Experiment- 2.1

Student Name: Jayant Sharma UID: 22BCS16668

Branch:BE-CSE Section/Group: NTPP 602-A

Semester:6TH Date of Performance:10/02/25

Subject Name: AP Lab-2 Subject Code: 22CSH-352

1. TITLE:

   Remove Duplicates from Sorted List

2. AIM: Given the head of a sorted linked list, delete all duplicates such that each element appears only once. Return the linked list sorted as well
3. Algorithm

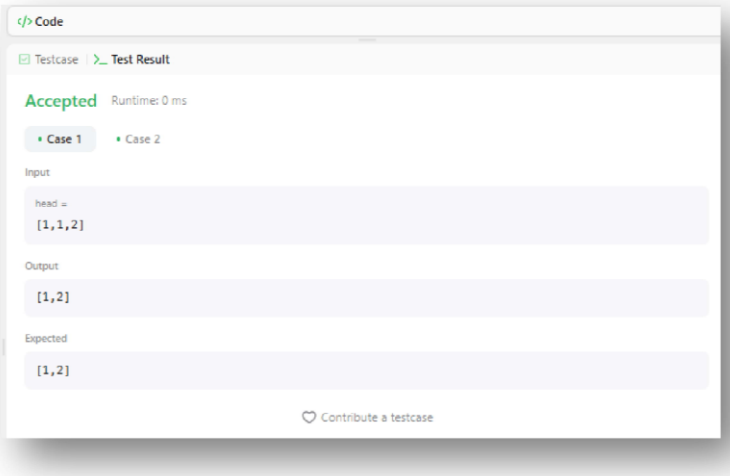
   - Start with the head of the linked list.
   - Iterate through the linked list while the next node is not None.
   - If the current node's value is equal to the next node's value, update the next pointer to skip the duplicate node.
   - Otherwise, move to the next node.

Implemetation/Code

```
class ListNode:
    def __init__(self, val=0,
next=None):
                self.val = val
                self.next = next
     class Solution:
    def deleteDuplicates(self,
head):
                current = head
while current and current.next:
if current.val ==
current.next.val:
current.next = current.next.next
else:
```

```
            current = current.next
    return head
```

Output:



Time Complexity : O(n)

Space Complexity : O(1)

Learning Outcomes:-

o Learn how to iterate through a linked list efficiently. o Understand how the sorted order helps in detecting duplicates efficiently.

Experiment – 2.2

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Semester:6TH Date of Performance:10/02/25

Subject Name: AP Lab-2 Subject Code: 22CSH-352

1. TITLE:

   Reverse Linked List.

2. AIM: Given the head of a singly linked list, reverse the list, and return the reversed list
3. Algorithm

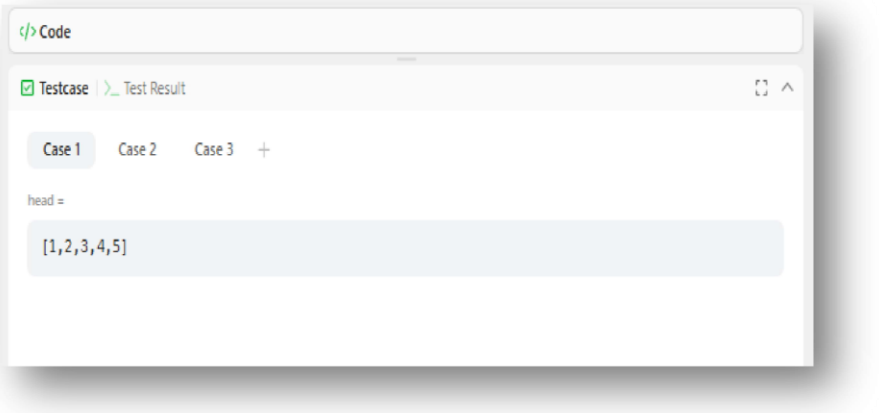
   - Set prev = None.
   - Set current = head.
   - Store the next node (next_node = current.next) before modifying links.
   - Reverse the link (current.next = prev) to point backward.
   - Move prev and current one step forward.
   - After the loop, prev will be the new head.

Implemetation/Code:

```
class ListNode: def __init__(self,
val=0, next=None):
self.val = val
self.next = next
 class Solution:
def reverseList(self, head):
prev = None
current = head
# Traverse the linked list
while current:
next_node = current.next
current.next = prev
```

```
prev = current
current = next_node
 return prev
```

Output:



Time Complexity : O(N)

Space Complexity : O(1)

Learning Outcomes:-

o Learn how to modify next pointers to reverse the direction of a linked list. o Understand how to efficiently reverse a linked list using only a few pointers (prev, current, next_node).