C++ Programming

STL Unordered Set

Mostafa S. Ibrahim
Teaching, Training and Coaching since more than a decade!

Artificial Intelligence & Computer Vision Researcher
PhD from Simon Fraser University - Canada
Bachelor / Msc from Cairo University - Egypt
Ex-(Software Engineer / ICPC World Finalist)

Unordered Set

```cpp
#include<iostream>
#include<unordered_set>
#include<set>
#include<algorithm>     // find
using namespace std;

int main() {
    unordered_set<int> s1 {20, 10, 20, 5, 30};

    s1.insert(7);
    s1.insert(0);

    for (auto v : s1)
        cout << v << " ";
    cout << "\n";   // 0 7 20 10 5 30 : removed duplicates

    // If container has a method use it,
    //      as it considers the internal representation
    auto it1 = s1.find(20); // FAST
    cout << *it1 << "\n";
    //*it = 20;     // CAN'T change

    // generic algorithms iterate in generic/same way.
    //      No idea about internal representation
    auto it2 = find(s1.begin(), s1.end(), 20);  // SLOW
    cout << *it2 << "\n";

    cout<<s1.size()<<"\n";  // 6
    s1.erase(s1.begin());
    cout<<s1.size()<<"\n";  // 5
```

Unordered Set (common actually)

```
int arr[] {20, 10, 20, 5, 30, 7, 0};
unordered_set<int> s2(arr, arr+3);

s1.swap(s2); // swapping operation: 0 7 30 5 10 20

set<int> sorteds(s1.begin(), s1.end()); // 5 7 10 20 30
//////////////////////////////////////////
// No reverse iterator
// unordered_multiset: same but allows duplicates
// In general most operations are fast
// Based on HashTable.
// In datastructures course you learn how to use efficiently
```

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."