Assignment - 4

Topic: List and Tuple

Sl. No.	Question
1.	Write a Python program to read a list from the user and find the sum of all elements of that list.
	l = eval(input("Enter list of numbers: ")) l1 = sum(l) print("Sum: ", l1) Output: Enter list of numbers: [1,2,3,4,5] Sum: 15
2.	Write a Python program to read a list of numbers from the user and find the maximum and minimum element of that list.
	l = eval(input("Enter list of numbers: ")) print("max: ", max(l)) print("min: ", min(l)) Output: Enter list of numbers: [78,100,1,2,45,99] max: 100 min: 1
3.	Write a Python program to read a list of number from the user and find the position of the maximum and minimum element of that list.

	l = eval(input("Enter list of numbers: "))
	
	for i in l:
	  if i == max(l):
	  print("max position is", l.index(i))
	  elif i == min(l):
	  print("min position is", l.index(i))
	
	Output:
	
	Enter list of numbers: [19,3,45,99,55,42]

	min position is 1 max position is 3
4.	Write a Python program to print all elements of a list which are greater than a given inputted value.

	l = eval(input("Enter a list: "))
	number = int(input("Enter the number: "))
	
	for i in l:
	  if i > number:
	  print(i, end=" ")
	
	Output:
	Enter a list: [34,2,56,77,1,90]
	Enter the number: 34
	56 77 90

5.	Write a Python program to print all the common elements of two lists.
	l1 = eval(input("Enter a list: ")) l2 = eval(input("Enter another list: ")) s1 = set(l1) s2 = set(l2) print(s1.intersection(s2)) Output: Enter a list: [12,56,2,67,44,23] Enter another list: [90,56,2,44,12] {56, 2, 44, 12}
6.	Write a Python program to find the second largest and second smallest value from a list.

	l = eval(input("Enter a list: "))
	
	l1 = sorted(l)
	
	if len(l) > 2:
	  print("Second Largest : ", l1[-2])
	  print("Second Smallest: ", l1[1])
	elif len(l) == 2:
	  print("Second Largest: ", l1[0])
	  print("Second Smallest: ", l1[0])
	elif len(l) == 1:
	  print("Second Largest: ", l1[0])
	  print("Second Smallest: ", l1[0])

	Output: Enter a list: [56,44,23,89,99,1,12] Second Largest : 89 Second Smallest: 12
7.	Write a program to to read a list of numbers from the user. Split the even and odd elements of the list into two different lists.

	l = eval(input("Enter a list of numbers: "))
	
	even = []
	odd = []
	
	for i in l:
	  if i % 2 == 0:
	  even.append(i)
	  else:
	  odd.append(i)
	print("Even list: ", even)
	print("Odd list: ", odd)
	
	Output:
	Enter a list of numbers: [90,56,78,12,1,34,23]
	Even list: [90, 56, 78, 12, 34]
	Odd list: [1, 23]

8.	Write a Python program to convert a tuple to a string.
	t = eval(input("Enter a tuple: ")) string = "" for i in t: string = string + str(i) print(string) Output: Enter a tuple: (12,34,1,56) 1234156
9.	Write a Python program to insert a new element into a tuple of elements at a specified position.
	t = eval(input("Enter a tuple: ")) number = int(input("Enter the element: ")) index = int(input("Enter the index position to insert: ")) l = list(t) l.insert(index, number) t = tuple(l) print(t)

	Output: Enter a tuple: (12,45,666,1) Enter the element: 3 Enter the index position to insert: 1 (12, 3, 45, 666, 1)
10.	Write a Python program to modify or replace and existing element of a tuple with a new element.
	t = eval(input("Enter a tuple: ")) number = input("Enter the element: ") index = int(input("Enter the index position to insert: ")) t = list(t) t.insert(index, number) t = tuple(t) print(t) Output: Enter a tuple: (44,33,55,66) Enter the element: 11 Enter the index position to insert: 2 (44, 33, '11', 55, 66)
11.	Write a Python program to delete an element from a particular position in the tuple.
	user__tuple = eval(input("Enter a tuple of elements: ")) rem = (int(input("Enter the position to remove: ")))-1 print("Original Tuple: ", user__tuple) user__tuple = user__tuple[:rem] + user__tuple[rem+1:] print("After removal: ", user__tuple) Output: Enter a tuple of elements: (55,66,77,88,44) Enter the position to remove: 3 Original Tuple: (55, 66, 77, 88, 44) After removal: (55, 66, 88, 44)
12.	Write a Python program to find the repeated items of a tuple.
	tuple = eval(input("Enter a tuple: ")) list = list(tuple) print(list) res__list = []

