1. Gadget Galaxy: Analyzing Sales and Customer Preferences for Electronics

Business Overview:

Gadget Galaxy is a retail chain specializing in consumer electronics such as smartphones, laptops, and accessories. Operating across multiple regions, the company's primary objectives include optimizing inventory management, identifying high-demand products, and tailoring marketing campaigns to specific customer preferences.

The company sources products directly from manufacturers and distributes them to various retail outlets while also maintaining an online platform for direct sales. Customer interactions include both in-store purchases and online orders, supported by marketing strategies like promotions and loyalty programs.

Business Operations:

1. **Product Management:**
    - Sourcing products from manufacturers based on demand forecasts.
    - Managing inventory levels across multiple warehouses and retail outlets.
    - Monitoring product performance to adjust sourcing strategies.
2. **Sales Channels:**
    - Physical stores with personalized customer services.
    - An e-commerce platform for online purchases, offering features like order tracking and delivery options.
3. **Customer Engagement:**
    - Marketing campaigns, including email promotions and seasonal discounts.
    - A loyalty program offering points for purchases, redeemable for discounts or gifts.
4. **Revenue Streams:**
    - Direct sales through retail outlets and the e-commerce platform.
    - Value-added services like extended warranties and technical support.

Data Warehouse Business Case:

Purpose of the Data Warehouse:

To enable data-driven decisions, Gadget Galaxy's data warehouse will centralize data from various operational systems, including sales, inventory, and customer interactions. This will help:

- Analyze sales trends and customer preferences.

- Optimize inventory levels and supply chain efficiency.
- Evaluate marketing campaign effectiveness.
- Improve customer retention strategies through loyalty program insights.

Star Schema Design:

The data warehouse will use a star schema with the following dimensions and facts:

Fact Table:

- **Sales Fact Table:**
    - Sales_ID (Primary Key)
    - Product_ID (Foreign Key)
    - Store_ID (Foreign Key)
    - Customer_ID (Foreign Key)
    - Date_ID (Foreign Key)
    - Quantity Sold
    - Revenue
    - Discount Amount

Dimension Tables:

1. **Product Dimension:**
    - Product_ID (Primary Key)
    - Product_Name
    - Category
    - Brand
    - Price
2. **Store Dimension:**
    - Store_ID (Primary Key)
    - Store_Name
    - Location
    - Region
3. **Customer Dimension:**
    - Customer_ID (Primary Key)
    - Customer_Name
    - Email
    - Loyalty_Tier
    - Join_Date
4. **Date Dimension:**
    - Date_ID (Primary Key)

- Date
- Day
- Month
- Year
- Quarter

Metadata for Data Warehouse:

1. **Sales Fact Table:**
    - Grain: Each row represents a single sales transaction.
    - Source: Sales system (in-store and online).
    - Update Frequency: Daily.
2. **Product Dimension:**
    - Grain: Each row represents a unique product.
    - Source: Product management system.
    - Update Frequency: Weekly or as products are added/updated.
3. **Store Dimension:**
    - Grain: Each row represents a unique store.
    - Source: Retail operations database.
    - Update Frequency: Monthly.
4. **Customer Dimension:**
    - Grain: Each row represents a unique customer.
    - Source: CRM system.
    - Update Frequency: Daily.
5. **Date Dimension:**
    - Grain: Each row represents a unique date.
    - Source: Calendar reference.
    - Update Frequency: Static (preloaded).

Dashboard Lab Instructions:

1. Use the data warehouse to execute queries and extract data relevant to Gadget Galaxy's operations.
2. Analyze sales trends, product performance, and customer preferences.
3. Design a dashboard using tools like Tableau or Power BI, ensuring it:
    - Includes relevant filters for dynamic analysis.
    - Displays key metrics like total revenue, sales by region, and customer loyalty trends.
    - Incorporates clean and consistent visualizations.

4. Present the dashboard to stakeholders, summarizing the insights derived and recommendations for business improvement.