Working Boost c++

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Running Lab 5 – multiplication and sum of elements of matrix 1

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**Comparing to lab4, this lab’s code is faster for same 3X3 size of matrices. And lab 5 I was running more than one calculation actually.**

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**Code:**

#include <boost/numeric/ublas/matrix.hpp>

#include <boost/numeric/ublas/io.hpp>

#include <boost/numeric/ublas/operation.hpp>

#include <boost/numeric/ublas/vector.hpp>

#include <numeric>

#include <iostream>

#include <stdio.h>

#include <stdlib.h>

int main () {

    using namespace boost::numeric::ublas;

    matrix<double> m1 (3, 3);        //1atrix 1

    matrix<double> m2 (3, 3);        //matrix 2

    matrix<double> m3 (3, 3);        //matrix 3

    vector<double> v1 (m1.size1()); //vector 1

    vector<double> v2 (m1.size1()); //vector 2

    //initialize matrix 1

    for (unsigned i = 0; i < m1.size1 (); ++ i)

        for (unsigned j = 0; j < m1.size2 (); ++ j)

            m1 (i, j) = rand() % 100; //generating 3x3 matrix of random numbers

    std::cout << "Matrix 1: " << m1 << "\n" << std::endl;

    //initialize matrix 2

    for (unsigned i = 0; i < m2.size1 (); ++ i)

        for (unsigned j = 0; j < m2.size2 (); ++ j)

            m2 (i, j) = rand() % 100; //generating 3x3 matrix of random numbers

    std::cout << "Matrix 2: " << m2 << "\n" << std::endl;

    //multiply the 2 matrices

    axpy\_prod(m1, m2, m3);

    std::cout << "Matrix 1 \* Matrix 2: " << m3 << "\n" << std::endl;

    //initialize vector with 1.0

    for (unsigned i = 0; i < v1.size(); ++ i)

        v1(i) = 1.0;

    std::cout << "Vector 1: " << v1 << "\n" << std::endl;

    //product of matrix and vector

    v2 = prod(m1, v1);

    std::cout << "Matrix 1 \* Vector 1: " << v2 << "\n" << std::endl;

    std::cout << "Sum of elements of Matrix 1 (Vector 2): " << std::accumulate(v2.begin(), v2.end(),0) << "\n" << std::endl;

    return 0;

}