Marwadi University Marwadi Chandarana Group NAAC A+	**Marwadi University** **Faculty of Engineering and Technology** **Department of Information and Communication Technology**	
Subject: DAA (01CT0512)	**LHC**	
LHC	**Date**:02-08-2025	**Enrolment No**: 92301733046

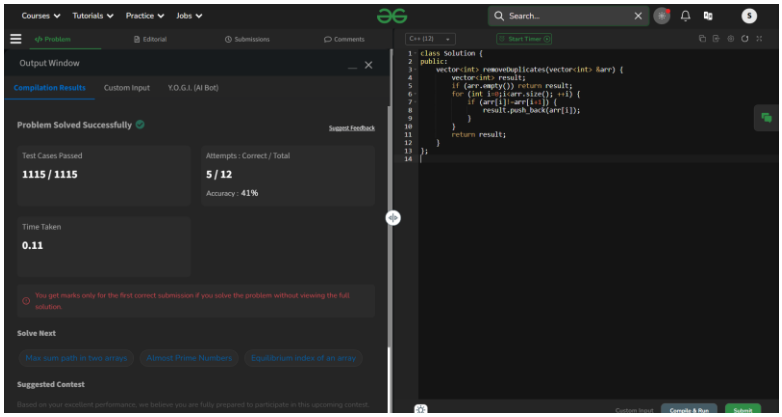
Company Name: Google

Problem-1: Remove Duplicate element from sorted array

Code:

```
class Solution {
public:
    vector<int> removeDuplicates(vector<int> &arr) {
        vector<int> result;
        if (arr.empty()) return result;
        for (int i=0;i<arr.size(); ++i) {
            if (arr[i]!=arr[i+1]) {
                result.push_back(arr[i]);
            }
        }
        return result;
    }
};
```

Output:



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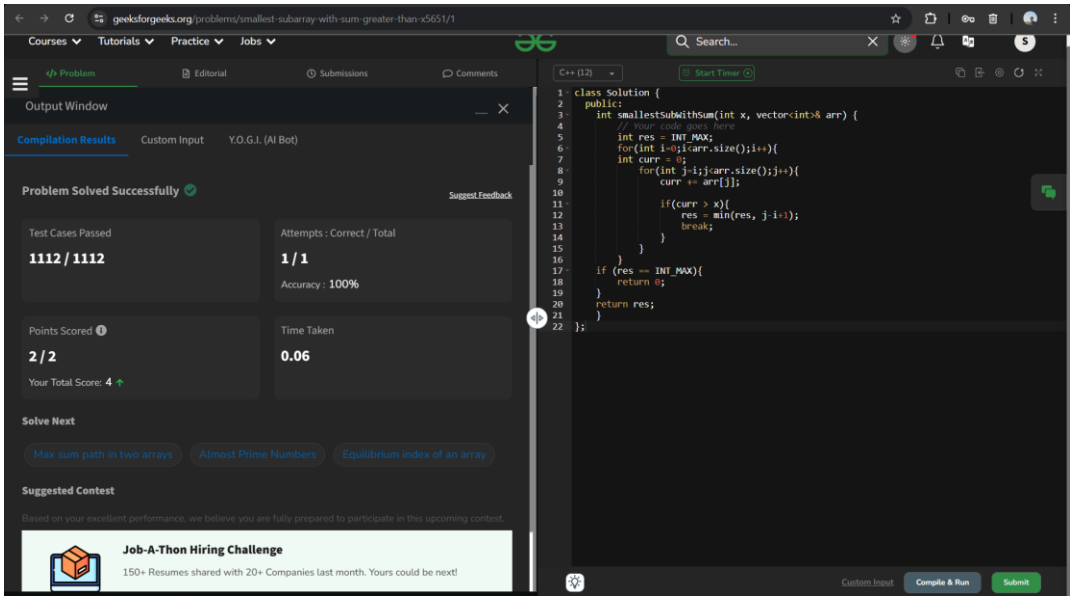
Problem-2:

Code:

```
class Solution {
  public:
    int smallestSubWithSum(int x, vector<int>& arr) {
        // Your code goes here
        int res = INT_MAX;
        for(int i=0;i<arr.size();i++){
        int curr = 0;
            for(int j=i;j<arr.size();j++){
                curr += arr[j];

                if(curr > x){
                    res = min(res, j-i+1);
                    break;
                }
            }
        }
    if (res == INT_MAX){
        return 0;
    }
    return res;
    }
};
```



