CS 5334/4390 Spring 2015
Shirley Moore, Instructor
Lab 4
Due by midnight March 4, 2015

Concurrent Programming with Cilk

For this lab, you will write and analyze a concurrent program that you will write in Cilk to do recursive mergesort.

1. First write a serial recursive mergesort program in C or C++. Recursive mergesort divides a list into two parts, recursively calls mergesort on each part, and then merges the two resulting lists in order. The recursion stops when the base case is reached. Compile and run your program and test that it works correctly. Try to find the size for the base case that gives the fastest runtime.

2. Draw the binary tree that represents the recursive calls, using the notation shown in the video for lecture 5.2. Determine T_1 and T_∞.

3. Convert your program to a recursive Cilk program. Compile and run your program on a processor that can support at least four parallel threads. Compare the runtime with that of your serial version. Compare the runtime with the theoretically predicted runtime.