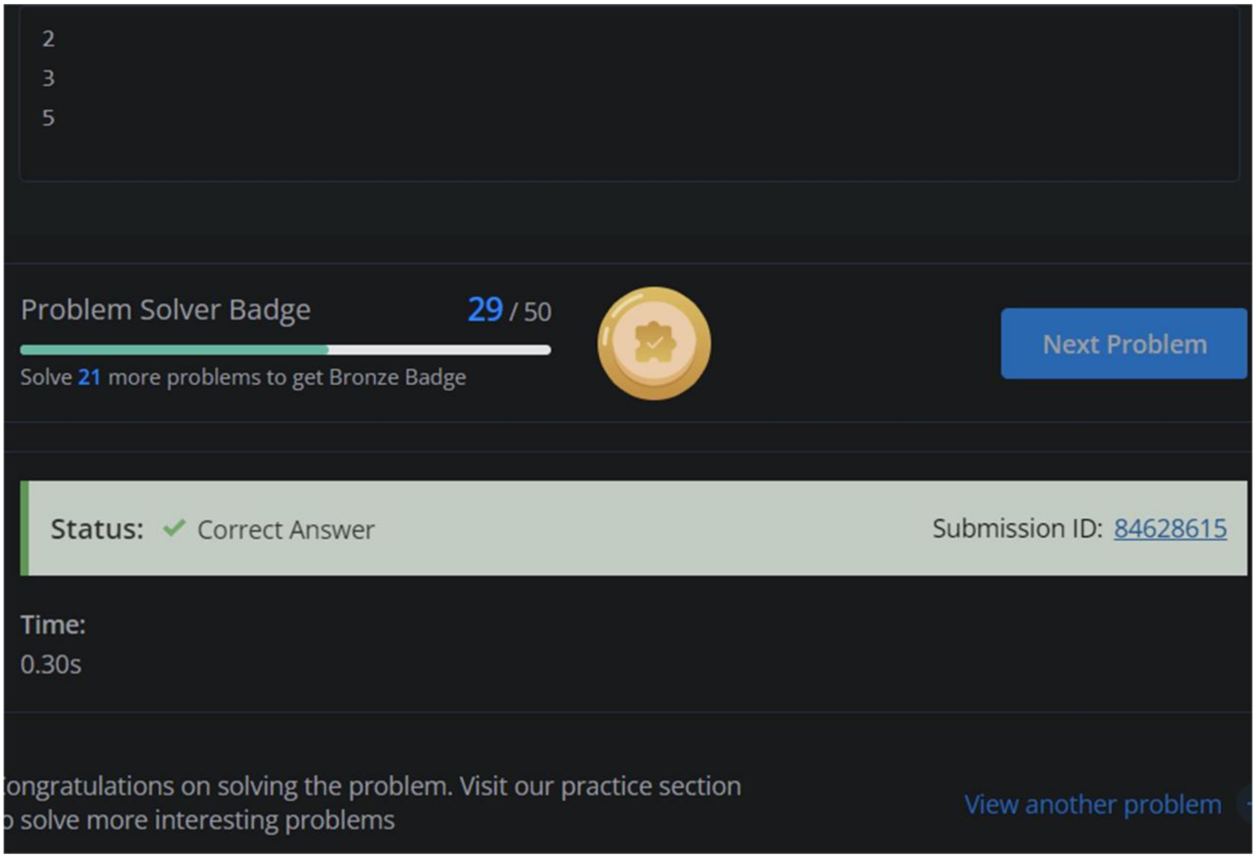
WORKSHEET_4 (IT_SKILLS)

Q1. Roads in Chef land

ANS:

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

using namespace std; void

solve()

{     int n;     cin >> n;

if ((n & (n - 1)) == 0)

   {

            cout << -1 << endl;

        return;


   }

   long long ans = 0;     for (int i =

1; i <= n; i <<= 1)         ans += ((n -

i) / (i << 1)) * i;     for (int i = 2; i <

n; i <<= 1)         ans += i;     cout

<< ans << endl; } int main() {

ios_base::sync_with_stdio(false);

cin.tie(NULL);

   int t;

cin >> t;

while (t--)

{
```

```
solve();     }

return 0; }
```



```
2
3
5
```

Problem Solver Badge 29 / 50

Solve 21 more problems to get Bronze Badge

Status: ✓ Correct Answer Submission ID: 84628615

Time:
0.30s

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Q2. Temple land

Code:

```
#include <bits/stdc++.h>
using namespace std;
// INT HERE MEANS LONG LONG
#define int long long
#define endl '\n'

bool solve(int* arr, int n)
{
   if(arr[0]!=1 || arr[n-1]!=1)
return false;     if(n%2 == 0)
   return false;
```

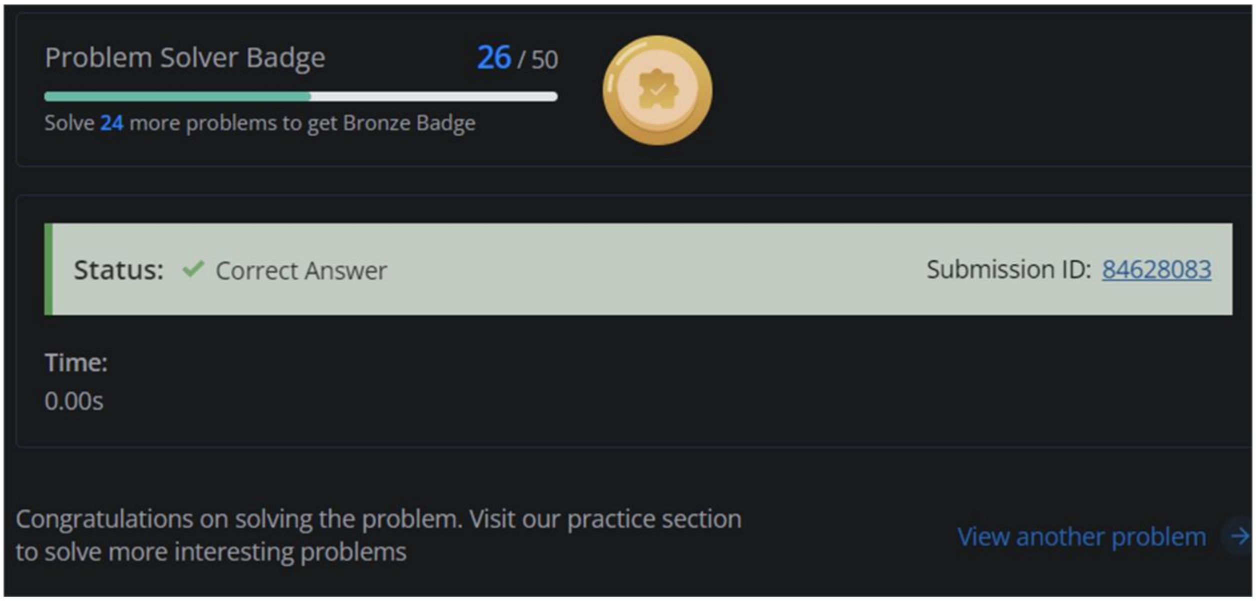
```
    for(int i = 0; i<n/2; i++)
    {
        if((arr[i]-arr[i+1])!=-1)
return false;
    }
    for(int i = n/2; i<n-1; i++)
    {
        if((arr[i]-arr[i+1])!=1)
return false;
    }
    return true;
}
int32_t main(){
ios_base::sync_with_stdio(false);
cin.tie(NULL);
     int t;     cin >> t;
while (t--){         int n;
cin>>n;         int* arr =
new int[n];

        for(int i = 0; i<n; i++)
        {
            cin>>arr[i];
        }

        if(solve(arr,n))
        cout<< "yes"<<endl;