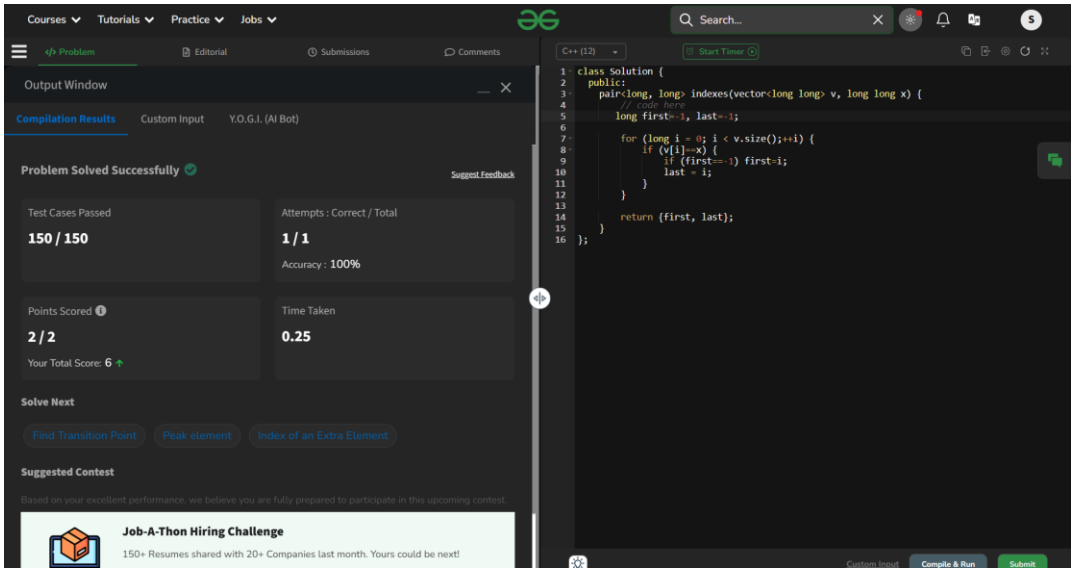
Problem-3: **Left most and right most index**

Code:

```
class Solution {
  public:
    pair<long, long> indexes(vector<long long> v, long long x) {
        // code here
       long first=-1, last=-1;


        for (long i = 0; i < v.size();++i) {
            if (v[i]==x) {
                if (first==-1) first=i;
                last = i;
            }
        }
```

```
        return {first, last};
    }
};
```



Problem-4:

Code:

```
/*
// Tree Node
class Node {
  public:
    int data;
    Node* left;
    Node* right;

    // Constructor to initialize a new node
    Node(int val) {
        data = val;
        left = NULL;
```

```
        right = NULL;
    }
};
*/

class Solution {
  public:
    int getCount(Node *root, int l, int h) {
        if(root==nullptr) return 0;
        if (root->data <=h && root->data>=l){
            return 1 + getCount(root->left,l,h) + getCount(root->right,l,h);
        }
        else if (root->data<l){
            return getCount(root->right,l,h);
        }
        else
            return getCount(root->left,l,h);
    }
};
```

Output:

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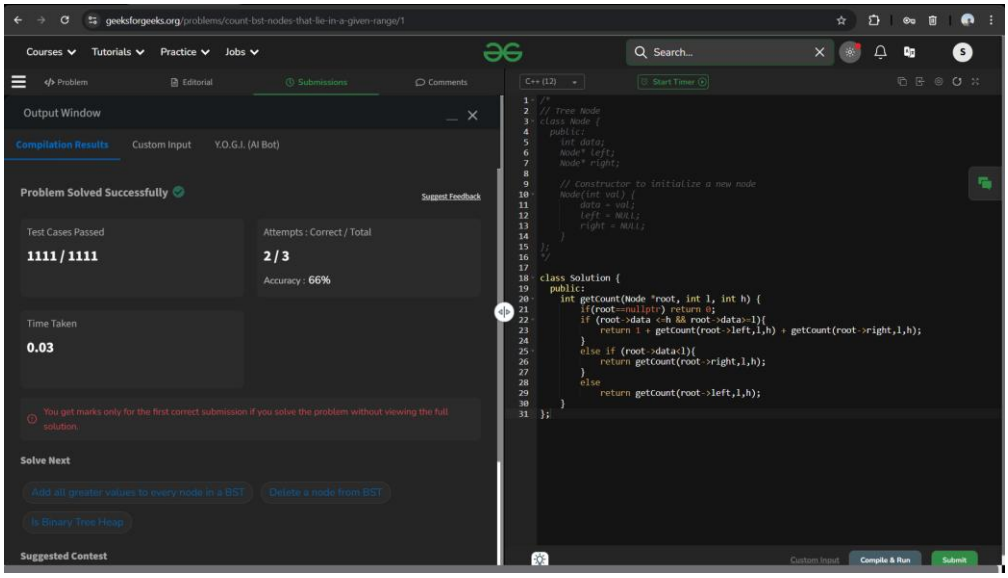


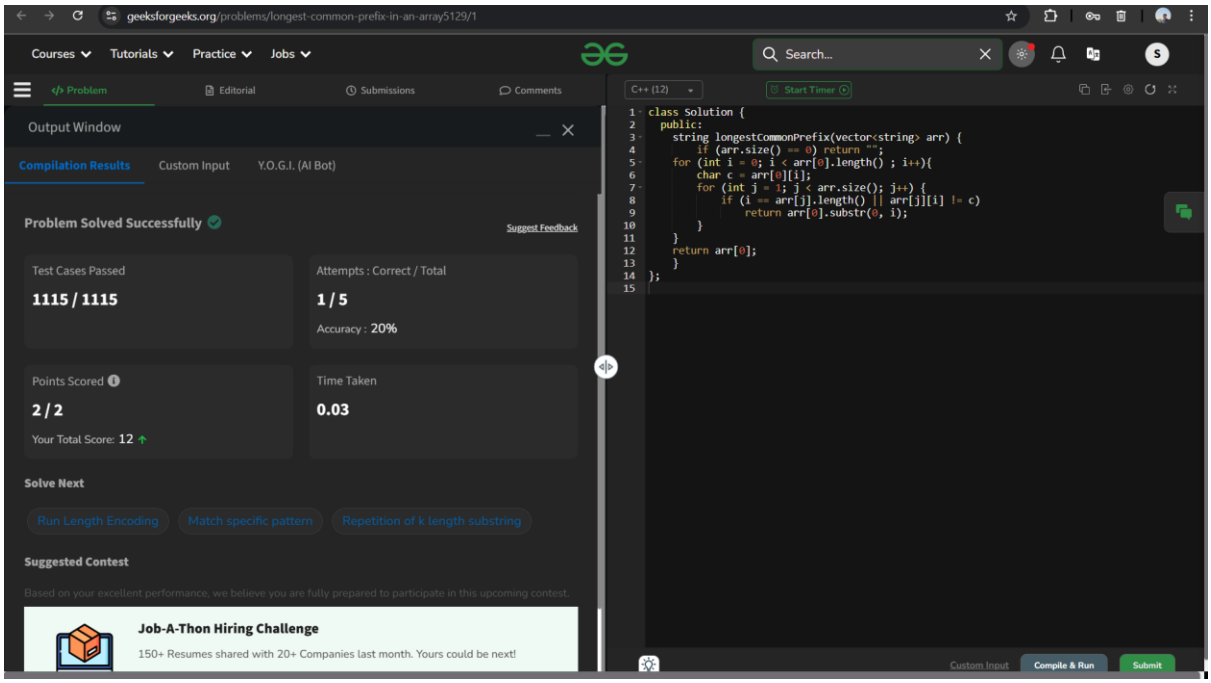
Problem-5: longest common prefix

Code:

```
// User function template for C++

class Solution {

  public:

    string longestCommonPrefix(vector<string> arr) {

        // your code here

        if(arr.size()==0) return 0;

        for(int i=0;i<arr.size();i++){

            char c=arr[0][i];

            for(int j=0;j<arr.size();j++){

                if(i=arr[i].length() || arr[[j][i]!=c]){

                    return arr[0].substr(0,i);

                }

            }

        }

    }
```

};

Output:



Problem-6:

Code:

```
class Solution {
  public:
    bool areKAnagrams(string &s1, string &s2, int k) {
        // code here
        {
    if (s1.length() != s2.length()) {
        return false;
    }

    unordered_map<char, int> map;
    for (int i = 0; i < s1.length(); i++) {
```

```
        char ch = s1[i];
        map[ch]++;
    }

    for (int i = 0; i < s2.length(); i++) {
        char ch = s2[i];
        if (map[ch] > 0) {
            map[ch]--;
        }
    }

    int count = 0;
    for (auto it = map.begin(); it != map.end(); it++) {
        count += it->second;
    }

    if (count > k)
        return false;
    else
        return true;
}

    }
};
```

