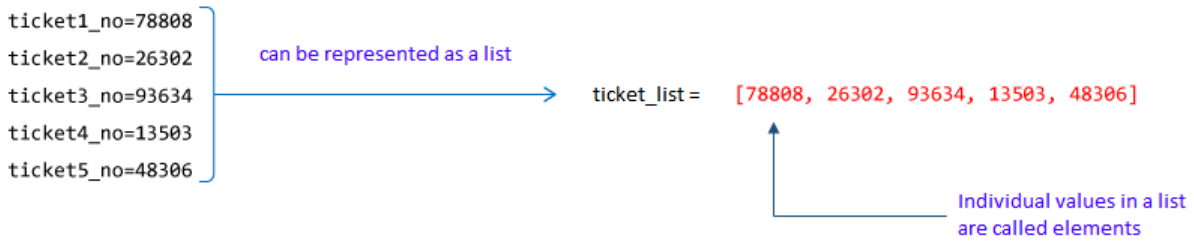
List

List is data type in python which is used to store a group of elements together.

Ex: Suppose we want to store the ticket numbers allocated to each passenger travelling in a flight. Instead of using separate variable for each ticket number, we can use a list as shown below.



Each element in the list has a position in the list known as an index. The list index starts from zero. It's like having seat numbers starting from 0!

Element	78808	26302	93634	13503	48306
Index	0	1	2	3	4

Suppose seat number 2 is allocated to the passenger with ticket number 93634, the passenger can directly go to seat number 2 without having to go through other seats. Similarly, index positions actually help us to **directly access** a value from the list.

Check 1: list_name[index] can be used to directly access the list element at the mentioned index position.

Suppose we have to allocate a different passenger to seat number 3, we can do it as **ticket_list[3]**=13504.

Check 2: Thus, in addition to using the index to access an element directly, we can also use it to **directly modify** an element in the list. **ticket_list[2]**=99883

Check 3: we cannot access values beyond the total number of elements in the list.

For example: print **ticket_list**[5] will result in index out of bound error.

list_of_airlines=["AI", "SJ", "JA", "EM", "AA"]

Indices of **list_of_airlines**

List of airlines	AI	SJ	JA	EM	AA
Index	0	1	2	3	4
Negative Index	-5	-4	-3	-2	-1

Indices may also be considered negative as shown above. This is normally used to count from right.

Check 4: To fetch the second last airline in the list, we can write list_of_airlines[-2].
This is equivalent to list_of_airlines[len(list_of_airlines)-2].

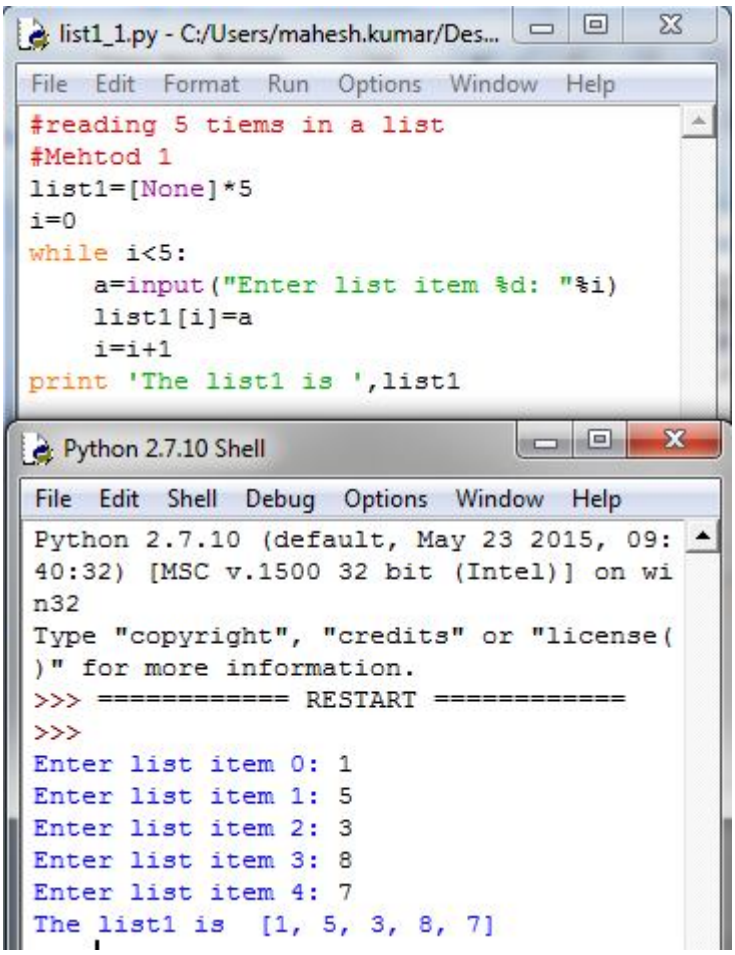
Negative indices can also be used for slicing.
For example: list_of_airlines[-4:-1] will give us the same output as list_of_airlines[1:4]