        else
        cout<<"no"<<endl;
    }
return 0; }
```

Output:



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Status: ✓ Correct Answer

Submission ID: 84628083

Time:
0.00s

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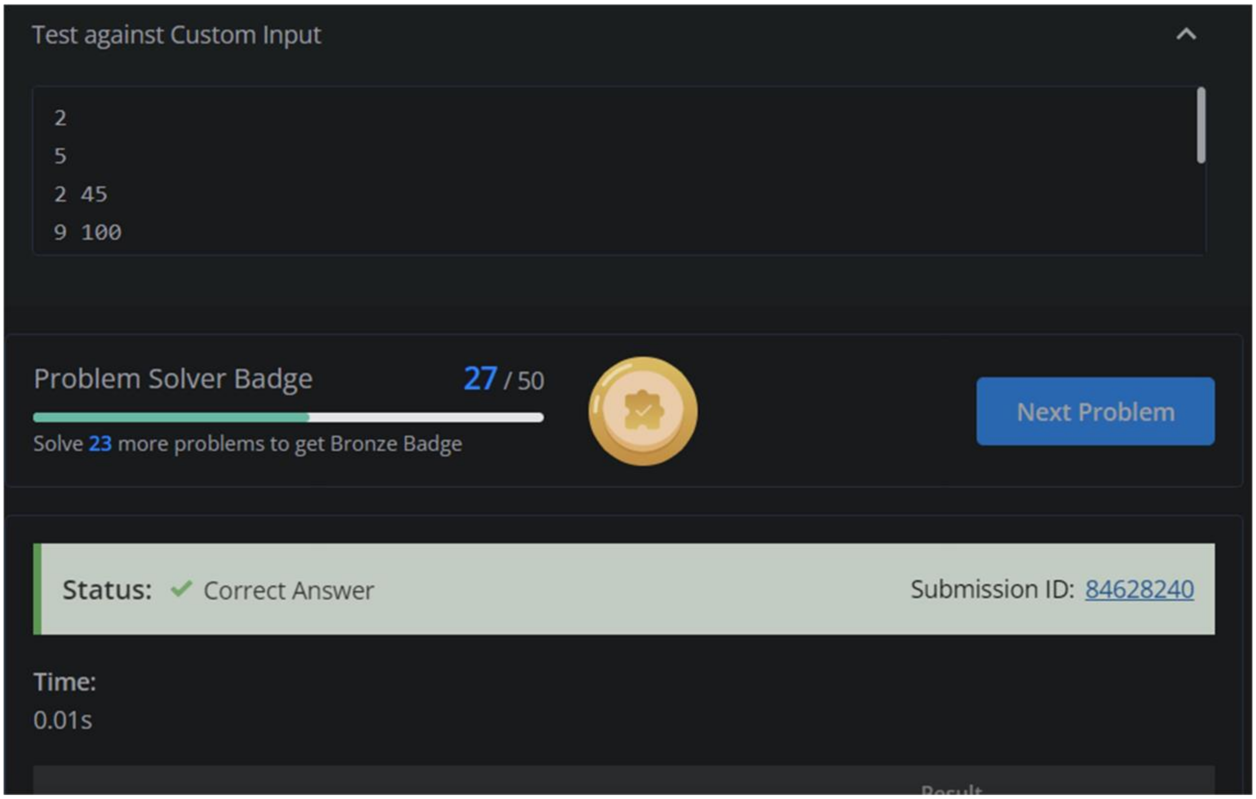
Q2. That Is my Score!

Code:

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


int main() {
map<int,int> m;
int n, x,y,sum=0,t;
cin>>t;


 while(t--)
 {
cin>>n;


 for(int i=0; i<n; i++)
  {
    cin>>x>>y;


    if(x<=8)
    {


   m[x]=max(m[x],y);


    }   }   map<int,
int>::iterator it;


  for(it=m.begin();it!=m.end();it++)
  {
   sum=sum+(*it).second ;
  }


cout<<sum<<endl; sum=0;
m.clear();
} return 0
;
}
```



