KMeans Clustering and Davies-Bouldin Index Report

1. **Loading the Data:**
    - The datasets 'Customers.csv', 'Products.csv', and 'Transactions.csv' are loaded using pandas.
    - These datasets provide essential data for customer analysis.
2. **KMeans Clustering:**
    - The KMeans algorithm is applied to the customer data, partitioning the dataset into 5 clusters.
    - Each customer is assigned to one of these clusters based on their features.
3. **Davies-Bouldin Index:**
    - The Davies-Bouldin Index (DBI) measures the compactness and separability of the clusters.
    - A lower DBI indicates well-separated and compact clusters, showing the quality of the clustering.
4. **PCA Visualization:**
    - Principal Component Analysis (PCA) reduces the customer features to 2 dimensions.
    - This allows for effective visual analysis of the clusters in a scatter plot format.
5. **Results:**
    - **Number of clusters**: 5 clusters were identified.
    - **Davies-Bouldin Index**: The calculated DBI is a measure of the clustering performance.