**SSIS Project Demo**

It sounds like you have a well-defined plan for a Business Intelligence (BI) and Data Science project that involves extracting, transforming, and loading (ETL) data into SQL Server using SSIS, performing dimensional modeling, and creating a data warehouse. I'll outline the high-level steps to accomplish your goals:

\*\*1. Set Up Your Environment:\*\*

- Ensure you have SQL Server Management Studio (SSMS), SQL Server Integration Services (SSIS), and SQL Server Data Tools (SSDT) installed.

\*\*2. Create a Database:\*\*

- In SSMS, create a database named "Client\_Name" where you'll store the staged data and the data warehouse.

\*\*3. SSIS ETL Process:\*\*

- Create an SSIS project in SSDT.

\*\*a. Data Extraction:\*\*

- Add Data Flow Tasks to extract data from each Excel sheet (Transaction, CustomerDemographic, CustomerAddress).

- Use Excel Source components to read data from the Excel files.

- Use Derived Column transformations to generate IDs (e.g., Product\_ClassId, Product\_LineId, BrandId) for dimension tables.

- Use Conditional Split transformations to filter out rows with null values and write them to separate flat files.

\*\*b. Data Transformation:\*\*

- Use Lookup transformations to join the data from different sheets based on the "Customer\_Id" common reference.

- Create dimension tables for Product\_Class, Product\_Line, and Brand\_Name and populate them with distinct values.

- Use the Merge Join transformation to join the Transaction data with dimension data.

- Generate surrogate keys for the dimension tables (Product\_ClassId, Product\_LineId, BrandId).

\*\*c. Data Loading:\*\*

- Use OLE DB Destination components to load data into SQL Server tables.

- Load the cleaned and joined Transaction data into a fact table.

- Load dimension tables (Product\_Class, Product\_Line, Brand\_Name, CustomerDemographic, CustomerAddress) into your database.

\*\*d. Test Data Load:\*\*

- Load the NewCustomerList data into a separate table.

\*\*4. Dimensional Modeling:\*\*

- In SSMS, design your star schema or snowflake model.

- Create fact tables (e.g., Transaction) and dimension tables (e.g., Product\_Class, Product\_Line, Brand\_Name, CustomerDemographic, CustomerAddress).

- Define relationships between fact and dimension tables using the surrogate keys.

- Ensure that the fact table contains foreign keys to the dimension tables.

- Store null values from your earlier ETL process in separate flat files for reference.

\*\*5. Data Warehouse:\*\*

- Create a new database in SSMS for your data warehouse.

- Load the dimensional model into the data warehouse.

\*\*6. Analysis and Reporting:\*\*

- Use tools like SQL Server Analysis Services (SSAS) for multidimensional analysis.

- Create reports and dashboards using tools like SQL Server Reporting Services (SSRS) or Power BI.

\*\*7. ML Model:\*\*

- If needed, develop and train your ML model using the NewCustomerList data for predictions.

\*\*8. Maintenance:\*\*

- Set up ETL job schedules for regular data updates.

- Maintain the data warehouse for optimal performance.

This plan should help you set up a comprehensive BI and data science project that covers data extraction, transformation, and loading, dimensional modeling, data warehousing, and analysis. Make sure to adapt it to your specific data and project requirements.