## Lists

C++ supports the linked list data structure and provides additional methods to improve the list's functionality.



std::list is a doubled linked list. std::list needs the header <list>.

Although it has a similar interface to std::vector or std::deque, std::list is
quite different from both of them. That's due to its structure.

std::list makes the following points unique:

- It supports no random access.
- Accessing an arbitrary element is slow because we might have to iterate through the whole list.
- Adding or removing an element is fast, if the iterator points to the right place.
- If we add or remove an element, the iterator remains valid.

Because of its special structure, std::list has a few special methods.

## Special methods of std::list#

Method	Description
lis.merge(c)	Merges the sorted list c into the sorted list lis, so that lis
	romaine corted

```
lis.merge(c, op)
                                  Merges the sorted list c into the
                                    sorted list lis, so that lis
                                remains sorted. Uses op as sorting
                                              criteria.
                                  Removes all elements from lis
   lis.remove(val)
                                          with value val.
                                  Removes all elements from lis,
 lis.remove_if(pre)
                                    fulfilling the predicate pre.
                                 Splits the elements in lis before
                                  pos . The elements can be single
lis.splice(pos, ...)
                                     elements, ranges or lists.
                                Removes adjacent element with the
    lis.unique()
                                            same value.
                                    Removes adjacent elements,
   lis.unique(pre)
                                    fulfilling the predicate pre.
```

Here are a few of the methods in a code snippet.

```
list1.splice(std::find(list1.begin(), list1.end(), 15), list2);
for (auto 1: list1) std::cout << 1 << " ";
    // 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

return 0;
}</pre>
```

