Data Integration and Warehousing Assignment

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Data Integration and Warehouse Implementation

1. Daily Data Load

- Developed ETL (Extract, Transform, Load) workflows using SQL Server Integration Services (SSIS) to load daily transactional data into the data warehouse.
- Ensures incremental data loading by processing only new or updated records. packages load daily transactional data into the warehouse through the SQL Server Agent.
- Data will be loaded into the data warehouse every day at **12:00:00 AM**.

Data Flow:

- Source: **Transactional Database (OLTP System): AdventureWorks2019**
- Staging database: **AWN_STG_Demo**
- Destination: **Data Warehouse (OLAP System): AWN_DW_Demo**

2. Data Updates

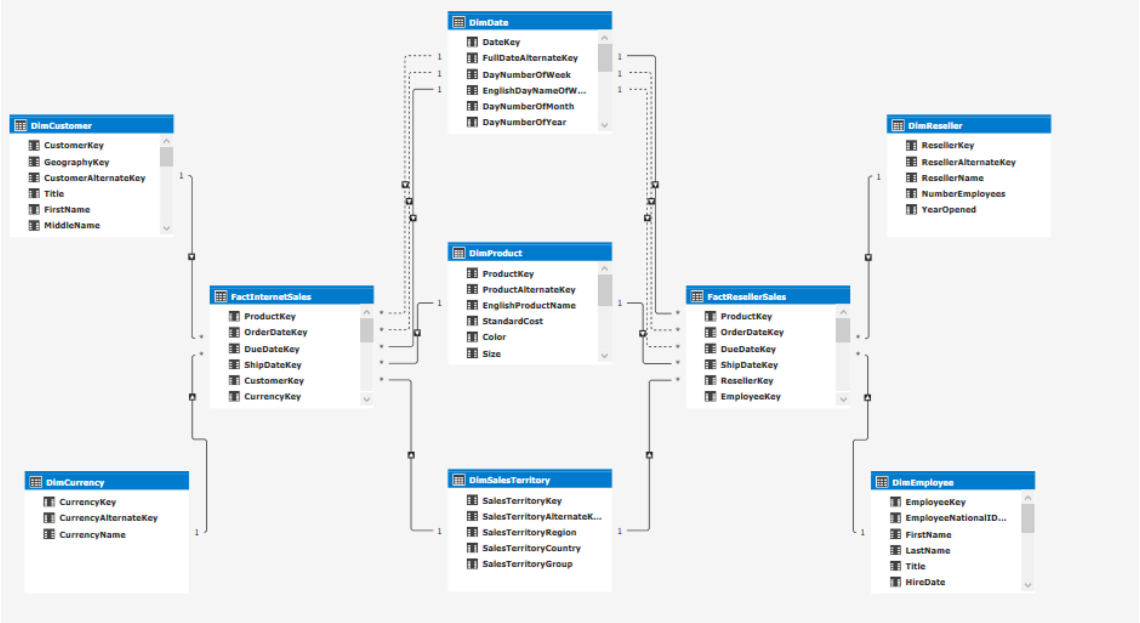
- **Territory Updates**: Implemented using Slowly Changing Dimension only track the updates without tracking the history.
- **Product Updates**: Implemented using **Slowly Changing Dimension Type 2 (SCD2)**.

3. Monthly CSV Processing

- The **SalesOrderForecast CSV** file is loaded into the staging database before being uploaded to the data warehouse.
- A SQL Server Agent job is set up to schedule a **monthly refresh**.

