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1  //-----
2  // 2A_Ping_pong_Ssend.cpp
3  //-----
4  #if (defined __linux__ ) || (defined _AIX) || (defined __APPLE__)
5      #include <sys/types.h>
6      #include <sys/stat.h>
7      #include <unistd.h>
8  #elif (defined _WIN32) || (defined _WIN64)
9      #include <conio.h>
10     #include <direct.h>
11 #endif
12
13 #include "mpi.h"
14 #include <iostream>
15 using namespace std;
16
17 int main(int argc, char* argv[])
18 {
19     int i, j, rank, size;
20     double time;
21     int array0[10], array1[10];
22
23     MPI_Init(&argc, &argv);
24     MPI_Barrier(MPI_COMM_WORLD);
25     time = -MPI_Wtime();
26
27     MPI_Comm_size(MPI_COMM_WORLD, &size);
28     MPI_Comm_rank(MPI_COMM_WORLD, &rank);
29     if (rank == 0) {
30         cout << "There are " << size << " processes\n";
31         std::fflush(stdout);
32     }
33     cout << "process " << rank << " is prepared" << endl;
34
35     for (i = 0; i < 10; i++)
36         array0[i] = 0;
37
38     if (rank == 0) {
39         cout << "\nprocess " << rank << " - Initial values of array0 are:" << endl;
40         for (i = 0; i < 10; i++)
41             cout << array0[i] << " ";
42     }
43     std::fflush(stdout);
44
45     for (i = 0; i < 1000000; i++) {
46         if (rank == 0) {
47             //         for (j = 0; j < 10; j++)
48             //             array0[j]--;
49             MPI_Ssend(array0, 10, MPI_INT, 1, 0, MPI_COMM_WORLD);
50
51             MPI_Recv(array0, 10, MPI_INT, 1, 1, MPI_COMM_WORLD, MPI_STATUS_IGNORE);
52         }
53         if (rank == 1) {
54             MPI_Recv(array1, 10, MPI_INT, 0, 0, MPI_COMM_WORLD, MPI_STATUS_IGNORE);
55
56             for (j = 0; j < 10; j++)
57                 array1[j]++;
58             MPI_Ssend(array1, 10, MPI_INT, 0, 1, MPI_COMM_WORLD);
59         }
60     }
61
62     if (rank == 0) {
63         cout << "\n\nprocess " << rank << " - Final values of array0 are:" << endl;
64         for (i = 0; i < 10; i++)
65             cout << array0[i] << " ";
66     }
67
68     time += MPI_Wtime();
69     if (rank == 0)
70         printf("\n\nTime = %10.6f s\n", time);
71
72     std::fflush(stdout);
73     MPI_Finalize();

```

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74  
75     return 0;  
76 }
```