**Project Scenario: Data Integration for E-commerce Website**

You have been hired as a data integration developer for an e-commerce company. The company has a website that sells various products online and collects customer information such as orders, customers, products, and shipping details. The company wants to create a centralized data warehouse that integrates data from various sources and provides a unified view of the business data for reporting and analysis purposes.

Your task is to use Informatica PowerCenter, a popular ETL (Extract, Transform, Load) tool, to design and implement data integration workflows to extract data from different sources, transform it into a common format, and load it into the data warehouse.

**Requirements:**

1. **Data Sources**: The company has the following data sources that need to be integrated into the data warehouse:

• **Orders**: Data about customer orders including order ID, customer ID, order date, product ID, quantity, and price.

• **Customers**: Data about customers including customer ID, name, email, address, and phone number.

• **Products**: Data about products including product ID, name, category, price, and inventory.

• **Shipping**: Data about shipping details including order ID, shipping address, shipping date, and tracking number.

2. **Data Integration Workflow**: Design and implement an ETL workflow using Informatica PowerCenter to extract data from the above data sources, transform it, and load it into the data warehouse.

• **Extract**: Extract data from the different data sources using appropriate Informatica PowerCenter components such as Source Qualifier, XML Source, Flat File Source, or Database Source.

• **Transform**: Apply data transformations using Informatica PowerCenter transformations such as Filter, Expression, Aggregator, Joiner, or Router to clean, validate, and enrich the data.

• **Load:** Load the transformed data into the data warehouse using Informatica PowerCenter components such as Target Table, Update Strategy, or Data Warehouse Designer.

3. **Data Quality and Error Handling**: Implement data quality checks and error handling mechanisms to ensure the integrity and accuracy of the data. For example, validate data types, check for duplicate records, handle null values, and log error records to error tables for further analysis and troubleshooting.

4. **Performance Optimization**: Optimize the performance of the data integration workflows by using Informatica PowerCenter features such as partitioning, pushdown optimization, or caching to improve data processing speed and efficiency.

5. **Documentation**: Create documentation for the data integration workflows, including design specifications, mapping documents, and user guides, to facilitate future maintenance and support.

**Deliverables:**

• Data integration workflows in Informatica PowerCenter that extract, transform, and load data from the data sources into the data warehouse.

• Error handling mechanisms and data quality checks to ensure the integrity of the data.

• Performance optimization techniques applied to improve data processing performance.

• Documentation including design specifications, mapping documents, and user guides.

This project will allow you to practice various Informatica PowerCenter concepts such as data extraction, transformation, and loading, error handling, data quality checks, performance optimization, and documentation. You can create the workflows, implement the required transformations, and validate the data in the data warehouse to gain hands-on experience with Informatica PowerCenter and improve your knowledge and skills in data integration. Good luck!