	for ch in list:
	  if list.count(ch) > 1:
	  if ch in res__list:
	  continue
	  else:
	  res__list.append(ch)
	  continue
	
	print("Repeted Items in tuple are: ")
	for ch in res__list:
	  print(ch, end=" ")
	
	Output:
	Enter a tuple: (12,55,34,24,12,55)
	[12, 55, 34, 24, 12, 55]
	Repeted Items in tuple are:
	12 55

13.	Write a Python program to reverse a tuple.
	tuplex = eval(input("Enter a tuple to reverse it: ")) listx = list(tuplex) listx.reverse() tuplex = tuple(listx) print(tuplex) Output: Enter a tuple to reverse it: (12,55,43,66,99) (99, 66, 43, 55, 12)
14.	Write a Python program to replace last value of tuples in a list by 100. **Sample list:** [(10, 20, 40), (40, 50, 60), (70, 80, 90)] **Expected Output:** [(10, 20, 100), (40, 50, 100), (70, 80, 100)]

	list__tuple = eval(input("Enter list of tuples: "))
	print("Original list of tuples: ", list__tuple)
	res = [list(elem) for elem in list__tuple]
	
	for ch in res:
	  for i in range(len(ch)):
	  if i == 2:
	  ch[i] = 100
	
	opp = [tuple(elem) for elem in res]
	print("Output: ", opp)
	
	Output:

	Enter list of tuples: [(10,20,40),(40,50,60),(70,80,90)] Original list of tuples: [(10, 20, 40), (40, 50, 60), (70, 80, 90)] Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]
15.	Write a Python program to sort a tuple by its float element. **Sample data:** [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')] **Expected Output:** [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

	tuple = eval(input("Enter a list of tuple strings: "))
	
	list = [list(elem) for elem in tuple]
	# print(list)
	
	float__list = []
	
	for ch in list:
	  print(ch[1][1])
	  float__list = sorted(float__list, key=lambda x: float(x))
	
	print(float__list)

16.	Given a list A of N numbers (integers), you have to write a Python program which prints the sum of the elements of list A with the corresponding elements of the reverse of list A. For example if list A has elements [1,2,3], then reverse of the list A will be [3,2,1] and the resultant list should be [4,4,4].

	list = eval(input("Enter a list of numbers: "))
	
	print("Original list: ", list)
	list_rev = list[::-1]
	print("Reversed list: ", list_rev)
	
	sum_list = []
	
	for i in range(len(list)):
	  a = list[i] + list_rev[i]
	  sum_list.append(a)
	
	print("Sum of list: ", sum_list)
	
	Output:
	Enter a list of numbers: [34,33,12,77,65,45]
	Original list: [34, 33, 12, 77, 65, 45]
	Reversed list: [45, 65, 77, 12, 33, 34]
	Sum of list: [79, 98, 89, 89, 98, 79]

17.	With a given list L of integers, write a program to print this list L after removing all duplicate values with original order preserved. **Sample Input:**12 24 35 24 88 120 155 88 120 155

	Sample Output:12 24 35 88 120 155
	listInput = eval(input("Enter a list of numbers to remove duplicates: ")) list_rem = list(dict.fromkeys(listInput)) print(list_rem) Output: Enter a list of numbers to remove duplicates: [12,24,55,24,88,12] [12, 24, 55, 88]
18.	Assuming that we have a list of email addresses in the "username@companyname.com" format. Write a python program to create two lists from that, one list should contain the usernames and another list should contain the company names. Both user names and company names are composed of letters only. Print the resultant lists.

