PROJECT PROPOSAL: DATACO SUPPLY CHAIN ANALYTICS USING SQL SERVER DATA WAREHOUSING AND POWER BI

1. Project Description
   This project focuses on optimizing DataCo Global's supply chain operations by building a complete SQL Server data warehouse (Bronze, Silver, Gold layers) and developing Power BI dashboards for interactive supply chain insights. The dataset (2015-2018 orders) includes order details, shipping dates, costs, delivery performance, customer attributes, and product department information.
   The goal is to provide a reliable, structured warehouse and powerful BI reporting that improves delivery performance, reduces costs, strengthens regional insights, and supports strategic decisions.
   All insights and KPIs are fully extractable from the provided datasets.

2. Group Members and Roles

- Saleem Khaled: Data Engineer / SQL Specialist
  Responsibilities: Data ingestion, Bronze layer development, initialization steps, staging, data quality checks, SQL Server optimization.

- Abdelrahman Mohamed: Data Warehouse Developer / SQL Specialist
  Responsibilities: Silver and Gold layer modeling, fact and dimension tables, business rules, SQL transformations, KPI calculation logic.

- Mohamed Mostafa: Business Analyst / Power BI Analyst
  Responsibilities: Translating business requirements into KPIs, DAX measures, Power BI modeling, creating analytical narratives and business interpretations of insights.

- Mohamed Sameer: Lead BI Developer / Power BI Dashboard Designer
  Responsibilities: Power BI data model design, visual layouts, dashboard interactions, report performance optimization, stakeholder-ready dashboards.

3. Team Leader
   Saleem Khaled

4. Objectives (mapped clearly to each team member)
   The following objectives match the roles and responsibilities to maintain consistency across the document:

5. Build a complete SQL Server data warehouse (Bronze, Silver, Gold layers).

    - Saleem: Bronze layer ingestion, raw structured staging, initialization, quality handling.
    - Abdelrahman: Silver and Gold transformations, business logic, star schema modeling, final analytical tables for BI.
6. Improve delivery performance by analyzing shipping delays, regions, and shipping modes.

    - Mohamed Mostafa: Convert delivery KPIs into actionable DAX metrics.
    - Mohamed Sameer: Visualize delivery performance via Power BI dashboards.
7. Optimize shipping and operational costs using order item shipping cost and delivery patterns.

    - Abdelrahman: Build cost-related fact tables in the Gold layer.
    - Mohamed Mostafa: Develop cost-efficiency KPIs in Power BI.
    - Mohamed Sameer: Create cost comparison dashboards.
8. Enhance regional, product, and customer insights using structured supply chain data.

    - Saleem: Ensure raw geographic, product, and customer data is loaded cleanly in Bronze.
    - Abdelrahman: Build regional and product dimensions in Silver/Gold.
    - Mohamed Sameer + Mohamed Mostafa: Power BI analytics and drill-down visuals.
9. Enable dynamic, executive-level reporting via interactive Power BI dashboards.

    - Mohamed Sameer: Dashboard development.
    - Mohamed Mostafa: KPI logic and performance analysis.
    - Abdelrahman: Provide clean star schema tables powering BI.
    - Saleem: Maintain reliable data ingestion that keeps dashboards accurate.
10. Tools and Technologies

- SQL Server (for Bronze, Silver, Gold layers)
- Power BI (data modeling, DAX, dashboards)
- SQL (analysis, transformations)
- Excel (optional for light data checks if needed)

6. Milestones and Deadlines
   Week 1–2: Data Ingestion and Bronze Layer

- Saleem: SQL Server setup, Bronze layer ingestion, raw data structure, basic cleaning rules.
- Abdelrahman: Initial SQL validations to prepare for Silver layer.

Week 3–4: Silver and Gold Layers + Data Warehouse Modeling

- Abdelrahman: Silver transformations (standardization, deduplication, business rules).
- Abdelrahman: Gold layer star schema (fact tables for orders, shipping, cost, delivery, products, customers).
- Saleem: Performance tuning, incremental load adjustments.

Week 5–6: Power BI Data Modeling and KPI Development

- Mohamed Mostafa: DAX KPIs (On-Time Delivery, Avg Shipping Cost, Order Cycle Time).
- Mohamed Sameer: Power BI model relationships, field parameters, drill-through logic.

Week 7–8: Dashboard Development, Testing, and Presentation

- Mohamed Sameer: Final dashboard build (Delivery, Cost, Regional, Customer).
- Mohamed Mostafa: Insights and business narrative.
- Abdelrahman + Saleem: Final data validation from Gold layer.

7. Supply Chain KPIs
   All KPIs confirmed to be extractable from the dataset.

Delivery and Performance KPIs

- On-Time Delivery Rate
- Late Delivery Rate
- Order Fulfillment Cycle Time
- Delivery Risk by Product/Region
- Shipping Mode Efficiency

Cost KPIs

- Average Shipping Cost per Order
- Total Shipping Cost by Region
- Profit per Order

- Cost vs. Delivery Time Correlation

Operational/Regional KPIs

- Late Deliveries by Country/Region
- Sales and Profit by Department
- Order Status Breakdown (Complete, Pending, Canceled, Fraud)

Customer KPIs

- On-Time Delivery by Customer Segment
- High-Value Customer Impact from Delays
- Customer Geographic Distribution Impact on delays and shipping cost