WORKSHEET - 4

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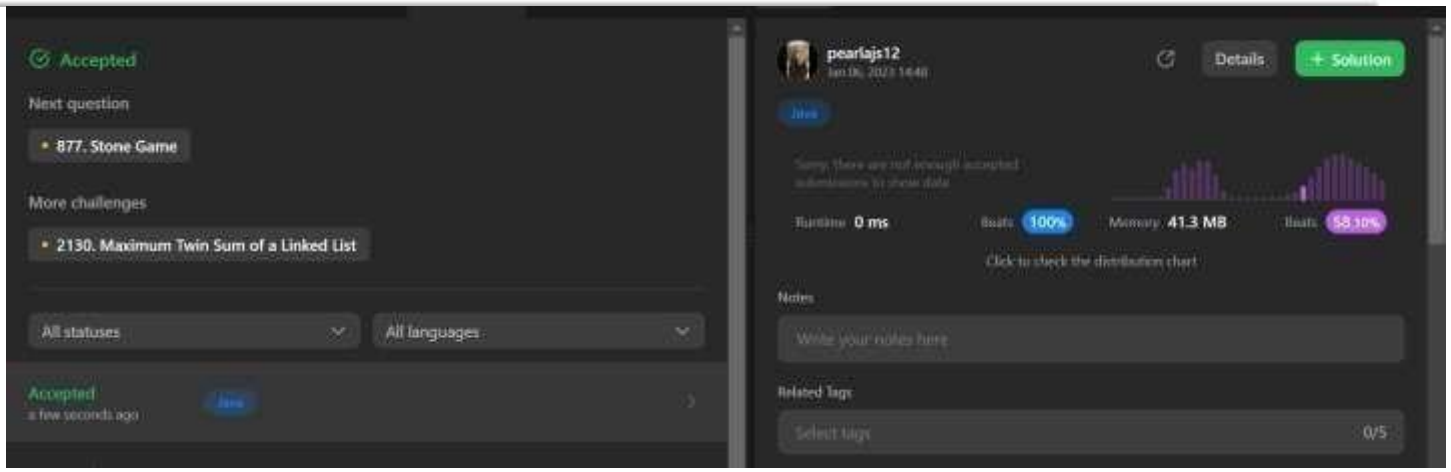
Branch: CSE

Section: DWWC - 43

Q1) **ADD TWO NUMBERS:-**

```
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;


    }  };
```



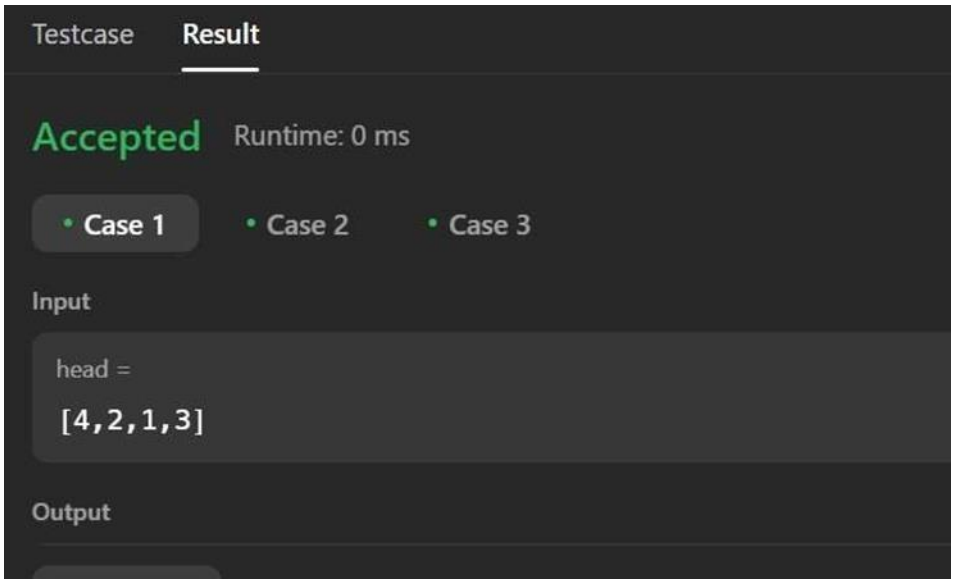
Q2) Palindrome Linked List

Code:-

```
class
{
  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;
        }
}
```

OUTPUT:-

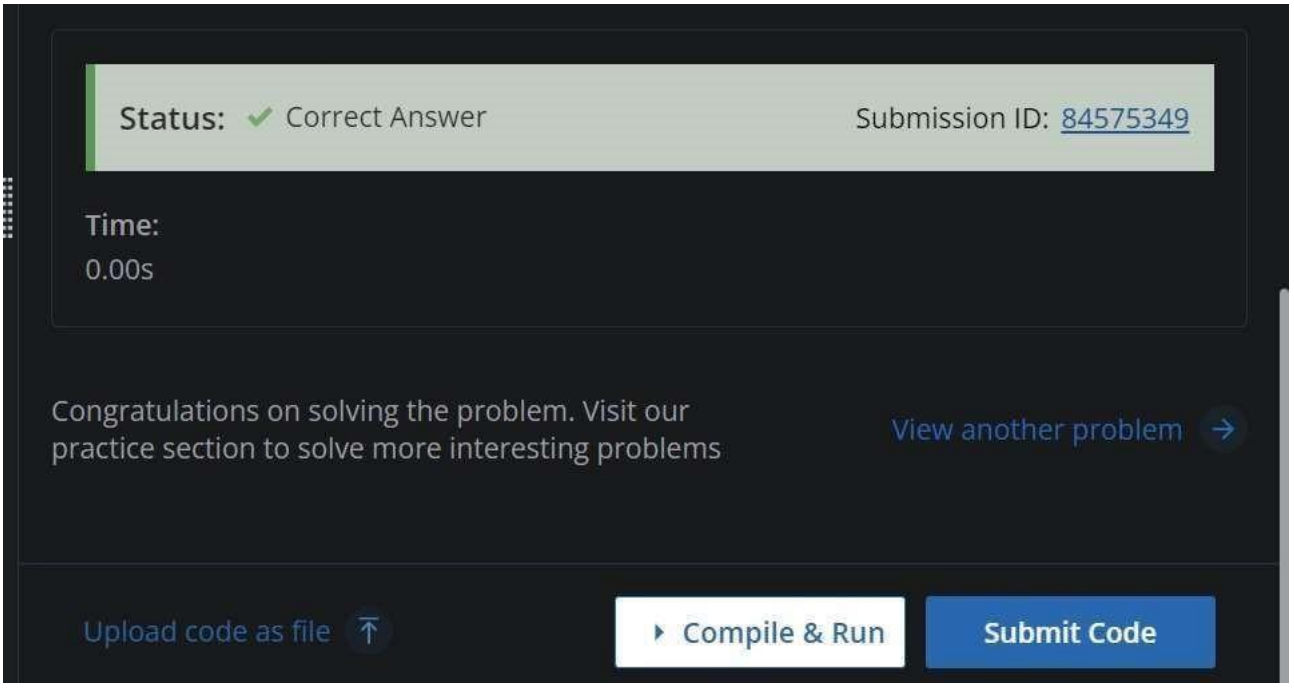


Q3) TEMPLE LAND:-

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;
}
```

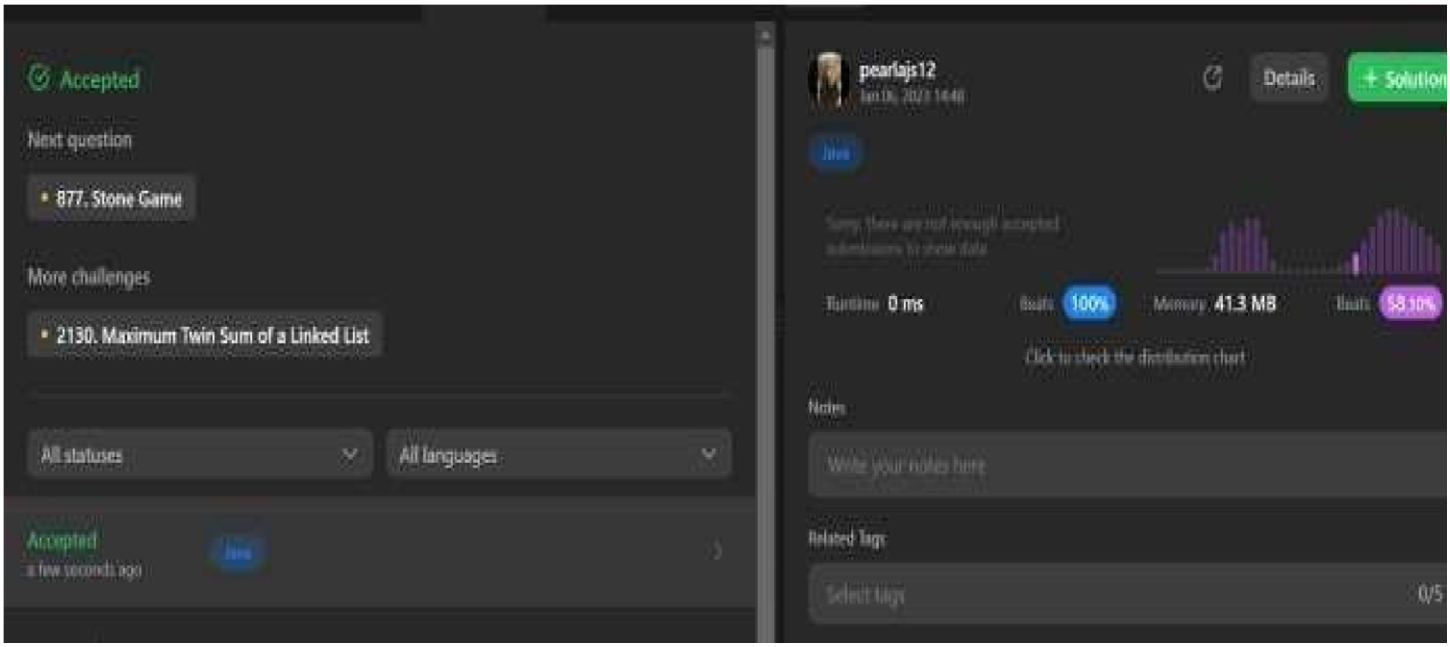
OUTPUT:-



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;
    } }
```

OUTPUT:-

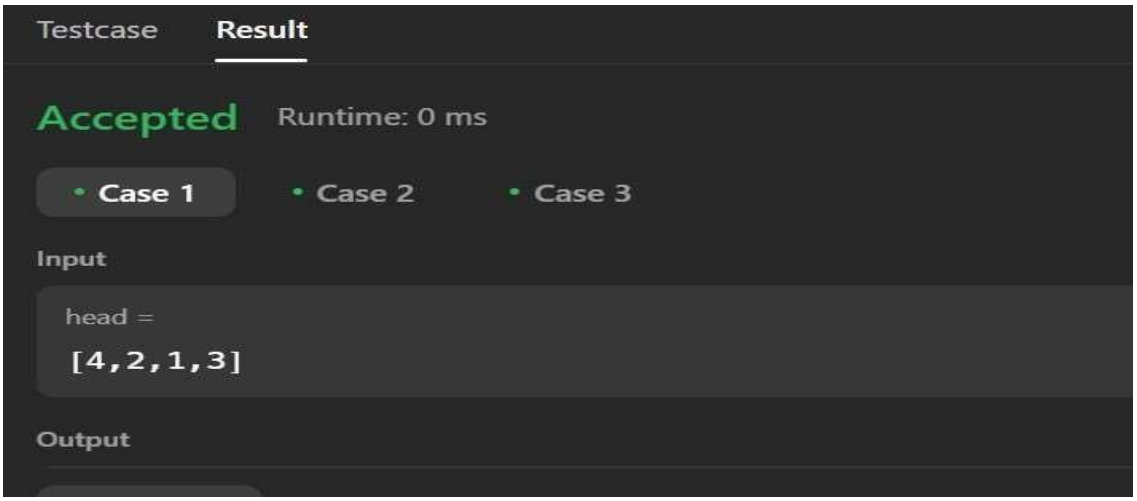


Q5) LONG LONG SUM:-

```
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;
    }
}
```

OUTPUT:-


Testcase
Result
Accepted
Runtime: 0 ms
Case 1
Case 2
Case 3
Input
head =
[4,2,1,3]
Output