NAME- Md Adnan Hussain **SEC-DWWC 43**

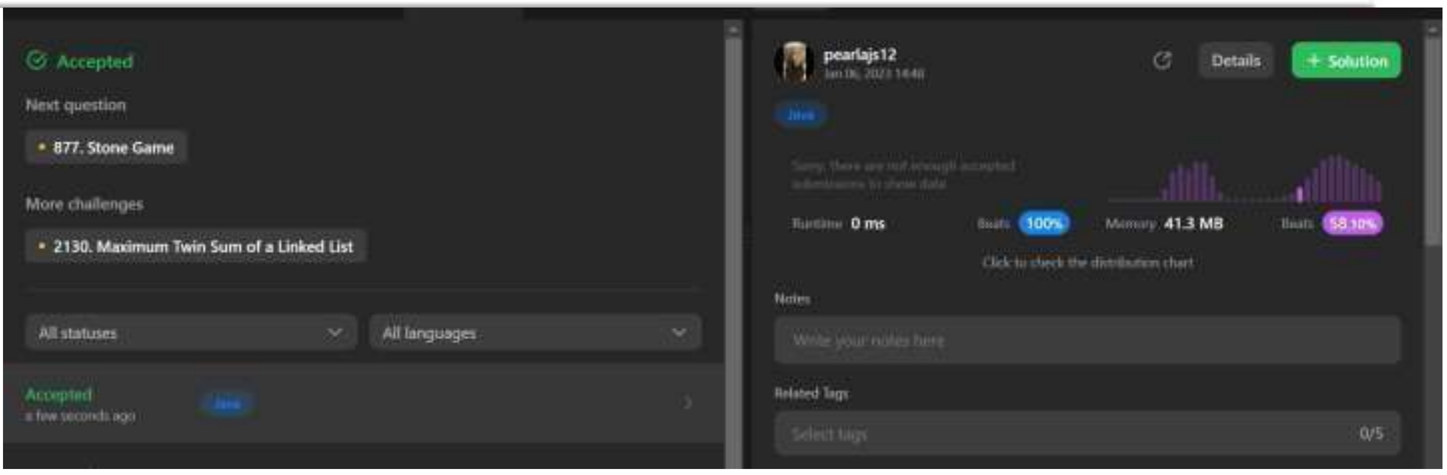
UID:20BCS9812 **Date- 06/01/2023**

DATA STRUCTURE WORKSHEET 4

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
Java
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Runtime 0 ms Beats 100%
Memory 41.3 MB Beats 58.10%
Click to check the distribution chart
Notes
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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;
```

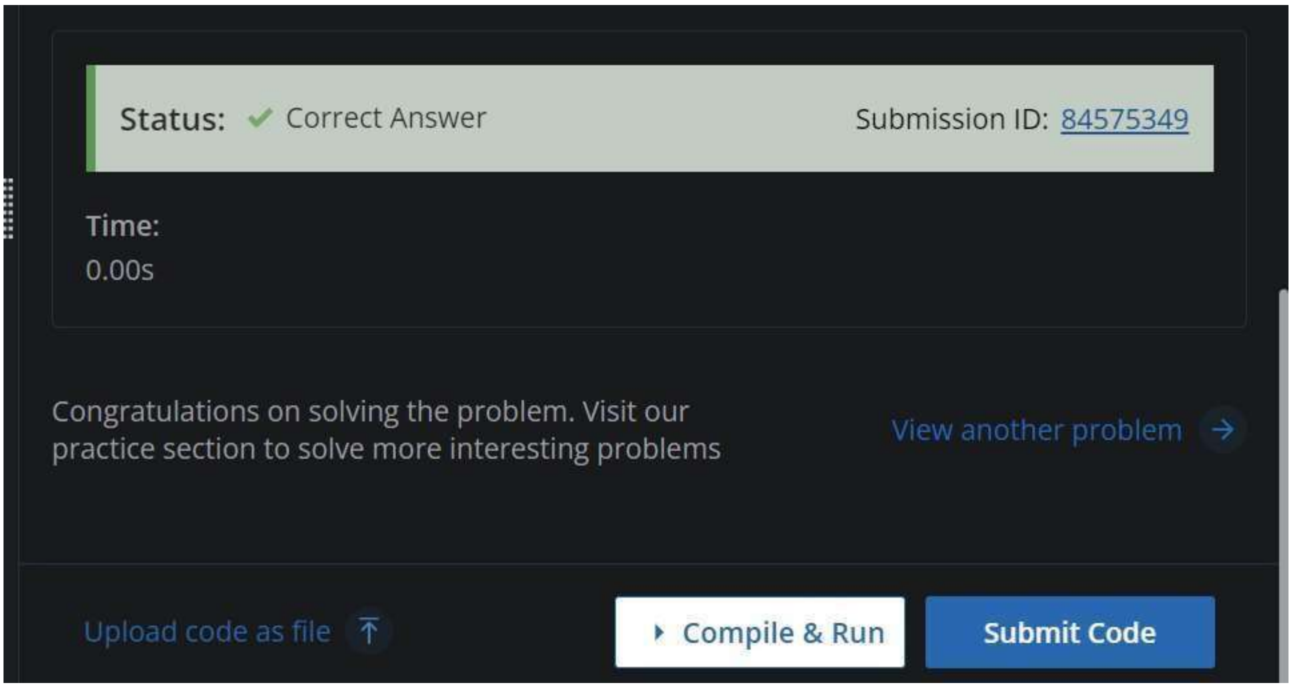
```
                                pointer_1 = pointer_1.next;
pointer_2 = pointer_2.next;
                     }
                     return true;
           }
}
```

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(ni!=a[i])             flag=0;
      }
                 cout<<(flag?"yes":"no")<<'\n';
              }          else
cout<<"no\n";
           }
           return 0;
}
```



