Sean Strawmatt

Dr. Miller

3/28/2020

Exam 1 Corrections

B. This function is O (1), because it does not depend on n in any way. It is only going through two for loops that have a constant range that never changes. I got tripped up by the division in the function and thought that any time there was division, that the order would be O (log n).

C. This function is O(n^2) because there is an outer loop which takes O(n) times and then there are two more functions being called which are also O(n) times. The reason that it is O(n^2) and not O(n^3) is because the pop and insert functions happen in the same loop. If they took place in different loops, then the function would most likely be O(n^3). I got confused because I thought that the insert and pop would equal n^3, but I just was overthinking it too much.

D. This function is O(n^2) because we have an outer for loop which is O(n) times, and then an inner if statement which also takes O(n) times. So, since the if statement is nested within the for loop, the running time would be O(n^2). The reason why I thought it was O(n^3) was because I got confused on the el2 = el – 10. I thought that that would be O(n) times because we are doing that for each element in the list.

E. This function is O(n) because there is nothing here that is nested. Each of the steps that takes O(n) times are completely separate of each other. I got confused with this problem because I was thinking we were working with a list rather than a dictionary. So I thought that it would take a lot longer that it usually does.

2. A screenshot of a cell phone

Description automatically generatedA close up of a black background

Description automatically generated

For this question, I was completely underthinking how these methods worked. I was thinking about the append method the same way that I would do it in a linked list. I didn’t really understand how the doubly linked list worked and how each one of the nodes points to the next, and the previous. I didn’t think that you can’t just add it to the end, you need to make sure that your node points in the right direction. I happened to do the same exact thing with the search method because I was not thinking clearly. I kept thinking about just a linked list and that is why I did so terrible on this question. But these answers are correct because they take into consideration all of the moving pieces of a doubly linked list and how it works together.

2B. A screenshot of a cell phone

Description automatically generated

This function would be O(n^2) because there are so many function calls that take O(n) times. It would be O(n^2) because of the for loop. We are going from 0 to the length of the first string which could be 7 characters, or 700 characters, and that would take some time to go through each character and count it up.

A picture containing knife

Description automatically generated

This function would be better than O(n) because it is basically saying that if both of the strings are already sorted and equal to each other, then return true or false. This would be a much faster way using some of the python libraries that are already installed but this would be the fastest way. I had to look for a few examples but this one comes from geeks for geeks and it made the most sense. My issue with this problem, was that I did not really study up on the anagram portion of the assignments, so I really did not have any idea how to do it. I’ve gone through and programmed these questions a few times and re-wrote the code in a way that I understand it and it has prepared me for the next exam.