

Ahmad El-Bobou

30 November 2018

Fall 2018

CS 162

Lab 10

Expectations

From my understand of how recursive functions work and based on what I've read from the textbook we've been using this semester, recursive functions are inefficient. How much exactly, I can't say. I wouldn't say that the difference would be too noticeable until you reach n of over 100. I'm going to measure in milliseconds because I think that will be most effective.

Data

N	Iterative in milliseconds	Recursive in milliseconds
1	0.029	0.006
3	0.032	0.008
5	0.031	0.01
10	0.03	0.01
20	0.034	0.123
25	0.03	1.214
28	0.035	4.629
30	0.035	13.123
50	0.034	140001.0
100	0.035	Program ran for more than 30 minutes and still didn't find the number.

Analysis

Interestingly, the data shows that the recursive function is quicker just before $n > 10$. I was not expecting this at all. But after $n > 10$, the recursive function gets exponentially less and less efficient. In cases where an recursive function has a deep depth, it should be avoided if possible.