Test against Custom Input

```
2
5
2 45
9 100
```

Problem Solver Badge 27 / 50

Solve 23 more problems to get Bronze Badge

Status: ✓ Correct Answer

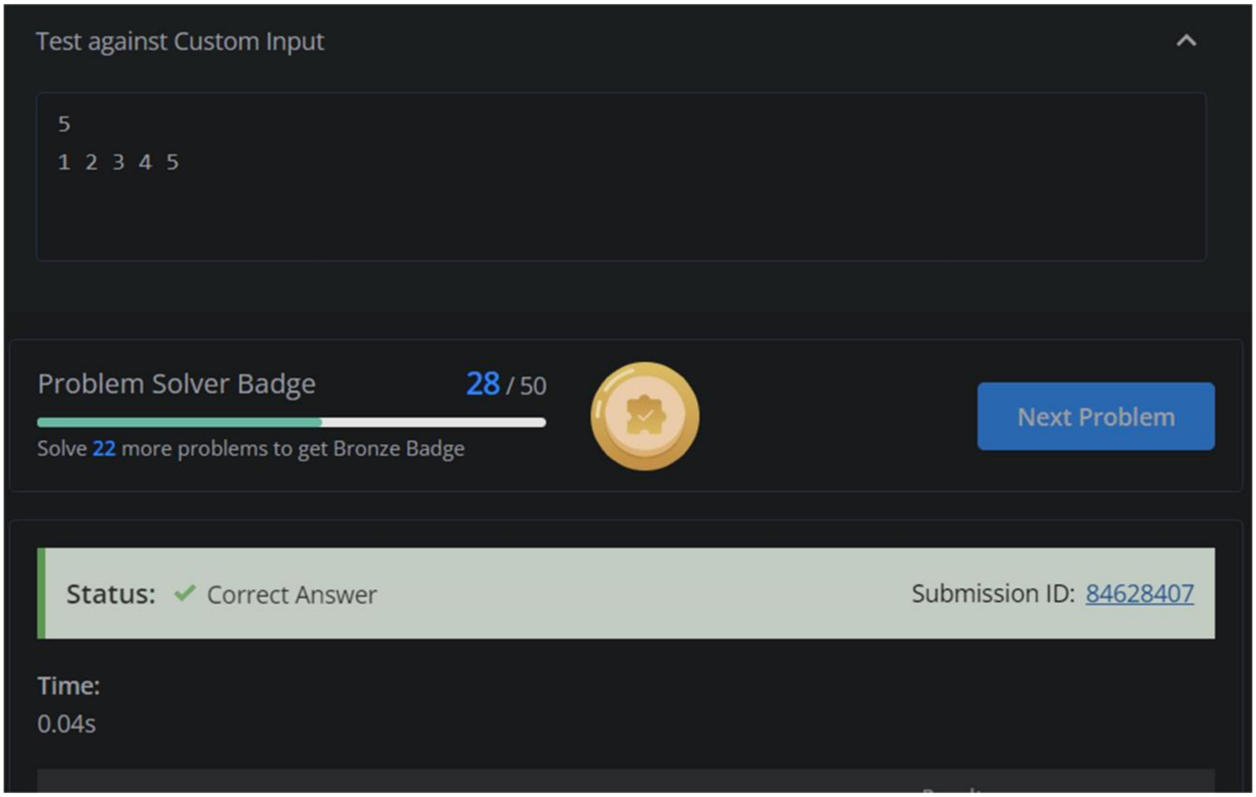
Submission ID: 84628240

Time:
0.01s

Q3. Pairwise AND Sum Code:

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

using namespace std;

#define ll long long int int

main() {

        // your code goes here

        ll n;

cin>>n;

vector<ll> v(n);

vector<ll> arr(31);

for(ll i=0;i<n;i++){

   cin>>v[i];

        }
```

```
          ll sum=0;

          for(int i=0;i<n;i++){

for(int j=0;j<31;j++){

if((v[i])&(1<<j)) arr[j]++;

             }

          }

          for(int j=0;j<31;j++){

   ll cnt=(arr[j]*(arr[j]-1))/2;

sum+=(cnt*(1<<j));

          }

          cout<<sum<<endl;

return 0;

