Lab Session 10

Tutorial llnl
MPI The complete Reference

Home exercises

1. **[10p]** Find the formulas for the algorithms reduce/scan/broadcast. The formulas should be built from the point of view of a process. What does each process receive and from whom? What does each process send and to whom?
2. **[10p]** Using the formulas, implement efficient broadcast with send and recv.

Lab Exercises

1. **[10p]** Implement reduction in MPI, by hand, without using MPI_Reduction.
2. **[10p]** Implement scan in MPI, by hand.
   - Do not use MPI_Bcast. Use only MPI_Send and MPI_Recv
3. **[20p]** Start from polynomialFunction.c and parallelize it in the using a pipeline.
4. **[20p]** Start from sort.c and implement merge-passing compare and exchange in the using a pipeline.
5. **[20p]** Start from sort.c and implement parallel Rank sort.
   - P is much smaller than N
   - A master process will collect the results.