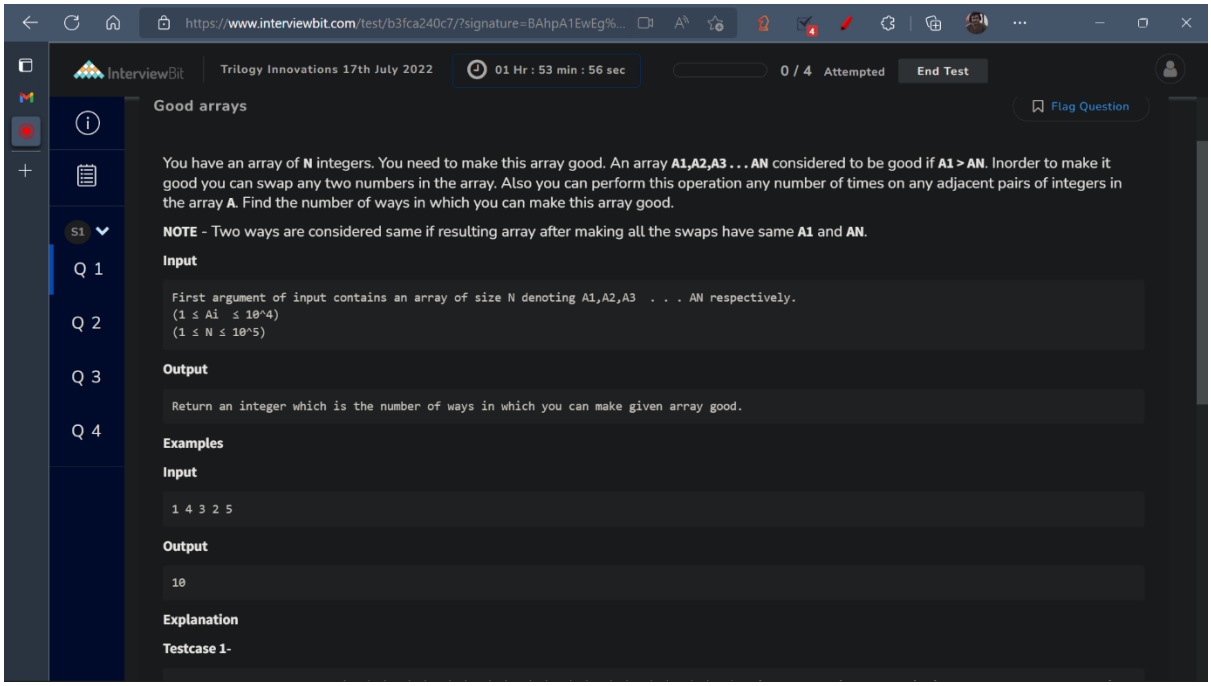
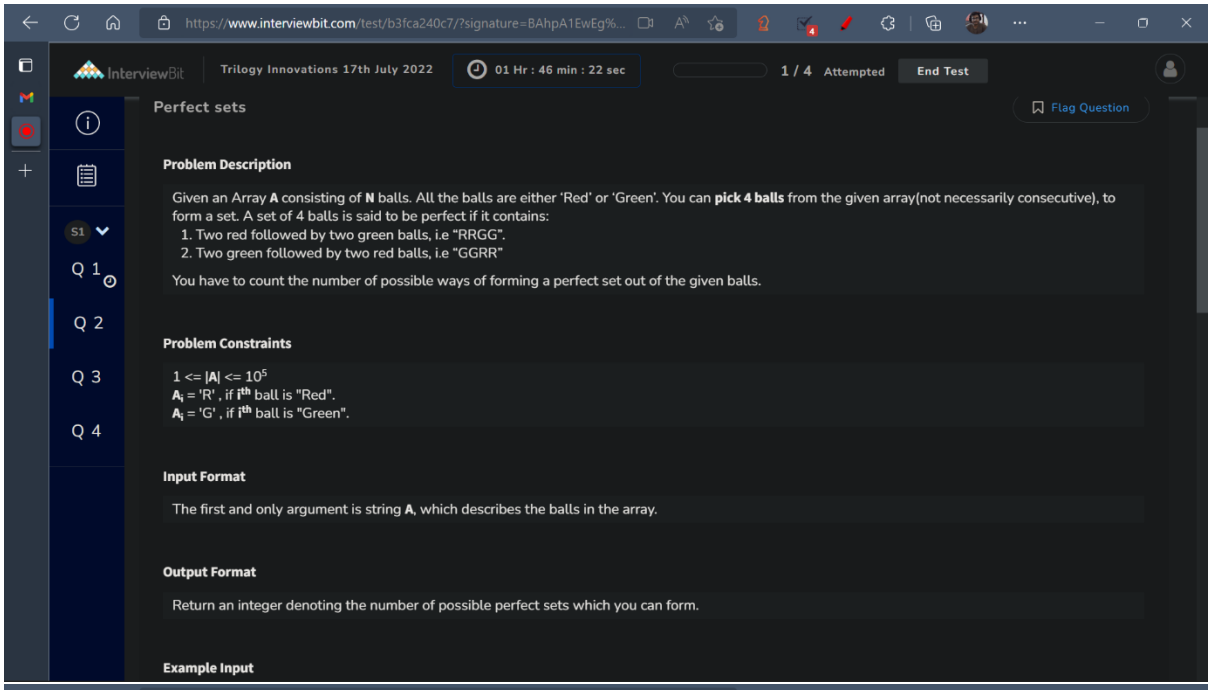
CODENATION (MANIT)

1)



2)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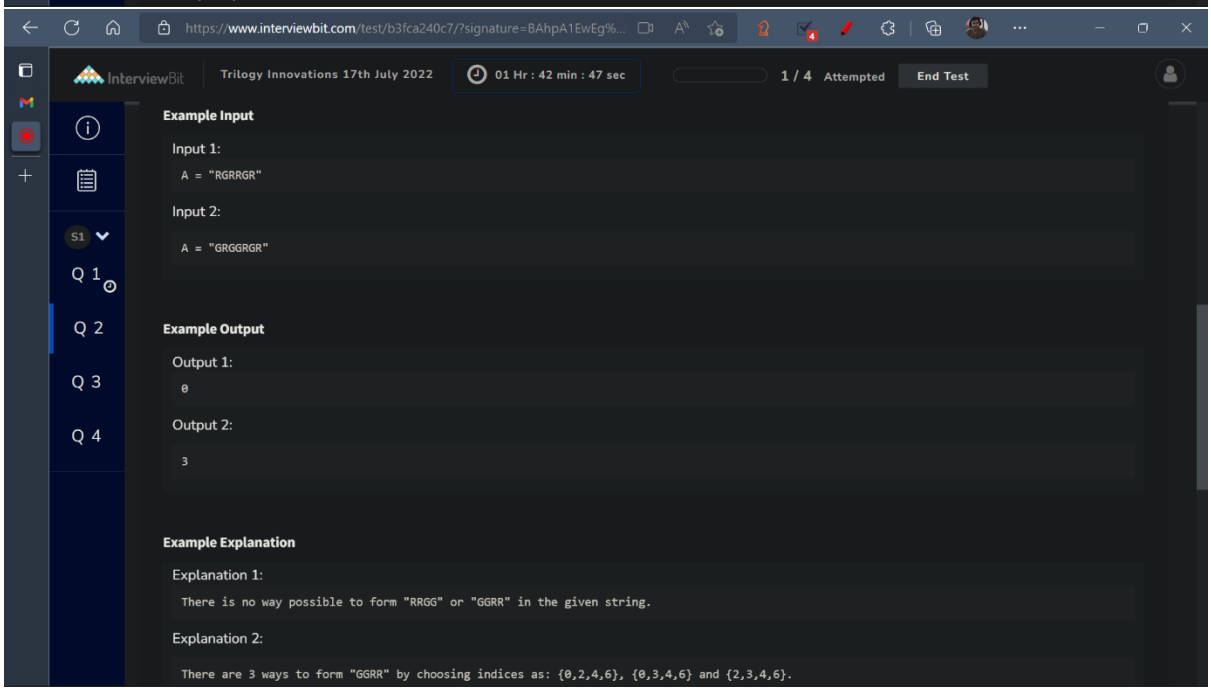
Trilogy Innovations 17th July 2022
01 Hr : 46 min : 22 sec
1 / 4 Attempted
End Test
Perfect sets
Flag Question
Problem Description
Given an Array A consisting of N balls. All the balls are either 'Red' or 'Green'. You can pick 4 balls from the given array(not necessarily consecutive), to form a set. A set of 4 balls is said to be perfect if it contains:
1. Two red followed by two green balls, i.e "RRGG".
2. Two green followed by two red balls, i.e "GGRR"
You have to count the number of possible ways of forming a perfect set out of the given balls.
Problem Constraints
1 <= |A| <= 10^5
A_i = 'R' , if i^th ball is "Red".
A_i = 'G' , if i^th ball is "Green".
Input Format
The first and only argument is string A, which describes the balls in the array.
Output Format
Return an integer denoting the number of possible perfect sets which you can form.
Example Input
S1
Q 1
Q 2
Q 3
Q 4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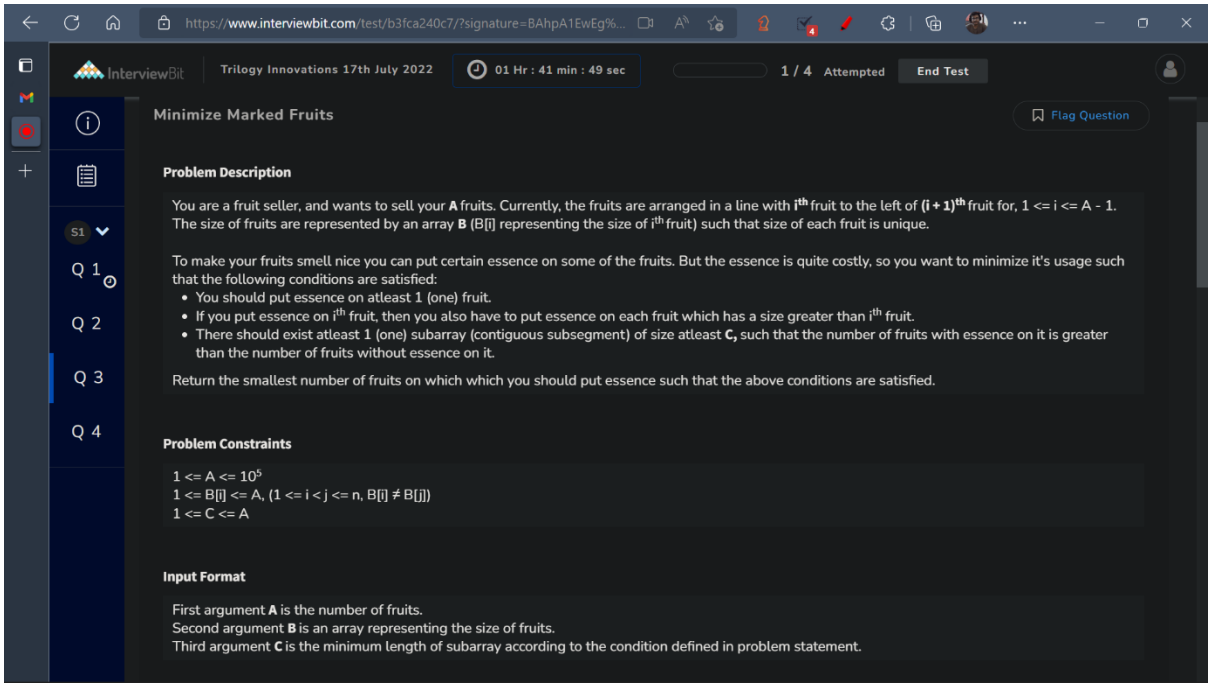
01 Hr : 42 min : 47 sec
1 / 4 Attempted
End Test
Example Input
Input 1:
A = "RGRRGR"
Input 2:
A = "GRGGRGR"
Example Output
Output 1:
0
Output 2:
3
Example Explanation
Explanation 1:
There is no way possible to form "RRGG" or "GGRR" in the given string.
