Programming Assignment 1, Part 3 Write Up

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Given $T = K \cdot N^p$ where T is the total solution time, K is a constant of proportionality, N is the size of the system and p is the factor we wish to determine, we can write the above equation as

$$\begin{aligned} T &= K \cdot N^P \\ \log(T) &= \log(K \cdot N^p) \\ \log(T) &= \log K + \log N^P \\ \log(T) &= \log K + p \log N \end{aligned}$$

where the last equation has a form similar to $y = mx + b$, but on a logarithmic scale. It follows that p is the slope of the data points in the plot for part 2. So in comparing the number of iterations to the system sizes, we conclude that $p \approx 10$.