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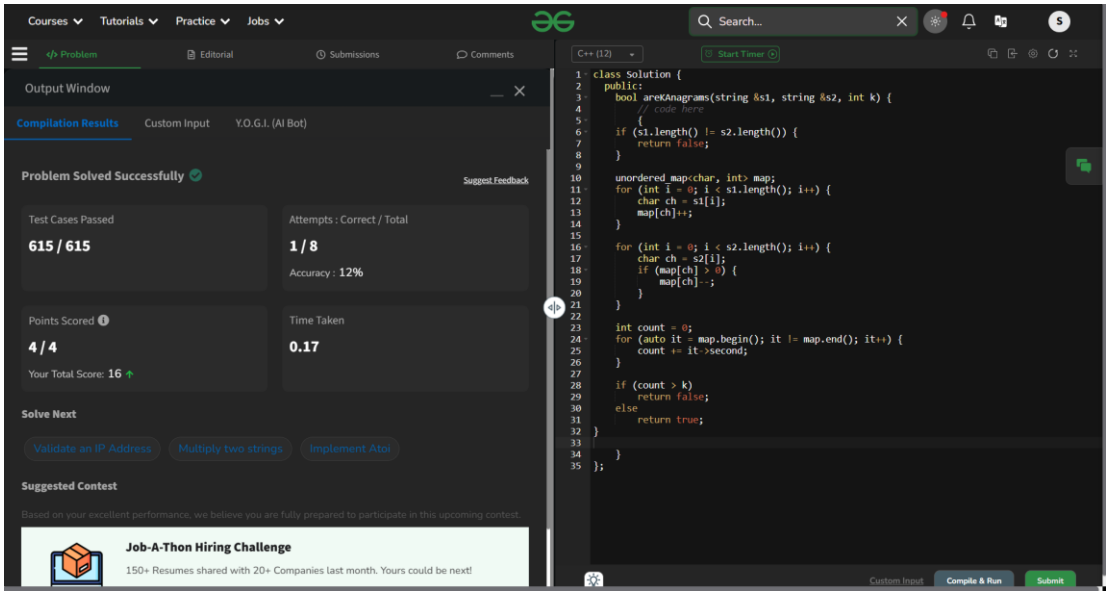


Problem-7: generate binary string

Code:

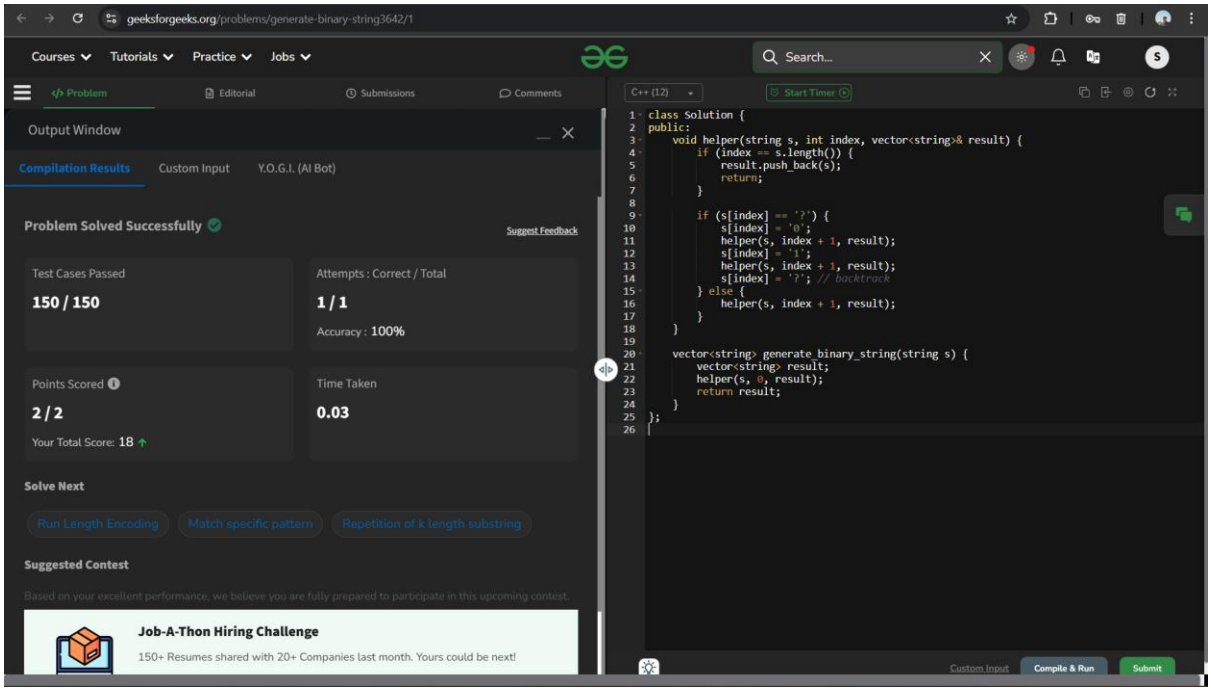
```
class Solution {
public:
   void helper(string s, int index, vector<string>& result) {
      if (index == s.length()) {
         result.push_back(s);
         return;
      }

      if (s[index] == '?') {
         s[index] = '0';
         helper(s, index + 1, result);
         s[index] = '1';
         helper(s, index + 1, result);
         s[index] = '?'; // backtrack
      } else {
```

```
        helper(s, index + 1, result);
    }
  }

  vector<string> generate_binary_string(string s) {
    vector<string> result;
    helper(s, 0, result);
    return result;
  }
};
```