Explanation 2:
There are 3 ways to form "GGRR" by choosing indices as: {0,2,4,6}, {0,3,4,6} and {2,3,4,6}.
S1
Q 1
Q 2
Q 3
Q 4

3)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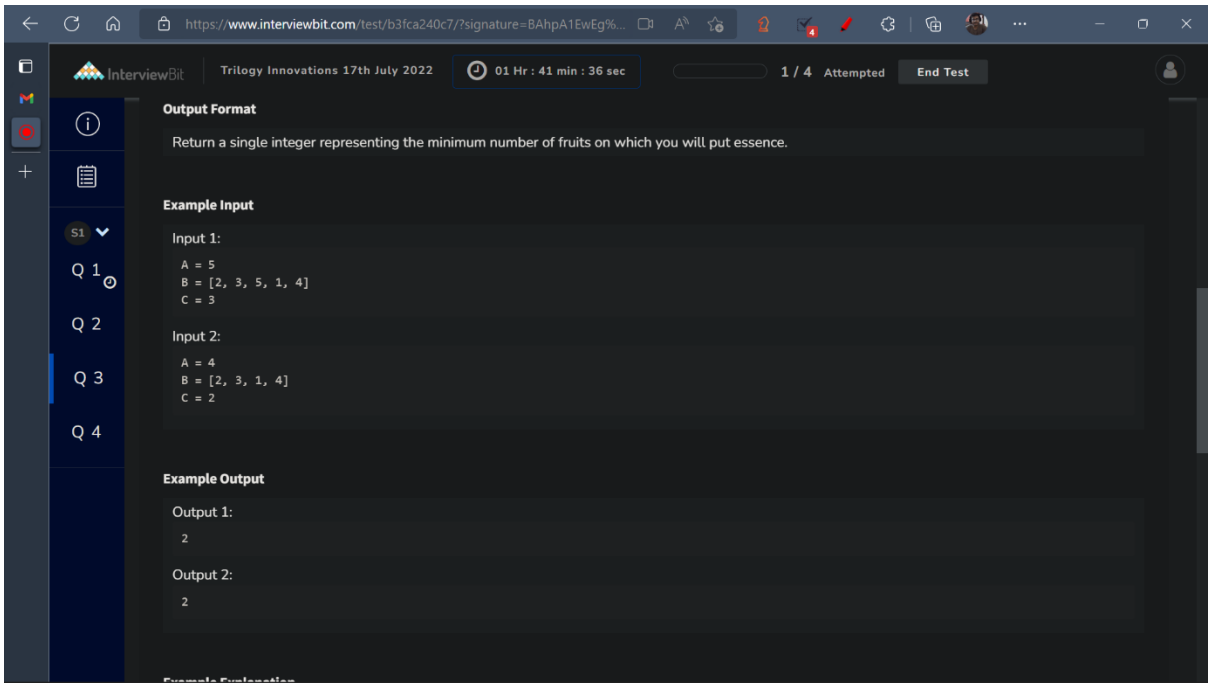
01 Hr : 41 min : 49 sec
1 / 4 Attempted
End Test
Minimize Marked Fruits
Flag Question
Problem Description
You are a fruit seller, and wants to sell your A fruits. Currently, the fruits are arranged in a line with i^th fruit to the left of (i + 1)^th fruit for, 1 <= i <= A - 1.
The size of fruits are represented by an array B (B[i] representing the size of i^th fruit) such that size of each fruit is unique.
To make your fruits smell nice you can put certain essence on some of the fruits. But the essence is quite costly, so you want to minimize it's usage such that the following conditions are satisfied:
• You should put essence on atleast 1 (one) fruit.
• If you put essence on i^th fruit, then you also have to put essence on each fruit which has a size greater than i^th fruit.
