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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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 * warranty, and with no claim as to its suitability for any purpose.
 */
#include <vector>
#include <iostream>
#include <string>
#include <algorithm>
#include <iterator>
using namespace std;

int main()
{
    // create empty vector for strings
    vector<string> sentence;

    // reserve memory for five elements to avoid reallocation
    sentence.reserve(5);

    // append some elements
    sentence.push_back("Hello,");
    sentence.insert(sentence.end(),{"how","are","you","?"});

    // print elements separated with spaces
    copy (sentence.cbegin(), sentence.cend(),
          ostream_iterator<string>(cout," "));
    cout << endl;

    // print "technical data"
    cout << "  max_size(): " << sentence.max_size() << endl;
    cout << "  size():     " << sentence.size()     << endl;
    cout << "  capacity(): " << sentence.capacity() << endl;

    // swap second and fourth element
    swap (sentence[1], sentence[3]);

    // insert element "always" before element "?"
    sentence.insert (find(sentence.begin(),sentence.end(),"?"),
                     "always");

    // assign "!" to the last element
    sentence.back() = "!";

    // print elements separated with spaces
    copy (sentence.cbegin(), sentence.cend(),
          ostream_iterator<string>(cout," "));
    cout << endl;

    // print some "technical data" again
    cout << "  size():     " << sentence.size()     << endl;
```

```
    cout << "  capacity(): " << sentence.capacity() << endl;

    // delete last two elements
    sentence.pop_back();
    sentence.pop_back();
    // shrink capacity (since C++11)
    sentence.shrink_to_fit();

    // print some "technical data" again
    cout << "  size():     " << sentence.size()     << endl;
    cout << "  capacity(): " << sentence.capacity() << endl;
}
```