Academic Year: 2024-25 **Semester: V**
Class/Branch: T.E. DS **Subject: DWMLab**

EXPERIMENT NO. 3

1. **Aim:** To perform OLAP operations in SQL Environment based on experiment 1 case study.

2. **Objectives:** From this experiment, the student will be able to
   - Learn about the importance of OLAP.
   - Learn about different OLAP Operations.

3. **Theory:**

OLAP:

OLAP stands for Online Analytical Processing. It is a technology that enables analysts to extract and view business data from different points of view. OLAP is a category of software that allows users to analyze information from multiple database systems at the same time Analysts frequently need to group, aggregate and join data.

OLAP databases are divided into one or more cubes. The cubes are designed in such a way that creating and viewing reports become easy.

OLAP Operations:-

Since OLAP servers are based on multidimensional view of data, we will discuss OLAP operations in multidimensional data.

Here is the list of OLAP operations −

• Roll-up

• Drill-down

• Slice and dice

• Pivot (rotate)

Roll-up:-

Roll-up performs aggregation on a data cube in any of the following ways −

• By climbing up a concept hierarchy for a dimension

• By dimension reduction

Drill-down:-

Drill-down is the reverse operation of roll-up. It is performed by either of the following ways −

• By stepping down a concept hierarchy for a dimension

• By introducing a new dimension.

Slice:-

The slice operation selects one particular dimension from a given cube and provides a new sub-cube.

Here Slice is performed for the dimension "time" using the criterion time = "Q1".

• It will form a new sub-cube by selecting one or more dimensions.

Dice:-

Dice selects two or more dimensions from a given cube and provides a new sub-cube.

The dice operation on the cube based on the following selection criteria involves three dimensions.

• (location = "Toronto" or "Vancouver")

• (time = "Q1" or "Q2")

• (item =" Mobile" or "Modem")

Pivot:-

The pivot operation is also known as rotation. It rotates the data axes in view in order to provide an alternative presentation of data. Consider the following diagram that shows the pivot operation.

Note: write your queries which are executed for All the above operations.

4. Conclusion: