PROJECT SUMMARY REPORT

Database Setup

- **Database Name**: retail_store
- **Tables Used**:
    - store: Contains regional store data.
    - product: Contains product and category info.
    - inventory: Central table with stock, pricing, demand, and sales metrics.
    - reorder_analysis: A view for lag-based demand and reorder tracking (used in dashboard).
    - Date table: Calendar dimensions for time-based analytics (used in dashboard).

Table Relationships

- **Primary Keys**:
    - store: Store_Region_ID
    - product: Store_Region_Product_ID
- **Foreign Keys in inventory**:
    - Store_Region_ID → store
    - Store_Region_Product_ID → product

Date relationships:

- reorder_analysis. Date and Date table. Date joins with inventory. Date

Why Were New Columns Created?

1. Store_Region_ID

- **Format**: StoreCode_Region (e.g., S001_N, S002_W)
- **Purpose**:

- Uniquely identifies each store in combination with its geographic region.
- Allows better grouping, analysis, and joining of store-specific data.
- Serves as a **primary key** in the store table and **foreign key** in inventory.

2. Store_Region_Product_ID

- **Format**: StoreCode_Region_ProductCode (e.g., S001_N_P001)
- **Purpose**:
  - Creates a **composite identifier** linking product, store, and region in one column.
  - Helps uniquely track inventory, demand, and sales **per product per location**.
  - Acts as a **primary key** in product and **foreign key** in inventory.

These fields ensure **referential integrity** and enable **precise joins and aggregation** across complex multi-store product tracking.

Key Metrics & Insights Calculated

1. **Stock Level Across Stores**
   - Aggregate sum of Inventory_Level grouped by each store and region.
2. **Reorder Lag Days**
   - Calculates time between inventory updates to find average replenishment cycle.
3. **Low Inventory Detection**
   - Compares Inventory_Level with a dynamically computed Reorder_Point.
4. **Inventory Turnover**
   - Ratio of units sold to average inventory – key for stock movement analysis.
5. **Stockout Analytics**
   - Identifies frequency and impact of low-stock events.

Power BI Dashboard Model

- Connected tables: store, product, inventory, Date table, reorder_analysis

- Fully normalized data model with robust keys and joins.
- Supports time-based, region-based, and product-category-based filtering and visuals.

Business Outcomes Enabled

- Forecast-driven restocking.
- Identification of slow-moving or overstocked products.
- Reduction of stockouts and improved inventory health.
- Data-backed regional demand planning.