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Queue in Standard Template Library (STL)

Queues are a type of container adaptors which operate in a first in first out (FIFO) type of arrangement. Elements are inserted at the back (end) and are deleted from the front.

The functions supported by queue are :

1. empty() – Returns whether the queue is empty.
2. size() – Returns the size of the queue.
3. queue::swap() in C++ STL: Exchange the contents of two queues but the queues must be of same type, although sizes may differ.
4. queue::emplace() in C++ STL: Insert a new element into the queue container, the new element is added to the end of the queue.
5. queue::front() and queue::back() in C++ STL– **front()** function returns a reference to the first element of the queue. **back()** function returns a reference to the last element of the queue.
6. push(g) and pop() – **push()** function adds the element 'g' at the end of the queue. **pop()** function deletes the first element of the queue.

```
// CPP code to illustrate
// Queue in Standard Template Library (STL)
#include <iostream>
#include <queue>

using namespace std;

void showq(queue <int> gq)
{
    queue <int> g = gq;
    while (!g.empty())
    {
        cout << '\t' << g.front();
        g.pop();
    }
    cout << '\n';
}

int main()
{
    queue <int> gquiz;
    gquiz.push(10);
    gquiz.push(20);
    gquiz.push(30);

    cout << "The queue gquiz is : ";
    showq(gquiz);

    cout << "\ngquiz.size() : " << gquiz.size();
    cout << "\ngquiz.front() : " << gquiz.front();
    cout << "\ngquiz.back() : " << gquiz.back();

    cout << "\ngquiz.pop() : ";
    gquiz.pop();
    showq(gquiz);

    return 0;
}
```

Output:

```
The queue gquiz is :      10      20      30

gquiz.size() : 3
gquiz.front() : 10
gquiz.back() : 30
gquiz.pop() :     20     30
```

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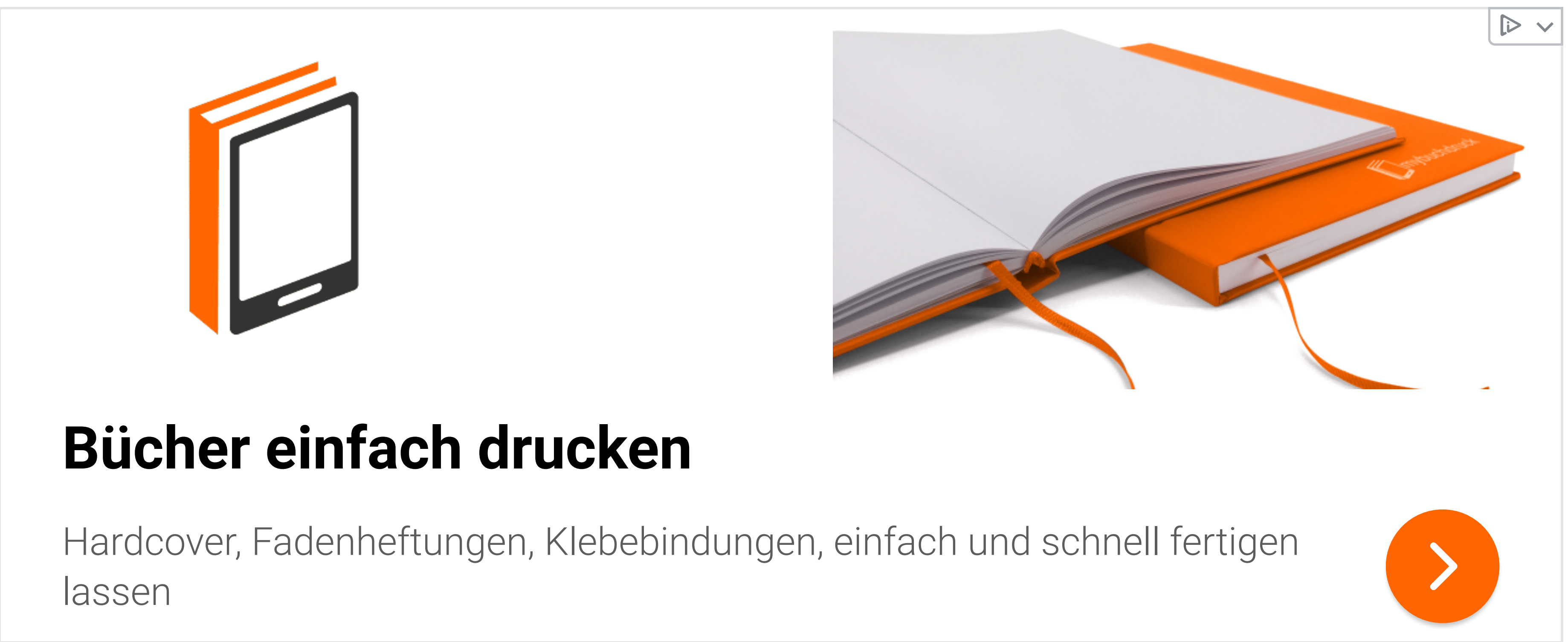

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