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NAAC GRADE A+
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Worksheet 4

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Que-1: Remove Duplicates from Sorted List

Code:

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

Output:

Que-2: [Palindrome Linked List]

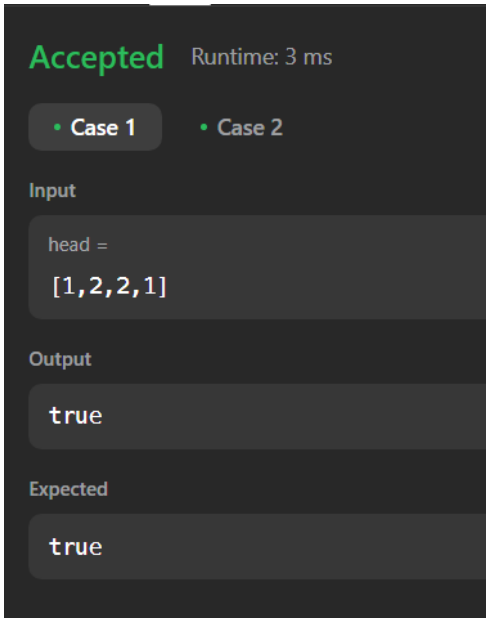
Code:

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

```
ListNode* reverse(ListNode* head){
    ListNode* curr=head;
    ListNode *temp=nullptr;
    ListNode* prev=nullptr;
    while(curr!=nullptr){
        temp=curr->next;
        curr->next=prev;
        prev=curr;
        curr=temp;
    }
    return prev;
}

bool isPalindrome(ListNode* head) {
    ListNode* p1=head;
    ListNode* mid=calmid(head);
    ListNode* p2=reverse(mid);
    while(p1!=nullptr && p2!=nullptr){
        if(p1->val!=p2->val)
            return false;
        p1=p1->next;
        p2=p2->next;
    }
    return true;
```

```
    }
};
```

Output:



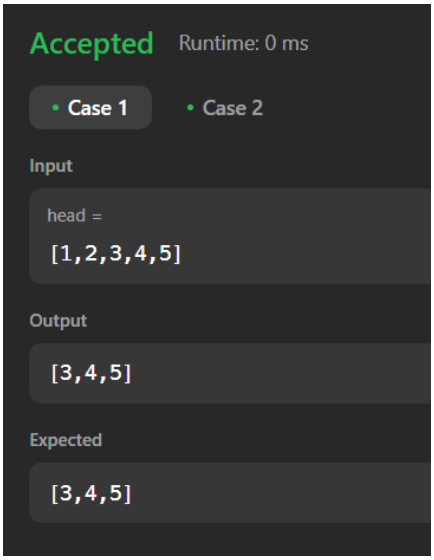
Que-3: [Middle of the Linked List]

Code:

```
class Solution {
public:
    ListNode* middleNode(ListNode* head) {
        ListNode* fast=head,*slow=head;
        while(fast!=nullptr && fast->next!=nullptr){
            slow=slow->next;
            fast=fast->next->next;
        }
```

```
        return slow;
    }
};
```

Output:



Que-4: Add Two Numbers

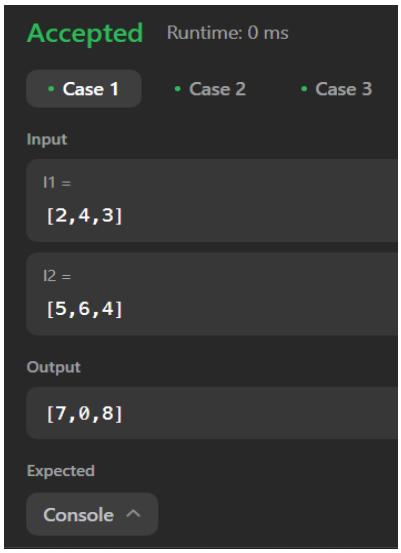
Code:

```
class Solution {
public:
    ListNode* addTwoNumbers(ListNode* l1, ListNode* l2) {
        ListNode* ans=nullptr;
        ListNode* temp=nullptr;
        int carr=0,val;
        while(l1!=nullptr || l2!=nullptr){
```

```
        if(l1!=nullptr && l2!=nullptr){
            val = l1->val + l2->val + carr;
            l1 = l1->next;
            l2 = l2->next;
        }
        else if(l1 != nullptr) {
            val = l1->val + carr;
            l1 = l1->next;
        }
        else if(l2 != nullptr) {
            val = l2->val + carr;
            l2 = l2->next;
        }
        else {
            break;
        }
        carr=val/10;

        if(ans==nullptr){
            temp=new ListNode(val%10);
            ans=temp;
        }
        else{
            temp->next=new ListNode(val%10);
```

```
                temp = temp->next;
            }
        }
        if(carr!=0){
            temp->next=new ListNode(carr);
        }
        return ans;
    }
};
```

Output:



Que-5: [Merge Two Sorted Lists]

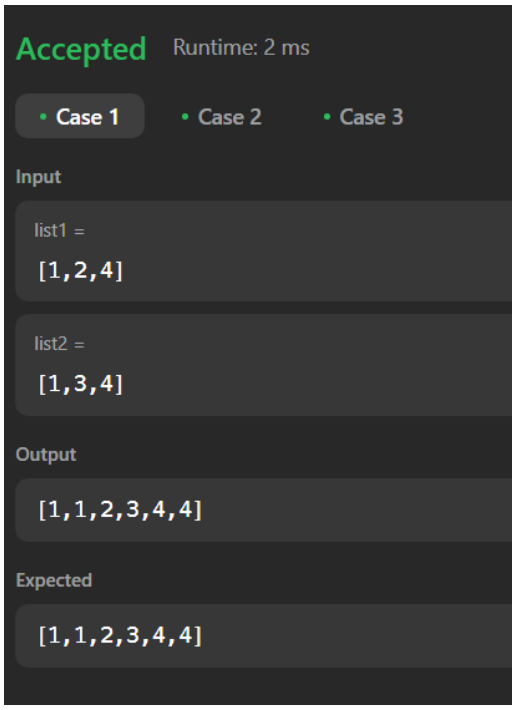
Code:

```
class Solution {

public:

    ListNode* mergeTwoLists(ListNode* list1, ListNode*
list2) {
```

```
        if(list1==nullptr){
            return list2;
        }
        if(list2==nullptr){
            return list1;
        }
        ListNode *temp=NULL,*head = NULL;
        if(list1->val<list2->val){
            temp = list1;
            head=temp;
            list1 = list1->next;
        }
        else{
            temp = list2;
            head=temp;
            list2 = list2->next;
        }

        while(list1!=nullptr && list2!=nullptr){
            if(list1->val<list2->val){
                temp->next=list1;
                list1=list1->next;
                temp=temp->next;
            }
```

```
            else{
                temp->next=list2;
                list2=list2->next;
                temp=temp->next;
            }
        }
        if(list1!=NULL)
        {
            temp->next = list1;
        }
        if(list2!=NULL)
        {
            temp->next = list2;
        }
        return head;
    }
};
```

Output:


Accepted
Runtime: 2 ms
Case 1
Case 2
Case 3
Input
list1 =
[1,2,4]
list2 =
[1,3,4]
Output
[1,1,2,3,4,4]
Expected
[1,1,2,3,4,4]