

2 marks

1. Explain Typical OLAP operations?

- Ans
1. Roll-up : It performs aggregation on a data cube, either by climbing up a concept hierarchy for a dimension.
 2. Drill-down : It is the reverse of roll-up. It navigates from less detailed data to more detailed data.
 3. Slice : The slice operation performs a selection on one dimension of the given cube resulting in subcube.
 4. Dice : The dice operation defines a subcube by performing a selection on two or more dimensions.
 5. Pivot : It is a visualization operation that rotates the data axes in view in order to provide an alternative presentation of the data.

2. Define the following terms:

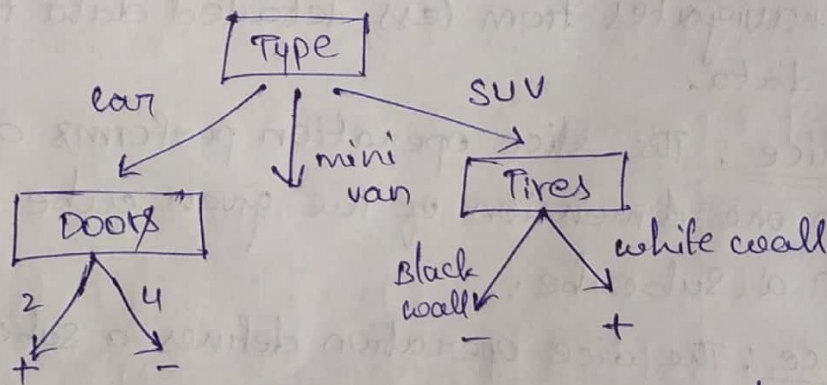
- * star schema : The datawarehouse contains,
 - (1) a large central table containing the bulk of the data, with no redundancy
 - (2) a set of smaller attendant tables, one for each dimension.

Fact constellation : Sophisticated applications may require multiple fact table to share dimension table. The kind of schema can be viewed as a collection of stars, and hence is called a galaxy schema or a fact constellation.

3. Define a decision Tree

Ans

Decision Tree is a structure that includes a root node, Branches, and leaf nodes. Each internal node denotes a test on an attribute, each branch denotes the outcome of a test and each leaf node holds class label. The topmost node in the tree is the root node.



4. outline the four views regarding the design of the data warehouse?

Ans

1. Increasing customer focus
2. Repositioning products and managing product portfolios.
3. Analyzing operations
4. Managing the customer relationship.

5. List the difference b/w OLTP and OLAP?

Ans

Feature	OLTP	OLAP
characteristic orientation user	operational process Transaction clerk database professional	Informational Processing analysis
Function	day-to-day operation	long-term Informational requirements

10 marks

1. Explain different OLAP operations with Example?

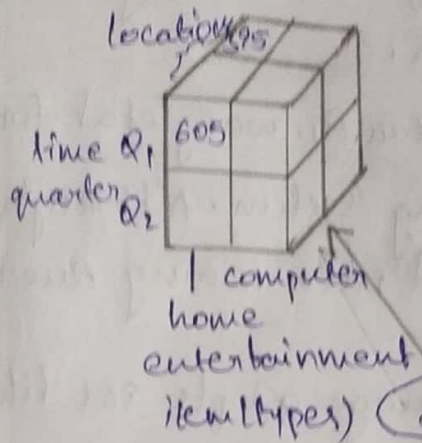
Ans

- Roll-up: The roll-up operation perform aggregation on a data cube, either by climbing up a concept hierarchy for a dimensional.
- Drill-down: Drill-Down is the reverse of roll up. It navigates from less detailed data to more detailed data.
- Slice: The slice operation performs a selection on one dimension of the given cube resulting in a subcube.
- Dice: The dice operation defines a subcube by performing a selection on two or more dimensions.
- Pivot: pivot is a visualization operation that rotates the data axes in view in order to provide an alternative presentation of the data.

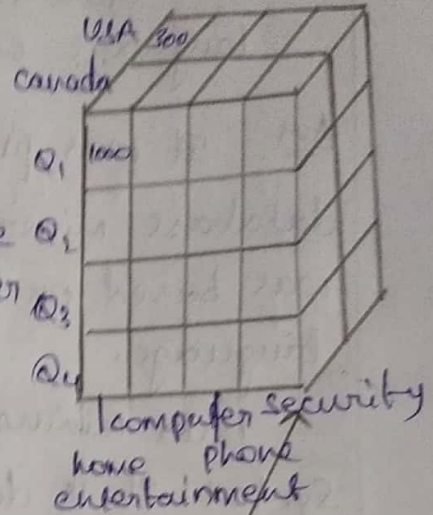
Other OLAP operations:-

- The drill-across executes queries involving more than one fact table.
- The drill-through operation uses relational SQL facilities to drill through the bottom level of a data cube down to its back-end relational tables.

