Assignment Title: Unveiling the Data

Instructions:

This assignment focuses on the **implementation** of the topics covered in the lecture **"Unveiling the Data."** You are required to apply the concepts from the lecture to your **chosen dataset** and demonstrate your understanding through a **Google Colab notebook (.ipynb file).**

Your submission must include the following:

1. **A Google Colab notebook (.ipynb file)** containing your implementation.
2. **Your dataset in CSV format.**

Notebook Structure:

Part 1: Implementing "Unveiling the Data" Concepts Using Your Chosen Dataset

- In this section, you will apply all topics discussed in **"Unveiling the Data"** to your **chosen dataset.**
- Use the **lecture notes and examples from the Cars dataset** as your guide, but perform the implementation with your own dataset.
- This section should include (but is not limited to):
    - Loading the dataset
    - Displaying the first few rows
    - Checking the dimensions and structure of the dataset
    - Identifying missing values
    - Summarizing key statistics

Part 2: Basic Data Preprocessing on Your Chosen Dataset

- In this section, you will perform basic data preprocessing to prepare your dataset for further analysis.
- Ensure your code includes:
    - Handling missing values (e.g., imputation, removal)
    - Checking for duplicates and handling them
    - Basic data transformations (e.g., changing data types, renaming columns)
    - Summary statistics and exploratory insights

Important Notes:

- This assignment is **all about implementation**—you are expected to apply what you have learned in **"Unveiling the Data"** to your dataset.

- Your notebook must be **well-documented** with markdown explanations for each step.
- The structure and logic should be clear and organized.

Part 3 : Implementation

Supervised Learning Classification

1. Logistic Regression
2. Decision Tree
3. Support Vector Machine
4. K-Nearest Neighbors (KNN)

Midterm Output: A Google Colab notebook (.ipynb file) containing your implementation and Documentation (IEEE format)