

Question 7:

Balanced Brackets

Time - The time complexity is $O(n)$ where n is the length of the string S , because we have a for-loop which iterates through the string.

Space - The space complexity is $O(n)$ where n is the number of characters in the string, the stack will cause space to be $O(n)$ if multiple brackets needed to be added into the stack.

Decode String:

Time - $O(n)$ where n is the length of the input string, because we iterate through the input string in order to decode it.

Space - $O(n)$ because both the stack size and currentString depend on what the string we get for the input is, we might have to use more memory if n the length of the string is longer.

Infix to Postfix:

Time - $O(n)$ where n is the length of the string because we iterate through each character of the string exactly once for the main for-loop.

Space - $O(n)$ because I use a stack to store the operators, and in the worst case, the stack can store up to all n characters in the stack.