}
```



Test against Custom Input

```
5
1 2 3 4 5
```

Problem Solver Badge 28 / 50

Solve 22 more problems to get Bronze Badge

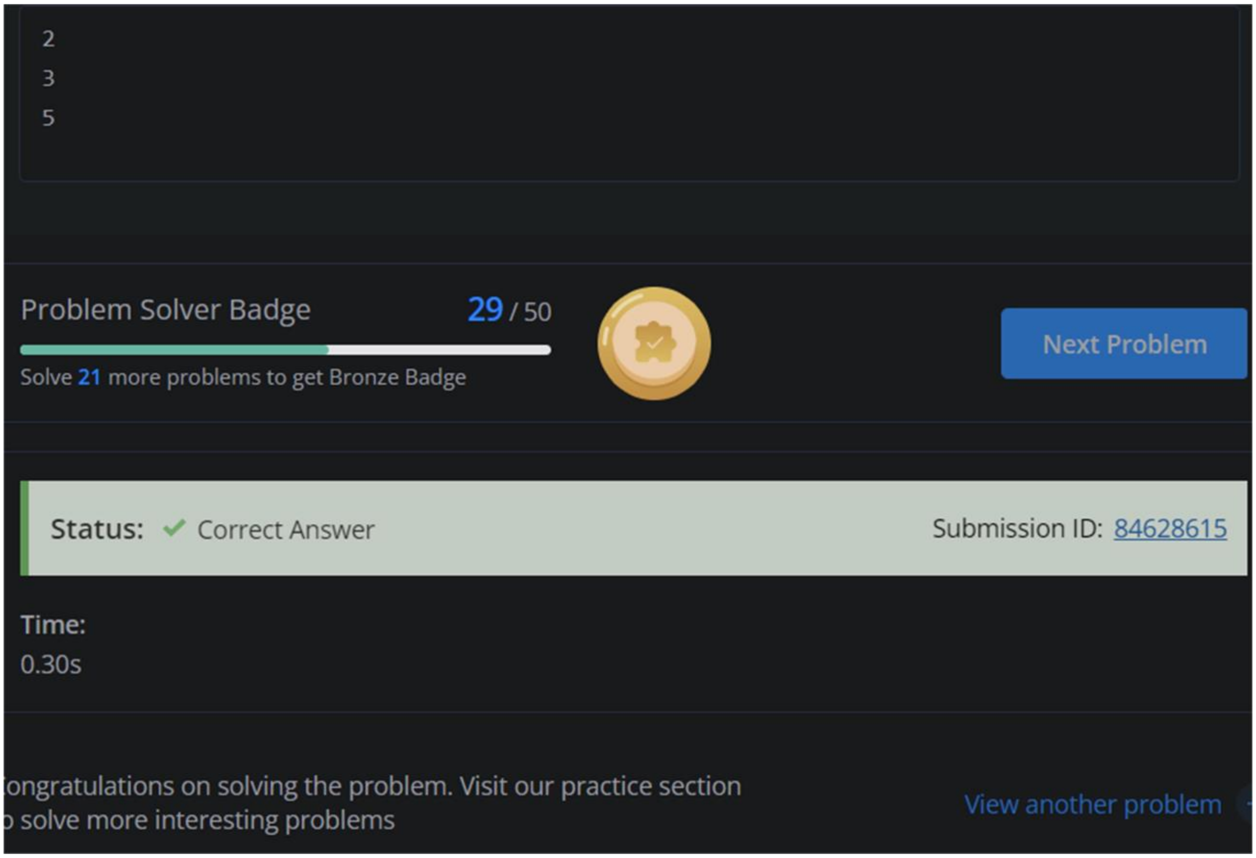
Status: ✓ Correct Answer

Submission ID: 84628407

Time:
0.04s

Q4. Roads in Chef land Code:

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

using namespace std; void

solve()

{     int n;     cin >> n;

if ((n & (n - 1)) == 0)

    {

            cout << -1 << endl;

        return;


    }

    long long ans = 0;     for (int i =

1; i <= n; i <<= 1)         ans += ((n -

i) / (i << 1)) * i;     for (int i = 2; i <

n; i <<= 1)         ans += i;     cout

<< ans << endl; } int main() {

ios_base::sync_with_stdio(false);

cin.tie(NULL);

    int t;

cin >> t;

while (t--)

{

solve();     }

return 0; }
```



```
2
3
5
```

Problem Solver Badge 29 / 50

Solve 21 more problems to get Bronze Badge

Status: ✓ Correct Answer Submission ID: 84628615

Time:
0.30s

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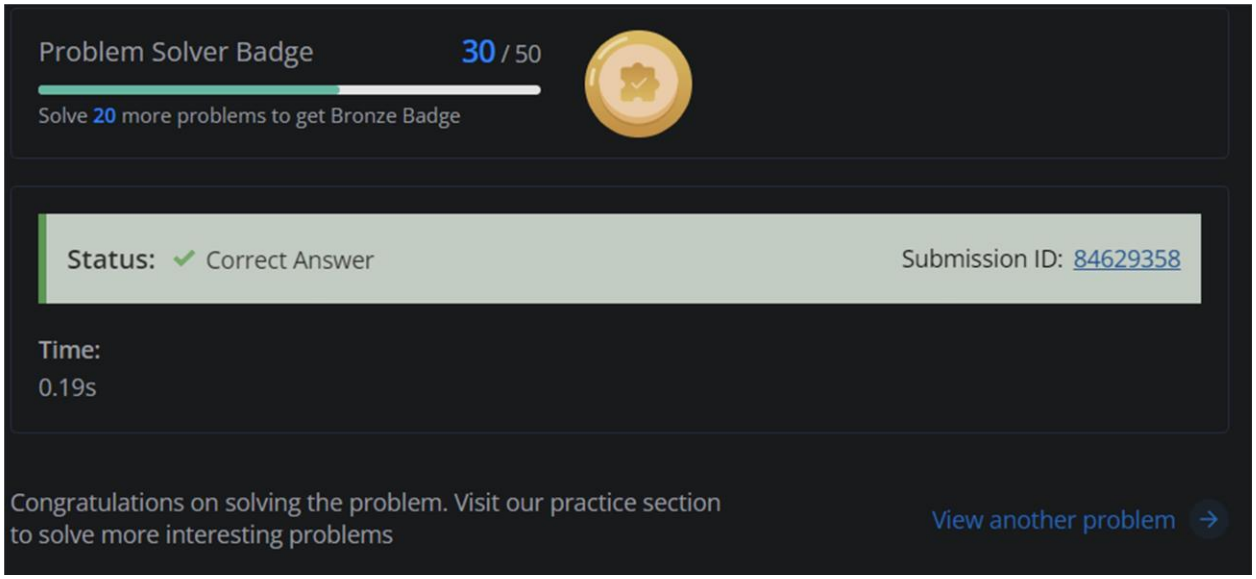
Q5. Gold collection Code:

```
#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;
}
```



