Experiment- 2A

Student Name: Mohd Areeb **UID: 22BCS16043**

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

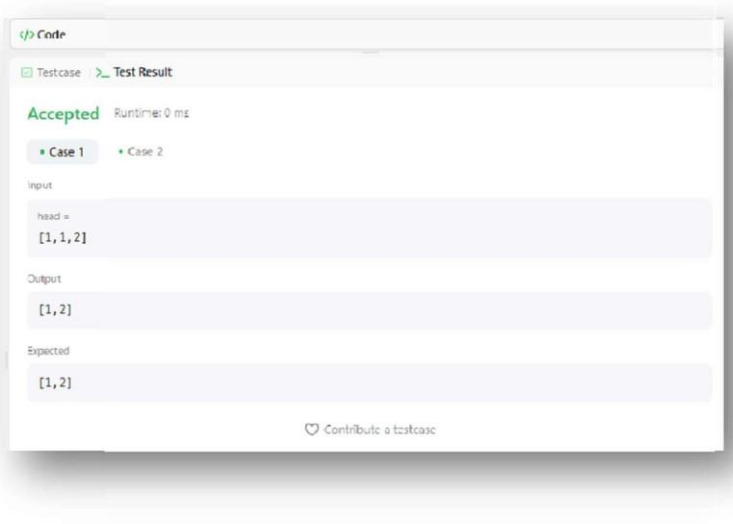
- Start with the head of the linked list.
- Iterate through the linked list while the next node is not None.
- If the current node's value is equal to the next node's value, update the `next` pointer to skip the duplicate node.
- Otherwise, move to the next node.

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:-

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

Experiment - 2B

Student Name: Mohd Areeb **UID: 22BCS16043**

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:

Reverse Linked List.

2. AIM:

Given the head of a singly linked list, reverse the list, and return *the reversed list*.

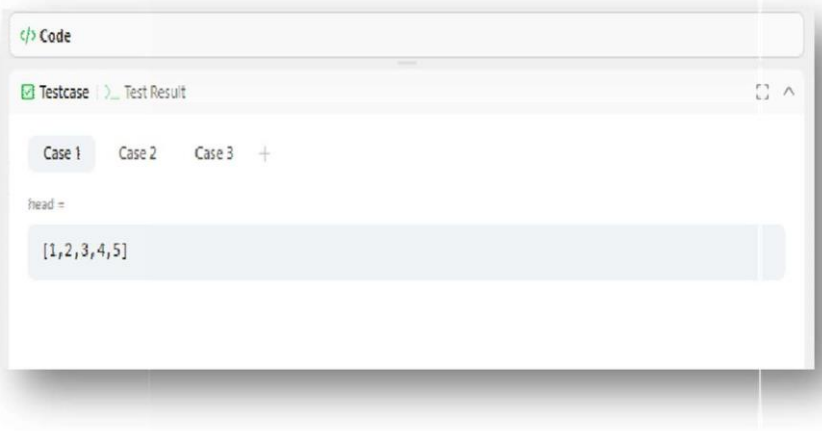
3. Algorithm

- 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:-

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

DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING