WORKSHEET 4

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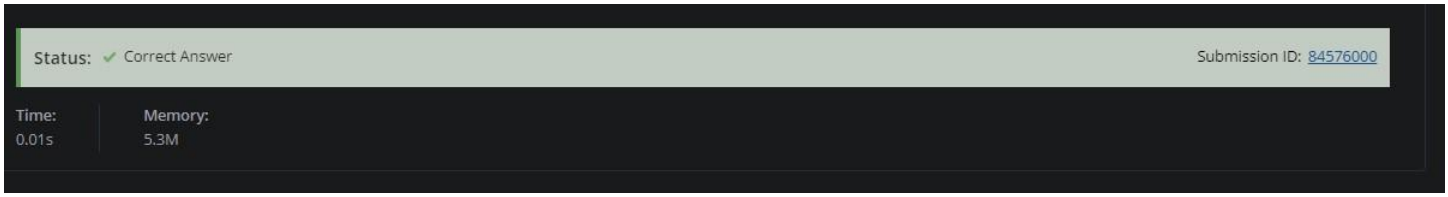
DOMAIN CAMP: 16-01-2023 to 28-01-2023
Section/Group: DWWC-77
Subject Name: IT Skills (DSA)

Question 1. TEMPLE LAND (ARRAY)

Language: C++14

```cpp
#include <iostream>
using namespace std;

int main() {
    // your code goes here
    int t;
    cin>>t;
    while(t--){
        int n;
        cin>>n;
        int arr[n];
        for(int i=0;i<n;i++){
            cin>>arr[i];
        }
        bool flag=true;

        if((n%2==0) || arr[0]!=1) flag=false;
       // else if(arr[n/2]>=arr[n/2+1] || arr[n/2]<=arr[n/2-1]) flag=false;
        else{
            int start=0, end=n-1, count=1;
            while(start<=end){
                if(arr[start]!=arr[end] || arr[start]!=count){
                    flag=false;
                    break;
                }
                start++,end--;
                count++;
            }
        }
        if(flag) cout<<"yes"<<endl;
        else
            cout<<"no"<<endl;
    }
    return 0;
}
```

SOLUTION:



Question 2. ROADS IN CHEFLAND (ARRAY)

Language: C++14

```cpp
#include <iostream>
using namespace std;
int main() {
    long long t,n,cost,v;
    cin>>t;
    while(t--){
        cin>>n;
        cost=0;
    if(!(n&(n-1))){
        cout<<"-1\n";
        continue;
    }
    for(int i=1;i<=n;i<<=1){
        v=(n-i)/(i<<1);
        cost+=v*i +i;
    }
    cost--;
    cout<<cost<<"\n";
    }
    return 0;
}
```

0:0

SOLUTION:

Status: ✔ Correct Answer Submission ID: 84576100

Time:	Memory:
0.38s	5.2M

Question 3. SOLVE THE CASE (ARRAY)

Language: C++14

```cpp
#include <bits/stdc++.h>

using namespace std;


int main(){
    int t;cin>>t;
    for(int j=0;j<t;j++){
        int n;cin>>n;
        vector<int> v1,v2;
        for(int i=0;i<n;i++){
            int a; cin>>a;
            v1.push_back(a);
        }
        for(int i=0;i<n;i++){
            int temp=v1[i];
            v2.push_back(temp);
            while(temp==v1[i] && i<n){
                i++;
            }
            i--;
        }
        int k=(int)v2.size();
        for(int i=0;i<k;i++){
            cout<<v2[i]<<" ";
        }
        cout<<'\n';
    }
    return 0;
}
```

SOLUTION:

Status: ✔ Correct Answer — Submission ID: 85014028

Score:	Time:	Memory:
100	0.00s	5.3M

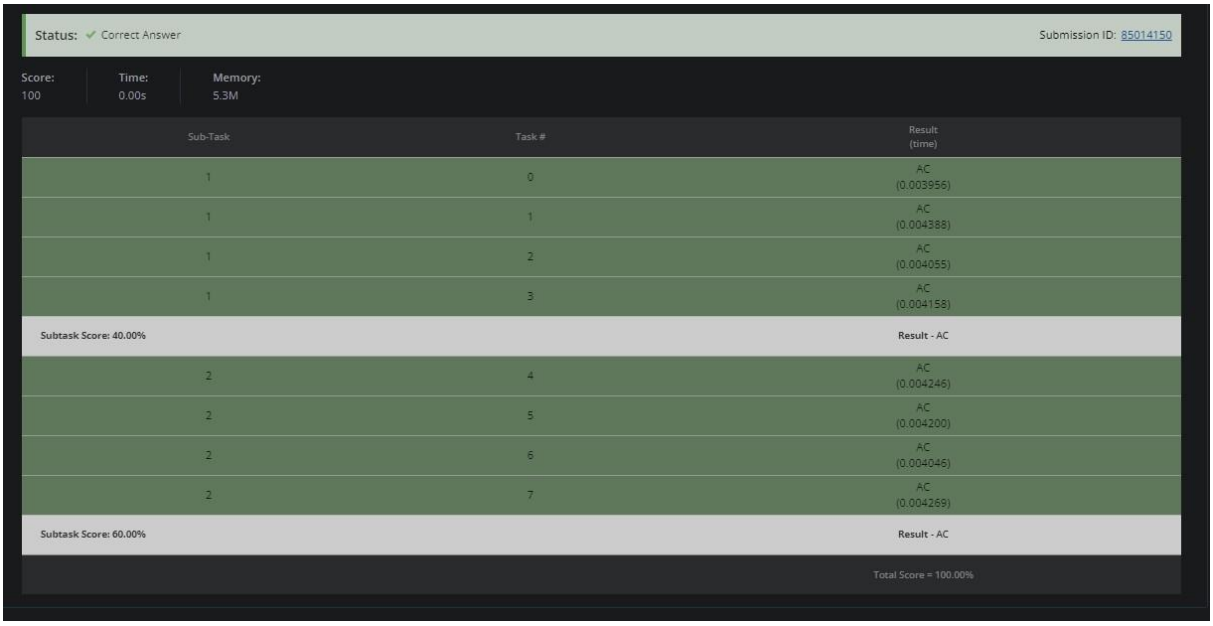
Sub-Task	Task #	Result (time)
1	0	AC (0.003930)
Subtask Score: 30.00%		Result - AC
2	1	AC (0.003999)
Subtask Score: 30.00%		Result - AC
3	2	AC (0.003919)
Subtask Score: 40.00%		Result - AC
		Total Score = 100.00%

Question 4. COOKING MACHINE (ARRAY)

Language: C++14

```cpp
#include <bits/stdc++.h>
using namespace std;
bool is(int n){
    while(n>0){

        int c=n%2;
        if(c!=0 && n!=1){
            return false;
        }
        n=n/2;

    }
    return true;
}
int main() {
    int t;
    cin>>t;
    while(t--){
       int a,b;
       cin>>a>>b;
       int counter=0;
       while(!is(a)){
           if(a==1) break;
          if(a%2!=0){ a=(a-1)/2;
              counter++;
          }
          else {a=a/2;

           counter++;}
       }

       if(b>a){
           while(b>a){

               a=a*2;
               counter++;
               if(b==a) break;
           }
       }else if(b<a){
           while(a>b){

               a=a/2;
               counter++;
               if(b==a)  break;
           }
       }
       cout<<counter<<endl;


    }
    return 0;
}
```

SOLUTION:



Status: ✔ Correct Answer — Submission ID: 85014150

Score:	Time:	Memory:
100	0.00s	5.3M

Sub-Task	Task #	Result (time)
1	0	AC (0.003956)
1	1	AC (0.004388)
1	2	AC (0.004055)
1	3	AC (0.004158)
Subtask Score: 40.00%		Result - AC
2	4	AC (0.004246)
2	5	AC (0.004200)
2	6	AC (0.004046)
2	7	AC (0.004269)
Subtask Score: 60.00%		Result - AC
		Total Score = 100.00%

Question .

