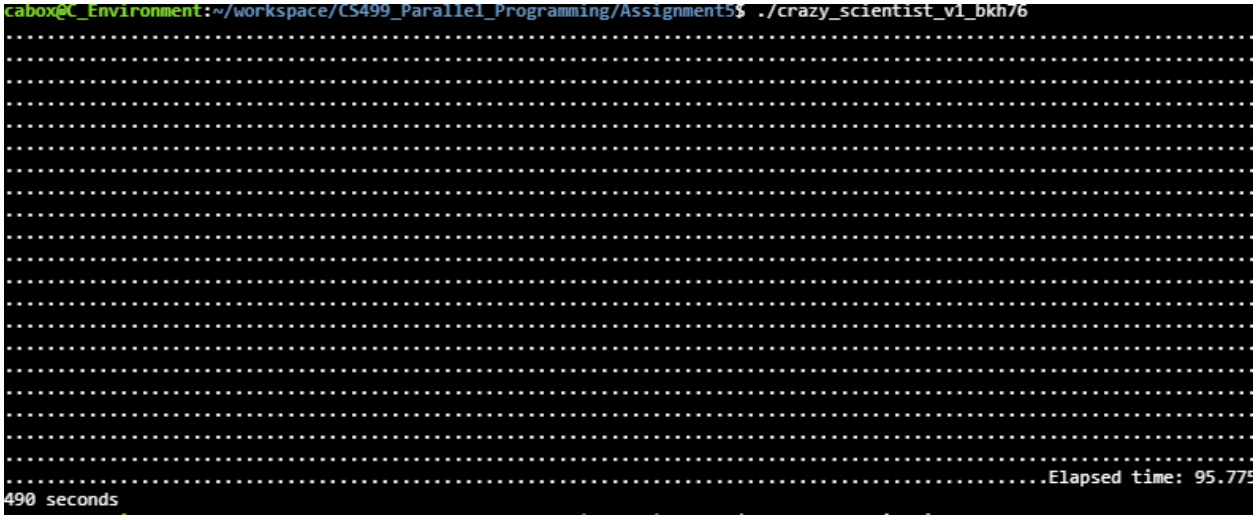
Brandon Horner
Michael Gowanlock
CS499: Parallel Programming
4 November 2019

Assignment 5: Programming with PThreads #2

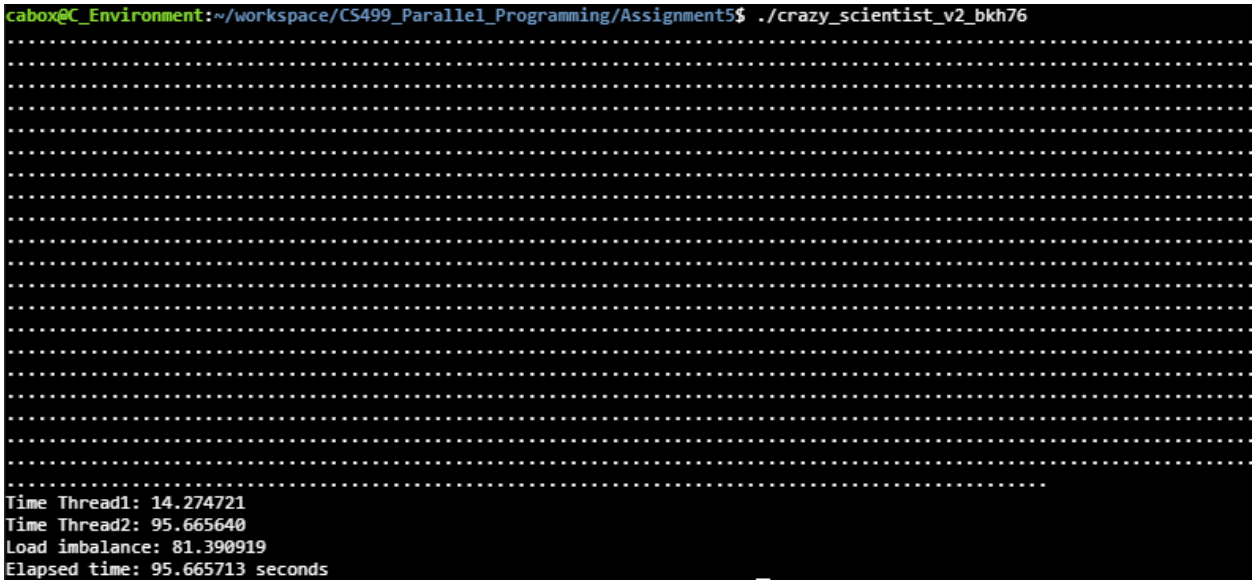
Question 1) The average time trial for the total elapsed time was 95.6900504 seconds
Example output:



Question 2) Averages

Thread 1	Thread 2	Load Imbalance	Elapsed Time
14.3394027	95.9341549	81.4947519	95.9341877

For this question I used sections to split up the work between the two threads. One section contained iterations 0-24 and the second section contained iterations 25-50.
Example output:



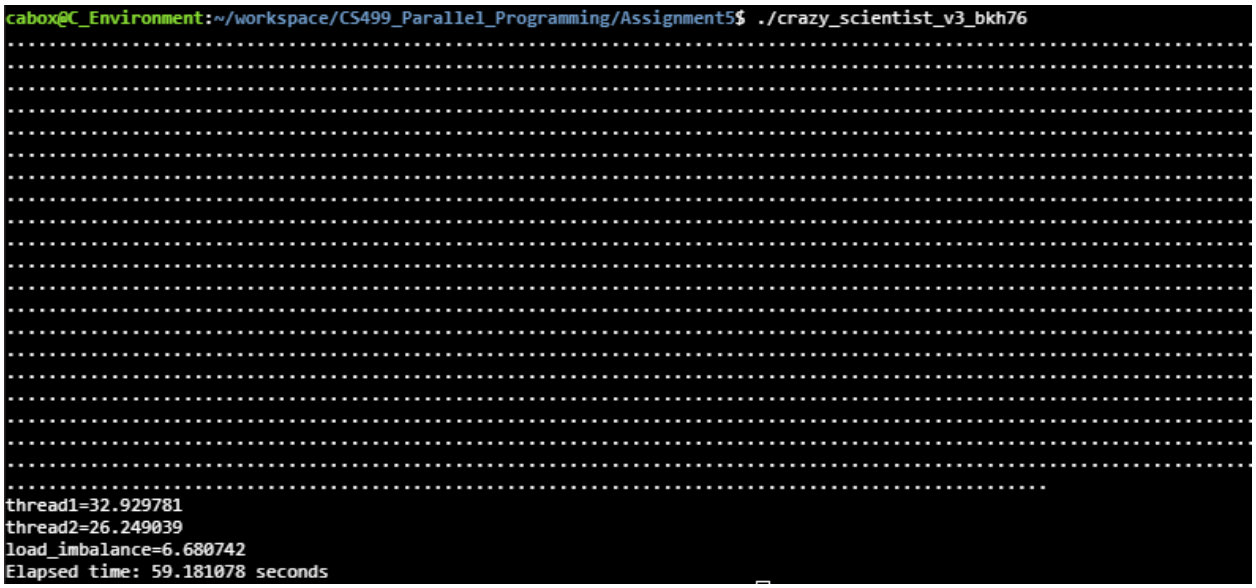
Question 3) For this question, I tried to use a single thread to create [SIZE] tasks for 2 threads to calculate as they become available. However this did not work as expected. The threads do not run in parallel, resulting in an elapsed time equal to the total time of thread one plus the total time of thread two. In other words, I believe they are running sequentially based on the averages. However, if these threads were to run in parallel, I believe the load imbalance would be similar.

The lower load imbalance than in question 2 is likely due to the fact that not all of the short computation time are handled by one thread. In question 2, the thread handling the first 0-24 iterations dealt with fast calculations, whereas the thread handling the 24-50 iterations dealt with long, slow calculations. In question 3, we trade off every iteration, so they split the long and short computational work mostly evenly.

Averages

Thread 1	Thread 2	Load Imbalance	Elapsed Time
32.120682	26.400260	5.720423	58.498471

Example Output:



Question 4)
I was stuck on question 3, so I did not attempt to do question 4.