

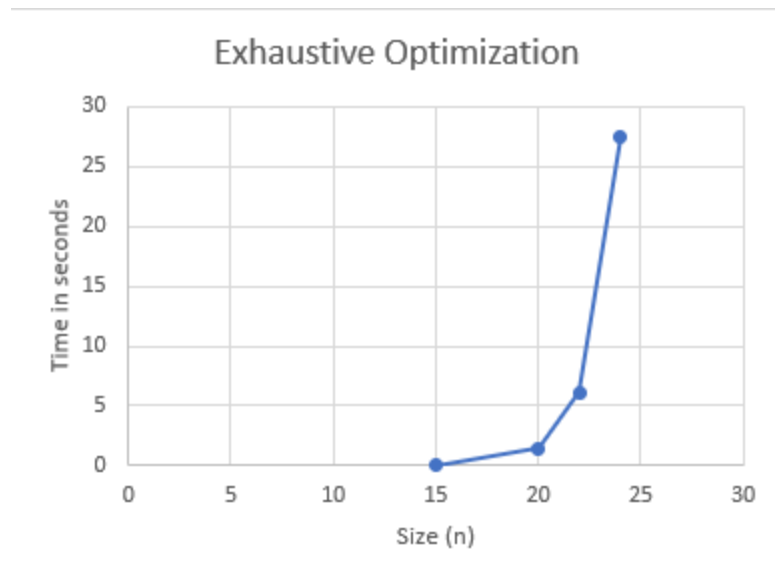
Project 4 Report

1. Your names, CSUF-supplied email address(es), and an indication that the submission is for project 4.
 - a. Alex Mulvaney (mulvaneya@csu.fullerton.edu)
 - b. Shane Spangenberg (sjs445@csu.fullerton.edu)

2. Three scatter plots:

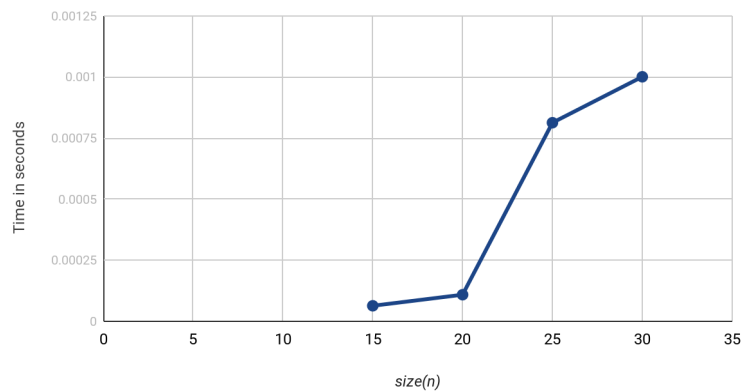
- a. One showing the time complexity of the exhaustive algorithm.

Exhaustive Optimization Time Complexity: $O(n * 2^n)$



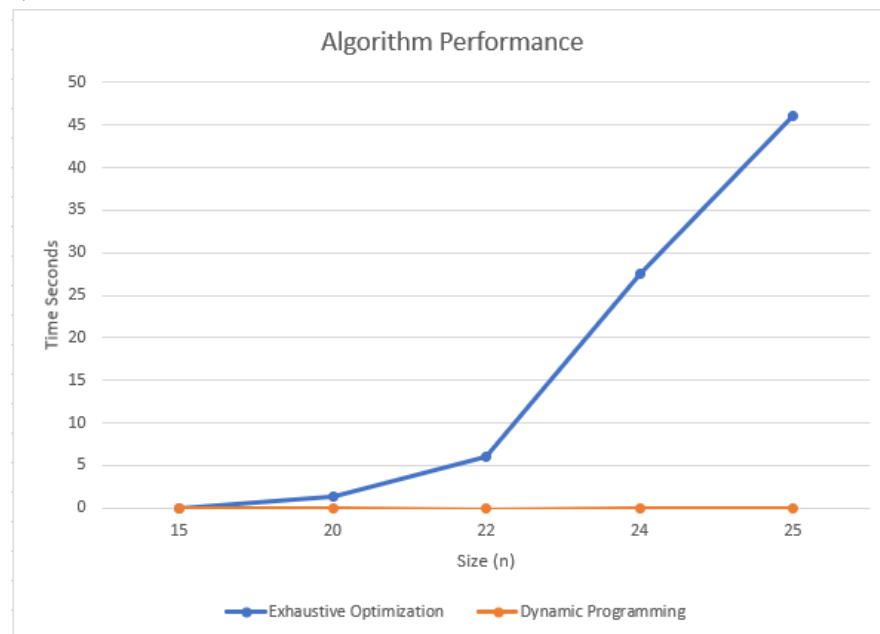
- b. **Dynamic Time Complexity: $O(n^2)$**

Dynamic



- c. One showing the performance of both algorithms together on the same plot. This will probably need to be zoomed-in since the exhaustive algorithm is so much slower than the

dynamic one.



3. Answers to the following questions, using complete sentences.
 - a. Are the fit lines on your scatter plots consistent with these efficiency classes? Justify your answer.
 - i. **For Exhaustive search we see that the time complexity of the graph fits the stated big-oh time complexity**
 - ii. **For Dynamic programming, we see that the graph is a little different from the stated big-oh time complexity. I believe it's because the algorithm is so quick it's hard to pick up exact millisecond times without bigger tests.**
 - b. Is this evidence consistent or inconsistent with the hypothesis stated on the first page? Justify your answer.
 - i. **Yes! The dynamic algorithm was much quicker than the exhaustive search algorithm**
 - c. Compare and contrast the difficulty you found in implementing the two algorithms. What was the most challenging part of implementing each algorithm. Overall, which implementation did you find harder, and why? Which algorithm implementation do you prefer?
 - i. **With the dynamic algo the error I encountered was making sure not to overwrite the first cell of the A vector. It was smooth sailing after that.**