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Analysis and Benchmarking of G-S

For our benchmarking of the Knights and Ladies problem, we ran each of the inputs of different sizes (ten inputs, one hundred, one thousand, five thousand) four times. We recorded these times and plotted the average of each on a graph and connected the points to show the curve. It's clear from the graph that the time complexity of our algorithm is O(n^2). Below you'll see the table we created and its corresponding graph (some numbers below are truncated to save space). The graph has the input size on the x-axis and the time it took to run on the y-axis. It meets our expectations because of the algorithm having to re-check knights it previously checked when they get divorced, so the larger the input size, the more knights it will be re-checking.

Input Size	Trial One (s)	Trial Two (s)	Trial Three (s)	Trial Four (s)	Average Time (s)
10	0.0019994	0.0089397	0.0099389	0.0039542	0.0062080
100	0.0588076	0.0538292	0.0538273	0.0578163	0.0560700
1000	0.6371610	0.6542475	0.6618021	0.6502445	0.6508637
5000	13.299639	13.142362	13.263788	13.141833	13.211905