**Task 18**

Machine Learning (Clustering Algorithm III)

Upload the .py or .ipynb extension file to GitHub public repo “100DaysofBytewise" and share the link in the submission form by August 2, 2024.

##### **Dataset : Wholesale Customers Dataset**

##### **K-Means Clustering for Customer Segmentation**

##### Task: Use K-Means clustering to segment customers in the Wholesale Customers dataset based on their annual spending in different categories. Visualize the clusters.

##### **Evaluating the Optimal Number of Clusters**

##### Task: Determine the optimal number of clusters for the Wholesale Customers dataset using the Elbow Method and Silhouette Score. Visualize the results and justify your choice.

##### **Cluster Analysis and Interpretation**

##### Task: Interpret the clusters formed in the Wholesale Customers dataset. Identify the characteristics and differences among the clusters based on spending behavior.

##### **Hierarchical Clustering: Dendrogram and Cluster Formation**

##### Task: Apply hierarchical clustering to the Wholesale Customers dataset and visualize the dendrogram. Compare the cluster assignments with those obtained from K-Means.

##### **Comparison of Clustering Results**

##### Task: Compare the effectiveness of K-Means and hierarchical clustering on the Wholesale Customers dataset. Discuss the results in terms of cluster cohesion and separation.