Data Structures (CS-215-ON)

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**Assignment 2.2 Coding a Stack to Test for Palindrome**

1. **Summary explaining how I thought through the problem of using a stack to accomplish the task.**

To accomplish the task, I need to think if I will be using words or numbers that represent the palindrome (resembles the same while reading them from backward), and then I will apply the LIFO/FILO stack linear structure.

Text, letter

Description automatically generated

1. **(5 Points) What is the essential operation in your code?**

The program iterates over the input string by running a loop from 1 to the length of the string and adds each character of the string to the stack using the **push() method.**

1. **(5 Points) What input determines how often the essential operation takes place?**

The loop until the stack is empty after removing the last character of the string.

1. **(5 Points) Express the number of times the essential operation occurs in terms of n. What does n represent?**

N represents the number of characters in the string.

1. **(5 Points) What is the computational complexity of the code in terms of Big O? Explain why.**

It is O(n) because it uses the same time for every element on the loop.

**5. (10) Points) Explain how a stack data structure differs from a bag data structure. Explain how you used the stack in your code to solve the palindrome problem.**

Bag Data Structure is more useful when we add an element, removing a part of testing if the bad is full or empty. However, the Stack can be used to look at the components on the top to compare them.