

# **Data Warehouse**

## **Experiment No.: 3**

### **Build Data Warehouse/Data mart**

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1. **Aim:** Build Data Warehouse/data mart using a modern tool
2. **Objectives:** To consolidate and store large volumes of data from various sources into a unified, optimized repository, enabling efficient analysis, reporting, and informed decision-making across an organization.
3. **Course Outcomes:** the creation of a centralized, consistent, and accessible data repository that enhances data analysis, supports accurate reporting, and facilitates data-driven decision-making across an organization.
4. **Hardware / Software Required:** Power BI tool to create the staging area of Data Warehouse
5. **Theory:** A data warehouse is a specialized type of database designed to support the efficient storage, retrieval, and analysis of large volumes of data. It consolidates data from various sources, such as operational databases, external data feeds, and other systems, into a unified repository. Key characteristics of a data warehouse include:

Centralized Data Storage: Aggregates data from multiple sources, providing a single source of truth for reporting and analysis.

Data Integration: Combines data from disparate systems, ensuring consistency and accuracy across the organization.

Optimized for Query Performance: Designed to handle complex queries and large datasets efficiently, supporting timely decision-making.

Historical Data: Maintains historical data to enable trend analysis and longitudinal studies.

Support for Business Intelligence: Facilitates advanced analytics, reporting, and data mining, empowering users to extract actionable insights.

Scalability: Capable of scaling to accommodate growing volumes of data and evolving business needs.

A data warehouse enhances an organization's ability to make informed decisions by providing a reliable, comprehensive, and efficient data infrastructure.

**6. Algorithm / Design / Procedure / Flowchart / Analysis:**

For the identified tables and values in experiment 1, and for the data models designed in experiment 3, for the constructed data warehouse identify the possible queries/ strategic questions to answer.

→ Strategic questions can be answered by studying the trends.



**Figure: Data Warehouse providing data trends**

**7. Results/Output Analysis:** List down atleast 10 strategic queries suitable and relevant to the dimension model created in experiment 2 and loaded in experiment 3.

**8. Conclusions:** Discuss about the Strategic queries in a data warehouse and how they provide essential insights for decision-making, performance monitoring, trend analysis, and resource optimization, supporting informed and data-driven business strategies.

**9. Viva Questions:** A list of potential questions related to the chosen business use case and dimension model and data warehouse/ data mart characteristics can be expected.

**10. References:**

1. Kimball Group: Kimball Group's Website offers articles and resources on dimensional modeling and data warehousing.
2. Coursera: Courses on Data Warehousing and Data Management, such as "Data Warehousing for Business Intelligence" by the University of Colorado.