**Homework 3**

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Problem 1:

A problem I believe threading helps solve is iterating over large quantities of data. The specific use case I imagine is combing through data in a file for data manipulation. My CSC 410 class has homework assignments that rely on particularly large dataset that we must parse through and analyze. By using multithreading, we can merge and manipulate the data exponentially faster. Another benefit of utilizing threading in this task is that it can work in tandem with multicore processing to further speed up and diversify the workload between reshaping the data and performing analysis on it.

Problem 2:

For this problem, the serial portion will take 16 nanoseconds, the remainder of the program is comprised of 896 operations that each take 1 nanosecond. There are 56 core that can be used to parallelize the program. This implies that the total processing time unaided would be 16 + 896, 912, S in Amdahl’s formula would then be equal to 16/912 or 1/57 and N will equal 56 in concordance with the given core count. After including the values in the formula, we are left with which evaluates to .

Problem 3:

A screenshot of a computer

Description automatically generated with medium confidence

The final line is my program handling EOF.