Exercise-0(a)

Python Program to Count the number of words in a Text File.

In [2]:
```
#Input: Required File
file="ReadMe.txt"

word_count=0
#Counting Words
with open(file,'r') as file:
    for line in file:
        #Increment the word_count variable by 1 for each word detected
        word_count=(word_count + len(line.split()))

#Output: Word Count
print("There are total ",word_count," Number of Words in the given file.")
```

```
There are total  21  Number of Words in the given file.
```

Exercise-0(b)

Python Program for Elementwise Multiplication of Matrix with Vector and Calculation of Mean, Standard Deviation & Histogram using NumPy.

In [1]:
```
import numpy as np
import matplotlib.pyplot as plt

#Input: Number of Rows and Columns of Matrix
rows = int(input("Enter the number of rows: "))
cols = int(input("\nEnter the number of columns: "))

A = np.random.randint(low = 1, high = 100, size = (rows,cols))
V = np.random.normal(loc = 2.0, scale = 0.01, size = (cols,1))

#Storing Elementwise Multiplication of Matrix A and Vector V in Vector C
C = A.dot(V)

#Output: The Resultant Vector, its Mean, Standard Deviation and the Histogram
print("\nThe Resultant Vector is:\n",C,"\n")
print("The Mean of the Resultant Vector = ",np.mean(C))
print("\nThe Standard Deviation of the Resultant Vector = ",np.std(C))
plt.style.use('seaborn-whitegrid')
print("\nThe Histogram for the Vector C is as follow:\n", plt.hist(C, bins=5))
plt.show()
```

```
Enter the number of rows: 100

Enter the number of columns: 20

The Resultant Vector is:
 [[2155.6776895 ]
 [1749.34294371]
 [1799.58732464]
 [1920.28583306]
 [1906.59584976]
 [1953.09542547]
 [2079.56534795]
 [1480.88346163]
 [1641.55878241]
 [1950.46312213]
 [2363.60615203]
 [2009.87673404]
 [2104.5027945 ]
 [1717.31844343]
 [2121.07404692]
 [1631.73856555]
 [1878.62287179]
 [1757.57705383]
 [1935.45037983]
 [2118.91365827]
 [1713.14856778]
 [2217.41375071]
 [2566.3074321 ]
 [2108.26437408]
 [1719.273376  ]
 [2304.81593736]
 [2327.32145189]
 [1771.75412483]
 [1863.20024522]
 [1887.97955644]
 [2039.85293179]
 [2097.22436096]
 [1981.59823108]
 [2076.53137362]
 [1994.33402651]
 [2188.48923336]
 [1993.49674834]
 [1990.24825673]
 [2031.72989745]
 [2216.91172898]
 [2115.1711655 ]
 [2039.5834911 ]
 [2204.91620853]
 [1829.15687796]
 [2284.46821011]
 [1888.55896213]
 [1695.90096438]
 [1676.94177498]
 [1711.59050213]
 [1785.82092323]
 [1413.78368379]
 [2012.99870361]
 [1820.65413218]
 [1636.34186723]
 [2070.98172303]
 [2266.57616066]
 [2038.07222516]
 [2327.31205656]
 [2313.5967455 ]
 [1738.97241263]
 [2152.34960082]
 [2251.84065389]
 [2266.05071419]
 [2046.76319547]
 [1271.96718056]
 [1986.52163506]
 [2323.04571008]
 [1797.20522631]
 [1930.99731941]
 [2065.91916572]
 [2206.47364338]
 [1789.09343467]
 [1714.14292795]
 [1702.60553018]
 [2025.20677402]
 [2085.69741064]
 [2356.40701418]
 [1819.52898642]
 [1298.25207251]
 [1853.08707907]
 [2013.17856468]
 [2562.96145865]
 [1823.16175325]
 [2112.0855763 ]
 [2505.25861255]
 [2132.32621028]
 [2005.09439989]
 [2093.01866672]
 [2122.48311923]
 [2209.01859955]
 [2016.01803973]
 [2134.97562018]
 [2129.31330854]
 [1763.43491085]
 [2608.99566342]
 [1461.12839893]
 [1883.96874948]
 [1543.30000208]
 [1659.5990227 ]
 [1651.70342764]]

The Mean of the Resultant Vector =  1976.1121025529858

The Standard Deviation of the Resultant Vector =  263.53874276776713

The Histogram for the Vector C is as follow:
 (array([ 5., 23., 34., 32.,  6.]), array([1271.96718056, 1539.37287713, 1806.7785737
, 2074.18427028,
       2341.58996685, 2608.99566342]), <BarContainer object of 5 artists>)
```