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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 three-dimensional valarray line-by-line
template <typename T>
void printValarray3D (const valarray<T>& va, int dim1, int dim2)
{
    for (int i=0; i<va.size()/(dim1*dim2); ++i) {
        for (int j=0; j<dim2; ++j) {
            for (int k=0; k<dim1; ++k) {
                cout << va[i*dim1*dim2+j*dim1+k] << ' ';
            }
            cout << '\n';
        }
        cout << '\n';
    }
    cout << endl;
}

int main()
{
    // valarray with 24 elements
    // - two groups
    // - four rows
    // - three columns
    valarray<double> va(24);

    // fill valarray with values
    for (int i=0; i<24; i++) {
        va[i] = i;
    }

    // print valarray
    printValarray3D (va, 3, 4);

    // we need two two-dimensional subsets of three times 3 values
    // in two 12-element arrays
    size_t lengthvalues[] = { 2, 3 };
    size_t stridevalues[] = { 12, 3 };
    valarray<size_t> length(lengthvalues, 2);
    valarray<size_t> stride(stridevalues, 2);

    // assign the second column of the first three rows
    // to the first column of the first three rows
    va[gslice(0, length, stride)]

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        = valarray<double>(va[gslice(1, length, stride)]);  
// add and assign the third of the first three rows  
// to the first of the first three rows  
va[gslice(0, length, stride)]  
    += valarray<double>(va[gslice(2, length, stride)]);  
  
// print valarray  
printValarray3D (va, 3, 4);  
}
```