Problem Solver Badge 30 / 50

Solve 20 more problems to get Bronze Badge

Status: ✓ Correct Answer

Submission ID: 84629358

Time:
0.19s

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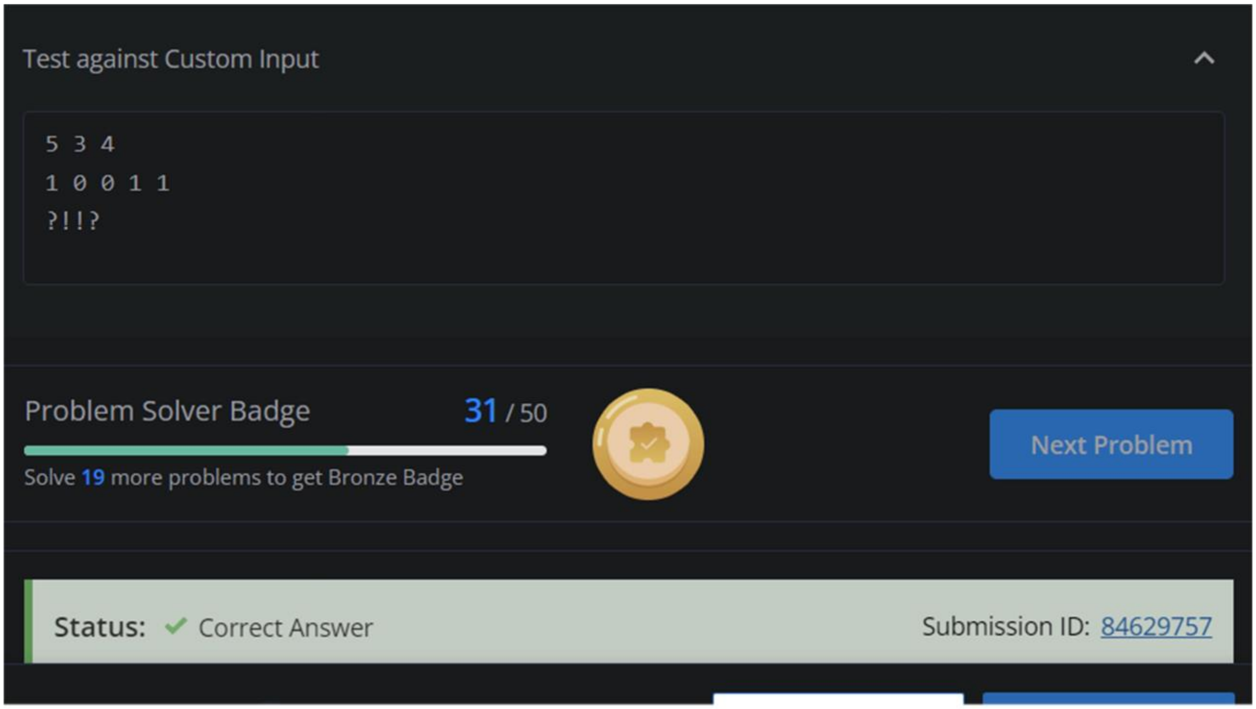
Q6. Chef and Sub Array

Code:

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

int n, k, p, a[200001], sum[200001], maxi[524288];
```

```
string s;

void build(int node, int l, int r) {
if (l == r) {         maxi[node] =
sum[l];         return;
    }
    int p1 = 2 * node + 1, p2 = 2 * node + 2, c = (l + r) / 2;
build(p1, l, c);
    build(p2, c + 1, r);     maxi[node] =
max(maxi[p1], maxi[p2]);
}

int query(int node, int l, int r, int i, int j) {     if (l == i
&& r == j)         return maxi[node];     int p1 = 2 * node
+ 1, p2 = 2 * node + 2, c = (l + r) / 2;
    if (j <= c) return query(p1, l, c, i, j);     if (i > c) return
query(p2, c + 1, r, i, j);     return max(query(p1, l, c, i, c),
query(p2, c + 1, r, c + 1, j));
}

