

PPL Lab Assignment 3

Page No.: |

Jaynam Modi. PG-43. G3. Aug 14, 2020

- Problem Statement : Write a Python Program to Merge Two Lists and Sort it.
- Objectives :
 1. To learn about the Lists in Python programming language.
 2. To understand the concept of interpreted language working.
- Theory :
 - List : In Python programming, a list is created by placing all the items (elements) inside square brackets `[]`, separated by commas. It can have any number of items and they may be of different types (integer, float, string etc.).

Thus, the list datatype in python can be used to easily create an iterable sequential collection of data that is

very useful in every programming concept.

- Algorithm :

- Problem Solution :

1. Take in the number of elements for the first list and store it in a variable.
2. Take in the elements of the list one by one.
3. Similarly take in the elements for the second list also.
4. Merge both the lists using the '+' operator and then sort the list.
5. Display the elements in the sorted list.
6. Exit.

- Steps for Implementation :

1. User must enter the number of elements for the first list and store it in a variable.

2. User must then enter the elements of the list one by one using a for loop and store it in that list.
3. User must similarly enter the elements of the second list one by one.
4. The '+' operator is then used to merge both the lists.
5. The sort function then sorts the list in ascending order.
6. The sorted list is then printed.

- Platform : Ubuntu

- Input :

> Enter the Elements of List 1 : 12 9 45

> Enter the Elements of List 2 : 8 34

- Output:

> Sorted list is : [8, 9, 12, 34, 45]

- Conclusion : Successfully Realised the program to solve the Problem Mentioned.

- FAQs :

1. What is the concept of lists in Python?
 - > A list is a data structure in Python that is a mutable, or changeable, ordered sequence of elements. Each element or value that is inside of a list is called an item. Just as strings are defined as characters between quotes, lists are defined by having values between square brackets `[]`.
2. Comment on applications of lists in Python.
 - > Python lists, being mutable and iterable can be used to store data in a sequential manner, they are the replacement to arrays in other commonly used OOP languages like C & C++.
3. List and explain few methods which can be used with lists?
 - > `list.append(elem)` - adds a single element to the end of the list. Common error: does not return the new list, just modifies the original.

- > `list.index(elem)` - searches for the given element from the start of the list and returns its index.
- > `list.reverse()` - reverses the list in place.
- > `list.pop(index)` - removes and returns the element at the given index. Returns the rightmost element if index is omitted (roughly the opposite of `append()`).

4. What is the principal difference between list and tuple?

- > The main difference between lists and tuples is the fact that lists are mutable whereas tuples are immutable.

What's the difference between `append()` and `extend()` methods?

- > When `append()` method adds its argument as a single element to the end of a list, the length of the list itself will increase by one. Whereas `extend()` method iterates over its argument adding each element to the list, extending the list.

- Practice Assignments:

1. Python Program to Swap the First and Last Value of a List.
2. Python Program to Find the Second Largest Number in a List Using Bubble Sort.
3. Python Program to create list of Tuples with first element as the number and the Second element as the Square of the Number.
4. Python Program to put Even & Odd Elements of a list into two separate lists.
5. Python Program to remove Duplicate Items from a list.
6. Python Program to calculate average of Numbers in list.


```
1
2 # PPL Lab Assignment 3, PG43 Jaynam Modi, G3
3
4 # Write a Python Program to merge two lists and sort it.
5
6 list1 = [int(x) for x in input("> Enter First List : ").split(" ") if x
7 != ""]
8 list2 = [int(y) for y in input("> Enter Second List : ").split(" ") if
9 y != ""]
10
11 merged = list1 + list2
12
13 print("> Merged List : ", merged)
14
15 merged.sort()
16
17 print("> Sorted List : ", merged)
18
19 # PRACTICE PROBLEMS.
20
21 # 1. Python Program to Swap the First and Last Value of a List.
22
23 def swap(lst):
24     lst[0], lst[-1] = lst[-1], lst[0]
25     return lst
26
27 # 2. Python Program to Find the Second Largest Number in a List Using
28 Bubble Sort.
29
30 def find2ndLargest(lst):
31     for i in range(2):
32         for j in range(len(lst)-1):
33             if lst[j] > lst[j+1]:
34                 lst[j], lst[j+1] = lst[j+1], lst[j]
35     return lst[-2]
36
37 # 3. Python Program to create list of Tuples with first element as the
38 number and the Second element as the Square of the Number.
39
40 def createSquareList(n):
41     return [(x, x * x) for x in range(1, n+1)]
42
43 # 4. Python Program to put Even & Odd Elements of a list into two
44 seperate lists.
45
46 def sortEvenOdd(lst):
47     return {"even": [x for x in lst if x // 2 == 0], "odd": [x for x in
48 lst if x // 2 == 1]}
49
50 # 5. Python Program to remove Duplicate Items from a list.
51
52 def removeDuplicates(lst):
53     y = []
54     for x in lst:
55         if x not in y:
56             y.append(x)
57     return y
58
59 # 6. Python Program to calculate average of Numbers is list.
60
61 def calcAverage(lst):
62     avg = 0
63     for x in lst:
64         avg += x
65     return (avg/len(lst))
```

```
u0_a362@localhost:~/github/assignments/PPL$ python ppl_assignment_3.py
```

```
> Enter First List : 12 9 45
```

```
> Enter Second List : 8 34
```

```
> Merged List : [12, 9, 45, 8, 34]
```

```
> Sorted List : [8, 9, 12, 34, 45]
```

```
u0_a362@localhost:~/github/assignments/PPL$
```