It can store heterogeneous data sample_list=["Mark",5,"Jack",9, "Chan",5]

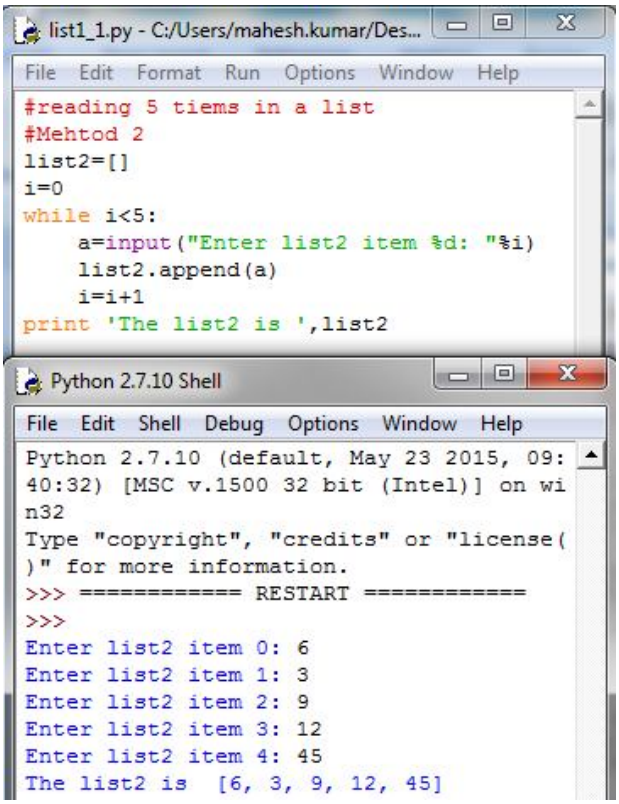
Creating a list:

Creating an empty list	sample_list=[]	
Creating a list with known size and known elements	sample_list1=["Mark",5,"Jack",9, "Chan",5] sample_list2= ["Mark","Jack", "Chan"]	List can store both homogeneous and heterogeneous elements
Creating a list with known size and unknown elements	sample_list=[None]*5	None denotes an unknown value in Python
Length of the list	len(sample_list)	Displays the number of elements in the list

