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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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 */
#include <iostream>
#include <valarray>
using namespace std;

// print valarray as two-dimensional array
template <typename T>
void printValarray (const valarray<T>& va, int num)
{
    for (int i=0; i<va.size()/num; i++) {
        for (int j=0; j<num; j++) {
            cout << va[i*num+j] << ' ';
        }
        cout << endl;
    }
    cout << endl;
}

int main()
{
    // create valarray for 12 elements
    valarray<double> va(12);

    // initialize valarray by values 1.01, 2.02, ... 12.12
    for (int i=0; i<12; i++) {
        va[i] = (i+1) * 1.01;
    }
    printValarray(va, 4);

    // create array of indexes
    // - note: element type has to be size_t
    valarray<size_t> idx(4);
    idx[0] = 8;
    idx[1] = 0;
    idx[2] = 3;
    idx[3] = 7;

    // use array of indexes to print the ninth, first, fourth, and eighth
    // elements
    printValarray(valarray<double>(va[idx]), 4);

    // change the first and fourth elements and print them again indirectly
    va[0] = 11.11;
    va[3] = 44.44;
    printValarray(valarray<double>(va[idx]), 4);

    // now select the second, third, sixth, and ninth elements

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// and assign 99 to them
idx[0] = 1;
idx[1] = 2;
idx[2] = 5;
idx[3] = 8;
va[idx] = 99;

// print the whole valarray again
printValarray (va, 4);
}
```