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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 <vector>
#include <algorithm>
using namespace std;

// function object to process the mean value
class MeanValue {
private:
    long num;    // number of elements
    long sum;    // sum of all element values
public:
    // constructor
    MeanValue () : num(0), sum(0) {
    }

    // "function call"
    // - process one more element of the sequence
    void operator() (int elem) {
        ++num;        // increment count
        sum += elem;   // add value
    }

    // return mean value
    double value () {
        return static_cast<double>(sum) / static_cast<double>(num);
    }
};

int main()
{
    vector<int> coll = { 1, 2, 3, 4, 5, 6, 7, 8 };

    // process and print mean value
    MeanValue mv = for_each (coll.begin(), coll.end(), // range
                             MeanValue());           // operation
    cout << "mean value: " << mv.value() << endl;
}

```