(No column name)		
1	22		