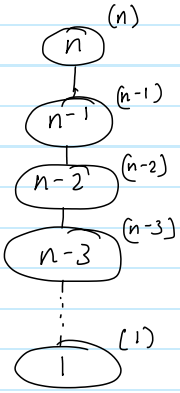
Sk10101_hw4_q1_q2

Tuesday, October 25, 2022 9:51 PM

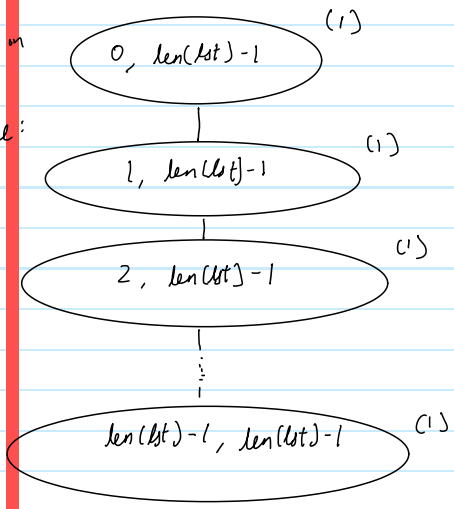
Q1)

2) (i) For sum_lst1(lst):

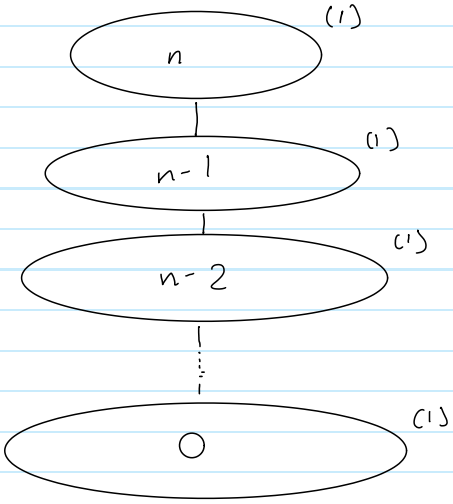


For sum_lst2(lst, low, high):

Based on TA's response:



Based on professor's approach:



(ii) For sum_lst1(lst):

For each recursion of the function over n items, we slice the list.

∴ Total cost = $n + n-1 + n-2 + \dots + 1 = \frac{n(n+1)}{2} = n^2 + \frac{n}{2} = O(n^2 + \frac{n}{2})$

$= \boxed{O(n^2)}$

For sum_lst2(lst):

For each recursion of the function, we have O(1) implementations over n times

∴ Total cost = $\boxed{O(n)}$

3) Since $n^2 > n$, sum_lst2(lst) will be asymptotically faster