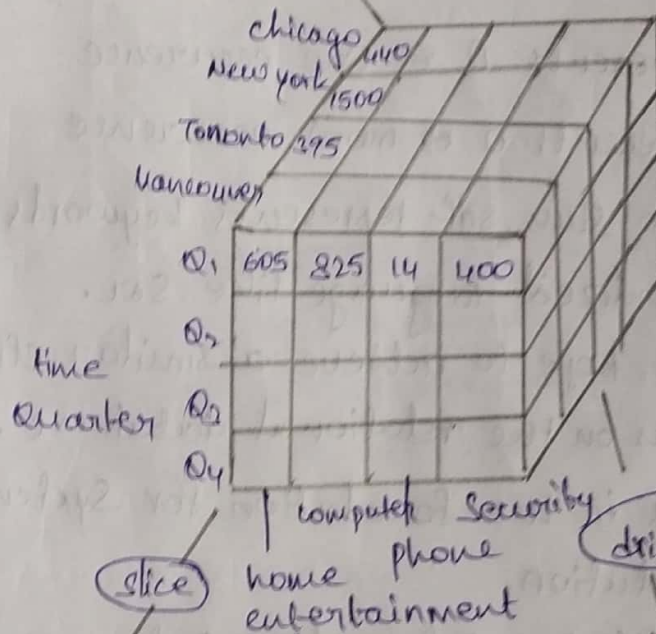
Example of typical OLAP operations on multidimensional data is as follows:



dice

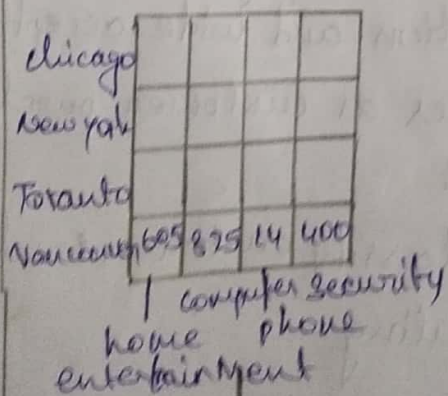


roll-up

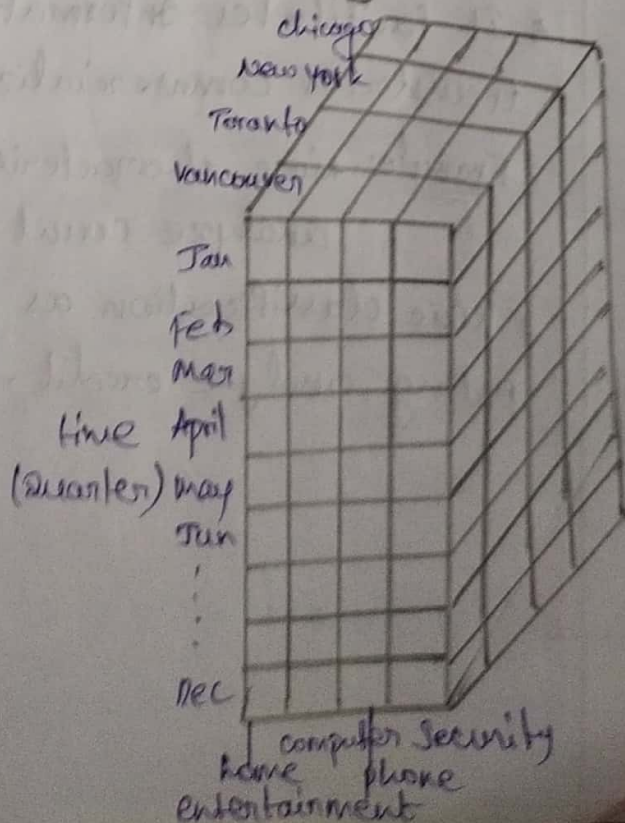
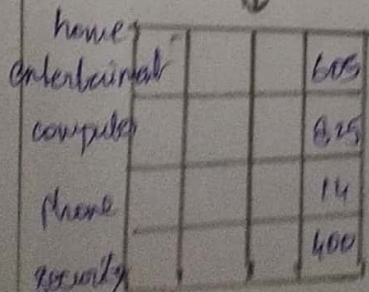


slice

drill-down



pivot



B) classify different Types of data mining query language with Examples.

Ans It was proposed by Han, Fu, Wang, et al for the database miner data mining system. Although it was based on the structured data mining query language.

Data mining query language adopts SQL like Syntax. It is defined in BHF Grammar

- * $[]$ represents 0 or one occurrence
 - * $\{ \}$ represents 0 or more occurrence
 - * words in sans SQL represents keywords, By providing a standardized language like SQL.
 - * we can hope to achieve a similar effect like the SQL has on the relational database.
 - * It helps in the foundation for System development and evolution.
 - * It facilitates Information Exchange technology translates commercialization and wide acceptance
- Example:- mine characteristics as customer purchase analyze count %.
- * mine classification as classify customer credit rating analyze credit-rating

2. Interpret various techniques in data cube technology (Buc, multiway etc.,)

Multiway Array Aggregation:-

The method computes a full data cube by using a multidimensional array as its basic data structure. multiway cannot perform any value-based reordering as an optimization technique. Array-based cube construction is as follows:

- partition the array into chunks:

A chunk is a subcube that is small enough to fit into the memory available for cube computation. chunking is a method for dividing an n -dimensional array into small n -dimensional chunks, where each chunk is stored as an object on disk. The chunks are compressed so as to remove wasted space resulting from empty array cells.

- compute aggregates by visiting (i.e., accessing the values) cube cells: The order in which cells are visited can be optimized so as to minimize the no. of times that each cell must be revisited, thereby reducing memory access and storage costs.

Main idea is to keep the smallest plane in the main memory, fetch and compute only one chunk at a time for the storage costs.

Limitation of the method:-

computing well only for a small number of dimensions. If there are a large no. of dimensions, "bottom-up

computation" and iceberg cube computation method can be explored.

A 3-D array for the dimensions A, B and C organized into 64 chunks. Each chunk is small enough to fit into the memory available for cube computation is as follows:

