

## Exercise-1

Aim:- Creation of a Data Warehouse.

- Build Data Warehouse / Data Mart
- Design multi-dimensional data models namely star, snowflake and fact constellation schemas for any one enterprise.
- Write ETL scripts and implement using data warehouse tools
- Perform various OLAP operations and such slice, dice, roll up, drill up and pivot.

Input:- Multi-dimensional data models, s

Analysis:- star schema, snowflake schema and fact constellation schema, OLAP operations.

Objective:-

The goal of a data warehouse is to create a store of historical data that can be retrieved and analyzed to provide useful insight into the organization's operations. A data warehouse is a vital component of business intelligence.

Multi-dimensional data models:-

A Multidimensional model views data in the form of a data-cube. A data cube enables data to be modeled and viewed in multiple dimensions. It is defined by dimensions and facts.

Star schema:-

Star schema is the fundamental schema among the data mart schema and it is simplest. This schema is widely used to develop or build a data warehouse and dimensional data marts.

Snowflake schema:-

The snowflake schema is a variant of the star schema. Here, the centralized fact table is connected to multiple dimensions. In the snowflake



Schema, dimensions are present in a normalized form in multiple related tables.

Fact Constellation Schema :-

Fact Constellation is a schema for representing multidimensional model. It is a collection of multiple fact tables having some common dimension tables.

OLAP :-

OLAP stands for Online Analytical Processing. OLAP is a classification of software technology which authorizes analysts, managers and executives to gain insight into information through fast, consistent, interactive access in a wide variety of possible views of data.

Slice :-

It selects a single dimension from the OLAP cube which results in a new sub-cube creation.

Dice :-

It selects a sub-cube from the OLAP cube by selecting two or more dimensions.

Roll-up :-

It is just opposite of the drill-down operation. It performs aggregation on the OLAP cube.

Drill down :-

In drill-down operation, the less detailed data is converted into highly detailed data.

Pivot :-

It is also known as rotation operation as it rotates the current view to get a new view to get a new view of the representation. In the sub-cube obtained after the slice operation.



Output:

Time
time-key
day
month

Branch
branch-key
branch-name
branch-type

Measure

Sales Fact table
time-key
Item-key
branch-key
location-key
units-sold
dollars-sold
avg-sales

Item
Item-key
Item-name
brand
type
supplier-type

Location
location-key
street
city

Time
time-key
day
month

Branch
branch-key
branch-name
branch-type

Measure

Sales Fact table
Item-key
time-key
branch-key
location-key
units-sold
dollars-sold
avg-sale

Item
Item-key
Item-name
brand
supplier-key

Supplier
supplier
supplier-key
supplier-type

Location
location-key
city-key
city

city
city-key
city

Time
time-key
day
month

branch
branch-key
branch-name
branch-type

measure

Sales Fact table
time-key
Item-key
branch-key
location-key
units-sold
dollars-sold
avg-sales

Item
Item-key
Item-name
branch

location
location-key
street
city

shipping Fact table
time-key
Item-key
shipper-key
from-location
to-location
dollars-cost
units-shipping

shipper
shipper-key
shipper-name