IT SKILLS (Domain Camp)
WORKSHEET – 4

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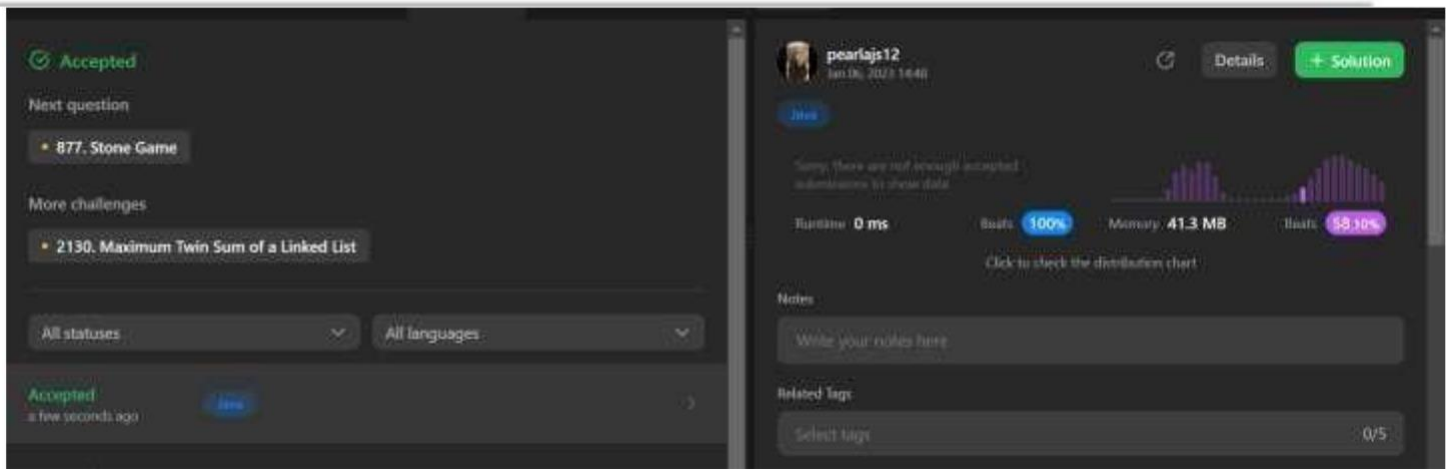
Q1) ADD TWO NUMBERS https://leetcode.com/problems/add-two-numbers/description/

```
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;

    }
};
```



Q2)

