PARALLEL PROCESSING AND ALGORITHMS
First Exam Fall 2014

Answer 2 of the following 3 questions for 10 points each, for a total of 20 points.

Q1.

- 5 points: Write the pseudocode of a message passing algorithm that implements the Linda coordination framework’s in and out operations.

- 5 points: Implement your algorithm using MPI. You can assume that the blackboard is simply an array of ints with indices into the array used as keys.

Q2.

- 5 points: Write the pseudocode of shared memory algorithm that implements the Linda coordination framework’s in and out operations.

- 5 points: Implement your algorithm using pthreads. You can assume that the blackboard is simply an array of ints with indices into the array used as keys.

Q3. Describe the execution of a 16-element bitonic sorting network on the input sequence

| 9, 1, 13, 2, 0, 10, 8, 3, 14, 6, 15, 12, 4, 5, 11, 7 |

- 5 points: sketch the algorithm and provide the steps for forming the build a single bitonic sequence from the given sequence

- 5 points: sketch the algorithm and provide the steps for the parallel sorting the bitonic sequence