Homework #7

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1. Since the tally function increases count 5 times and the program is running on 8 threads that means the total number of the tally variable is 40. ***Total Increments = 8 threads × 5 increments/thread = 40 increments***
2. The worst-case scenario would involve the maximum overlap of the load and store operations, potentially leading to a situation where all threads load the initial value before any of them has completed the store operation after increment. In that case, the lowest possible value is 1.
3. Using Amdahl’s law:

Alternative A:

Alternative B:

***Alternative A provides a higher bound on the possible speed-up.***

Program name: omp\_test.c

**compile with command: gcc -fopenmp -o omp\_test omp\_test.c**

**run with command: ./omp\_test**

Program output:

Average time with 1 CPUs: 1676.308000 ms

Average time with 2 CPUs: 846.104600 ms

Average time with 4 CPUs: 425.187800 ms

Average time with 8 CPUs: 446.238800 ms

Average time with 16 CPUs: 431.864400 ms