**Task Three**

**Data Structures**

1) Create a list of 10 elements of four different data types like int, string, complex and float.

a,b,c,d,e,f,g,h,i,j=5,10,6,3,4,7,8,9,1,65

k,l,m,n,o,p,q,r,s,t="ab","bc","cd","de","ef","fg","gh","hi","ij","jk"

u,v,w,x,y,z,aa,ab,bc,cd=1+6**j**,4i+6**j**,4**j**+7,8+9k,7+9k,1+3i,3+6**j**,4i+7k,3k,5**j**

de,ef,fg,gh,hi,ij,jk,float8,float9,float10=3.4,1.2,3.55,2.31,7.09,0.01,-0.05,4.76,2.099,4.9

2) Create a list of size 5 and execute the slicing structure

num=[1,2,3,4,5]

num[1:5:3]=[4,7]

print(num)

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

num=[1,2,3,4,5]

summ=0

product=1

for i in range(len(num)):

    summ+=num[i]

    product\*=num[i]

print("Sum is:",summ)

print("\nProduct is:",product)

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

num=[1,2,3,4,5]

large=0

small=100

for i in range(len(num)):

    if(large<num[i]):

        large=num[i]

    if(small>num[i]):

        small=num[i]

print("Largest number in the list is ",large)

print("Smallest number in the list is ",small)

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

num=[1,2,3,4,5]

newlist=[]

newlist=[i for i in range(len(num)) if num[i]%2 ==0]

print("New even list is ",newlist)

6) Create a list of elements such that it contains the squares of the first and last 5 elements between 1 and 30 (both included).

**def** printValues():

    l = list()

    for i in range(1,31):

        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.

l=[1,2,3]

l1=[4,5]

l=l[:-1]+l1

print(l)

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

a={1:10,2:20}

b={3:30,4:40}

a.update(b)

print(a)

9) Create a dictionary that contain numbers in the form(x:x\*x) where x takes all the values between 1 and n (both 1 and n included).

d={}

for x in range(1,5):

    d[x]=x\*\*2

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 in the form of string.

a,b=[int(x) for x in input("Enter two values\n").split(',')]

print("The list is ",[a,b])

print("The tuple is ",(a,b))