**TASK THREE: DATA STRUCTURES**

1. Create a list of the 10 elements of four different types of Data Type like int, string, complex and float.

List = [10, 20, 14, 5, 6, 7, 8, 9,10, 12]  
print("\nList of numbers: ")  
print(List)

List = [10.4, 20.1, 14.5, 5.1, 6.2, 7.5, 8.10, 9.65 ,10.1, 12.5]  
print("\nList of numbers: ")  
print(List)

List = ['python', 'training', 'menca', 'sure', 'bliss', 'class' 'of', 'november']  
print("\nList of numbers: ")  
print(List)

List = [1j, 2+3j, 5+2j]  
print("\nList of numbers: ")  
print(List)

1. Create a list of size 5 and execute the slicing structure

a = [1,2,3,4,5]  
b = a[1:3]  
print(b)

1. Write a program to get the sum and multiply of all the items in a given list.

#Sum

a = [3,23,4,3,12,54,65,23,23,45,32,54,23]  
s = 0  
i = 0  
while (i<len(a)):  
 s = s+a[i]  
 i=i+1  
print(s)

#Multiply

from functools import reduce  
  
list1 = [1, 2, 3]  
list2 = [3, 2, 4]  
  
result1 = reduce((lambda x, y: x \* y), list1)  
result2 = reduce((lambda x, y: x \* y), list2)  
print(result1)  
print(result2)

4.Find the largest and smallest number from a given list.

list1 = [10, 20, 1, 45, 99]  
print("Smallest element is:", min(list1))  
print("Largest element is:", max(list1))

5. Create a new list which contains the specified numbers after removing the even numbers from a predefined list.

num = [7,8, 120, 25, 44, 20, 27]  
num = [x for x in num if x%2!=0]  
print(num)

6.Create a list of first and last 5 elements where the values are square of numbers between 1 and30 (both included).

def printValues():  
 l = list()  
 for i in range(1,21):  
 l.append(i\*\*2)  
 print(l[:5])  
 print(l[-5:])  
  
printValues()

7. Write a program to replace the last element in a list with another list.

[1, 3, 5, 7, 9, 2, 4, 6, 8]

Sample data: [[1,3,5,7,9,10],[2,4,6,8]]

Expected output: [1,3,5,7,9,2,4,6,8]

num1 = [1, 3, 5, 7, 9, 10]  
num2 = [2, 4, 6, 8]  
num1[-1:] = num2  
print(num1)

8. Create a new dictionary by concatenating the following two dictionaries:

a={1:10,2:20}

b={3:30,4:40}

Expected Result: {1:10,2:20,3:30,4:40}

a={1:10,2:20}  
b={3:30,4:40}  
c = {}  
for d in (a, b): c.update(d)  
print(c)

9. Create a dictionary that contains a number (between 1 and n) in the form(x,x\*x).

Sample data (n=5)

Expected Output: {1:1,2:4,3:9,4:16,5:25}

n=5  
d = dict()  
  
for x in range(1,n+1):  
 d[x]=x\*x  
  
print(d)

10. Write a program which accepts a sequence of comma-separated numbers from console and generates a list and a tuple which contains every number. Suppose the following input is supplied to the program:

34,67,55,33,12,98

The output should be:

[‘34’,’67’,’55’,’33’,’12’,’98’]

(‘34’,’67’,’55’,’33’,’12’,’98’)

values = input("Input some comma seprated numbers : ")  
list = values.split(",")  
tuple = tuple(list)  
print('List : ',list)  
print('Tuple : ',tuple)

Output:

Input some comma seprated numbers : 34,67,55,33,12,98

List : ['34', '67', '55', '33', '12', '98']

Tuple : ('34', '67', '55', '33', '12', '98')