**September 24 - Saroj Banjara**

**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.

elements10 = [1, 'time', 2.0, 'asked', 3.8, 'and', 20, 'what\_the', 'hell\_is', 4 + 2j]

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

size5 = [1, 2, (3, 4), 5, (6, 7)]

print(size5[:]) *# prints [1, 2, (3, 4), 5, (6, 7)]*

print(size5[1:]) *# prints [2, (3, 4), 5, (6, 7)]*

print(size5[:4])  *# prints [1, 2, (3, 4), 5]*

print(size5[0:4:2]) *# prints [1, (3, 4)]*

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

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

add = 0

mult = 1

for i in range(len(x)):

add = add + x[i]

mult = mult \* x[i]

print(‘Addition: ’, add)  *# returns Addition: 15*

print(‘Multiplication: ’, mult) *# returns Multiplication: 120*

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

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

print('Largest number: ', max(x)) *# returns Largest number: 5*

print('Smallest number: ', min(x)) *# returns Smallest number : 1*

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

x = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15]

for i in x:

if i % 2 == 0:

x.remove(i)

print('y = ', x) *# returns y = [1, 3, 5, 7, 9, 11, 13, 15]*

6. Create a list of first and last 5 elements where the values are square of numbers between 1 and 30 (both included).

l = list()

for i in range(1,30):

i = i \* i

l.append(i)

print('First five: ', l[:5]) *# returns [1, 4, 9, 16, 25]*

print('Last five: ', l[-5:]) *#returns [625, 676, 729, 784, 841]*

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

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

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

a = [1, 3, 5, 7, 9, 10]

b = [2, 4, 6, 8]

a[-1:] = b

print(a) *# returns [1, 3, 5, 7, 9, 2, 4, 6, 8]*

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 i in (a, b, c):

c.update(i)

print('c = ', c) *# returns c = {1:10, 2:20, 3:30, 4:40}*

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

Sample data (n=5)

n = 5

a = dict()

for i in range(1, n + 1):

a[i] = i \* i

print(a) *# returns {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}*

10. Write a program which accepts a sequence of comma-separated numbers from console and generate 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’)

number = input("Enter some numbers separated with comma: ")

a = number.split(',')

print('List: ', a)

b = tuple(a)

print('Tuple: ',b)