Datorstrukturer och algoritmer

Laboration 1 Part II

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**Table of Contents**:

* Problem specification
* User manual
* System description
* The Limits of the Solution
* Problems and reflections
* Bibliography

**Problem specification**

The difference in time between using two stacks or one stack and one queue to see which one comes out on top in the long run.

**User manual**

Since there are no other parameters than the palindrome. And which is given via code, there are really nothing to do except to start the executable (.exe).

**System description**

The palindrome check is put away in an overloaded boolean function called takes to arguments, which is either stack & stack or stack & queue. Where it considers the base cases, such as the string are of equal size or length is less than or equal to 1. then it compares the upcoming character by performing a pop from both lists.

In the stack & stack the second stack is reversed so that the function only needs to pop halfway to determine if it should return true.

**The Limits of the Solution**

The Palindromes needs to be added through code. Meaning the User requires access the source code. Which is too risk to give to a client.

**Problems and reflections**

To plan the outcome and not use trial and error and understand the order of the outputs. The conclusion to come of this is to manage the schedule better. To start on paper and when the concept is down to start with the code. And never the other way around.

Since I only ever check half of the string, I could skip pushing the second half of the string. Because it’s never used for the check.

**Test runs**

The times chosen are the quickest ones cause the other ones are pruned to have been affected by other processes. Meaning shortest time would be equivalent with least interference. And the slowest of time containing the most interference were to be disposed.

|  |  |  |
| --- | --- | --- |
| Palindrome check | Stack & stack (µs) | Stack & queue (µs) |
| 10-character | 1 | 2 |
| 100-character | 11 | 12 |
| 1,000-character | 109 | 116 |
| 10,000-character | 1,146 | 1,081 |

**Biliography**

Stack – a type of list that only excepts elements to be inserted and removed from the end of the list.

Queue – a type of list that only excepts elements to be inserted from the front and removed from the end of the list.

Palindrome – A piece of text that reads the same forwards and backwards, excluding any characters that are not from the alphabet.

Boolean – a data type that holds to values, true or false.

Function - separate piece of code that needs to be called to run. Can be called multiple times.

Parameters – what values need to come with the function call if required.

Arguments – The values that where sent to the function.