

std::queue

Defined in header <queue>

```
template<
    class T,
    class Container = std::deque<T>
> class queue;
```

The `std::queue` class is a container adaptor that gives the programmer the functionality of a queue – specifically, a FIFO (first-in, first-out) data structure.

The class template acts as a wrapper to the underlying container – only a specific set of functions is provided. The queue pushes the elements on the back of the underlying container and pops them from the front.

Template parameters

- T** – The type of the stored elements. The behavior is undefined if T is not the same type as Container::value_type. (since C++17)
- Container** – The type of the underlying container to use to store the elements. The container must satisfy the requirements of *SequenceContainer*. Additionally, it must provide the following functions with the usual semantics:
- `back()`
 - `front()`
 - `push_back()`
 - `pop_front()`

The standard containers `std::deque` and `std::list` satisfy these requirements.

Member types

Member type	Definition
<code>container_type</code>	<code>Container</code>
<code>value_type</code>	<code>Container::value_type</code>
<code>size_type</code>	<code>Container::size_type</code>
<code>reference</code>	<code>Container::reference</code>
<code>const_reference</code>	<code>Container::const_reference</code>

Member functions

(constructor)	constructs the queue (public member function)
(destructor)	destructs the queue (public member function)
operator=	assigns values to the container adaptor (public member function)

Element access

front	access the first element (public member function)
back	access the last element (public member function)

Capacity

empty	checks whether the underlying container is empty (public member function)
size	returns the number of elements (public member function)

Modifiers

push	inserts element at the end
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	(public member function)
emplace (C++11)	constructs element in-place at the end (public member function)
pop	removes the first element (public member function)
swap (C++11)	swaps the contents (public member function)

Member objects

Container c	the underlying container (protected member object)
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Non-member functions

operator== operator!= operator< operator<= operator> operator>= operator<=> (C++20)	lexicographically compares the values in the queue (function template)
std::swap (std::queue) (C++11)	specializes the std::swap algorithm (function template)

Helper classes

std::uses_allocator <std::queue> (C++11)	specializes the std::uses_allocator type trait (class template specialization)
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Deduction guides(since C++17)

See also

deque	double-ended queue (class template)
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