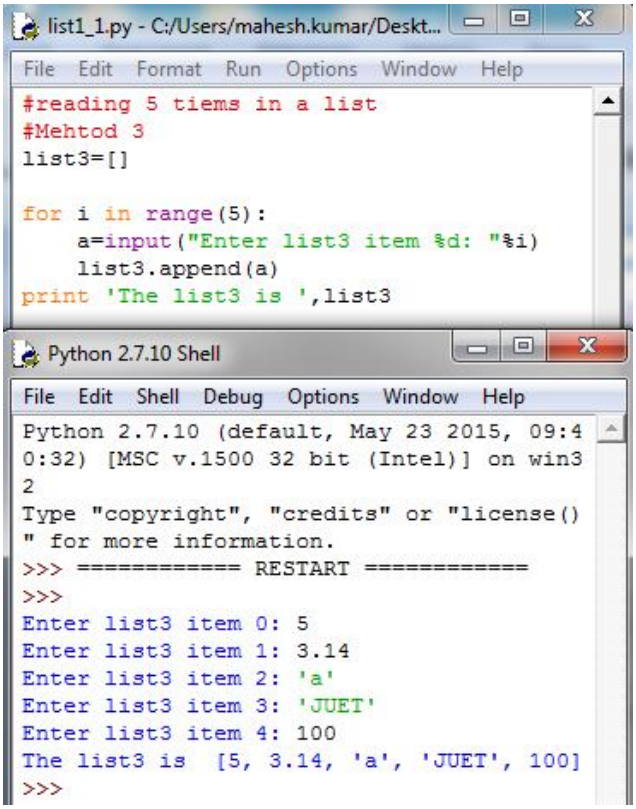
Check 5: input list at run time



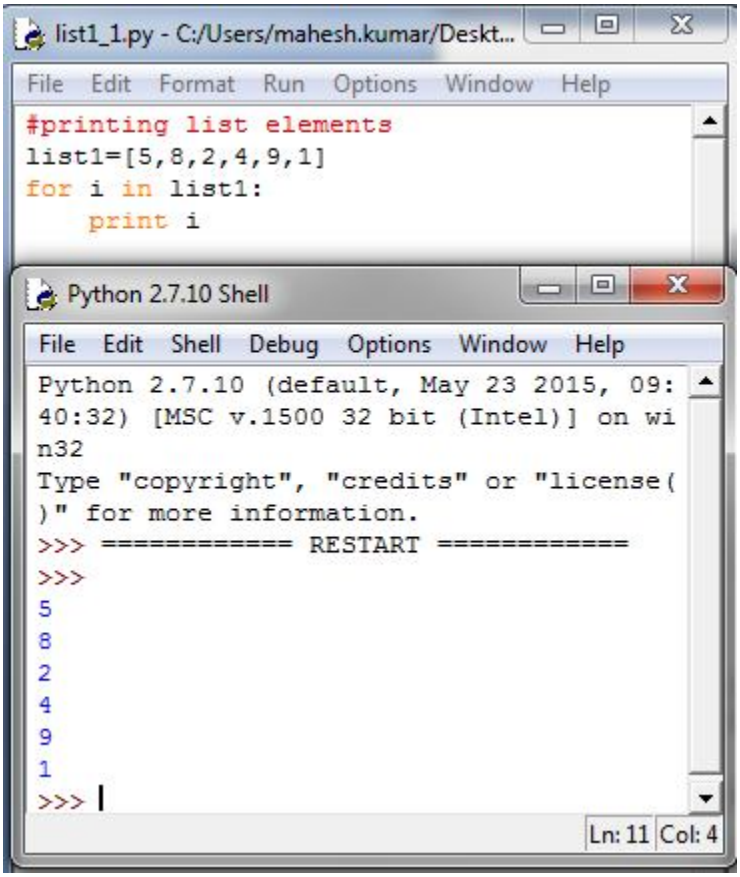
Check 6: input list at run time



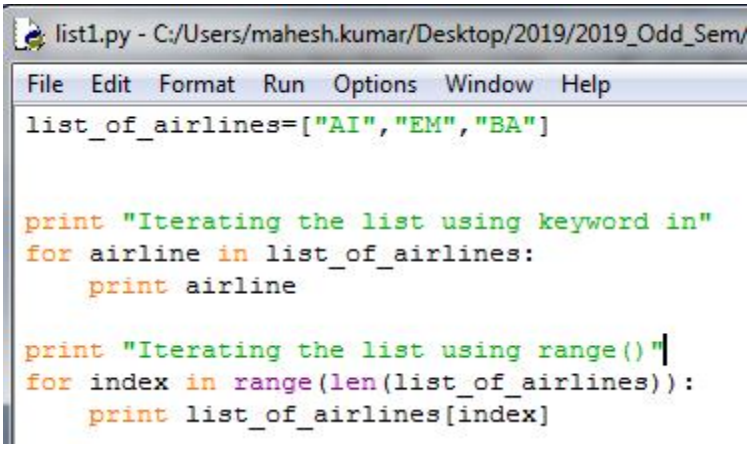
Check 7: input list using for loop



Check 8: Printing List elements



Check 9:



Prob1: Read elements into a list and show output by printing each elements

Sample Input	Expected Output
1,5,7,8,3.14, 4, 5	1 5 7 8 3.14 4 5
1,[2,3],4,5,6	1 2 3 4 5 6
1,2,[3,4,5],[6,7]	1 2 3 4 5 6 7
[(1,2,3)]	1 2 3

Prob2: Given a list of integer values. Write a python program to check whether it contains same number in adjacent position. Display the count of such adjacent occurrences.

Sample Input	Expected Output
[1,1,5,100,-20,-20,6,0,0]	3
[10,20,30,40,30,20]	0
[1,2,2,3,4,4,4,10]	3

Prob3: Read a list from the user of arbitrary length, and show following:

- print the list entered by the user
- print least value and largest value
- swap positions of least and largest element
- print the list after swapping positions.

Prob4: Read two lists **enrol** and **name** from the user of 10 elements. The list **enrol** contains enrolment numbers and list **name** contains names of the students. Now read enrolment number from the user to search in the list, if the enrolment is found in the list then print enrolment and name of the student. Otherwise print -1.