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/*Косейкина Анна Сергеевна, группа IO-91
      лаб№ 7. Потоки в библиотеке MPI
      F1: 1.15  d = MAX(A + B + C)
      F2: 2.27  MD = MA*MB*TRANS(MC)
      F3: 3.21  W = SORT(B*MD)*(MA*MB)*/
#include "stdafx.h"
#include "funcs.h"
#include <iostream>
#include <fstream>
#include <mpi.h>
using std::cout;
using std::endl;


    void Thread_F1(){
        std:: cout << "T1 started" << std::endl;
        int val = 1;
        int A[N], B[N], C[N];
            for(int i = 0; i < N; i++){
                A[i] = val;
                B[i] = val;
                C[i] = val;
        }
        F1(A, B, C);
        std:: cout << "T1 finished" << std::endl;
    }
    void Thread_F2(){
        std:: cout << "T2 started" << std::endl;
        int val = 1;
        Matrix MA, MB, MC;
        for(int i = 0; i < N; i++)
            for(int j = 0; j < N; j++){
                MA.mas[i][j]=1;
                MB.mas[i][j]=1;
                MC.mas[i][j]=1;
            }
        F2(MA, MB, MC);
        std:: cout << "T2 finished" << std::endl;
    }
    void Thread_F3(){
        std:: cout << "T3 started" << std::endl;
        int val = 1;
        Vector B;
        Matrix MA;
        Matrix MB;
        Matrix MD;
        for(int i = 0; i < N; i++){
            for(int j = 0; j < N; j++){
                MA.mas[i][j]=1;
                MB.mas[i][j]=1;
                MD.mas[i][j]=1;
            }
            B.mas[i] = val;
        }
        F3(MA, MB, MD, B);
        std:: cout << "T3 finished" << std::endl;
    }

    int _tmain(int argc, char* argv[])
    {
cout << "lab started"<< endl;
    #pragma comment(linker, "/STACK:599999999")
    MPI_Init(&argc, &argv);
    int rankOfProcess;
    MPI_Comm_rank(MPI_COMM_WORLD, &rankOfProcess);
    switch (rankOfProcess) {
        case 0: Thread_F1(); break;
        case 1: Thread_F2(); break;
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69          case 2: Thread_F3(); break;
70      }
71      MPI_Finalize();
72      cout << "lab finished"<< endl;
73      return 0;
74      }
75
```