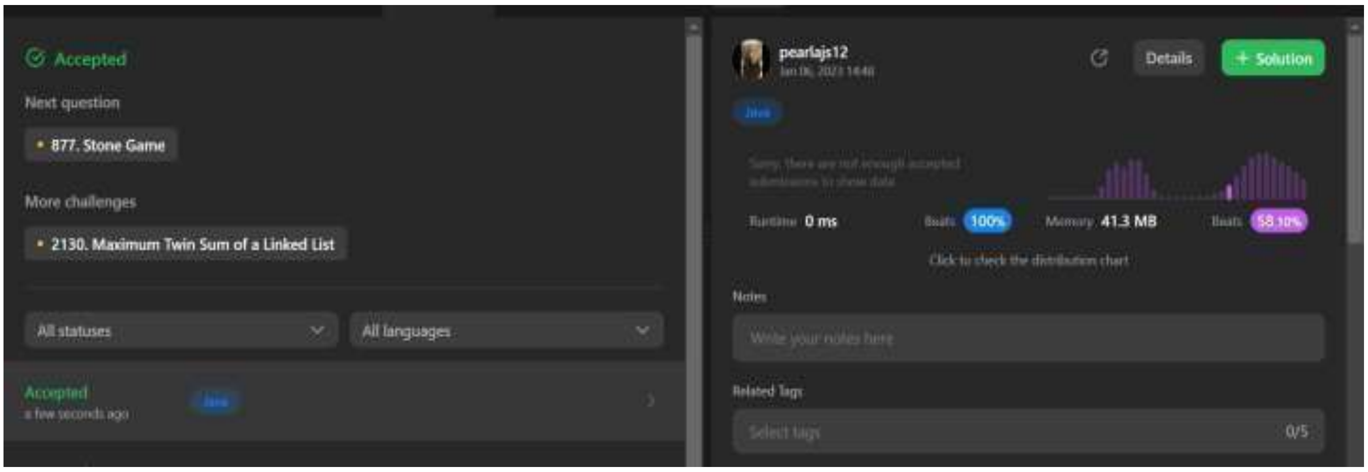
Status: ✓ Correct Answer Submission ID: 84575349

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

pearlajs12
Jan 06, 2023 14:48
Java
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Runtime 0 ms Beats 100% Memory 41.3 MB Beats 58.10%

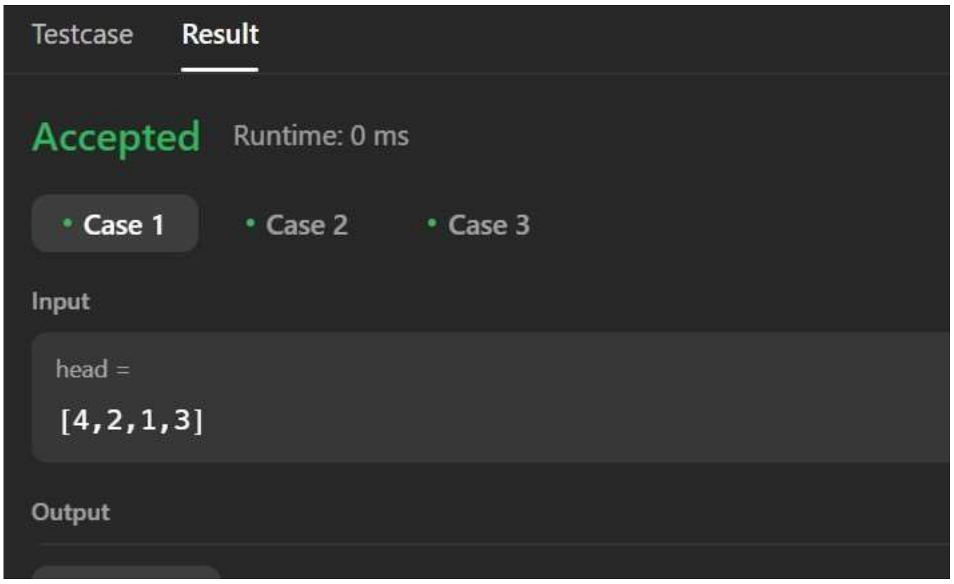
Accepted
a few seconds ago
Java

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