• There should exist atleast 1 (one) subarray (contiguous subsegment) of size atleast C, such that the number of fruits with essence on it is greater than the number of fruits without essence on it.
Return the smallest number of fruits on which which you should put essence such that the above conditions are satisfied.
Problem Constraints
1 <= A <= 10^5
1 <= B[i] <= A, (1 <= i < j <= n, B[i] ≠ B[j])
1 <= C <= A
Input Format
First argument A is the number of fruits.
Second argument B is an array representing the size of fruits.
Third argument C is the minimum length of subarray according to the condition defined in problem statement.
S1
Q 1
Q 2
Q 3
Q 4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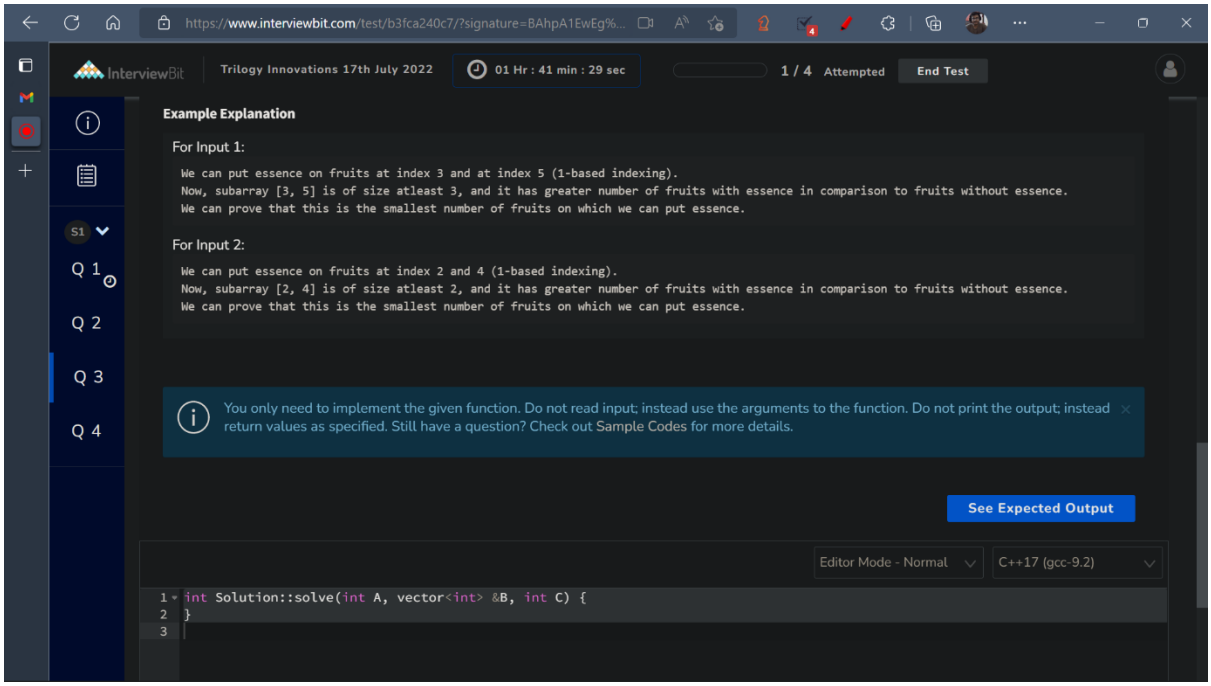
End Test
Output Format
Return a single integer representing the minimum number of fruits on which you will put essence.
