

C++ Standard Template Library Quick Reference

| Headers | | <vector> | <deque> | <list> | <set> | <map> |
|---|---|---|---|--|---|----------------|
| ne = num elements passed to function n = num elements in container | | (back insert) (forward, reversible, rand access) | (back/front insert) (forward, reversible, rand access) | (back/front insert) (forward, reversible) | (forward) (multiset for duplicate values) | map, multimap |
| capacity | Constructor default: c; fill: c(ne, elem, alloc) range: c(iltA, iltB) copy: c(const c&) | vector | deque | list | set | map |
| | destructor | ~vector | ~deque | ~list | ~set | ~map |
| | operator= | operator= | operator= | operator= | operator= | operator= |
| | size | O(1) | O(1) | O(1) | O(1) | O(1) |
| | max_size [sys limit] | O(1) | O(1) | O(1) | O(1) | O(1) |
| | empty | O(1) | O(1) | O(1) | O(1) | O(1) |
| | capacity | O(1) | | | | |
| | reserve(space) Does not change size | O(n) | | | | |
| | resize(n, elem=def) Changes size | O(n) | O(n) | O(n) | | |
| | | | | | | |
| element access | front | O(1) | O(1) | O(1) | | |
| | back | O(1) | O(1) | O(1) | | |
| | operator[i] | O(1) | O(1) | | | O(log n) (map) |
| | at(i) | O(1) | O(1) | | | |
| Modifiers (emplace C++11) | assign(iterA, iterB): | O(n) | O(ne) | O(ne) | | |
| | range | O(n) | O(ne) | O(ne) | | |
| | assign(ne, val): fill | | | | | |

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|-----------------|----------------------------|---------|---------|--------------------------------------|-----------------------------|
| list operations | insert(iter, val) | $O(n)$ | $O(1)$ | $O(1)$ | pair<it, bool> |
| | insert(iter, ne, val) | | $O(ne)$ | $O(ne)$ | $O(1)$ |
| | insert(iter, inItA, inItB) | | $O(ne)$ | $O(ne)$ | insert(val): $O(ne \log n)$ |
| | | | | iter | |
| | | | | insert(iter, val): $O(1)$ | |
| | | | | inItA | |
| | | | | insert(inItA, inItB): $O(ne \log n)$ | |
| | erase(iter) | $O(n)$ | $O(1)$ | $O(1)$ | $O(1)$ |
| | erase(iterA, iterB) | $O(n)$ | $O(ne)$ | $O(ne)$ | $O(ne)$ |
| | size_t erase(val) | | | $O(\log n)$ | $O(\log n)$ |
| | clear | $O(n)$ | $O(n)$ | $O(n)$ | $O(n)$ |
| | swap(container &) | $O(1)$ | $O(1)$ | $O(1)$ | $O(1)$ |
| | push_back(val) | $O(1)$ | $O(1)$ | $O(1)$ | |
| | pop_back | $O(1)$ | $O(1)$ | $O(1)$ | |
| | push_front(val) | | $O(1)$ | $O(1)$ | |
| | pop_front | | $O(1)$ | $O(1)$ | |
| | emplace(iter, ne, ele) | $O(n)$ | $O(ne)$ | $O(ne)$ | $O(\log n)$ |
| | emplace_back(elem) | $O(1)$ | $O(1)$ | $O(1)$ | $O(\log n)$ |
| | emplace_front(elem) | | $O(1)$ | $O(1)$ | |
| | remove(val) | | | $O(n)$ | |
| | remove_if(predicate) | | | $O(n)$ | |
| | unique([binaryPred]) | | | $O(n - 1)$ | |
| | merge(list &m, [cmp]) | | | $O(n + m - 1)$ | |
| | reverse | | | $O(n)$ | |
| | sort([cmp]) | | | $O(n \log n)$ | |

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|---------------------------------|---|----------|---------|-----------------------|----------|----------|
| Associate containers operations | splice(iter, list &newLst) splice(iter, list &, inIter) splice(it, list&, inItA, inItB) | | | O(1) O(1) O(ne) | | |
| | count | | | | O(log n) | O(log n) |
| | find | | | | O(log n) | O(log n) |
| | equal_range | | | | O(log n) | O(log n) |
| | lower_bound | | | | O(log n) | O(log n) |
| | upper_bound | | | | O(log n) | O(log n) |