Experiment 2

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Subject Name: AP- 2 **Subject Code:** 22CSP-351

Aim:

a) Remove duplicates from sorted list
b) Reverse Linked List
c) Delete the middle node of linked list

Objective: To learn about linked list.

Code:

a)

```
class Solution {
public:
ListNode* deleteDuplicates(ListNode* head) {
if (!head) return nullptr;
ListNode* current = head;
while (current->next) {
if (current->val == current->next->val) {
ListNode* temp = current->next;
current->next = current->next->next;
delete temp;
} else {
current = current->next;
}}
return head;
}};
```

b)

```
class Solution {
public:
ListNode* reverseList(ListNode* head) {
ListNode* prev = nullptr;
ListNode* current=head;
while (current!=nullptr) {
ListNode* nextTemp=current->next;
current->next=prev;
prev=current;
current=nextTemp;
}
return prev;
}
};
```

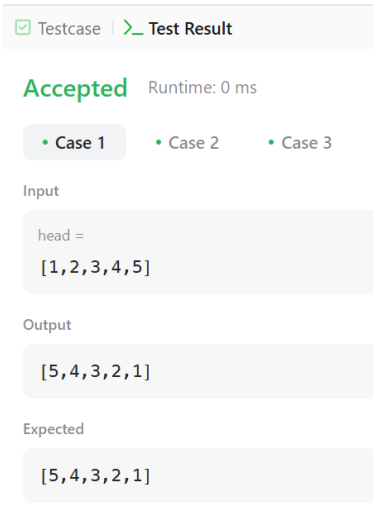
c)

```
class Solution {
public:
ListNode* deleteMiddle(ListNode* head) {
if (head == nullptr || head->next == nullptr) {
return nullptr;
}
ListNode* slow = head;
ListNode* fast = head;
ListNode* prev = nullptr;
while (fast != nullptr && fast->next != nullptr) {
prev = slow;
slow = slow->next;
fast = fast->next->next;
}
if (prev != nullptr) {
prev->next = slow->next;
}
return head;
}
};
```

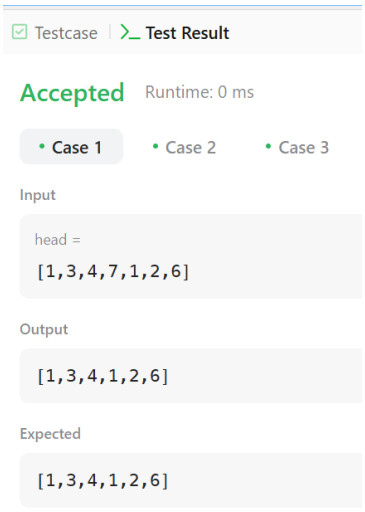
Output:

a)

b)



c)



Learning Outcomes:

a) Understand the concept of linked list.
b) Learnt about different problem like reverse list, remove duplicates.
c) Gain an understanding about the efficiency of linked list.