

## **Assignment 6: Data Warehouse**

### **1. Understanding the Importance of a Data Warehouse:**

Define a data warehouse. Explain its importance and list scenarios in which a company or organization would require to design a data warehouse. Discuss the advantages of data warehouse in business analysis and decision making.

### **2. Designing a Data Warehouse:**

You're working for a retail company called X-Mart, which is facing issues in decision making due to non-integrated data. Your task is to design a data warehouse to assist in decision making. Describe your approach to design this data warehouse. What steps will you follow? Who will you involve in the process?

### **3. Identifying Requirements:**

Based on the scenario provided, list the key requirements for the data warehouse. How will you identify these requirements and who would you consult in the organization?

### **4. Dimensional Model Design:**

Explain what a dimensional model is. Describe how you would design a dimensional model for the given scenario. List and explain the dimensions you would use.

### **5. Defining Measures and Fact Table:**

Define the concept of measures and fact tables in a data warehouse. Using the X-Mart scenario, identify and define the measures and attributes of the fact table.

### **6. Designing the Relational Database:**

Explain the concept of schemas in data warehouse design. Based on the scenario provided, propose a suitable schema for the data warehouse. Justify your choice.

### **7. Application:**

Apply all the above concepts and design a data warehouse for X-Mart. Use diagrams where necessary to visualize your design.

Note: Students should refer to the given reference for additional information and guidance.

### **8. Coding Assignment: Designing and Populating a Data Warehouse**

You have been tasked with creating a data warehouse for a retail company, X-Mart. This involves creating and populating the database, dimension tables, and the fact table.

#### **Step 1: Create Database**

Using T-SQL Script, create a database for your data warehouse in SQL Server or any other Database.

### **Step 2: Create Customer Dimension Table**

Design and create a Customer dimension table in the data warehouse that will hold customer personal details. Populate this table with sample values.

### **Step 3: Create Product Dimension Table**

Design and create a Product Dimension table considering only the basic level without any Category or Subcategory. Populate this table with sample values.

### **Step 4: Create Store Dimension Table**

Design and create a Store Dimension table that will hold details related to various stores available across different places. Populate this table with sample values.

### **Step 5: Create Sales Person Dimension Table**

Design and create a Sales Person dimension table that will hold details related to the salespersons across various stores. Populate this table with sample values.

### **Step 6: Create Date Dimension Table**

Design and create a Date Dimension table. Populate the date data divided on various levels.

### **Step 7: Create Time Dimension Table**

Design and create a Time Dimension table and populate time data for the entire day with various time buckets.

### **Step 8: Create Fact Table**

Design and create a Fact table to hold all the transactional entries of previous day sales with appropriate foreign key columns referring to the primary key column of your dimensions.

### **Step 9: Add Relations**

Establish relations between the fact table and the dimension tables.

### **Step 10: Populate Fact Table**

Populate the fact table with historical transaction values of sales for the previous day, with proper values of dimension key values.

After executing these steps, your sample data warehouse for sales should be ready. You should be able to create an OLAP Cube on the basis of this data warehouse.

In a real-world scenario, you would use an ETL package like SSIS to populate the dimension and fact tables of your data warehouse with appropriate values. In this assignment, you can assume the data is manually inputted.

Submit your T-SQL scripts, the design diagrams for the tables, and evidence of successful creation and population of your database and tables ([screenshot or video](#)).

Please note: refer to the provided CodeProject articles to create and populate the Date and Time dimensions.

**Reference:**

<https://www.codeproject.com/Articles/652108/Create-First-Data-WareHouse>