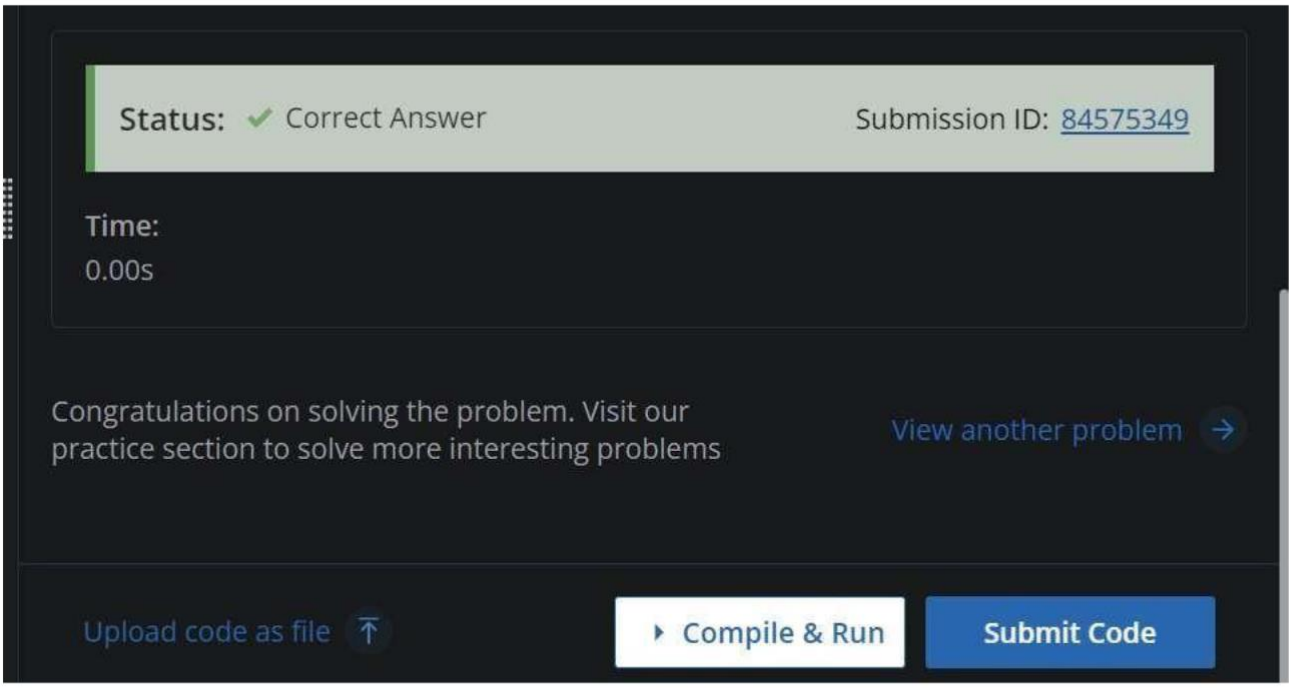
```
class Solution
{
  ListNode getMid(ListNode head) { ListNode
                slow = head, fast = head;
                while (fast != null) {
                        slow = slow.next;
                        fast = fast.next == null ? null : fast.next.next;
                } return
             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

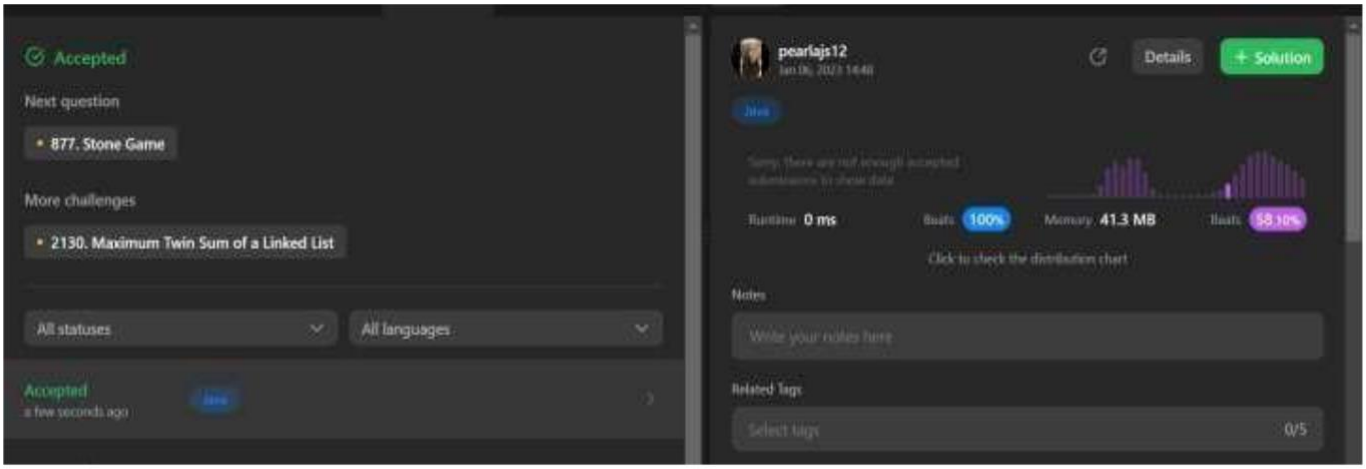
Ans)

```
#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;
}
```




```
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;
    }
}
```

Q4) MIDDLE OF LINKED LIST



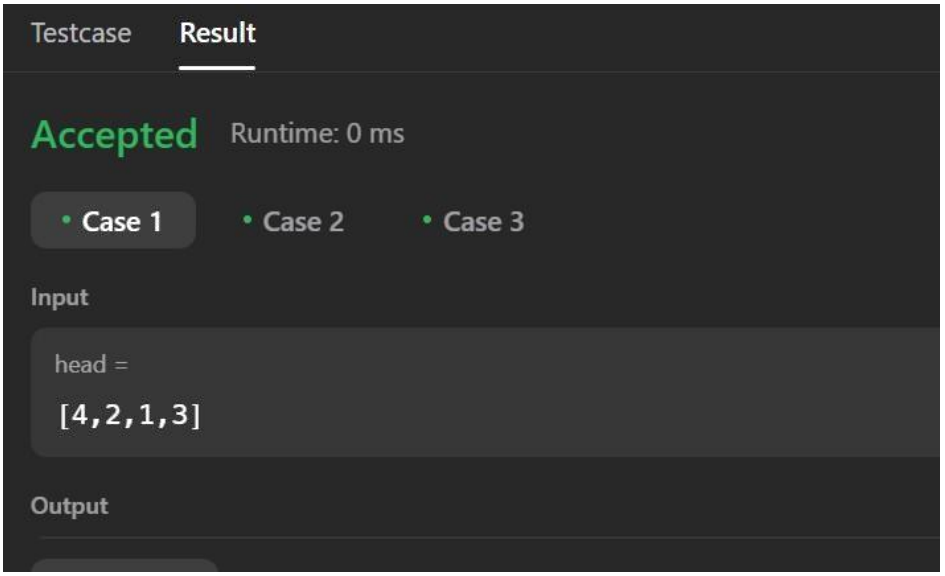
Q5) https://leetcode.com/problems/sort-list/

```
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;
            }
```

SORT LIST

```
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;
    }
}
```


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