	print("Enter list of Email addresses: ")
	eList = eval(input())
	count = 0
	names = []
	cNames = []
	
	for emails in eList:
	  count += 1
	  atTheRate = emails.index('@')
	  names.append(emails[:atTheRate])
	  cNames.append(emails[atTheRate + 1: -4])
	
	print("Names: ", names)
	print("Company: ", cNames)
	
	Output:
	Enter list of Email addresses:
	['useername@gmail.com', 'xyz@yahoo.com', 'abc@bing.com']
	Names: ['useername', 'xyz', 'abc']
	Company: ['gmail', 'yahoo', 'bing']

19.	Write a Python program to add two matrices and display the sum matrix using lists.

	m1 = []
	r1 = int(input("Enter number of rows of matrix 1: "))
	c1 = int(input("Enter number of columns of matrix 1: "))
	
	for i in range(r1):
	  a = []
	  for j in range(c1):
	  a.append(int(input("Enter value: ")))

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    m1.append(a)
print("Inputted matrix 1: ")
for i in range(r1):
    print(m1[i])

m2 = []
r2 = int(input("Enter number of rows of matrix 2: "))
c2 = int(input("Enter number of columns of matrix 2: "))

for i in range(r2):
    b = []
    for j in range(c2):
        b.append(int(input("Enter value: ")))
    m2.append(b)
print("Inputted matrix 2: ")
for i in range(r1):
    print(m2[i])

sum = []

if(r1 == r2 and c1 == c2):
    sum = [[m1[i][j] + m2[i][j]  for j in range(len(m1[0]))] for i in range(len(m1))]
else:
    print("Not compatible!!")

print("Sum: ")
for i in range(r1):
    print(sum[i])

Output:
Enter number of rows of matrix 1: 3
Enter number of columns of matrix 1: 3
Enter value: 1
Enter value: 2
Enter value: 3
Enter value: 4
Enter value: 5
Enter value: 6
Enter value: 7
Enter value: 8
Enter value: 9
Inputted matrix 1:
[1, 2, 3]
[4, 5, 6]
[7, 8, 9]
Enter number of rows of matrix 2: 3
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	Enter number of columns of matrix 2: 3 Enter value: 4 Enter value: 5 Enter value: 2 Enter value: 6 Enter value: 1 Enter value: 7 Enter value: 8 Enter value: 2 Enter value: 8 Inputted matrix 2: [4, 5, 2] [6, 1, 7] [8, 2, 8] Sum: [5, 7, 5] [10, 6, 13] [15, 10, 17]
20.	Write a Python program to remove an empty tuple(s) from a list of tuples. **Sample data:** [(), (), ('',), ('a', 'b'), ('a', 'b', 'c'), ('d')] **Expected output:** [('',), ('a', 'b'), ('a', 'b', 'c'), 'd']
	listOfTuples = eval(input("Enter list of tuples: ")) listOfList = [list(x) for x in listOfTuples] res = list(filter(None, listOfList)) listOfTuples = [tuple(x) for x in res] print(listOfTuples) Output: Enter list of tuples: [(), (), (), ('a', 'b'), ('a', 'b', 'c'), ('d')] [('a', 'b'), ('a', 'b', 'c'), ('d',)]
21	Write a Python program convert a given string list to a tuple. **Original string:**python 3.0 <class 'str'> **Convert the said string to a tuple:** ('p', 'y', 't', 'h', 'o', 'n', '3', '.', '0') <class 'tuple'>
	string = input("Enter a string: ") list = [] for ch in string: list.append(ch) tuple = tuple(list) print(tuple)

	Output: Enter a string: python3.0 ('p', 'y', 't', 'h', 'o', 'n', '3', '.', '0')
22.	Write a Python program to calculate the average value of the numbers in a given tuple of tuples. Original Tuple: ((10, 10, 10, 12), (30, 45, 56, 45), (81, 80, 39, 32), (1, 2, 3, 4)) Average value of the numbers of the said tuple of tuples: [10.5, 44, 58, 2.5]

	tupleOfTuple = eval(input("Enter Tuple of Tuples: "))
	
	listOfList = [list(x) for x in tupleOfTuple]
	print(listOfList)
	
	sumList = []
	count = 0
	res = []
	
	for i in range(len(listOfList)):
	  sumList.append(sum(listOfList[i]))
	
	for ch in sumList:
	  res.append(ch/len(listOfList[count]))
	  count += 1
	
	print("SumList: ", sumList)
	print("result: ", res)
	
