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CS162

LAB 10 REPORT

Expectations

Recursion is usually much slower because all function calls must be stored in a stack to allow the return back to the caller functions, so I expect that the recursive method will take more time than the iterative method. As the number of cycles increase I think that the time difference will increase with the recursive method taking significantly longer.

Data

Table: Recursion vs Iterative data representation.

N	Recursive time (s)	Iterative time (s)
5	0.000023	0.000017
10	0.000020	0.000014
15	0.000035	0.000020
20	0.000168	0.000017
25	0.00153	0.000023
30	0.0152	0.000014
35	0.128	0.000019
40	1.45	0.000013

Analysis and Discussion

At lower values of N, the recursive and iterative methods take the same amount of time, but at around 15 cycles the recursive method begins to increase in time. As N increases by 5 the recursive method begins to increase in time by a magnitude after each increase. What was surprising to me was that the iterative method maintains the same time for all values of N. Out of curiosity I had wondered at what point the iterative method times begin to take longer, which wasn't until 100000 cycles. Overall it seems that recursion is very computationally intensive and the best times to use it is at lower cycles and for problems where recursion might be a more intuitive method to utilize.