42. Customer Segmentation: a) Load “customer\_data.” file into a Pandas data frame, which

contains “Customer ID,” ”Age,” “Gender,” and “Total Spending.”

b) Segment customers into three groups based on their total spending: “High Spenders,” ”Medium Spenders,” and “Low Spenders.” Assign these segments to a new column in the data frame.

c) Calculate the average age of customers in each spending segment.

CODE:

import pandas as pd

df = pd.read\_csv('customer\_data.csv')

quantiles = df['Total Spending'].quantile([0.33, 0.67])

df['Spending Segment'] = pd.cut(df['Total Spending'], bins=[-1, quantiles[0.33], quantiles[0.67], float('inf')],

labels=['Low Spenders', 'Medium Spenders', 'High Spenders'])

avg\_age = df.groupby('Spending Segment')['Age'].mean()

print("Customer Segmentation:")

print(df[['Customer ID', 'Spending Segment']])

print("\nAverage Age per Spending Segment:")

print(avg\_age)

print("\nData Quality Checks:")

df.info()

print("\nMissing Values:")

print(df.isna().sum())

print("\nGender Distribution:")

print(df['Gender'].value\_counts())

print("\nSpending Segment Statistics:")

print(df.groupby('Spending Segment', observed=True)['Total Spending'].agg(['mean', 'median', 'std']))

OUTPUT:





