set lower_bound() function in C++ STL

Difficulty Level : Easy • Last Updated : 21 Oct, 2020

The **set::lower_bound()** is a built-in function in C++ STL which returns an iterator pointing to the element in the container which is equivalent to k passed in the parameter. In case k is not present in the set container, the function returns an iterator pointing to the immediate next element which is just greater than k. If the key passed in the parameter exceeds the maximum value in the container, then the iterator returned points to the element beyond last element in the set container that is set.end().

Syntax:

```
set_name.lower_bound(key)
```

Parameters: This function accepts a single mandatory parameter *key* which specifies the element whose lower_bound is to be returned.

Return Value: The function returns an iterator pointing to the element in the container which is equivalent to k passed in the parameter. In case k is not present in the set container, the function returns an iterator pointing to the immediate next element which is just greater than k. If the key passed in the parameter exceeds the maximum value in the container, then the iterator returned is equivalent to s.end() (A special iterator points beyond the last element).

Below program illustrate the above function:

CPP

```
// CPP program to demonstrate the
// set::lower_bound() function
#include <bits/stdc++.h>
using namespace std;
```

```
    // Function to insert elements
    // in the set container
    s.insert(1);
    s.insert(4);
    s.insert(2);
    s.insert(5);
    s.insert(6);

    cout << "The set elements are: ";
    for (auto it = s.begin(); it != s.end(); it++)
        cout << *it << " ";

    // when 2 is present
    auto it = s.lower_bound(2);
    if (it != s.end()) {
        cout << "\nThe lower bound of key 2 is ";
        cout << (*it) << endl;
    }
    else
        cout << "The element entered is larger than the "
                "greatest element in the set"
             << endl;
    // when 3 is not present
    // points to next greater after 3
    it = s.lower_bound(3);
    if (it != s.end()) {
        cout << "The lower bound of key 3 is ";
        cout << (*it) << endl;
    }
    else
        cout << "The element entered is larger than the "
                "greatest element in the set"
             << endl;

    // when 8 exceeds the max element in set
    it = s.lower_bound(8);
    if (it != s.end()) {
        cout << "The lower bound of key 8 is ";
        cout << (*it) << endl;
    }
    else
        cout << "The element is larger than the greatest "
                "element in the set"
             << endl;

    return 0;
}
```

Output:

```
The element is larger than the greatest element in the set
```

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