int main() {     ios::sync_with_stdio(0);
cin.tie(0); cout.tie(0);
    //freopen("test01.in", "r", stdin);
//freopen("test01.out", "w", stdout);
cin >> n >> k >> p;     k = min(k, n);
for (int i = 1; i <= n; i++) {
        cin >> a[i];
a[n + i] = a[i];
    }     cin >> s;     sum[0] = 0;     for (int i
= 1; i <= k; i++)         sum[i] = sum[i - 1]
+ a[i];     for (int i = k + 1; i <= 2 * n; i++)
sum[i] = sum[i - 1] + a[i] - a[i - k];
build(0, 1, 2 * n);     for (int i = 0, pos = 1;
i < s.size(); i++) {
        if (s[i] == '?')             cout << query(0, 1, 2 * n, pos + k - 1,
pos + n - 1) << "\n";         else {             pos--;             if (pos < 1)
pos = n;
        }     }
return 0; }
```



```
5 3 4
1 0 0 1 1
?!!?
```

Problem Solver Badge 31 / 50

Solve 19 more problems to get Bronze Badge

Status: ✓ Correct Answer

Submission ID: 84629757

Q7. Multiple Linked Lists

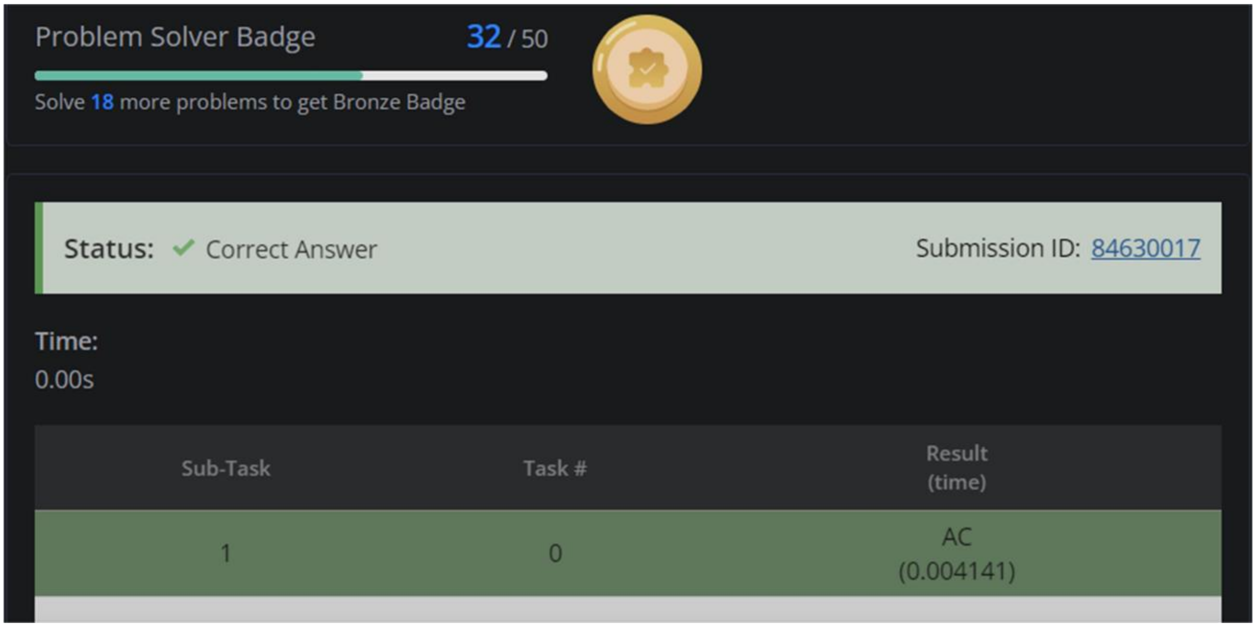
```
#include <iostream> using
namespace std;
struct Node{
int data;
   Node* link;     Node*
head = NULL;     bool
circular = false;     int *table
= new int[1001];     Node*
NodeTable[1001];     int N =
0; public:     int* getTable()
         {
      return table;
   }
   Node()
   {
      for(int i = 0; i < 1001; i++)
                     table[i] = 0;
      for(int i = 0; i < 1001; i++)
```

