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2022360

Data warehousing and Business Intelligence

A star schema is a type of database schema commonly used in data warehousing and business intelligence. It organizes data into a structure that resembles a star, with a central fact table surrounded by dimension tables.

The goal was to structure the data for effective analysis and reporting by organizing it into a central fact table and surrounding dimension tables.

**Steps Taken**

1. **Loading the Dataset**
   * Opened Power BI Desktop and loaded the dataset “Lab 04\_lab task data” through the **Get Data** feature, selecting the appropriate file format.
   * Ensured all relevant tables were imported into Power BI.
2. **Transforming Data in Power Query Editor**
   * Entered the Power Query Editor to prepare the data for analysis.
   * Conducted a thorough review of the dataset to identify potential fact and dimension tables.
3. **Creating Dimension Tables**
   * **Date Dimension**: Created a new table with attributes such as Date Key, Date, Month, and Year. This table enables time-based analysis of the sales data.
   * **Product Dimension**: Duplicated the original data query to create a Product Dimension, retaining essential columns like Product ID, Product Name, and Category. Removed duplicates to ensure unique product records.
   * **Customer Dimension**: Similarly, created a Customer Dimension table containing unique customer attributes such as Customer ID, Customer Name, and Region.
4. **Creating the Fact Table**
   * Duplicated the original data query again to form the Fact Table, keeping relevant columns such as Sales ID, Date Key, Product Key, Customer Key, Sales Amount, and Quantity Sold.
   * Ensured that foreign keys from dimension tables were included to establish relationships.
5. **Data Normalization**
   * Verified that all dimension tables contained unique records to maintain data integrity.
   * Adjusted data types as necessary to ensure consistency across the dataset.
6. **Setting Up Relationships**
   * Navigated to the Model view in Power BI to create relationships between the Fact Table and the Dimension Tables:
     + Linked the Date Key from the Fact Table to the Date Key in the Date Dimension.
     + Linked the Product Key from the Fact Table to the Product Key in the Product Dimension.
     + Linked the Customer Key from the Fact Table to the Customer Key in the Customer Dimension.
   * Ensured all relationships were set as one-to-many to facilitate accurate querying.
7. **Building Reports**
   * Moved to the Report view to create visualizations that leverage the newly established star schema.
   * Created various charts and tables to represent sales data, enabling detailed analysis by dimensions such as time, product, and customer.
8. **Final Steps**
   * Utilized filters and slicers to enhance user interactivity within the reports.
   * Saved the Power BI project to preserve all configurations and visualizations.





