Assignment No. 7

Build a Data Warehouse for X-Mart

PRN: 21510120

Batch: T6

- Title: Design and Implementation of a Data Warehousing System for X-Mart.
- Objective: To design and implement a data warehouse for a X-Mart taking into consideration the requirements of the upper hierarchy.
- Introduction: According to W. H. Inom, father of Data Warehousing, a data warehouse is subject oriented, integrated, time variant and non volatile collection of data that is required by an organization for the decision making process. Data warehouse works on Extraction, Transformation and Load mechanism.
- Theory: Data warehousing involves the process of collecting, storing, and managing data from various sources to provide valuable insights for decision-making purposes. Dimensional modeling is a popular technique used in data warehousing, where data is organized into dimensions (descriptive attributes) and facts (measurable metrics).

Business Requirement: X-Mart, a chain of malls, requires a
data warehousing system to integrate and analyze sales data
from its various stores. The system should provide management
with quick access to relevant information for decision-making
and ensure a high return on investment (ROI) through improved
operational efficiency and strategic planning.

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  54 • INSERT INTO date_dimension (date_id, date, day_of_week, day_name, month, month_name, quarter, year) VALUES
  55 (1, '2022-01-01', 6, 'Saturday', 1, 'January', 1, 2022),

56 (2, '2022-01-02', 7, 'Sunday', 1, 'January', 1, 2022),

57 (3, '2022-01-03', 1, 'Monday', 1, 'January', 1, 2022),
        (4, '2022-01-04', 2, 'Tuesday', 1, 'January', 1, 2022),
(5, '2022-01-05', 3, 'Wednesday', 1, 'January', 1, 2022);
  63
  66 • ⊖ CREATE TABLE sales_fact (
  67
              transaction id INT PRIMARY KEY,
              product_id INT,
              date id INT.
  72
              amount DECIMAL(10, 2),
              FOREIGN KEY (store_id) REFERENCES store_dimension(store_id),
               FOREIGN KEY (product_id) REFERENCES product_dimension(product_id),
              FOREIGN KEY (date_id) REFERENCES date_dimension(date_id)
   78 • INSERT INTO sales fact (transaction id, store id, product id, date id, quantity, amount) VALUES
 Action Output
MySQL Workbench
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 <u>File Edit View Query Database Server Tools Scripting Help</u>
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   22 • © CREATE TABLE product_dimension (
             product_id INT PRIMARY KEY,
               product_name VARCHAR(255),
             category VARCHAR(255),
brand VARCHAR(255),
  26
27
        weight DECIMAL(10, 2)
             unit_price DECIMAL(10, 2),
  32 • INSERT INTO product_dimension (product_id, product_name, category, brand, unit_price, weight) VALUES
        (101, 'Smartphone', 'Electronics', 'Samsung', 500.00, 0.3), (102, 'Laptop', 'Electronics', 'Dell', 1000.00, 2.5),
          (103, 'T-shirt', 'Clothing', 'Nike', 20.00, 0.2),
(104, 'Jeans', 'Clothing', 'Levis', 50.00, 0.8),
          (105, 'Shoes', 'Footwear', 'Adidas', 70.00, 0.5);
  42 • 

CREATE TABLE date_dimension (
              date_id INT PRIMARY KEY,
              date DATE.
             day_of_week INT,
             day_name VARCHAR(20),
month INT,
month_name VARCHAR(20),
 Action Output
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MvSOI Workbench
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     @ |
      1 • CREATE DATABASE Mall;
2 • USE Mall;
          6 • ○ CREATE TABLE store_dimension (
                                  store_id INT PRIMARY KEY,
store_name VARCHAR(255),
location VARCHAR(255),
manager_name VARCHAR(255),
         opening_date DATE
12 );
         13
       13

14 • INSERT INTO store_dimension (store_id, store_name, location, manager_name, opening_date) VALUES

15 (1, "X-Mart Mall A', 'New Delhi', 'Rajesh Sharma', '2022-01-01'),

16 (2, 'X-Mart Mall B', 'Mumbai', 'Priya Patel', '2022-02-15'),

17 (3, 'X-Mart Mall C', 'Bangalore', 'Amit Singh', '2022-03-20');

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       21
22   CREATE TABLE product_dimension (
23   product_id INT PRIMARY KEY,
24   product_name VARCHAR(255),
                                  Product_id INT PRIMARY KEY,
product_name VARCHAR(255),
category VARCHAR(255),
brand VARCHAR(255),
unit_price DECIMAL(10, 2),
         25
         26
27
     Output ::::
  ☐ Action Output 
Query Completed
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  MySQL Workbench
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         76 );
77
        78 • INSERT INTO sales_fact (transaction_id, store_id, product_id, date_id, quantity, amount) VALUES
        78 • INSERT INTO sales_fact (trans.
79 (1, 1, 101, 1, 10, 5000.00),
80 (2, 1, 102, 1, 5, 5000.00),
81 (3, 2, 183, 1, 20, 400.00),
82 (4, 2, 104, 1, 15, 750.00),
83 (5, 3, 105, 1, 12, 840.00);
         85
         86
87
         88
89 • SELECT p.category, SUM(sf.quantity) AS total_sales_quantity
        90 FROM sales fact sf
91 JOIN product_dimension p
92 DN sf.product_id = p.product_id
                                  GROUP BY p.category;
     94
95
96 SELECT d.month_name, SUM(sf.amount) AS total_sales_amount
97 FROM sales_fact sf
98 JOIN date_dimension d
99 ON sf.date_id = d.date_id
100 MtRR d.year = 2022
101 GROUP BY d.month_name;
  Query Completed
```