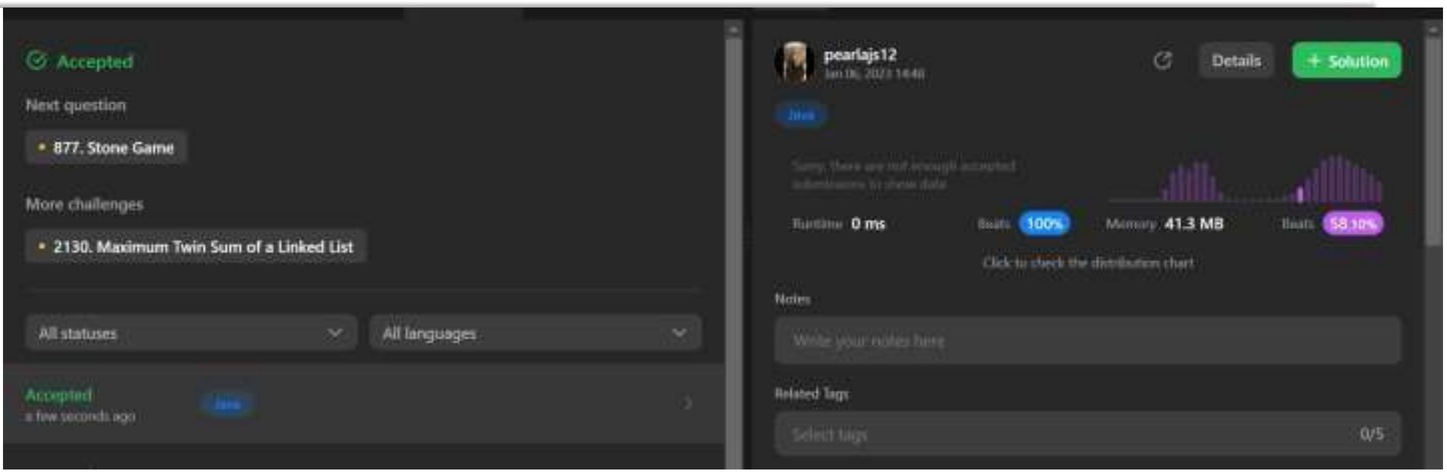
DATA STRUCTURE WORKSHEET 4

NAME- Gautam Kumar	**SEC-DWWC 43**
UID:20BCS9807	**Date- 06/01/2023**

Q1) ADD TWO NUMBERS https://leetcode.com/problems/add-two-numbers/description/

```
class Solution {
public ListNode addTwoNumbers(ListNode l1, ListNode l2) {
        ListNode ll1=l1;
        ListNode ll2=l2;
       ListNode dummy=new ListNode(0);
 ListNode d=new ListNode();
 d=dummy;
        int carry=0;
while(ll1!=null || ll2!=null)
    {                   int x = (ll1 != null)
? ll1.val : 0;          int y = (ll2 != null)
? ll2.val : 0;          int sum = carry + x +
y;
        d.next=new ListNode(sum%10);
carry=sum/10;          if(ll1 !=
null)               ll1=ll1.next;
if(ll2 != null)
ll2=ll2.next;          d=d.next;
    }
     if (carry > 0) {
        d.next = new ListNode(carry);
}
    return dummy.next;

    }
};
```


Accepted
Next question
• 877. Stone Game
More challenges
• 2130. Maximum Twin Sum of a Linked List
All statuses
All languages
Accepted
a few seconds ago
Java

pearlajs12
Jan 06, 2023 14:46
Details
+ Solution
Java
Sorry, there are not enough accepted submissions to show data
Runtime 0 ms Beats 100%
Memory 41.3 MB Beats 58.10%
Click to check the distribution chart
Notes
Write your notes here
Related Tags
Select tags 0/5

Q2) Palindrome Linked List class

```
Solution
{
  ListNode getMid(ListNode head) {
                    ListNode slow = head, fast = head;
while (fast != null) {
                              slow = slow.next;
                              fast = fast.next == null ? null : fast.next.next;
                    }
                    return slow;
          }

          ListNode reverse(ListNode head) {
                    ListNode prev = null, curr = head, next = head.next;
                    while (curr != null) {
                              curr.next =
prev;                         prev = curr;
          curr = next;                        if
(next != null)
                                        next = next.next;
                    }
                    return prev;
          }

          boolean isPalindrome(ListNode head) {
          if (head == null) return false;
ListNode mid = getMid(head);
                    if (mid != null) // this is to handle when there is only 1 element
                    mid = reverse(mid);
                    ListNode pointer_1 = head, pointer_2 = mid;
          while (pointer_1 != null && pointer_2 != null) {
                              if (pointer_1.val != pointer_2.val)
```

