ETL Modeling Case Studies

----Objective1: Basic ETL Modeling----

Database Schema

- **Category** {CategoryID, CategoryName, Description}
- **Product** {ProductID, ProductName, CategoryID, SupplierID, StockQuantity }
- **Supplier** {SupplierID, SupplierName, ContactPerson, PhoneNumber, Email, Address}

Data Mart schema

- **DimProduct** {ProductID, ProductName}
- **DimSupplier** {SupplierID, SupplierName}
- **FactInventory** {ProductID, SupplierID, StockQuantity}

Task 1:
Design ETL for the above case.

----Objective 2: Modeling from Multiple Source Tables----

Database Schema

- **Category** {CategoryID, CategoryName, Description}
- **Product** {ProductID, ProductName, CategoryID, SupplierID, StockQuantity }
- **Supplier** {SupplierID, SupplierName, ContactPerson, PhoneNumber, Email, Address}

Data Mart schema

- **DimProduct** {ProductID, ProductName, CategoryName}
- **DimSupplier** {SupplierID, SupplierName, City}
- **FactInventory** {ProductID, SupplierID, StockQuantity, DefectRate}

Task 2:
Design ETL for the above case.

----Objective 3: Modeling Technical Architecture ----

Database Schema

- **Category** {CategoryID, CategoryName, Description}
- **Product** {ProductID, ProductName, CategoryID, SupplierID, StockQuantity }
- **Supplier** {SupplierID, SupplierName, ContactPerson, PhoneNumber, Email, Address}

Additional Information: The system is implemented in three different stores in Lahore, Islamabad, and Peshawar. Each implementation is independent. The executive requires an integrated view of data.
Type: Technical Architecture (such as servers)

Data Mart schema

- **DimProduct** {ProductID, ProductName, CategoryName}
- **DimSupplier** {SupplierID, SupplierName, City}
- **FactInventory** {ProductID, SupplierID, StockQuantity, DefectRate}

Task 3:
Design ETL for the above case.

----Objective 4: Modeling User Entities ----

Database Schema

- **Product** {ProductID, ProductName}
- **Supplier** {SupplierID, SupplierName, ContactPerson, PhoneNumber, Email, Address}

Additional Information: The product categories are decided by ProductManager. They possible categories are New, Established, Old based on the duration of product. Product rating is decided by investors. They can rate it based on 1 to 5. All the investors rate it and the Investment Manager is responsible for aggregating the rating.
Type: User entities

Data Mart schema

- **DimCategory** {CategoryID, CatName}
- **DimProductRating** {ProductID, Rating}
- **DimProduct** {ProductID, ProductName, CategoryName, ProductRating}
- **DimSupplier** {SupplierID, SupplierName, City, CityPriority}
- **FactInventory** {ProductID, SupplierID, StockQuantity, DefectRate}

Task 4:

Design ETL for the above case. Use entities will be modeled.

----Objective 5: Modeling Business Entities ----

Database Schema

1. Inventory Management Department
- **Category** {CategoryID, CategoryName, Description}
- **Product** {ProductID, ProductName, CategoryID, SupplierID, UnitPrice, StockQuantity, ReorderLevel}
- **Supplier** {SupplierID, SupplierName, ContactPerson, PhoneNumber, Email, Address}

2. Sales Transactions Schema
- **Order** {OrderID, CustomerID, OrderDate, OrderStatus, TotalAmount}
- **OrderDetail** {OrderDetailID, OrderID, ProductID, Quantity, UnitPrice, Discount}
- **Payment** {PaymentID, OrderID, PaymentMethod, PaymentDate, PaymentAmount}

3. Customer Management Schema
- **Customer** {CustomerID, FirstName, LastName, Email, PhoneNumber, Address, LoyaltyPoints}
- **CustomerFeedback** {FeedbackID, CustomerID, FeedbackDate, Rating, Comments}
- **LoyaltyProgram** {ProgramID, CustomerID, EnrollmentDate, PointsEarned, MembershipTier}

Data Warehouse
- **DimProduct** {ProductID, ProductName, CategoryID}
- **DimCategory** {CategoryID, CategoryName}
- **DimSupplier** {SupplierID, SupplierName}
- **DimTime** {TimeID, Date, Day, Month, Quarter, Year}
- **FactInventory** {ProductID, TimeID, Supplier, StockQuantity, StockValue, RestockDate, LastUpdated}

Task 5:
Design ETL for the above case. Business Entities will be modeled.