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**Title of Experiment :** Construction of Cubes , OLAP Operations, OLAP Queries

**Objective of Experiment :** To understand the construction of cubes and perform OLAP operations like roll up , slice , dice ,etc.

**Outcome of Experiment :** Perform OLAP Operations and queries on the previous database .

**Problem Statement :** Construct Cubes using the company Database ( previous DB)

And perform Roll up , Slice , dice like OLAP operations on it

**Description / Theory :**

* Cube

"Cube" refers to a multidimensional data structure used for storing and analyzing data in a way that allows for quick and flexible querying. It is a type of OLAP (Online Analytical Processing) data model.The cube is designed to facilitate the analysis of large datasets, providing a high-level view of the data with the ability to drill down into specific details. It organizes data along multiple dimensions, allowing users to view data from various perspectives and analyze different combinations of dimensions simultaneously.The dimensions in a cube represent different attributes or characteristics of the data, such as time, geography, product categories, etc. Each dimension has associated hierarchies, and the intersections of dimensions create "cells" in the cube, which contain the actual data values (measures).OLAP tools and technologies are commonly used to work with cubes, allowing users to interactively explore and analyze data efficiently.

* Roll Up

Roll-up" is an operation used to aggregate data from detailed levels to higher-level summaries or totals , by climbing down concept hierarchies, i.e., dimension reduction. Roll-up is like zooming-out on the data cubes.When a roll-up is performed by dimension reduction, one or more dimensions are removed from the cube. For example, consider a sales data cube having two dimensions, location and time. Roll-up may be performed by removing the time dimensions, appearing in an aggregation of the total sales by location, relatively than by location and by time.

* Drill Down

"Drill-down" is an operation in Online Analytical Processing (OLAP) used to explore data at finer levels of detail. It is the opposite of the "roll-up" operation, which aggregates data from higher-level summaries to lower-level details.

When performing a drill-down, data is broken down into more granular levels, providing more detailed information about the data. For example, if you have sales data summarized at the monthly level, and you want to see the individual sales transactions for a specific month, you would perform a drill-down from the month level to the day level.

* Slice

"Slicing" is an operation in Online Analytical Processing (OLAP) used to extract a subcube of data from a multidimensional cube by selecting a specific value or range of values for one or more dimensions. It allows you to focus on a specific subset of data for analysis or reporting. When performing a slice, you choose one or more dimensions and fix their values to isolate a specific "slice" of the data cube. The result is a new cube containing data only for the selected values of the fixed dimensions. All other dimensions remain unchanged or unconstrained in the slice operation.

* Dice

"Dicing" is an operation in Online Analytical Processing (OLAP) used to extract a subcube of data from a multidimensional cube by selecting specific values or ranges for two or more dimensions. It allows you to focus on a subset of data that matches the specified criteria.When performing a dice, you choose specific values or ranges for two or more dimensions, and the result is a new cube containing data only for the selected values of those dimensions. Other dimensions remain unchanged or unconstrained in the dice operation.

* Pivot

"Pivot" is an operation used in data processing and analysis to transform a dataset from a "long" format to a "wide" format. It involves rotating or reorganizing the data to create a new summary table with aggregated values, making it easier to analyze and interpret the data. The pivot operation is commonly used in spreadsheet software, database management systems, and data analysis tools. It allows you to convert rows into columns, grouping data based on specific attributes or dimensions.

**Program :**

| 1. | **Implementation Of Cube :**  **Output Screenshots :** |
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| 2. | **Roll up:**  **Output Screenshots :** |
| 3. | **SLICE:** |
| 4. | **DICE:** |

**Results and Discussions :**

Here we have implemented and constructed a cube based on the game development company and performed OLAP operations like roll up , slice, dice , etc . and understood its importance and use.