**Q1: Frequency Distribution for Discrete Data**

from collections import Counter

scores = [56, 67, 56, 45, 67, 78, 90, 45, 67, 78, 90, 90, 56, 67, 45]

frequency = Counter(scores)

print("Discrete Frequency Distribution:")

print("Score\tFrequency")

for score in sorted(frequency):

print(f"{score}\t{frequency[score]}")

**Q2: Grouped Frequency Distribution**

print("\nGrouped Frequency Distribution:")

data = [45, 56, 67, 89, 70, 76, 83, 92, 55, 61, 73, 68, 90, 88, 66, 52]

bin\_size = 10

start = min(data)

end = (max(data)

print("Class Interval\tFrequency")

current = start

while current < end:

next\_limit = current + bin\_size

freq = sum(current <= value < next\_limit for value in data)

print(f"{current}-{next\_limit - 1}\t\t{freq}")

current = next\_limit

**Q 3: Arithmetic Mean, Geometric Mean, Harmonic Mean**

import statistics

from scipy.stats import hmean, gmean

values = [12, 15, 20, 25, 30]

arithmetic\_mean = sum(values) / len(values)

geometric\_mean = gmean(values)

harmonic\_mean = hmean(values)

print("\nMeans:")

print(f"Arithmetic Mean: {arithmetic\_mean:.2f}")

print(f"Geometric Mean: {geometric\_mean:.2f}")

print(f"Harmonic Mean: {harmonic\_mean:.2f}")

**Q 4: Median and Mode**

median\_value = statistics.median(values)

mode\_value = statistics.mode(values)

print("\nMedian and Mode:")

print(f"Median: {median\_value}")

print(f"Mode: {mode\_value}")

**Q 5: Line Diagram of Real-World Data**

import matplotlib.pyplot as plt

years = [2015, 2016, 2017, 2018, 2019, 2020, 2021]

population = [1.25, 1.28, 1.30, 1.33, 1.35, 1.38, 1.40]

plt.plot(years, population, marker='o', linestyle='-', color='blue')

plt.title("Population Growth Over the Years")

plt.xlabel("Year")

plt.ylabel("Population (Billions)")

plt.grid(True)

plt.tight\_layout()

plt.show()