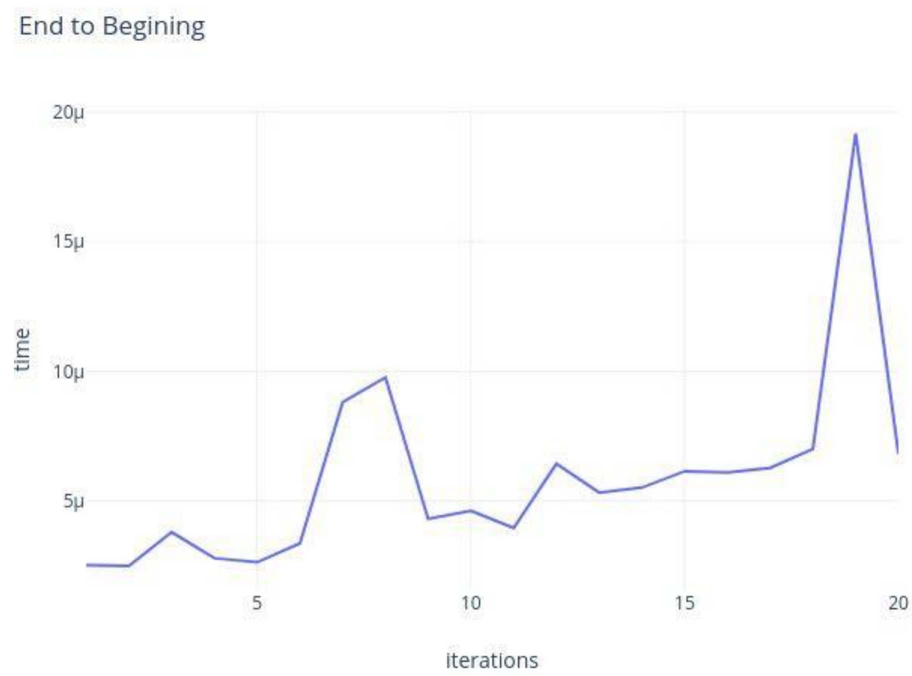
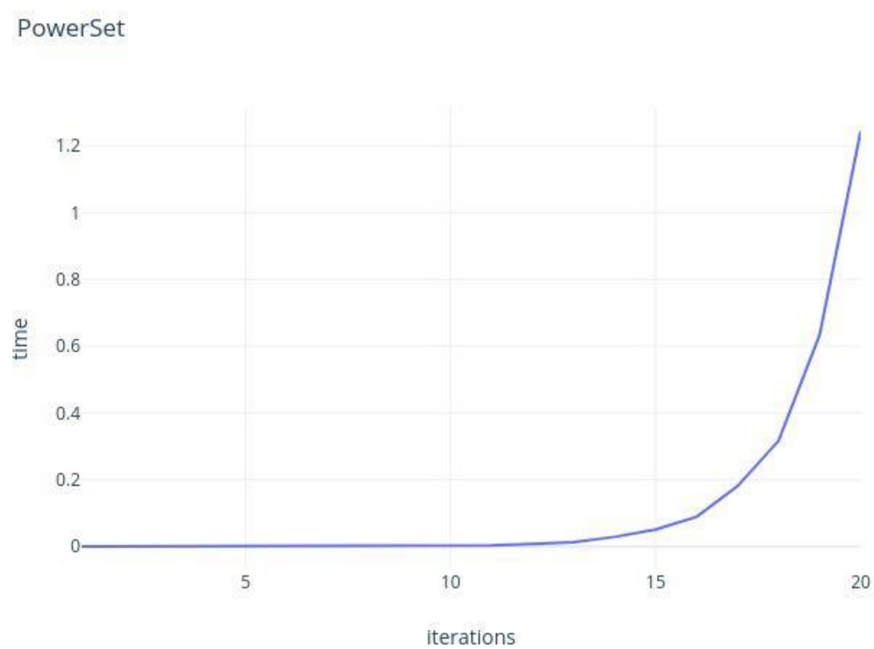
David Luu david042691@csu.fullerton.edu
Esteban Montelongo EstebanMontelongo@csu.fullerton.edu
Richard Stanley audstanley@csu.fullerton.edu

Time in Seconds:





a. Provide pseudocode for your two algorithms.

Psudocode is as a pdf on our github repo

b. What is the efficiency class of each of your algorithms, according to your own mathematical analysis? (You are not required to include all your math work, just state the classes you derived and proved.)

End To Begining: O(n^2 **), and Powerset is O(** $n\ 2^n$ **)**

c. Is there a noticeable difference in the running speed of the algorithms? Which is faster, and by how much? Does this surprise you?

Yes, End to Beginning is significantly faster run time versus the Powerset function.

d. Are the fit lines on your scatter plots consistent with these efficiency classes? Justify your answer.

Yes, End to Beginning's complexity slowly rises with an increase in iterations. There are some outliers in out plot, and the PowerSet function becomes significantly slower at a massively exponential rate.

e. Is this evidence consistent or inconsistent with the hypothesis stated on the first page? Justify your answer.

Yes, the first algorithm stays in the microsecond range on my laptop and would be a practical solution to solve the problem. The PowerSet function would not be practical for deployment in a production environment considering the solution can be calculated in a more simplified, efficient, and practical way. The PowerSet function is not an efficient solution.