

DSA Practical Test 1 19/12/2022 Time: 1hr

Question 1:

Write a function that takes a list sorted in non-decreasing order and deletes any duplicate nodes from the list. The list should only be traversed once.

For example if the linked list is 11->11->11->21->43->43->60 then removeDuplicates() should convert the list to 11->21->43->60.

Algorithm: Traverse the list from the head (or start) node. While traversing, compare each node with its next node. If the data of the next node is the same as the current node then delete the next node. Before we delete a node, we need to store the next pointer of the node

Implementation: Functions other than removeDuplicates() are just to create a linked list and test removeDuplicates().

Question 2:

Given a stack of integers, sort it in ascending order using another temporary stack.

Examples:

Input : [34, 3, 31, 98, 92, 23]

Output : [3, 23, 31, 34, 92, 98]

Input : [3, 5, 1, 4, 2, 8]

Output : [1, 2, 3, 4, 5, 8]

Algorithm:

i. Create a temporary stack say tmpStack.

ii. While input stack is NOT empty do this:

- Pop an element from input stack call it temp
- while temporary stack is NOT empty and top of temporary stack is greater than temp, pop from temporary stack and push it to the input stack
- push temp in temporary stack

iii. The sorted numbers are in tmpStack

Question 3:

Write a program to reverse the elements of a queue.