



# ADITYA ENGINEERING COLLEGE (A)

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Department of Information Technology

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## Data Warehousing and Data Mining

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Semester: VI Semester

Designation: Professor

Course: Data Warehousing and Data Mining

Department: IT

Topic: OLAP Operations

Conventional Methods: Chalk & Talk

Teaching Methodology: Flipped Classroom

OLAP stands for Online Analytical Processing Server. It is a software technology that allows users to analyse information from multiple database systems at the same time. It is based on multidimensional data model and allows the user to query on multi-dimensional data. For better understanding about the topic, flipped classroom teaching method is used. The video link is provided to the students and informed them to go through the video. In next day, the OLAP operations are discussed in the class.

### References:

1. [https://www.youtube.com/watch?v=0ZMndP\\_Y32U](https://www.youtube.com/watch?v=0ZMndP_Y32U)
2. <https://www.geeksforgeeks.org/olap-operations-in-dbms/>

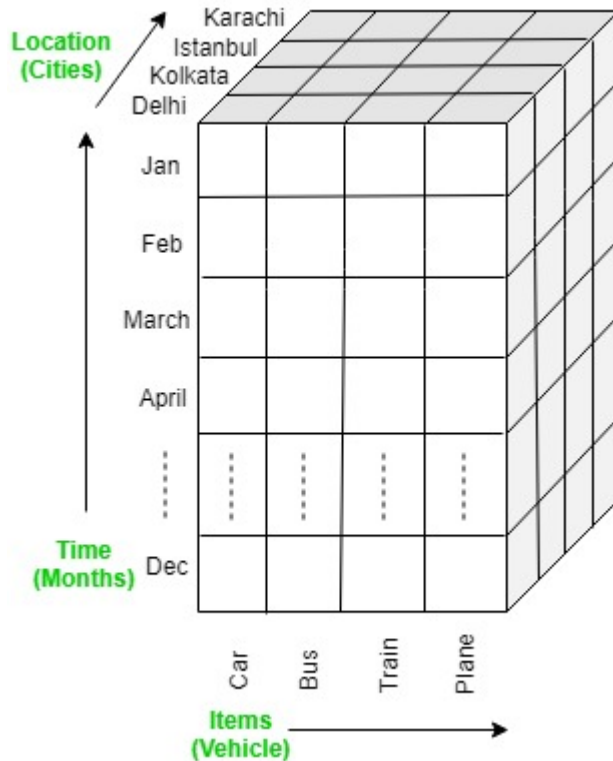
### OLAP Operations

#### OLAP operations:

There are five basic analytical operations that can be performed on an OLAP cube:

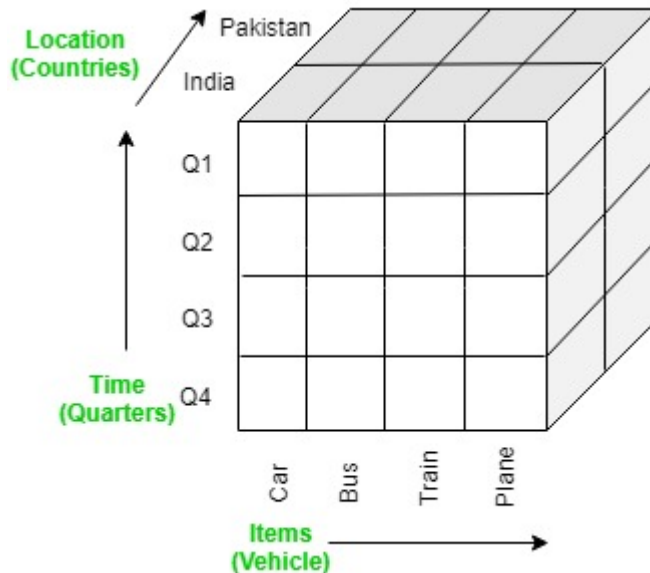
1. **Drill down:** In drill-down operation, the less detailed data is converted into highly detailed data. It can be done by:
  - Moving down in the concept hierarchy
  - Adding a new dimension

In the cube given in overview section, the drill down operation is performed by moving down in the concept hierarchy of *Time* dimension (Quarter -> Month).



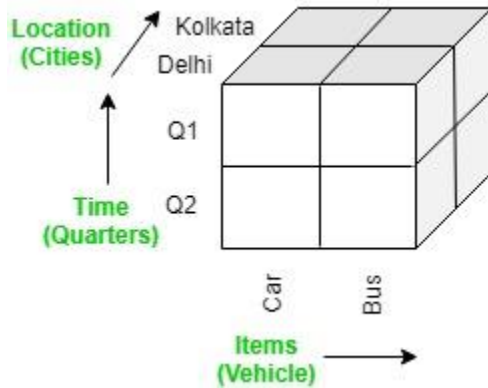
2. **Roll up:** It is just opposite of the drill-down operation. It performs aggregation on the OLAP cube. It can be done by:
- Climbing up in the concept hierarchy
  - Reducing the dimensions

In the cube given in the overview section, the roll-up operation is performed by climbing up in the concept hierarchy of *Location* dimension (City -> Country).



3. **Dice:** It selects a sub-cube from the OLAP cube by selecting two or more dimensions. In the cube given in the overview section, a sub-cube is selected by selecting following dimensions with criteria:

- Location = “Delhi” or “Kolkata”
- Time = “Q1” or “Q2”
- Item = “Car” or “Bus”



4. **Slice:** It selects a single dimension from the OLAP cube which results in a new sub-cube creation. In the cube given in the overview section, Slice is performed on the dimension Time = “Q1”.



5. **Pivot:** It is also known as *rotation* operation as it rotates the current view to get a new view of the representation. In the sub-cube obtained after the slice operation,

performing pivot operation gives a new view of it.

	Car				
	Bus				
	Train				
	Plane				
		Delhi	Kolkata	Istanbul	Karachi

### OLAP Operations using Flipped Classroom:

The link([https://www.youtube.com/watch?v=0ZMndP\\_Y32U](https://www.youtube.com/watch?v=0ZMndP_Y32U)) for OLAP operations is given one day before the class and informed the student to go through the link. In next day, all the OLAP operations are discussed in the class.

