Ex No: 11 Find the sum and average of n integer numbers.

Aim:

To Write a Program to find the sum and average of n integer numbers.

Algorithm

1. Import numpy library
2. Read the required number of inputs to find sum and average .
3. Read the list of numbers
4. Convert list to numpy array
5. Calculate sum and average using sum and mean function
6. Display the sum and average

Program

```
import numpy as np

# Input: number of elements

n = int(input("Enter how many numbers you want to input: "))

# Input: list of numbers

numbers = []

for i in range(n):

    num = int(input(f"Enter number {i+1}: "))

    numbers.append(num)

# Convert list to NumPy array

arr = np.array(numbers)

# Calculate sum and average

total = np.sum(arr)

average = np.mean(arr)


# Output

print(f"\nSum of the numbers: {total}")

print(f"Average of the numbers: {average}")
```

Input:

Enter how many numbers you want to input: 4

Enter number 1: 10

Enter number 2: 20

Enter number 3: 30

Enter number 4: 40

Output:

Sum of the numbers: 100

Average of the numbers: 25.0

Result:

Thus the python Program to find the sum and average of n integer numbers was executed successfully.

Ex :12 Find the variance and standard deviation of set of elements.

Aim

To find the variance and standard deviation of set of elements using python program.

Description:

- **import numpy as np:**

  This line imports the NumPy library, which provides efficient numerical operations, including statistical functions.

- **data = np.array([...]):**

  This creates a NumPy array named data containing the set of elements for which you want to calculate the variance and standard deviation.

- **np.var(data):**

  This function calculates the variance of the elements in the data array. By default, it calculates the population variance (dividing by N). If you need the sample variance (dividing by N-1, Bessel's correction), you can use np.var(data, ddof=1).

- **np.std(data):**

  This function calculates the standard deviation of the elements in the data array. Similar to np.var(), it calculates the population standard deviation by default. For sample standard deviation, use np.std(data, ddof=1)

Program

```
import numpy as np

# Define a set of elements (as a NumPy array)
data = np.array([1, 2, 3, 4, 5, 6, 7, 8, 9, 10])

# Calculate the variance
variance = np.var(data)

# Calculate the standard deviation
standard_deviation = np.std(data)
# Print the results
print(f"The given data set is: {data}")
print(f"Variance: {variance}")
print(f"Standard Deviation: {standard_deviation}")
```

Result:

Thus, the variance and standard deviation of set of elements was calculated using python program.