DSA Sheet by Love Babbar - Ge | Reverse a linked list | Practice | G

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verse a linked list

Easy Accuracy: **73.11%** Submissions: **265K+** Points: **2**

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Given a linked list of **N** nodes. The task is to reverse this list.

Example 1:

Input:
LinkedList: 1->2->3->4->5->6
Output: 6 5 4 3 2 1
Explanation: After reversing the list, elements are 6->5->4->3->2->1.

Example 2:

Input:
LinkedList: 2->7->8->9->10

```
/* Linked List Node structure:

struct Node
{
    int data;
    struct Node *next;
}

*/

class Solution
{
    public:
    //Function to reverse a linked list.
    struct Node* reverseList(struct Node *head)
    {
        Node *prev = NULL;
        Node *temp;
        while(head){
            temp = head ->next;
            head ->next = prev;
            prev = head;
            head = temp;
        }
        return prev;
    }

```

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DSA Sheet by Love Babbar | Reverse a Linked List in grou | Detect Loop in linked list | P | Detect Loop in linked list | P | Remove loop in Linked List |

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move loop in Linked List

Medium Accuracy: **27.66%** Submissions: **404K+** Points: **4**

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Given a linked list of **N** nodes such that it may contain a loop.

A loop here means that the last node of the link list is connected to the node at position X(1-based index). If the link list does not have any loop, X=0.

Remove the loop from the linked list, if it is present, i.e. unlink the last node which is forming the loop.

Example 1:

Input:
N = 3
value[] = {1,3,4}

```
71  /*
72  structure of linked list node:
73
74  struct Node
75  {
76      int data;
77      Node* next;
78
79      Node(int val)
80      {
81          data = val;
82          next = NULL;
83      }
84  };
85
86  */
87
88  class Solution
89  {
90      public:
91      //Function to remove a loop in the linked list.
92      void removeLoop(Node* head)
93      {
94          Node *slow = head->next;
95          Node *fast = head->next->next;
96          while(slow != fast){
97              slow = slow->next;
```

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DSA Sheet by Love Babbar | Remove duplicates from an | Add two numbers represent | Intersection of two sorted L | Intersection Point in Y Shap

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tersection Point in Y Shaped Linked Lists

Medium Accuracy: **44.67%** Submissions: **241K+** Points: **4**

Given two singly linked lists of size **N** and **M,** write a program to get the point where two linked lists intersect each other.

Example 1:

Input:
LinkList1 = 3->6->9->common
LinkList2 = 10->common
common = 15->30->NULL
Output: 15
Explanation:

```
103
104
105
106
107 /* Linked List Node
108 struct Node {
109   int data;
110   struct Node *next;
111   Node(int x) {
112     data = x;
113     next = NULL;
114   }
115 }; */
116
117 //Function to find intersection point in Y shaped Linked Lists.
118 int intersectPoint(Node* head1, Node* head2)
119 {
120     int count1 = 0 , count2 = 0 , var = 0;
121     struct Node *first = head1;
122     struct Node *second = head2;
123     while(first){
124         count1++;
125         first = first->next;
126     }
127     while(second){
128         count2++;
129         second = second->next;
```

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DSA Sheet by Love Babbar - Ge | Check If Circular Linked List | Pra

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eck If Circular Linked List

Basic Accuracy: 54.26% Submissions: 136K+ Points: 1

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Given **head**, the head of a singly linked list, find if the linked list is circular or not. A linked list is called circular if it not NULL terminated and all nodes are connected in the form of a cycle. An empty linked list is considered as circular.

Note: The linked list does not contains any inner loop.

Example 1:

Input:
LinkedList: 1->2->3->4->5
(the first and last node is connected,
i.e. 5 --> 1)
Output: 1

```
58
59
60
61
62  /* Link list Node
63  struct Node
64  {
65      int data;
66      struct Node* next;
67
68      Node(int x){
69          data = x;
70          next = NULL;
71      }
72
73  };
74  */
75
76  /* Should return true if linked list is circular, else false */
77  bool isCircular(Node *head)
78  {
79      if(!head)
80      return 1;
81
82      struct Node *first = head;
83      while(first->next && first->next != head){
84          first = first->next;
```

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DSA Sheet by Love Babbar - Ge | Check if Linked List is Palindrom

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ıeck if Linked List is Palindrome

Medium Accuracy: **41.48%** Submissions: **281K+** Points: **4**

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Given a singly linked list of size **N** of integers. The task is to check if the given linked list is palindrome or not.

Example 1:

Input:
N = 3
value[] = {1,2,1}
Output: 1
Explanation: The given linked list is 1 2 1 , which is a palindrome and Hence, the output is 1.

Example 2:

```
21 /*
22 struct Node {
23   int data;
24   struct Node *next;
25   Node(int x) {
26     data = x;
27     next = NULL;
28   }
29 };
30 */
31
32 class Solution{
33   public:
34     //Function to check whether the list is palindrome.
35     bool isPalindrome(Node *head)
36     {
37         int count = 0;
38         struct Node *first = head;
39         while(first){
40             count++;
41             first = first->next;
42         }
43         first = head;
44         int n = (count+1) / 2;
45         struct Node *second = head;
46         while(n--){
47             second = second->next;
```

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DSA Sheet by Love Babbar - Ge | Clone a linked list with next and

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one a linked list with next and random pointer

Hard Accuracy: 64.8% Submissions: 62K+ Points: 8

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You are given a special linked list with **N** nodes where each node has a next pointer pointing to its next node. You are also given **M** random pointers, where you will be given **M** number of pairs denoting two nodes **a** and **b** **i.e. a->arb = b** (arb is pointer to random node).

Construct a copy of the given list. The copy should consist of exactly **N** new nodes, where each new node has its value set to the value of its corresponding original node. Both the next and random pointer of the new nodes should point to new nodes in the copied list such that the pointers in the original list and copied list represent the same list state. None of the pointers in the new list should point to nodes in the original list.

For example, if there are two nodes **X** and **Y** in the original list, where

```
21  class Solution
22  {
23      public:
24      Node *copyList(Node *head)
25      {
26          Node* clone = head;
27          Node* temp;
28          while(clone){
29              Node *temp = new Node(clone->data);
30              temp->next = clone->next;
31              clone->next = temp;
32              clone = clone->next->next;
33          }
34          clone = head;
35          while(clone){
36              if(clone->arb)
37              clone->next->arb = clone->arb->next;
38
39              clone = clone->next->next;
40          }
41          Node *header = head->next;
42          Node *first = head;
43          Node *second = head->next;
44          while(first){
45              first->next = second->next;
46              if(first->next){
47                  second->next = first->next->next;
```

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DSA Sheet by Love Babbar - Ge | Detect Loop in linked list | Pract

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Problem Solved Successfully

Test Cases Passed:	Total Points Scored:
254 /254	2 /2
Your Total Score:	**Total Time Taken:**
264 ↑	0.14
Your Accuracy:	**Attempts No.:**
100%	1

Next Suggested Problem(s):

Finding middle element in a linked list

C++ (g++ 5.4) Average Time: 20m Start Timer

```
35 struct Node
36 {
37     int data;
38     struct Node *next;
39     Node(int x) {
40         data = x;
41         next = NULL;
42     }
43
44 */
45 class Solution
46 {
47     public:
48     //Function to check if the linked list has a loop.
49     bool detectLoop(Node* head)
50     {
51         Node *first = head, *second = head;
52         while(second!=NULL && second->next!=NULL){
53             first = first->next;
54             second = second->next->next;
55
56             if(first==second)
57             return true;
58         }
59         return false;
60     }
61 };
62
```

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