Department of CSE, The University of Texas at Arlington

CSE5351/CSE4351: Parallel Processing
Spring 2022
Homework Assignment 5

Submit your solution in WORD file and your source code only, to your TA via email.

1. **PROBLEM DESCRIPTION**
   Implement the hot potato test (as taught in class and shown in lecture notes) for measuring communication time using MPI on the Stampede. Use N number of processors and S data size (your program should run with any N and any S). Use 100 repetition to increase accuracy.

   Measure the communication time, using N = 0, 4, 8 and 16 and S = 64 integers, and draw a curve. Repeat the same and draw another curve using N = 0, 4, 8 and 16 and S = 512 integers. Submit your source code and data curves.

2. **PROBLEM DESCRIPTION**
   Implement the program for measuring the all-to-all exchange collection communication operation (from the MPI library) using MPI on the Stampede. Use N number of processors and S data size (your program should run with any N and any S). Use 100 repetition to increase accuracy. Submit your source code and data curves.

   Measure the collective communication time, using N = 0, 4, 8 and 16 and S = 64 integers, and draw a curve. Repeat the same and draw another curve using N = 0, 4, 8 and 16 and S = 128 integers.

SUBMISSION: WHAT, WHEN & HOW
(1) Provide your answers on a word file and source code.
(2) This assignment is due on or before April 22, 2022
(3) Use MS Word to create your assignment and submit it to your TA via email.