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2.

In the insertion function for the two parameters, first need to evaluate the position so that the items can be placed. And it does by comparing two value at the current position in an ascending order. However, for the one argument, in order to place the value to the position, we must compare it.

In sc.insert(Complex(40,10)); in order to work, we must explicitly define the operator >, which haven't defined

So, in the above function, we compare the complex value, but we haven't declared any comparison operator, which caused getting the error

3.(b)

Since we are using recursive, we must break the problem down into simpler sub problems. To access the subdomains(which is smaller), we requires the domain parameters. Also, For the given constrains, we must pass the string as a path to track of all the menu and submenus. Thus, in order to solve this problem recursively we need at least 2 parameter.

4. (a)

**ANS: is O(N3)**

The nested loop is three layers of deep. The outer loop performs N comparison between I and N. The second “for loop” also performs N2 between j and N. As we goes one more layer deeper, the third loop performs (N3 -N) between k and N as it doesn’t loop when i == j.

So our network complexity for the function bool isFriend[N][N] is O(N3).

4 (b)

**ANS: O(N3)**

The function bool isFrined[N][N] is made up of three different nested for loops. The very outer for loop performs N comparison between I and N. The second for loop performs N2 between j and I and third performs N3 between k and N.

5.

(a) **ANS: O(N2).**

There is two for loops which are separate. The time operation of visiting each item in the linked list for the first implementation of interleave is O(N2). Therefore, each outer for loop the inner function like insert goes N times, thus for N operations, the inner function goesN2 times. second loops complexity operation is also N2 as well because of insert function. So, the overall time complexity is O(N2).

5 (b) **ANS: O(N).**

It also has two for loops which are doing different things. first for loop performs N operation and second for loop performs N operations as well.

So, the time complexity for the second (b) interleave is better than first (a) interleave.