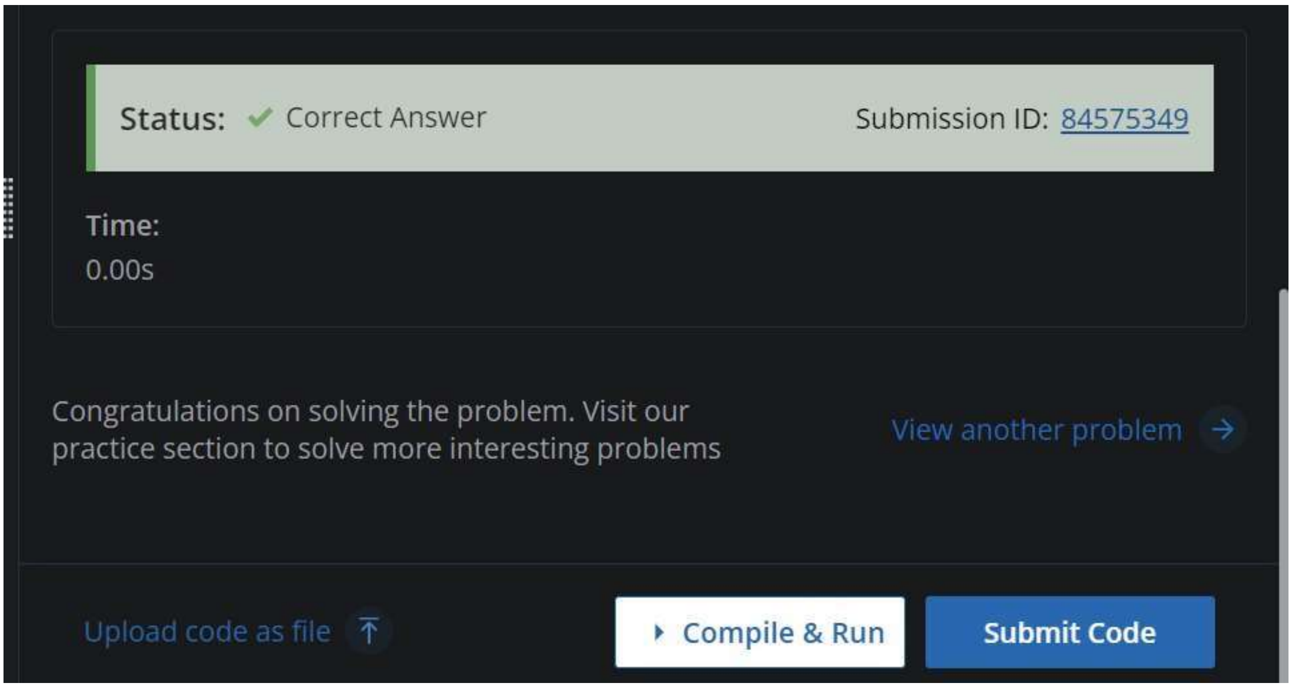
```
                                   return false;
                          pointer_1 = pointer_1.next;
pointer_2 = pointer_2.next;
                 }
                 return true;
        }
}
```

Q3) TEMPLE LAND

```
Ans) #include
<bits/stdc++.h>
using namespace std;

int main() {
        // ASHISH RANA
int t;    cin>>t;          while(t-
-){         int n;
cin>>n;
vector<int>a(n);
for(auto &i:a)cin>>i;

           if(n&1){          bool
flag=1;              for(int
i=0;i<=n/2;i++){
               if(i+1!=a[i])flag=0;
             }
             for(int
i=n/2+1;i<n;i++){             if(n-
i!=a[i])              flag=0;
     }
             cout<<(flag?"yes":"no")<<'\n';
           }
           else cout<<"no\n";
        }
        return 0;
}
```


Status: ✓ Correct Answer

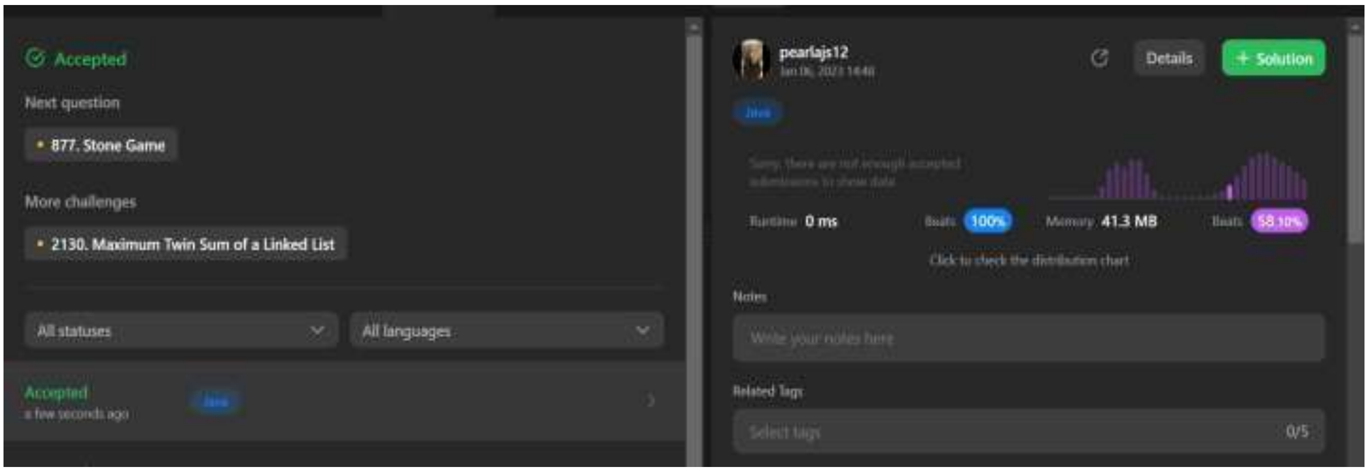
Submission ID: 84575349

Time:
0.00s

Congratulations on solving the problem. Visit our practice section to solve more interesting problems

