THADOMAL SHAHANI TSEC ENGINEERING COLLEGE

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T23 – 101
BI Lab

Assignment No: 4

Aim: Creating OLAP Cube using MySQL Server.

Theory:

An OLAP (Online Analytical Processing) cube is a data structure designed to support fast and efficient multidimensional analysis of large datasets. Unlike traditional relational databases that store data in rows and columns, an OLAP cube organizes data into multiple dimensions, such as time, product, location, and customer, along with numerical measures like sales, revenue, and profit. This multidimensional approach allows users to perform complex queries and aggregations quickly without affecting database performance. OLAP cubes are widely used in data warehousing and business intelligence (BI) applications, enabling organizations to analyze historical data, identify trends, and make data-driven decisions.

The primary purpose of an OLAP cube is to facilitate advanced data analysis through operations like drill-down (detailed analysis), roll-up (summary view), slicing (filtering by dimension), and dicing (viewing data from different perspectives). These operations allow users to explore data interactively, making it easier to derive meaningful insights. OLAP cubes are extensively used in domains such as finance, sales, marketing, and supply chain management, where large amounts of structured data need to be analyzed efficiently. By using OLAP cubes, businesses can improve reporting capabilities, enhance forecasting accuracy, and optimize overall decision-making processes.

Steps:

1. Open SQL Server Management Studio 2012

2. Connect Database Engine Click Connect.

3. Open New Query editor

4. Go to the extracted sql file and double click on it.

5. New Sql Query Editor will be opened containing the Sales_DW Database.

6. Click on execute or press F5 by selecting the query one by one or directly click on Execute.

7. After completing execution save and close SQL Server Management studio & Reopen to see (Sales_DW in Databases Tab.)

8. Start SSDT(Sql Server Data Tools) environment and create New Data Source

9. Go to Sql Server Data Tools→Right click and run as administrator Click on File → New → Project

10. In Business Intelligence → Analysis Services Multidimensional and Data Mining models → appropriate project name → click OK

11. Right click on Data Sources in solution explorer → New Data Source

Data Source Wizard appears→Click on New→Select Server Name → select Use SQL Server Authentication → Select or enter a→database name (Sales_DW) (as given during installation of SQL 2012 full version)

12. Click Next

13. Click Finish

Sales_DW.ds gets created under Data Sources in Solution Explorer

14. Creating New Data Source View In Solution explorer right click on Data Source View → Select New Data Source View→Click Next→Click Next→Select FactProductSales(dbo) from Available objects and put in Includes Objects by→clicking on Click on Add Related Tables

15. Click Next

Sales DW.dsv appears in Data Source Views in Solution Explorer

16. Creating new cube Right click on Cubes → New Cube→Select Use existing tables in Select Creation Method → Next

17. In Select Measure Group Tables → Select FactProductSales → Click Next

18. In Select Measures → check all measures → Next

19. In Select New Dimensions → Check all Dimensions → Next

20. Click on Finish

Sales_DW.cube is created

21. Dimension Modification In dimension tab → Double Click Dim Product.dim

22. Drag and Drop Product Name from Table in Data Source View and Add in Attribute Pane at left side

23. Creating Attribute Hierarchy in Date Dimension Double click On Dim Date dimension - Drag and Drop Fields from Table shown in Data Source View to Attributes;

24. Drag and Drop attributes from leftmost pane of attributes to middle pane of Hierarchy.

25. Drag fields in sequence from Attributes to Hierarchy window (Year, Quarter Name, Month Name, Week of the Month, Full Date UK)

26. Deploy Cube Right click on Project name → Properties

This window appears

27. Do following changes and click on Apply & ok

28. Right click on project name → Deploy

29. Deployment successful

30. To process cube right click on Sales_DW.cube → Process

31. Click run

32. Browse the cube for analysis in solution explorer

LO Mapped: LO6

Conclusion:

The successful creation and deployment of an OLAP cube using MySQL Server demonstrates the ability to structure and analyze multidimensional data efficiently. By implementing the Sales_DW data warehouse, defining measures and dimensions, and processing the cube, we enable advanced data analysis and reporting, enhancing decision-making capabilities.