Data Structure and Algorithms
Assignment 2

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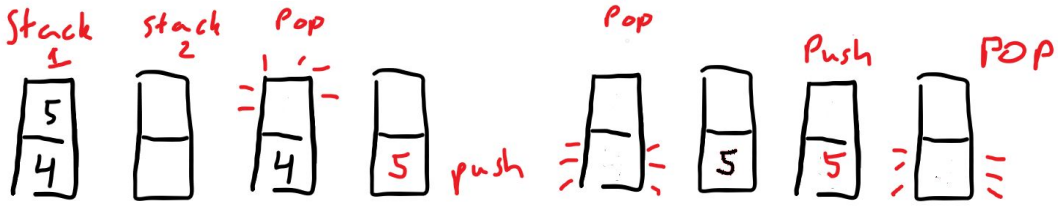
Question 1

Code in file

Question 2



Doing it like this would require a bit of extra operations and so running time.
Removing the front element (dequeuing) with two stack would require to pop all elements -1 and push all elements -1. Meaning that it would require N -1 operations of popping, N -1 operations of pushing and also popping stack 2, + N-1 = 3N . complexity of O (N)

Question 3

Code in RPN file

Question 4

Code in file

Complexity : O(n)

Question 5

Code in file

Complexity : O(n)

Question 6

Code in file

Complexity : O(n)

Question 7

Code in file

Complexity O(n)

Question 8

Complexities:

Insert() = O(1)
RemoveAt() = O(1)
remove() = O(1)
next() = O(1)

Question 9

Code in file

Question 10

Code in file

Question 11

The reason the code is not working is because the for loops iterator and the iterator of remove are out of sync and throws an exception which basically says”Cannot guarantee correctness”. To solve this we have to use our own iterator when we loop through the list and also when we remove from the list, to guarantee correctness.

Code in file

Question 12

Code in file
Complexity O(n) since every item is accessed once.

Question 13

Code in file
Complexity O(n) since every item is accessed once.

Question 14

Question 15

Code in file

Question 16

Code in file

Question 17

Code in file