import pandas as pd

import matplotlib.pyplot as plt

from sklearn.cluster import KMeans

from sklearn.preprocessing import StandardScaler

data = {

    'CustomerID': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10],

    'Total\_Spent': [500, 1500, 800, 2000, 1200, 300, 4000, 3500, 250, 1000],

    'Visit\_Frequency': [5, 15, 8, 20, 12, 3, 40, 35, 2, 10]

}

df = pd.DataFrame(data)

X = df[['Total\_Spent', 'Visit\_Frequency']]

scaler = StandardScaler()

X\_scaled = scaler.fit\_transform(X)

kmeans = KMeans(n\_clusters=3, random\_state=42)

df['Cluster'] = kmeans.fit\_predict(X\_scaled)

print("📌 Customer Segmentation Results:")

print(df)

plt.figure(figsize=(8,6))

plt.scatter(df['Total\_Spent'], df['Visit\_Frequency'], c=df['Cluster'], cmap='viridis', s=100)

plt.scatter(

    kmeans.cluster\_centers\_[:,0]\*scaler.scale\_[0] + scaler.mean\_[0],

    kmeans.cluster\_centers\_[:,1]\*scaler.scale\_[1] + scaler.mean\_[1],

    c='red', marker='X', s=200, label='Centroids'

)

plt.xlabel("Total Amount Spent")

plt.ylabel("Visit Frequency")

plt.title("Customer Segmentation using KMeans")

plt.legend()

plt.show()

OUTPUT:



