Complexity Analysis of the Class ScoreKeeper

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Below I will describe the worst case complexity of each method of ScoreKeeper individually.

I will refer to the amount of characters in a string as n

convert_to_number(input,position)

This method converts a char in the string input at a given position and returns a value that corresponds to the char.

The worst case complexity of this method is O(1) because this method looks up returns values based on conditional statements.

compute_number_of_throws(input)

This method goes through each character in a string and computes how many throws were made in a game. Therefore this loop runs n times and has a worst case complexity of O(n).

calculate(input)

Calculate starts off by calling compute_number_of_throws and then executes one loop that loops n times. Each iteration of the loop consists of checking multiple conditionals O(1) resulting in a worst case complexity of O(n).

Therefore, ignoring constants, this class has a total worst case complexity of O(n) + O(n) + O(1) = O(n)