**Problem: Classifying Customer Segments**

**Context:** You work for a retail company that wants to segment its customers to tailor marketing strategies better. You have customer data that includes various features like age, income, spending score, and shopping frequency.

**Dataset:**

* **Features:**
  + Age
  + Annual Income
  + Spending Score (a measure of spending habits on a scale of 1-100)
  + Shopping Frequency (number of visits to the store per month)
* **Target:**
  + Customer Segment (categorical: e.g., "Low Spender", "Medium Spender", "High Spender")

**Task:** Use the k-NN algorithm to classify customers into different segments based on their features.

**Steps:**

1. **Data Preprocessing:**
   * Normalize numerical features (e.g., age, income) since k-NN is sensitive to the scale of data.
   * Convert the target variable "Customer Segment" into numerical labels if it's not already.
2. **Model Building:**
   * Choose an appropriate value for kkk (the number of neighbors) through cross-validation or another method.
   * Train the k-NN model on the labeled data.
3. **Evaluation:**
   * Evaluate the model using metrics like accuracy, precision, recall, and F1-score.
   * Analyze the confusion matrix to understand the model's performance across different customer segments.
4. **Application:**
   * Use the trained model to classify new customers into segments, aiding targeted marketing and personalized offers.