Example Input
Input 1:
A = 5
B = [2, 3, 5, 1, 4]
C = 3
Input 2:
A = 4
B = [2, 3, 1, 4]
C = 2
Example Output
Output 1:
2
Output 2:
2
S1
Q 1
Q 2
Q 3
Q 4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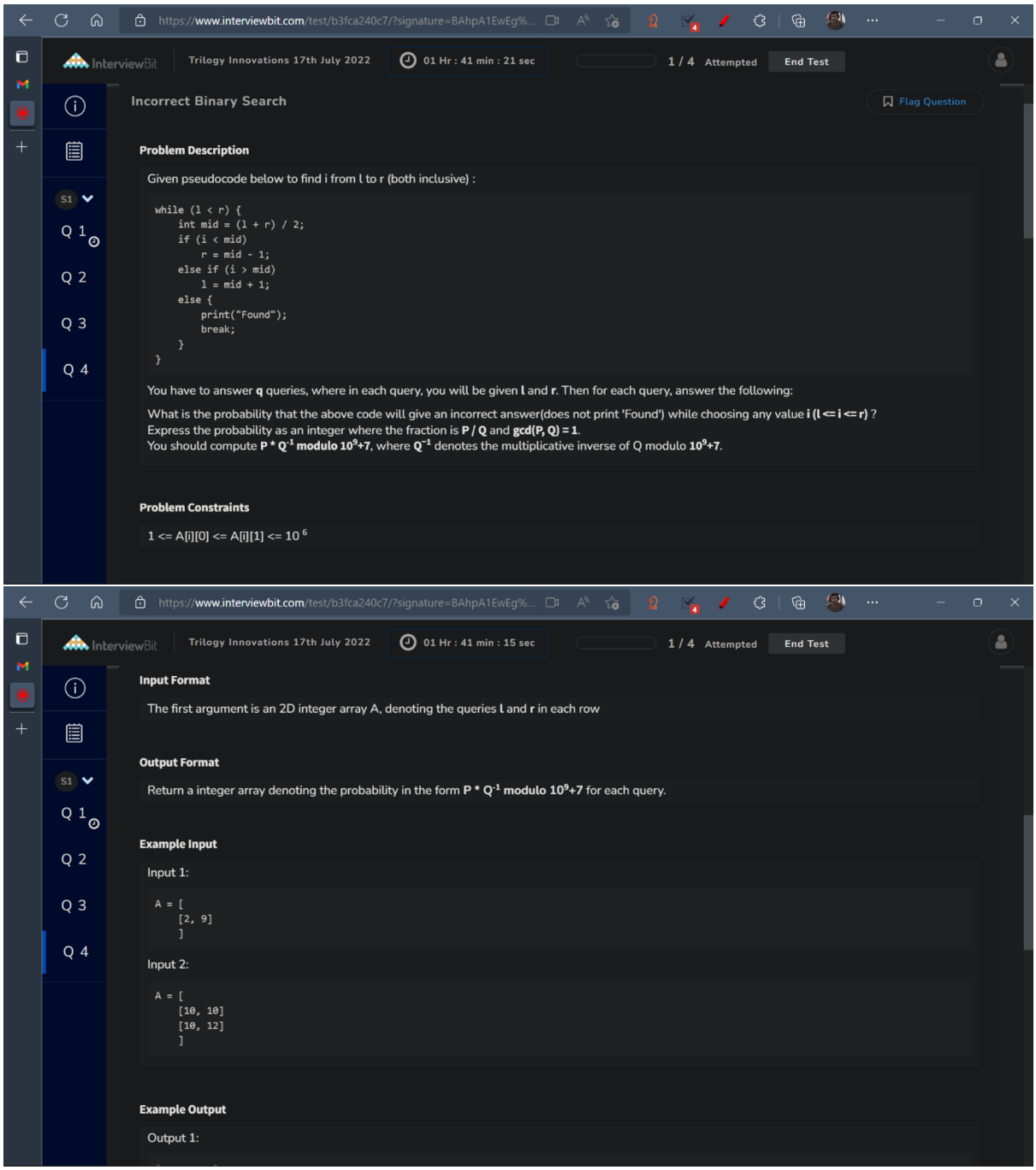
1 / 4 Attempted
End Test
Example Explanation
For Input 1:
We can put essence on fruits at index 3 and at index 5 (1-based indexing).
Now, subarray [3, 5] is of size atleast 3, and it has greater number of fruits with essence in comparison to fruits without essence.
We can prove that this is the smallest number of fruits on which we can put essence.
For Input 2:
We can put essence on fruits at index 2 and 4 (1-based indexing).