	Output:
	Enter Tuple of Tuples: ((10,10,10,12), (30,45,56,45), (81,80,39,32), (1,2,3,4))
	[[10, 10, 10, 12], [30, 45, 56, 45], [81, 80, 39, 32], [1, 2, 3, 4]]
	SumList: [42, 176, 232, 10]
	result: [10.5, 44.0, 58.0, 2.5]

23.	Write a Python program to convert a tuple of string values to a tuple of integer values. Original tuple values: (('333', '33'), ('1416', '55')) New tuple values: ((333, 33), (1416, 55))
	tupleOfTuples = eval(input("Enter tuple of tuples: ")) listOfList = [list(x) for x in tupleOfTuples] listOfList = [[int(float(j)) for j in i] for i in listOfList] print(listOfList)

	Output: Enter tuple of tuples: (('333', '33'), ('1416', '55')) [[333, 33], [1416, 55]]
24.	Write a Python program to convert a given tuple of positive integers into an integer. Original tuple:(1, 2, 3) Convert the said tuple of positive integers into an integer:123 Original tuple:(10, 20, 40, 5, 70) Convert the said tuple of positive integers into an integer:102040570
	tupleInput = eval(input("Enter a tuple of integers: ")) listUser = list(tupleInput) stringUser = "" for ch in listUser: stringUser = stringUser + str(ch) print(stringUser) Output: Enter a tuple of integers: (10, 20, 40, 5, 70) 102040570
25.	Write a Python program to check if a specified element presents in a tuple of tuples. Original list: (('Red', 'White', 'Blue'), ('Green', 'Pink', 'Purple'), ('Orange', 'Yellow', 'Lime')) Check if White present in said tuple of tuples! True Check if Lime present in said tuple of tuples! True Check if Olive present in said tuple of tuples! False

	tupleOfTuples = eval(input("Enter tuple of tuples: "))
	userSearch = input("Enter a String to Search in Tuple of Tuples: ")
	listOfLists = [list(x) for x in tupleOfTuples]
	
	for ch in listOfLists:
	  for i in ch:
	  if userSearch == i:
	  print("check if", userSearch, " present in tuple of tuples ")
	  print(True)
	  break
	  else:
	  print("check if", userSearch, " present in tuple of tuples ")
	  print(False)
	  break
	  break

	Output: Enter tuple of tuples: (('Red', 'White', 'Blue'), ('Green', 'Pink', 'Purple'), ('Orange', 'Yellow', 'Lime')) Enter a String to Search in Tuple of Tuples: Red check if Red present in tuple of tuples True
26.	Write a Python program to compute element-wise sum of given tuples. Original lists: (1, 2, 3, 4) (3, 5, 2, 1) (2, 2, 3, 1) Element-wise sum of the said tuples: (6, 9, 8, 6)
	a = eval(input("Enter tuple a: ")) b = eval(input("Enter tuple b: ")) c = eval(input("Enter tuple c: ")) a = list(a) b = list(b) c = list(c) sum = [] for i in range(0, len(a)): sum.append(a[i] + b[i] + c[i]) print(tuple(sum)) Output: Enter tuple a: (1,2,3,4) Enter tuple b: (3,5,2,1) Enter tuple c: (2,2,3,1) (6, 9, 8, 6)
27.	Write a Python program to convert a given list of tuples to a list of lists Original list of tuples: [(1, 2), (2, 3), (3, 4)] Convert the said list of tuples to a list of lists: [[1, 2], [2, 3], [3, 4]] Original list of tuples: [(1, 2), (2, 3, 5), (3, 4), (2, 3, 4, 2)] Convert the said list of tuples to a list of lists: [[1, 2], [2, 3, 5], [3, 4], [2, 3, 4, 2]]
	tupleOfTuples = eval(input("Enter Tuple of Tuples: ")) listOfLists = [list(x) for x in tupleOfTuples] print(listOfLists) Output: Enter Tuple of Tuples: [(1,2), (2,3), (3,4)] [[1, 2], [2, 3], [3, 4]]