```
                            NodeTable[i] = NULL;
    }     void
first(int x){
        Node* temp1 = new Node;
temp1->data = x;         temp1-
>link = NULL;
NodeTable[x] = temp1;
N++;         if(head == NULL)
        {
            head = temp1;
table[head->data] = 0;
            return;
        }
        Node* temp = head;
while(temp->link != NULL)
temp = temp->link;
        temp->link = temp1;
    }

    void second(int y, int x)
    {
        N++;
        find(y) ? insertAfter(y, x) : insertBefore(y, x);
    }
    void insertBefore(int y, int x)
    {
        Node* temp = new Node;
temp->data = y;         temp-
>link = NULL;
NodeTable[y] = temp;
            if(head->data == x)
            {
            temp->link = head;
head = temp;
return;
        }
        Node* temp1 = head;
while(temp1->link->data != x)
temp1 = temp1->link;         temp->link =
temp1->link;
        temp1->link = temp;
    }
    void insertAfter(int y, int x){
Node* temp = new Node;
temp->data = x;         temp-
>link = NULL;
NodeTable[x] = temp;
Node* temp1 = head;
while(temp1->data != y)
temp1 = temp1->link;
temp->link = temp1->link;
        temp1->link = temp;
    }

    void third(int x, int y, int z)
    {
        Node* temp1 = new Node;
temp1->data = z;         temp1-
>link = NULL;
NodeTable[z] = temp1;         int
distance = 0;         Node* temp
= head;         while(temp-
>data!=x)             temp=temp-
>link;         Node* Initial =
temp;
        while(temp->data != y)
        {
            temp = temp->link;
            distance++;
        }         distance /=
2;         while(distance !=
0)
        {
            Initial = Initial->link;
distance--;
        }
        temp1->link = Initial->link;
        Initial->link = temp1;
        N++;
    }

    bool find(int x)
    {
        Node* temp = head;         while(temp != NULL)
            {
```

```
         if(temp->data == x)
return true;
         temp = temp->link;
      }
      if(temp == NULL)
return false;
   }

   void display()
   {
      Node* temp = head;
      while(temp != NULL)
         {
         cout << temp->data << " ";
         temp = temp->link;
      }
}
   void fourth(int x, int p)
   {       if(find(x) == false)
   return;       Node* temp =
NodeTable[x];
         while(p != 0)            {
if(temp->link == NULL)
                  {
                     temp->link = head;
                           temp = head;
                  circular = true;
                           p--
;                 }
else
                  {
                     temp = temp->link;
                     p--;
                  }
      }
            NodeTable[x]->link = temp;
   }    void
createtable()
         {
      for(int i = 1; i < 1001; i++)
if(NodeTable[i] != NULL)
if(NodeTable[i]->link != NULL)
table[NodeTable[i]->link->data]++;
```

```
    }
    void displaytable()
            {
        for(int i = 1; i < 10; i++)
            cout << i << " " << table[i] << endl;
    }     bool
Circular()
            {
        return circular;
    }     int
length()
            {
        return N;
    } }; int
main() {
Node A;
int N;     cin
>> N;
char c;
int b;
    for(int i = 0; i < N; i++)
            {
        cin>>c;          cin>>b;
if(c == 'I' && b == 0)
                        {
            int x;
cin >> x;
A.first(x);
        }
        else if(c == 'I' && b == 1)
                        {
            int x,y;
cin >> x >> y;
            A.second(x, y);
        }

        else if(c == 'I' && b == 2)
                        {
            int x, y, z;
cin >> x >> y >> z;
            A.third(x, y, z);
        }
        else if(c == 'U')
```

```
                        {
            int p;
cin >> p;
            A.fourth(b, p);
        }
    }
    A.createtable();     int*
ansTable = A.getTable();     int
countMultiple = 0;
    A.Circular() ? cout << 1 << endl : cout << 0 << endl;
    for(int i = 1; i <= 1000; i++)
if(ansTable[i] >= 2)
                            countMultiple++;
    if(countMultiple == 0)
            {
                 cout << 0 << endl;
                 A.display();
            }
    else
    {
        cout << countMultiple << endl;
for(int i = 1; i <= 1000; i++)
if(ansTable[i] >= 2)                  cout
<< i << " ";         cout<<endl;
for(int i = 1; i <= 1000; i++)
if(ansTable[i] >= 2)                  cout
<< ansTable[i] << " ";
    }
    cout << endl;
}
```



Problem Solver Badge 32 / 50

Solve 18 more problems to get Bronze Badge

Status: ✓ Correct Answer

Submission ID: 84630017

Time:

0.00s

Sub-Task	Task #	Result (time)
1	0	AC (0.004141)