

Doubly and Circular linked list

Assignment Questions



1. Implement doubly linked list as a class with functions to insert a node and traverse the list in both forward and reverse direction.

2. Given the head of a doubly linked list, remove all the nodes from the linked list that have the value x stored in them. The first line of input contains n (the size of the linked list) and x. The second line of input contains the elements of the linked list.

INPUT

4

3 1 3 2 3

OUTPUT

1 2

3. Given the head of a doubly linked list which stores only binary values i.e. 1's and 0's. In the linked list make sure that between every 2 nodes containing value 1, there exist an even number of 0's. If the number of 0's is odd then insert a node with value 0 in between the two 1's. Assume that the first and the last node contains value 1.

The first line of input contains n, the size of the linked list. The second line of input contains the elements of the linked list.

INPUT

6

1 0 0 1 0 1

OUTPUT

1→0→0→1→0→0→1

INPUT

5

1 1 0 1 1

OUTPUT

1→1→0→0→1→1

4. You are given two non-empty doubly linked lists representing two non-negative integers, and each of their nodes contains a single digit. Subtract the two numbers and return the difference as a linked list. It is guaranteed that the first number will always be greater than the second number. The first line of input contains n and m, the size of the first and second linked list respectively. The second line of input contains the elements of the first linked list. The third line of input contains the elements of the second linked list.

Input

3 2

8 2 3

3 4

Output

7 8 9

5. Given the head of a doubly linked list. Divide the list into 2 parts- one containing odd values and the other containing even values. Return the array containing the two linked lists. The order of the nodes must be maintained. The first line of input contains n, the size of the linked list. The second line of input contains the elements of the linked list.

Input

6 1 10 2 5 3 4

Output: 1→5→3→NULL

10→2→4→NULL

6. Given the head of a doubly linked list and a pointer to a node present in the list. Delete the node from the list.

Input

1 3 2 4

Node = 2

Output: 1 → 3 → 4 → NULL

7. Given the head of a doubly linked list. Find the number of non-decreasing sublists. A sublist is a part of a linked list that can be created by removing some number of elements from the beginning of the list and the end of the list. Note: Each sublist should contain at least 2 members. The first line of input contains n, the size of the linked list. The second line of input contains the elements of the linked list.

Input

6

3 4 5 2 1 4

Output

3

Explanation: The 3 non-decreasing sublists are - 3 → 4 → 5, 4 → 5, 1 → 4

8. Given a sorted doubly linked list, find the number of triplets of distinct nodes such that their sum is equal to x.

The first line of input contains n, the size of the linked list, and the value of x.

The second line of input contains the elements of the linked list.

Input

5 4

1 2 1 1 2

Output

6

9. Implement the class of a circular linked list with "insert(int val)", and "print()" functions.

10. You are given a circular linked list in the form of a string. Each node of the linked list contains either a dot('.') or a star('*'). Your task is to make sure that between every consecutive dot there are not more than 2 stars. For this you can delete a star in between any 2 dots. Count the minimum number of stars that you will have to delete.

It is guaranteed that there is at least 1 dot character.

The first line of input contains a string s, the nodes of the linked list.

INPUT.

..*

OUTPUT

3

11. You are given a circular linked list in the form of a string. Each node contains either a dot('.') or a star('*'). Your task is to make sure that between every consecutive dot there are at least 2 stars. For this you can add a star in between any 2 dots. Count the minimum number of stars that you will have to add.

It is guaranteed that there is at least 1 dot character.

The first line of input contains a string s, the nodes of the linked list.

INPUT

.*.**.*

OUTPUT

3

12. You are given a circular linked list in the form of a string. Each node contains either a dot('.') or a star('*'). Your task is to make sure that between every consecutive dot there are exactly 2 stars. For this you can add or delete a star in between any 2 dots. Return the updated linked list.

It is guaranteed that there is at least 1 dot character.

The first line of input contains a string s, the nodes of the linked list.

INPUT

.*.***.

OUTPUT.→*→*→.→*→*→.→*→*

13. You are given a circular linked list with integer values. Your task is to find the sum of values present at opposite positions.

It is guaranteed that the size of the linked list is even.

The first line of input contains n, the size of the linked list.

The second line of input contains the elements of the linked list.

INPUT

6

1 2 3 7 8 9

OUTPUT



skills