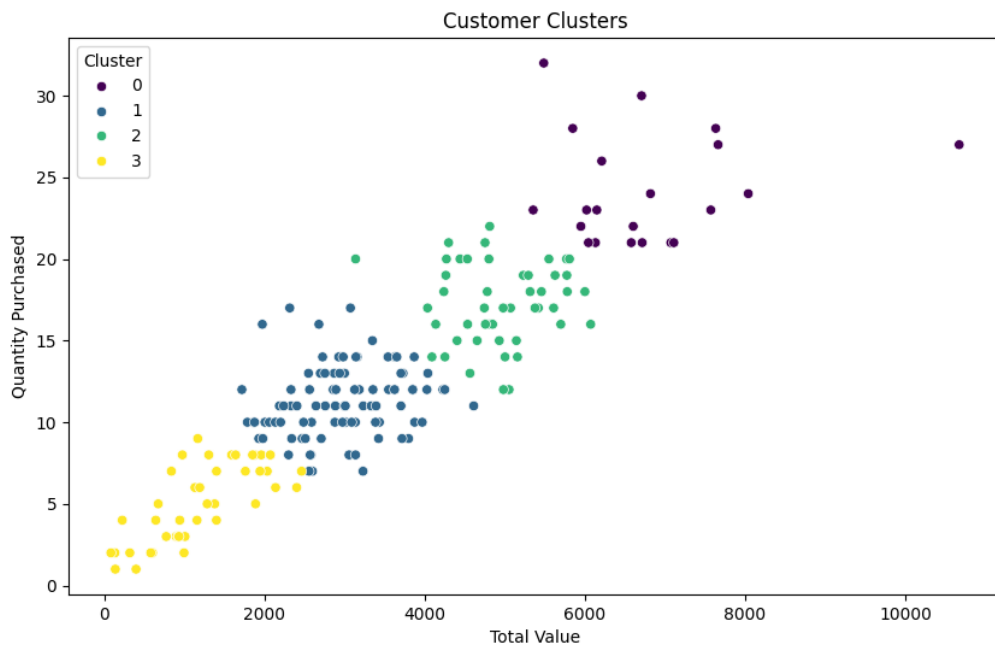


The total number of different clusters formed is 4.



DB Index value and other relevant clustering metrics are as follows:

Davies-Bouldin Index: 0.72127971818163

Silhouette Score: 0.44975010590006376

```
File Edit Selection View Go Run Terminal Help ← → Search
newCode.py X
C:\Users\YASHESH\Downloads> newCode.py ...
...
112 # Exporting clustering results
113 cluster_results.to_csv("Customer_Segmentation.csv", index=False)
114
115 # Visualizing Clusters
116 plt.figure(figsize=(10, 6))
117 sns.scatterplot(x=cluster_results['TotalValue'], y=cluster_results['Quantity'], hue=cluster_results['Cluster'], palette='viridis')
118 plt.title("Customer Clusters")
119 plt.xlabel("Total Value")
120 plt.ylabel("Quantity Purchased")
121 plt.show()
122
123 # Customer Lifetime Value (CLV) Analysis
124 customer_lifetime_value = merged_df.groupby("CustomerID")["TotalValue"].sum().reset_index()
125 sns.boxplot(x=customer_lifetime_value["TotalValue"])
126 plt.title("Customer Lifetime Value Distribution")
127 plt.show()
128
129 # CLV per Region
130 clv_region = merged_df.groupby("Region")["TotalValue"].sum().reset_index()
131 sns.barplot(x="Region", y="TotalValue", data=clv_region)
132 plt.xticks(rotation=45)
133 plt.title("Customer Lifetime Value by Region")
134 plt.show()
135
[Running] python -u "c:\Users\YASHESH\Downloads\newCode.py"
c:\Users\YASHESH\Downloads\newCode.py:68: UserWarning: Ignoring 'palette' because no 'hue' variable has been assigned.
  sns.scatterplot(x='recency', y='frequency', data=customer_metrics, palette='viridis')
Davies-Bouldin Index: 0.72127971818163
Silhouette Score: 0.44975010590006376

[Done] exited with code=0 in 12.293 seconds
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE PORTS
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```