AI Lab CS236 Lab 1 - Class Exercise

1. Create a two-dimensional NumPy array of size 10x10 with random values between 0 and 1.
    a) Add 10 with each element individually using any loop in python
    b) Perform vector addition to add 10 with each element.
    c) Compare the time taken by the above two operations.

2. Create a pandas data frame with columns (roll no, name, subject, age, marks)
    a) Add 10 student information into the data frame
    b) Find out the minimum, maximum, mean, median, and standard deviation of the marks obtained by the students.

3. Create a function that sums all numbers. It should work for both the inputs: 5,6,7,8,9 as separate args and as a list [5,6,7,8,9]:

4. Check whether two given strings are anagrams or not.
   Anagrams example(below = elbow, study = dusty, night = thing)

5. i) Create a list L of size 9 of random numbers ranging from 5 to 9.
   ii) Count the frequency of each number on that list.
   iii) Print the values of indexes of the number which has the highest frequency.

6. i) Create a list L1 of random numbers (size of 10 or more) ranging from 40 to 49.
   ii) Create another list L2 of random numbers (size of 10 or more) ranging from 41 to 48.
   iii) Create another list L by selecting the even indexing element from L1 and the odd indexing element from L2.

7. Create a function that takes a list and returns a new list with unique elements of the first list.

8. Create a random 20 x 5 array and extract the first ten rows of the array and store them into a variable.

9. Write a Python program to calculate the sum of all positive, and negative integers present in a given string.

   -100#^sdfkj8902w3ir021@swf-20

   Output: positive integer= 9046, negative integer= -120

10. There is a given array and split it from a specified position, and move the first part of the array add to the end.
    a[ ]= {5, 16, 62, 23, 7, 12, 18, 3, 1}
    Output = {7, 12, 18, 3, 1, 5, 16, 62, 23}

11. You are given a N X M integer array matrix with space-separated elements (N= rows and M= columns).

Calculate the transpose and flatten results. First, print the transposed array and then print the flatten.

12. Given a dictionary in Python, write a Python program to find the sum of all items in the dictionary.

I*nput :* *{'a': 100, 'b':200, 'c':300}*

Output: *600*