**NAME : MANGESH A. GHADWAJE**

**ROLL NO:24**

**BATCH : B2**

**COURSE: DATA SCIENCE PRACTICAL**

**Assginment No. 3**

**Problem Statement :**

**Write a Python script to find moments, skewness and kurtosis**

**Code :**

**import numpy as np**

**# Generate random normal data**

**np.random.seed(42)**

**data = np.random.normal(loc=0, scale=1, size=10) # Small dataset for manual calculations**

**# Step 1: Calculate Mean (First Moment)**

**mean = np.sum(data) / len(data)**

**print(f"Mean (1st moment): {mean}")**

**# Step 2: Calculate Variance (Second Moment)**

**variance = np.sum((data - mean) \*\* 2) / len(data)**

**print(f"Variance (2nd moment): {variance}")**

**# Step 3: Calculate Third Moment**

**third\_moment = np.sum((data - mean) \*\* 3) / len(data)**

**print(f"Third Moment: {third\_moment}")**

**# Step 4: Calculate Fourth Moment**

**fourth\_moment = np.sum((data - mean) \*\* 4) / len(data)**

**print(f"Fourth Moment: {fourth\_moment}")**

**# Step 5: Calculate Skewness**

**std\_dev = np.sqrt(variance) # Standard deviation**

**skewness = np.sum(((data - mean) / std\_dev) \*\* 3) / len(data)**

**print(f"Skewness: {skewness}")**

**# Step 6: Calculate Kurtosis**

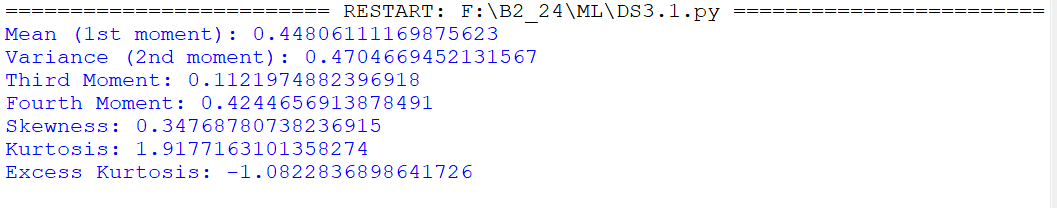
**kurtosis = np.sum(((data - mean) / std\_dev) \*\* 4) / len(data)**

**excess\_kurtosis = kurtosis - 3 # Subtract 3 to get excess kurtosis**

**print(f"Kurtosis: {kurtosis}")**

**print(f"Excess Kurtosis: {excess\_kurtosis}")**

**OUTPUT:**

****