5 GOLD COLLECTION (ARRAY)

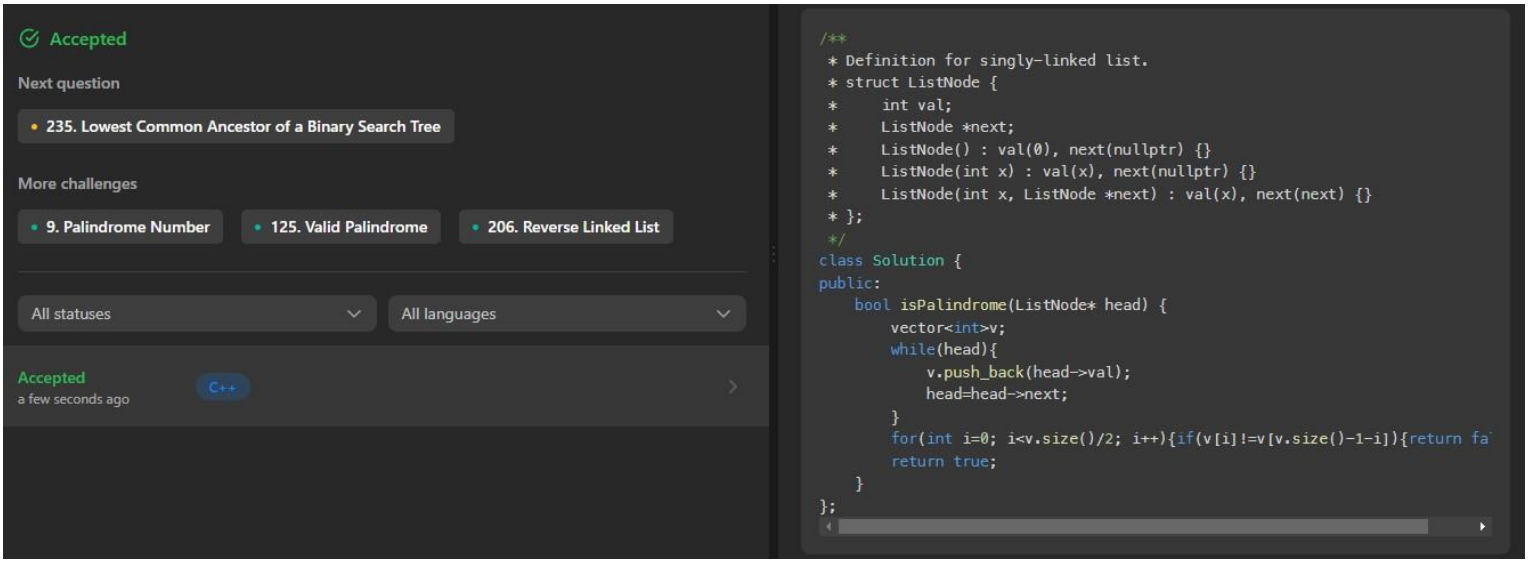
Language: C++14

```
#include <iostream>
using namespace std;

int main() {
    int t;
    scanf("%d",&t);
    while(t--)
    {
        int n;
    scanf("%d",&n);

            int arr[n];
            for(int i=0;i<n;i++)
            {
                scanf("%d",&arr[i]);
            }
            for(int i=1;i<n;i++)
            {
                arr[i]+=arr[i-1];
            }
            int q;
            scanf("%d",&q);
                for(int i=0;i<q;i++)
                {
                    int q1,q2;
                    scanf("%d%d",&q1,&q2);
                    if(q1==1)
                    {
                        printf ("%d\n"  ,arr[q2-1]);
                    }
                    else
                    {
                        printf("%d\n" ,  arr[q2-1]-arr[q1-2]);
                    }
                }
}
    return 0;
}
```

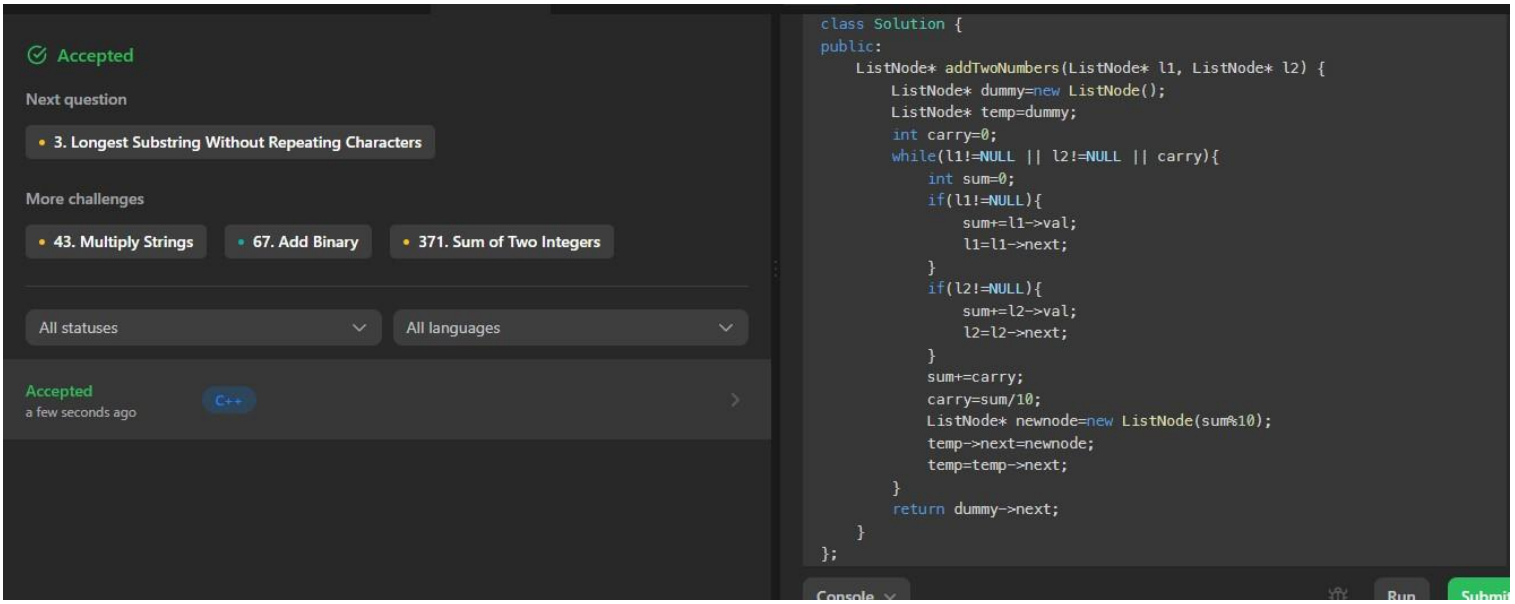
SOLUTION:

Question .

Question 6. PALINDROME LINKED LIST (LINKED LIST)

