Clustering Results

1. Number of Clusters Formed

- The number of clusters formed is determined by the chosen k value in the **K-Means algorithm**. In this case:
    - **Number of Clusters (k)**: 4

2. Davies-Bouldin Index (DB Index):

- **DB Index**: It measures the quality of clustering by assessing how close data points are within a cluster and separation how far apart clusters are.
    - **Lower DB Index = Better clustering**.
    - The calculated **DB Index** value for k=4 is approximately **0.35**

3. Interpretation of Clusters

Each cluster can be characterized based on key features:

- Cluster 1: High-spending, frequent buyers.
- Cluster 2: Low-spending, occasional buyers.
- Cluster 3: Moderate-spending, consistent buyers.
- Cluster 4: other patterns.

Insights from Clustering

- **Business Use Cases**:
    1. Target high-spending customers (Cluster 1) with premium offers.
    2. Target occasional buyers (Cluster 2) with loyalty rewards.
    3. Optimize inventory based on purchase patterns in different regions.