Now, subarray [2, 4] is of size atleast 2, and it has greater number of fruits with essence in comparison to fruits without essence.
We can prove that this is the smallest number of fruits on which we can put essence.
S1
Q 1
Q 2
Q 3
Q 4
You only need to implement the given function. Do not read input; instead use the arguments to the function. Do not print the output; instead return values as specified. Still have a question? Check out Sample Codes for more details.
See Expected Output
Editor Mode - Normal
C++17 (gcc-9.2)
int Solution::solve(int A, vector<int> &B, int C) {
}

4)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01 Hr : 41 min : 21 sec
1 / 4 Attempted
End Test
Incorrect Binary Search
Flag Question
Problem Description
Given pseudocode below to find i from l to r (both inclusive) :
while (l < r) {
int mid = (l + r) / 2;
if (i < mid)
r = mid - 1;
else if (i > mid)
l = mid + 1;
else {
print("Found");
break;
}
}
You have to answer q queries, where in each query, you will be given l and r. Then for each query, answer the following:
What is the probability that the above code will give an incorrect answer(does not print 'Found') while choosing any value i (l <= i <= r) ?
Express the probability as an integer where the fraction is P / Q and gcd(P, Q) = 1.
You should compute P * Q^-1 modulo 10^9+7, where Q^-1 denotes the multiplicative inverse of Q modulo 10^9+7.
Problem Constraints
1 <= A[i][0] <= A[i][1] <= 10^6
S1
Q 1
Q 2
Q 3
Q 4

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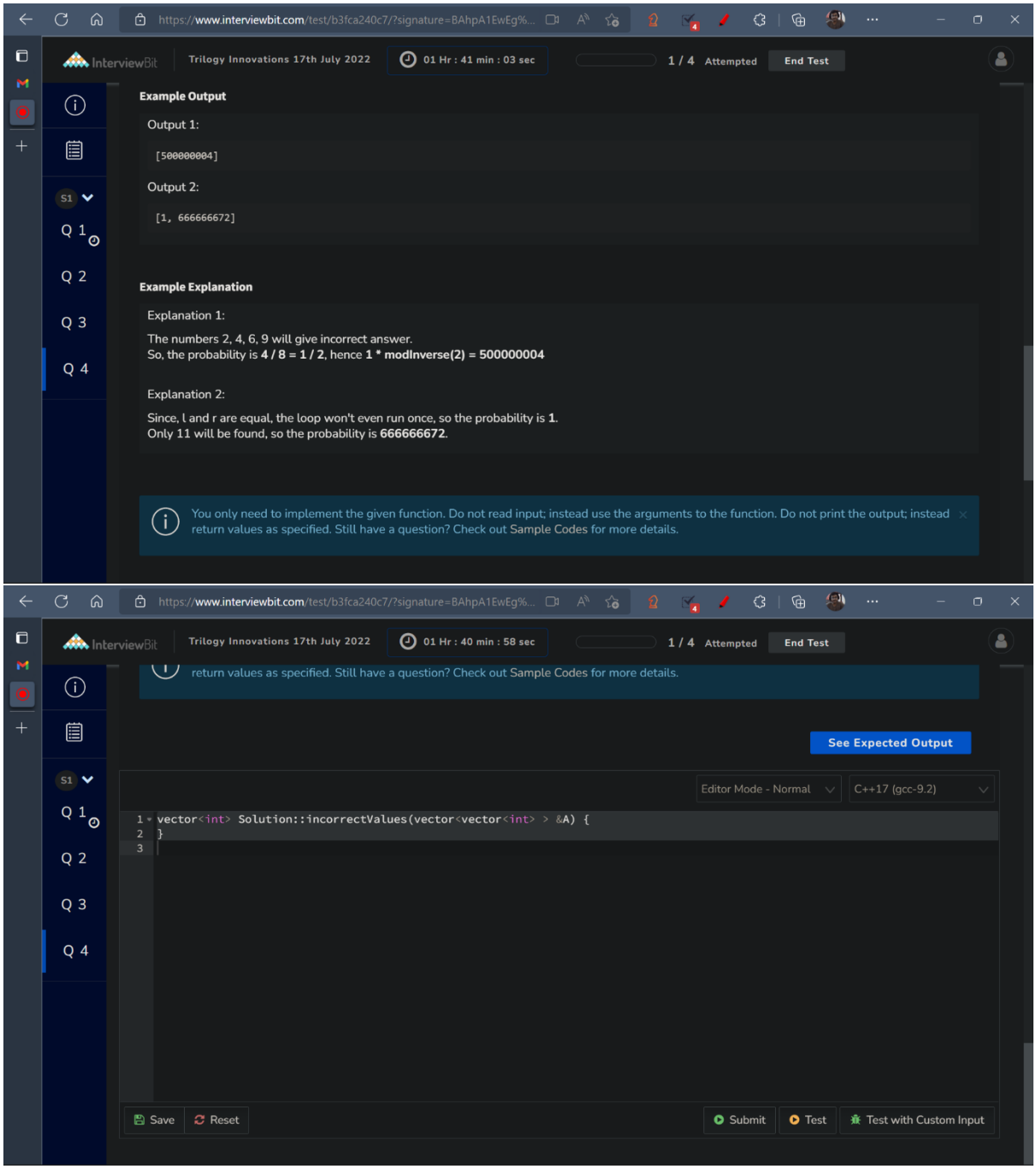
01 Hr : 41 min : 15 sec
1 / 4 Attempted
End Test
Input Format
The first argument is an 2D integer array A, denoting the queries l and r in each row
Output Format
Return a integer array denoting the probability in the form P * Q^-1 modulo 10^9+7 for each query.
Example Input
Input 1:
A = [
[2, 9]
]
Input 2:
A = [
[10, 10]
[10, 12]
]