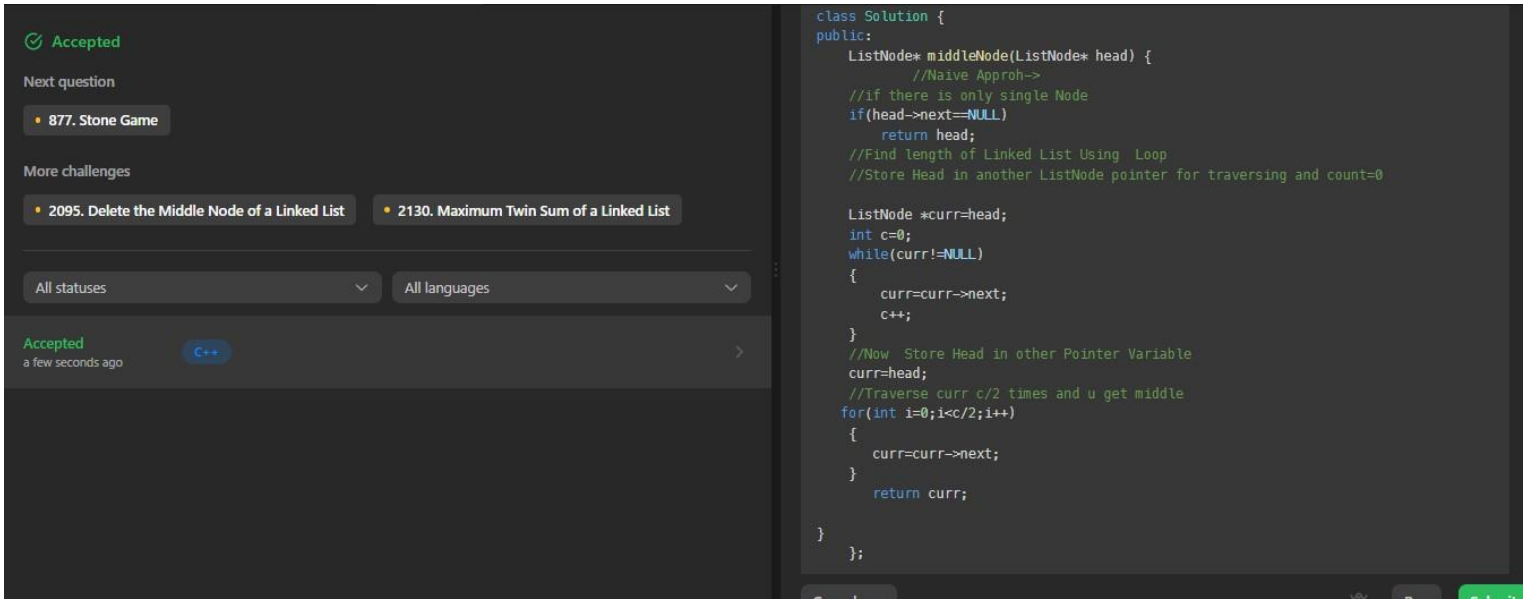


7 ADD TWO NUMBERS (LINKED LIST)



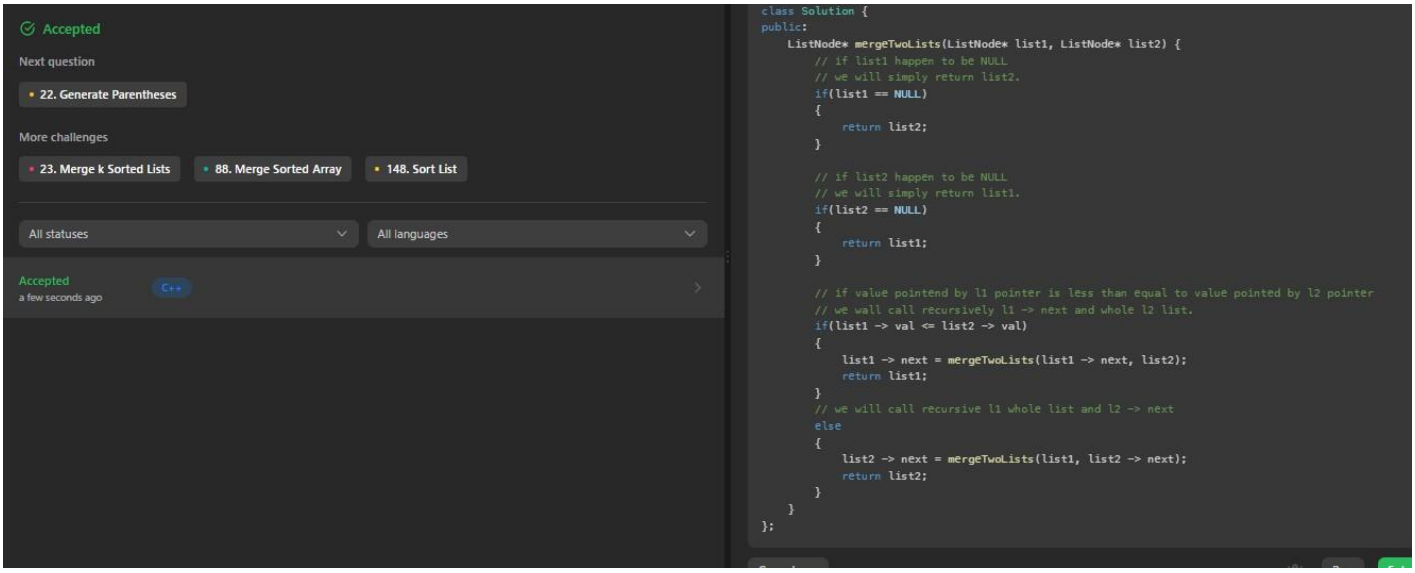
Question .

