Check if element exists in list in Python

Difficulty Level : Easy • Last Updated : 22 Feb, 2023

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The list is an important container in python as it stores elements of all the data types as a collection. Knowledge of certain list operations is necessary for day-day programming. This article discusses the Fastest way to check if a value exists in a list or not using Python.

Example:

```
list = test_list = [1, 6, 3, 5, 3, 4]
Input: 3  # Check if 3 exist or not.
Output: True
```

```
Input: 7  # Check if 7 exist or not.
Output: False
```

Method 1: Naive Method

In the Naive method, one easily uses a loop that iterates through all the elements to check the existence of the target element. This is the simplest way to check the existence of the element in the list. Python is the most conventional way to check if an element exists in a list or not. This particular way returns True if an element exists in the list and False if the element does not exist in the list. The list need not be sorted to practice this approach of checking.

Example 1: Check if an element exists in the list using the if-else statement

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Got It !

Python3

```
# python code to Check if element exists in list or not

lst=[ 1, 6, 3, 5, 3, 4 ]
#checking if element 7 is present
# in the given list or not
i=7
# if element present then return
# exist otherwise not exist
if i in lst:
    print("exist")
else:
    print("not exist")


    # this code is contributed by gangarajula laxmi
```

Output

```
not exist
```

Time Complexity: O(1)

Auxiliary Space: O(n), where n is total number of elements.

Example 2: Check if an element exists in the list using a loop

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Python3

```python
# Initializing list
test_list = [1, 6, 3, 5, 3, 4]

# Checking if 4 exists in list
for i in test_list:
    if(i == 4):
        print("Element Exists")
```

Output:

```
Element Exists
```

Time Complexity: O(n)

Auxiliary Space: O(1)

Example 3: Check if an element exists in the list using "in"

Python3

```python
# Initializing list
test_list = [1, 6, 3, 5, 3, 4]

# Checking if 4 exists in list
# using in
if (4 in test_list):
    print("Element Exists")
```

Output:

```
Element Exists
```

Example 4: Check if an element exists in the list using any() function

Python3

```python
# Initializing list
test_list = [1, 6, 3, 5, 3, 4]
```

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Output:

```
Does string contain any list element : True
```

Method 2: Check if an element exists in the list using count()

We can use the in-built python List method, count(), to check if the passed element exists in the List. If the passed element exists in the List, the count() method will show the number of times it occurs in the entire list. If it is a non-zero positive number, it means an element exists in the List. Demonstrating to check the existence of elements in the list using count().

Python3

```
# Initializing list
test_list = [10, 15, 20, 7, 46, 2808]

print("Checking if 15 exists in list")

# number of times element exists in list
exist_count = test_list.count(15)

# checking if it is more than 0
if exist_count > 0:
    print("Yes, 15 exists in list")
else:
    print("No, 15 does not exists in list")
```

Output:

```
Checking if 15 exists in list
Yes, 15 exists in list
```

Method 3: Check if an element exists in the list using sort + bisect_left + set

Converting the list into the set and then using *it* can possibly be more efficient than only using it. But having efficiency for a plus also has certain negatives. One among them is that the order of the list is not preserved, and if you opt to take a new list for it, you would require to use extra space. Another drawback is that set disallows duplicity and hence duplicate elements would be removed from the original list. In the conventional binary search way of

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element ordering. bisect_left() returns the first occurrence of the element to be found and has worked similarly to lower_bound() in C++ STL.

> ***Note:*** *The bisect function will only state the position of where to insert the element but not the details about if the element is present or not.*

Demonstrating to check existence of element in list using set() + in and sort() + bisect_left()

Python3

```
from bisect import bisect_left ,bisect

# Initializing list
test_list_set = [ 1, 6, 3, 5, 3, 4 ]
test_list_bisect = [ 1, 6, 3, 5, 3, 4 ]

print("Checking if 4 exists in list ( using set() + in) : ")

# Checking if 4 exists in list
# using set() + in
test_list_set = set(test_list_set)
if 4 in test_list_set :
    print ("Element Exists")

print("Checking if 4 exists in list ( using sort() + bisect_left() ) : ")

# Checking if 4 exists in list
# using sort() + bisect_left()
test_list_bisect.sort()
if bisect_left(test_list_bisect, 4)!=bisect(test_list_bisect, 4):
    print ("Element Exists")
else:
    print("Element doesnt exist")
```

Output:

```
Checking if 4 exists in list ( using set() + in) :
Element Exists
Checking if 4 exists in list ( using sort() + bisect_left() ) :
Element Exists
```

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Method 4: Using find() method

Python3

```
# Initializing list
test_list = [10, 15, 20, 7, 46, 2808]

print("Checking if 15 exists in list")
x=list(map(str,test_list))
y="-".join(x)

if y.find("15") !=-1:
    print("Yes, 15 exists in list")
else:
    print("No, 15 does not exists in list")
```

Output

```
Checking if 15 exists in list
Yes, 15 exists in list
```

Method 5: Using Counter() function

Below is the implementation:

Python3

```
from collections import Counter

test_list = [10, 15, 20, 7, 46, 2808]

# Calculating frequencies
frequency = Counter(test_list)

# If the element has frequency greater than 0
# then it exists else it doesn't exist
if(frequency[15] > 0):
    print("Yes, 15 exists in list")
else:
    print("No, 15 does not exists in list")

# This code is contributed by vikkycirus
```

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```
Yes, 15 exists in list
```

Method 6: Using try-except block

One additional approach to check if an element exists in a list is to use the index() method. This method returns the index of the first occurrence of the element in the list, or throws a ValueError if the element is not present in the list. To use this method, you can wrap the call to index() in a try-except block to catch the ValueError and return False if it occurs:

Python3

```python
def element_exists(lst, element):
  # Try to get the index of the element in the list
  try:
    lst.index(element)
  # If the element is found, return True
    return True
  # If a ValueError is raised, the element is not in the list
  except ValueError:
  # Return False in this case
    return False

#Test the function
test_list = [1, 6, 3, 5, 3, 4]

print(element_exists(test_list, 3)) # prints True
print(element_exists(test_list, 7)) # prints False
#This code is contributed by Edula Vinay Kumar Reddy
```

Output

```
True
False
```

Time complexity: O(n), where n is the length of the list. The index() method iterates through the list to find the element, so the time complexity is linear.

Auxiliary Space: O(1). This approach does not require any additional space.

Approach 7: Using Set

Time complexity: O(1) average case as checking for an element in a set takes constant time

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on average.

Space complexity: O(n) as it creates a new set from the list to store its elements.

Python3

```python
def check_element_exists_set(lst, target):
  return target in set(lst)

#Example
test_list = [1, 6, 3, 5, 3, 4]
target = 3
print("Exists using set: ", check_element_exists_set(test_list, target))
```

Output

```
Exists using set:  True
```

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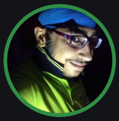

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