

vector 10-2.cpp

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1 //=====
2 // Name      : vector.cpp
3 // Author    : Paul Hrycewicz
4 // Version   :
5 // Copyright : Your copyright notice
6 // Description : Hello World in C++, Ansi-style
7 //=====
8
9 #include <iostream>
10 #include <vector>
11 using namespace std;
12
13 int main() {
14     vector<int> x;
15     x.push_back(3);
16     x.push_back(4);
17     x.push_back(3);
18     x.push_back(4);
19     x.push_back(3);
20     x.push_back(5);
21 // accessing vector elements via subscript
22     int i;
23     i = x[0];
24     i = i + x[1];
25 // no bounds checking, just like with a standard array
26 // x [55555] = 0;          // this will probably blow up
27 // but we can use the at function to check
28     i = x.at(1);
29     i = x.at(5);
30 // i = x.at(6);          // this will throw an exception
31
32 // iterator for vectors of type int
33     vector<int>::iterator vi;
34     vi = x.begin();      // points iterator at beginning
35 // loop to iterate through the vector
36     for (vi=x.begin(); vi != x.end(); vi++)
37     {
38         cout << " value " << *vi << endl;
39     }
40 // loop to iterate through the vector, and to carry an element
41 // counter through the loop with us
42     int count;
43     for (count = 0, vi=x.begin(); vi != x.end(); vi++, count++)
44     {
45         cout << "vector element " << count << " value " << *vi << endl;
46     }
47 // manipulate the vector iterator as a pointer
48     vi = x.begin();      // point at beginning
49     vi++;                // increment and decrement
50     vi--;
51     vi++;
52     x.insert (vi,6);      // insert an element with value 6 in front of where
53                          // the iterator points
54
55 // can i get to the 47th element? (if there was one)
56     vi = x.begin();
57     advance(vi,47);      // iterator now points to 47th
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58
59 // can i find the element with value n and insert a new element before?
60     i=14;                // value to look for
61     int j = 48;          // new element to insert
62     for (vi=x.begin(); (vi!=x.end() && *vi != i); vi++)
63     {
64         continue;        // keep looping until an end condition met
65     }
66     x.insert(vi,j);       // insert before that point
67                          // if not found, insets at end
68
69     for(auto vi : x)      // range-based for loop to iterate through the vector
70                          // notice no dereference of the iterator when using
71                          // this technique
72     {
73         cout << "in range-based for loop. element " << vi << endl;
74     }
75
76     x.clear();            // destroys all elements
77
78     return 0;
79 }
80
```