4. Data Transformation

- Created the **Star Schema** by combining **Sales Data, Product Data, and Employee Data**.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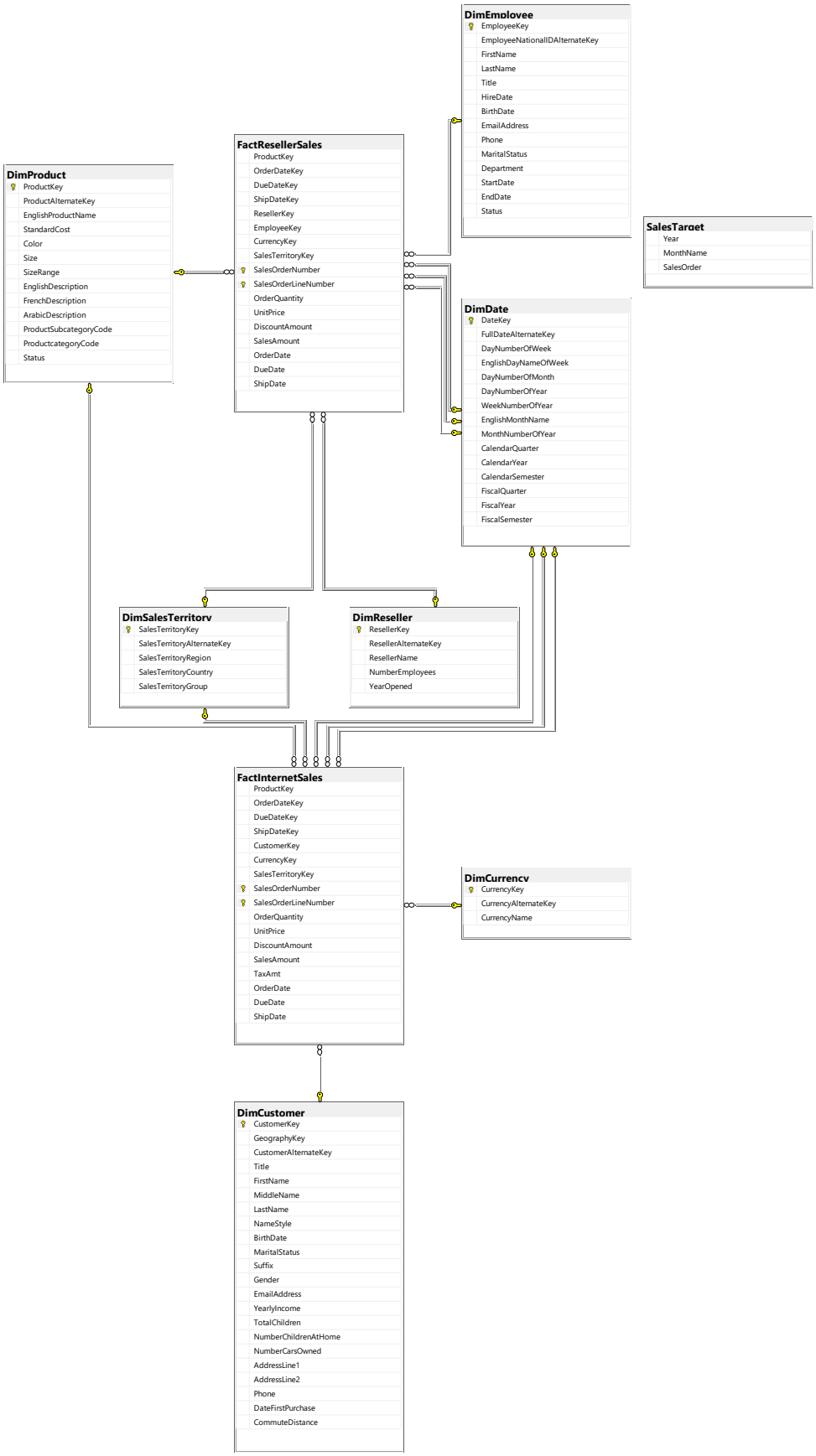
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Gender
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YearlyIncome
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NumberChildrenAtHome
NumberCarsOwned
AddressLine1
AddressLine2
Phone
DateFirstPurchase
CommuteDistance

5. Semantic Layer

- ETL packages are deployed using the **SSIS Service Catalogue** for centralized management.
- Data is processed in SSAS Tabular Mode to create an OLAP cube.

6. Visualization and Reporting

- **Power BI** is connected to the data model to retrieve data for further analysis.