Related Articles

Save for later

Difference between std::set and std::list

Difficulty Level : Basic ● Last Updated : 17 Nov, 2020

Set: Set is a type of associative container which stores elements in a sorted manner. All the elements of a set are unique and can not be modified but can be removed or inserted. It is a template of Standard Template Library or STL in C++.

Syntax:

```
set <data_type> s
```

Below is the program to illustrate the same:

C++

```cpp
// C++ program to demonstrate the
// working of set in c++
#include <bits/stdc++.h>
using namespace std;

// Driver code
int main()
{
    // Declaring a set
    set<int> s;

    // Inserting elements
    // into the set
    s.insert(10);
    s.insert(5);
    s.insert(15);
    s.insert(1);

    // Insert the duplicate elements
    s.insert(1);

    cout << "Elements in set:\n";

    // Print the element stored in set
    return 0;
}
```

Output:

```
Elements in set:
1 5 10 15
```

List: The list is a type of sequence container in which elements are stored in non-contiguous memory allocation. It is implemented as a doubly-linked list so it provides iteration in both directions.

Syntax:

```
list <data_type> l;
```

Below is the program to illustrate the same:

C++

```
// C++ program to demonstrate the
// working of list in cpp
#include <bits/stdc++.h>
using namespace std;

// Driver code
int main()
{
    // Inserting elements
    // in the list
    l.push_back(10);
    l.push_back(15);
    l.push_back(5);
    l.push_back(1);
    l.push_back(1);
    l.push_back(10);

    cout << "Elements in list:\n";

    // Print the elements of list
    for (auto it : l)
        cout << it << " ";

    return 0;
}
```

Output:

```
Elements in list:
10 15 5 1 1 10
```

Below is the tabular difference between the set and list:

As seen in the above codes, after inserting the values {10, 5, 15, 1, 1} in the set, the elements get sorted and duplicate is not stored in the set. Hence, it is unordered. But in the case of the list the elements are exactly stored in the order they were inserted and duplicate is also stored. Hence, it is ordered.

S.No.	**Set**	**List**
1	Set is sorted and unordered	The list is unsorted and ordered
2	Insertion cannot be done at the desired position	Insertion can be done at any position using the insert() function
3	Takes logarithmic time for searching an element.	Takes linear time for searching for an element.
4	Elements are unique.	May contain duplicate elements.
5	Can contain only one null value.	Can contain more than one null value.

6	Insertion and deletion take logarithmic time.	Insertion and deletion take constant time.
7	Implemented in HashSet, LinkedHashSet, and TreeSet.	Implemented in ArrayList and LinkedList.

Like 0

Previous

Vector of Maps in C++ with Examples

Next

Difference between std::set vs std::vector in C++ STL

RECOMMENDED ARTICLES

Page : 1 2 3

01 Difference between Difference Engine and Analytical Engine
08, Jan 21

02 Difference between Stop and Wait protocol and Sliding Window protocol
17, May 19

03 Similarities and Difference between Java and C++
29, Jun 20

04 Difference between Yaacomo and and XAP
20, Jun 20

05 Difference between VoIP and and POTS
11, Aug 20

06 Difference and Similarities between PHP and C
29, May 20

07 Difference between Time Tracking and Time and Attendance Software
05, Nov 20

08 Difference Between Single and Double Quotes in Shell Script and Linux
14, Nov 20

Article Contributed By :

aktmishra143
@aktmishra143

Vote for difficulty

Current difficulty : Basic

Easy Normal Medium Hard Expert

Article Tags : cpp-list, cpp-set, HashSet, Linked Lists, Articles, Difference Between

Improve Article Report Issue

Writing code in comment? Please use ide.geeksforgeeks.org, generate link and share the link here.

Load Comments

GeeksforGeeks

5th Floor, A-118,
Sector-136, Noida, Uttar Pradesh - 201305

feedback@geeksforgeeks.org

Company

About Us

Careers

Privacy Policy

Learn

Algorithms

Data Structures

Languages

Practice

Courses

Company-wise

Topic-wise

How to begin?

Contribute

Write an Article

Write Interview Experience

Internships

Videos