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/* The following code example is taken from the book
 * "The C++ Standard Library – A Tutorial and Reference, 2nd Edition"
 * by Nicolai M. Josuttis, Addison-Wesley, 2012
 *
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 */
#include <iostream>
#include <set>
#include <algorithm>
#include <iterator>
using namespace std;

int main()
{
    // type of the collection:
    // - no duplicates
    // - elements are integral values
    // - descending order
    set<int, greater<int>> coll1;

    // insert elements in random order using different member functions
    coll1.insert({4, 3, 5, 1, 6, 2});
    coll1.insert(5);

    // print all elements
    for (int elem : coll1) {
        cout << elem << ' ';
    }
    cout << endl;

    // insert 4 again and process return value
    auto status = coll1.insert(4);
    if (status.second) {
        cout << "4 inserted as element "
             << distance(coll1.begin(), status.first) + 1 << endl;
    }
    else {
        cout << "4 already exists" << endl;
    }

    // assign elements to another set with ascending order
    set<int> coll2(coll1.cbegin(), coll1.cend());

    // print all elements of the copy using stream iterators
    copy (coll2.cbegin(), coll2.cend(),
          ostream_iterator<int>(cout, " "));
    cout << endl;

    // remove all elements up to element with value 3
    coll2.erase (coll2.begin(), coll2.find(3));

    // remove all elements with value 5

```

```
int num;
num = coll2.erase (5);
cout << num << " element(s) removed" << endl;

// print all elements
copy (coll2.cbegin(), coll2.cend(),
      ostream_iterator<int>(cout, " "));
cout << endl;
}
```