Question 8. MIDDLE OF THE LINKED LIST (LINKED LIST)



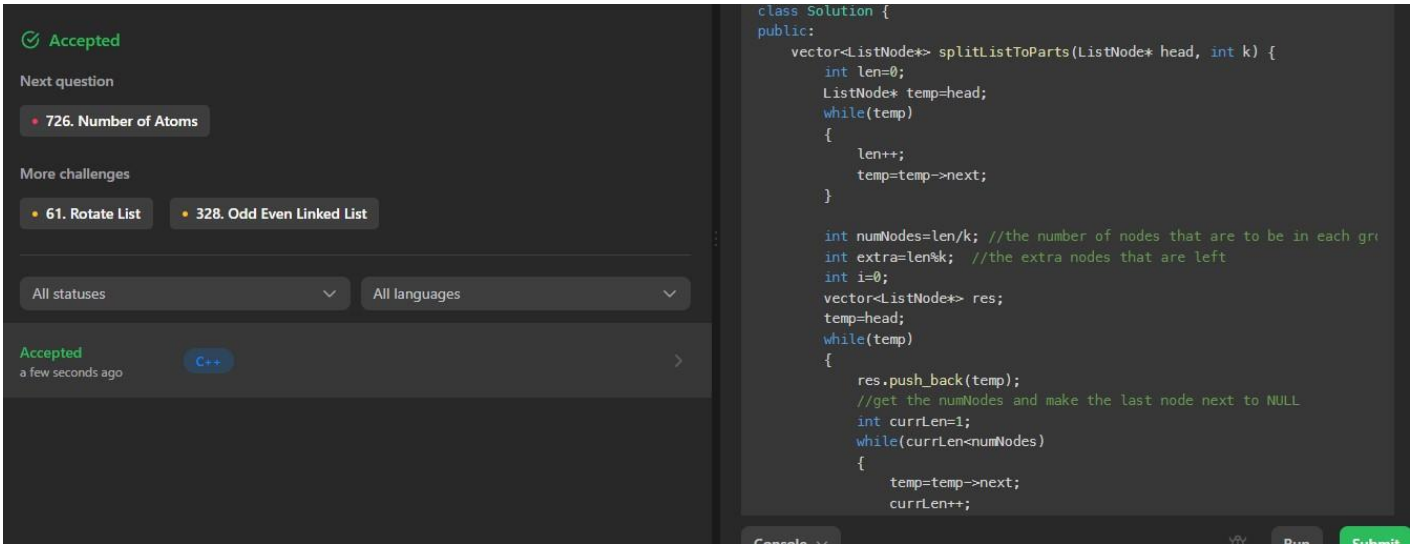
Question .

9 MERGE TWO SORTED LISTS (LINKED LIST)



Question .

Question 10. SPLIT LINKED LIST IN PARTS (LINKED LIST)




```
class Solution {
public:
    vector<ListNode*> splitListToParts(ListNode* head, int k) {
        int len=0;
        ListNode* temp=head;
        while(temp)
        {
            len++;
            temp=temp->next;
        }

        int numNodes=len/k; //the number of nodes that are to be in each gr
        int extra=len%k;  //the extra nodes that are left
        int i=0;
        vector<ListNode*> res;
        temp=head;
        while(temp)
        {
            res.push_back(temp);
            //get the numNodes and make the last node next to NULL
            int currLen=1;
            while(currLen<numNodes)
            {
                temp=temp->next;
                currLen++;
            }
            if(extra>0 && len>k)
            {
                temp=temp->next;
                extra--;
            }
            ListNode* x=temp->next;
            temp->next=NULL;
            temp=x;
        }
        //if the number of nodes are less than k we add NULL
        while(len<k)
        {
            res.push_back(NULL);
            len++;
        }
        return res;
    }
};
```