Example Output
Output 1:
S1
Q 1
Q 2
Q 3
Q 4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InterviewBit
Trilogy Innovations 17th July 2022
01 Hr : 41 min : 03 sec
1 / 4 Attempted
End Test
Example Output
Output 1:
[500000004]
Output 2:
[1, 666666672]
Example Explanation
Explanation 1:
The numbers 2, 4, 6, 9 will give incorrect answer.
So, the probability is 4 / 8 = 1 / 2, hence 1 * modInverse(2) = 500000004
Explanation 2:
Since, l and r are equal, the loop won't even run once, so the probability is 1.
Only 11 will be found, so the probability is 666666672.
You only need to implement the given function. Do not read input; instead use the arguments to the function. Do not print the output; instead return values as specified. Still have a question? Check out Sample Codes for more details.
S1
Q 1
Q 2
Q 3
Q 4

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InterviewBit
Trilogy Innovations 17th July 2022
01 Hr : 40 min : 58 sec
1 / 4 Attempted
End Test
return values as specified. Still have a question? Check out Sample Codes for more details.
See Expected Output
Editor Mode - Normal
C++17 (gcc-9.2)
vector<int> Solution::incorrectValues(vector<vector<int> > &A) {
}
Save
Reset
Submit
Test
Test with Custom Input
S1
Q 1
Q 2
Q 3
Q 4

SOLUTION

2)

```
long int s(string A,string temp,int i,int j,vector<vector<int>> &dp)
{
    if(i==0 && j>0) return 0;

    if(j==0) return 1;

    if(dp[i][j]!=-1) return dp[i][j];

    if(A[i-1]==A[j-1])
    return dp[i][j]=s(A,temp,i-1,j-1,dp)+s(A,temp,i-1,j,dp);
    else
    return dp[i][j]=s(A,temp,i-1,j,dp);
}

long solve(string A)
{
    vector<vector<int>> dp(A.length()+1,vector<int>(5,-1));
    string temp="RRGG";
    long ans=0;
    ans+=s(A,temp,A.length(),4,dp);

    temp="GGRR";
    for(int i=0;i<=A.length();i++)
    {
        for(int j=0;j<5;j++)
        dp[i][j]=-1;
    }

    ans+=s(A,temp,A.length(),4,dp);

    return ans;
}
```