Q4) MIDDLE OF LINKED LIST

```
class Solution {
    public ListNode middleNode(ListNode head) {
ListNode slow = head, fast = head;         while
(fast != null && fast.next != null) {
slow = slow.next;             fast =
fast.next.next;
        }
        return slow;
    } }
```


Accepted

Next question

- 877. Stone Game

More challenges

- 2130. Maximum Twin Sum of a Linked List

Accepted
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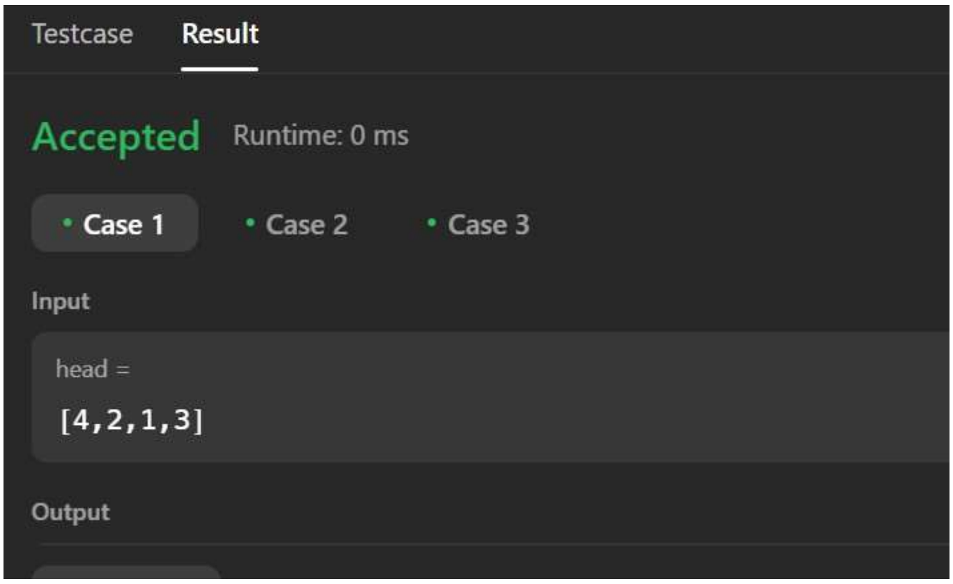
Runtime 0 ms Beats 100% Memory 41.3 MB Beats 58.10%

Q5) https://leetcode.com/problems/sort-list/

```
class Solution {      public ListNode
sortList(ListNode head) {          if
(head == null || head.next == null)
return head;
        ListNode mid = getMid(head);
        ListNode left = sortList(head);
ListNode right = sortList(mid);
return merge(left, right);
    }

    ListNode merge(ListNode list1, ListNode
list2) {       if (list1 == null) {
return list2;
        }         if
(list2 == null) {
return list1;
        }
        ListNode head1=list1;
        ListNode head2=list2;

        ListNode dummy;
        ListNode head3;


        //choosing the head which is
smaller :)
if(head1.val<head2.val)              {
                head3=dummy=new ListNode(head1.val);
head1=head1.next;
            }             else{
head3=dummy=new ListNode(head2.val);
head2=head2.next;
            }



        // Loop until any of the list becomes
null          while (head1 != null && head2 !=
null) {              if (head1.val < head2.val)
{                 head3.next = new
ListNode(head1.val);                 head1 =
head1.next;
            } else {                 head3.next
= new ListNode(head2.val);
head2 = head2.next;             }
head3=head3.next;
```

```
        }



while(head1!=null)
        {
head3.next=new ListNode(head1.val);
head1=head1.next;
head3=head3.next;
        }
while(head2!=null)
        {               head3.next=new
ListNode(head2.val);
head2=head2.next;
head3=head3.next;
        }
return
dummy;
    }
    ListNode getMid(ListNode head) {          ListNode
midPrev = null;         while (head != null &&
head.next != null) {             midPrev = (midPrev ==
null) ? head : midPrev.next;             head =
head.next.next;
        }
        ListNode mid =
midPrev.next;
midPrev.next = null;
return mid;
    }
}
```

SORT LIST


Testcase Result

Accepted Runtime: 0 ms

Case 1 Case 2 Case 3

Input

head =

```
[4,2,1,3]
```

Output