Car Dataset– Excel (VLOOKUP , HLOOKUP and Pivot Table)

In this Excel project, I explored real-world applications of **VLOOKUP** ,**HLOOKUP and Pivot Table** using a car dataset. The aim is to automate data retrieval and analysis for sales, customer service, and inventory insights in a car dealership setting.

🔍 VLOOKUP-Based Problem Statements.

1. **Find Car Model by Customer ID**

Use VLOOKUP to search for a customer's car model using their unique Customer ID. This simulates a CRM (Customer Relationship Management) use case.

2. **Check Car Brand from Model Name**

Given a car model, retrieve its brand name from the dataset to help in standardizing and grouping data for reporting.

3. **Retrieve Manufacturing Year from Car Model**

Automate the lookup of manufacturing year using car model as input to calculate car age or check eligibility for resale/insurance.

4. **Identify Fuel Type for Selected Model**

Use VLOOKUP to return the correct fuel type (Petrol/Diesel/Electric) based on user-selected car model, useful in filtering fuel-efficient vehicles.

5. **Check On-Road Price by Model**

Retrieve on-road price for a particular model using VLOOKUP for quick cost comparison or financial planning.

📊 HLOOKUP-Based Problem Statements

1. **Compare Prices Across Car Variants Horizontally**

If car variants (e.g., Base, Mid, Top) are arranged in columns, use HLOOKUP to pull prices across variants for a selected brand.

2. **Warranty Lookup by Car Type**

Search warranty details horizontally across car types to compare manufacturer offerings.

3. **Retrieve Mileage Based on Variant**

Use HLOOKUP to find mileage values from a table where variants are laid out horizontally and features (like mileage, engine size) are in rows.

4. **Track Sales by Month**

When months are arranged in the top row, HLOOKUP can help retrieve the number of sales for a particular brand/model in a specific month.

5. **Compare Insurance Cost Across Models**

Extract and compare insurance premiums stored horizontally across different car models using HLOOKUP.

Pivot Table

1) Pivot Table – Problem Statement 1

Title: Analyzing Fuel Type and Transmission Trends Across Brands

Objective:
Understand how the combination of fuel type and transmission varies across car brands and how it relates to the year of manufacture.

Explanation:
This pivot chart groups data by Brand, FuelType, and Transmission and summarizes the Year (either as count or sum). It helps answer:

- Which fuel types are more common in automatic vs. manual cars?
- Do certain brands favor a particular transmission-fuel combo?
- How have these preferences shifted over time?

Real-World Use Case:
Car dealerships can use this to plan inventory purchases based on popular configurations in the second-hand market.

📌 Pivot Table – Problem Statement 2

Title: Evaluating Model Popularity by Brand Over Time

Objective:
Analyze which car models are most listed (or owned) within each brand, filtered by manufacturing year, using customer_id as a proxy for volume.

Explanation:
This pivot chart uses Brand and Model as axes and aggregates the count of customer_id. With Year as a filter, it enables:

- Identifying top-selling or frequently listed models
- Brand-wise performance of various models
- Spotting spikes or drops in listings over time

Real-World Use Case:
Dealerships or resale platforms can identify high-demand or slow-moving models and adjust their marketing or pricing strategies accordingly.

🧰 **Tools Used**

- **Microsoft Excel (Advanced Lookup Functions and Pivot Table)**
- **Data Cleaning & Formatting**
- **Realistic Auto Sales Dataset (cardataset)**