Output:



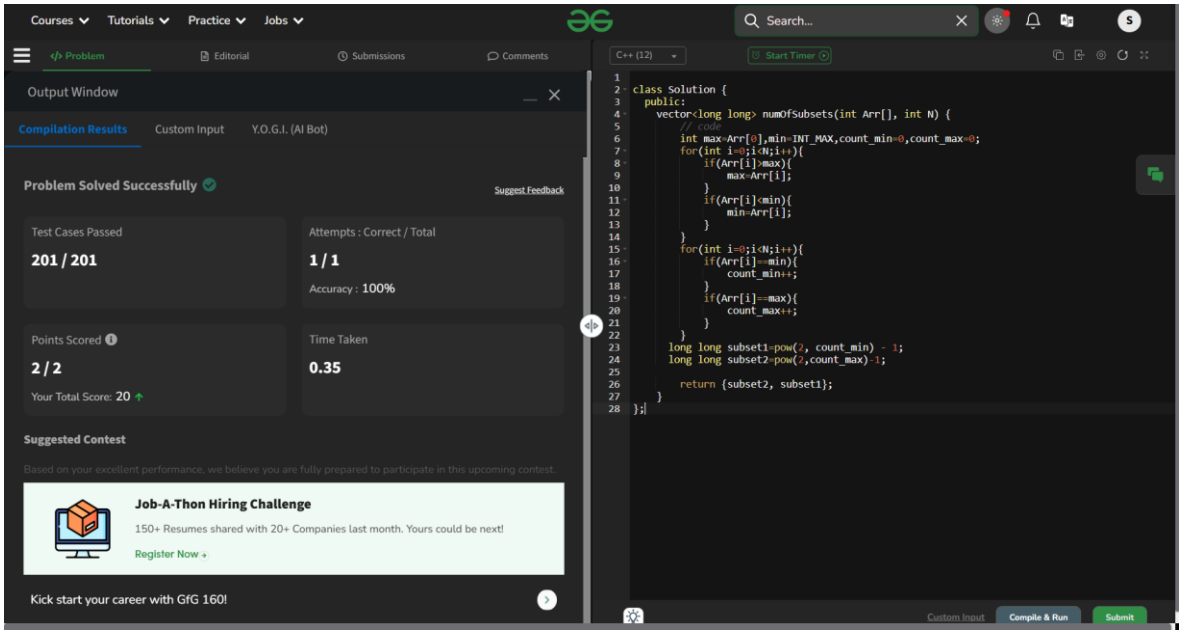
Problem -8:

```
class Solution {
  public:
```

```
    vector<long long> numOfSubsets(int Arr[], int N) {
        // code
        int max=Arr[0],min=INT_MAX,count_min=0,count_max=0;
        for(int i=0;i<N;i++){
            if(Arr[i]>max){
                max=Arr[i];
            }
            if(Arr[i]<min){
                min=Arr[i];
            }
        }
        for(int i=0;i<N;i++){
            if(Arr[i]==min){
                count_min++;
            }
            if(Arr[i]==max){
                count_max++;
            }
        }
       long long subset1=pow(2, count_min) - 1;
       long long subset2=pow(2,count_max)-1;

        return {subset2, subset1};
    }
};
```

Output:



Problem-9: subarray with given sum

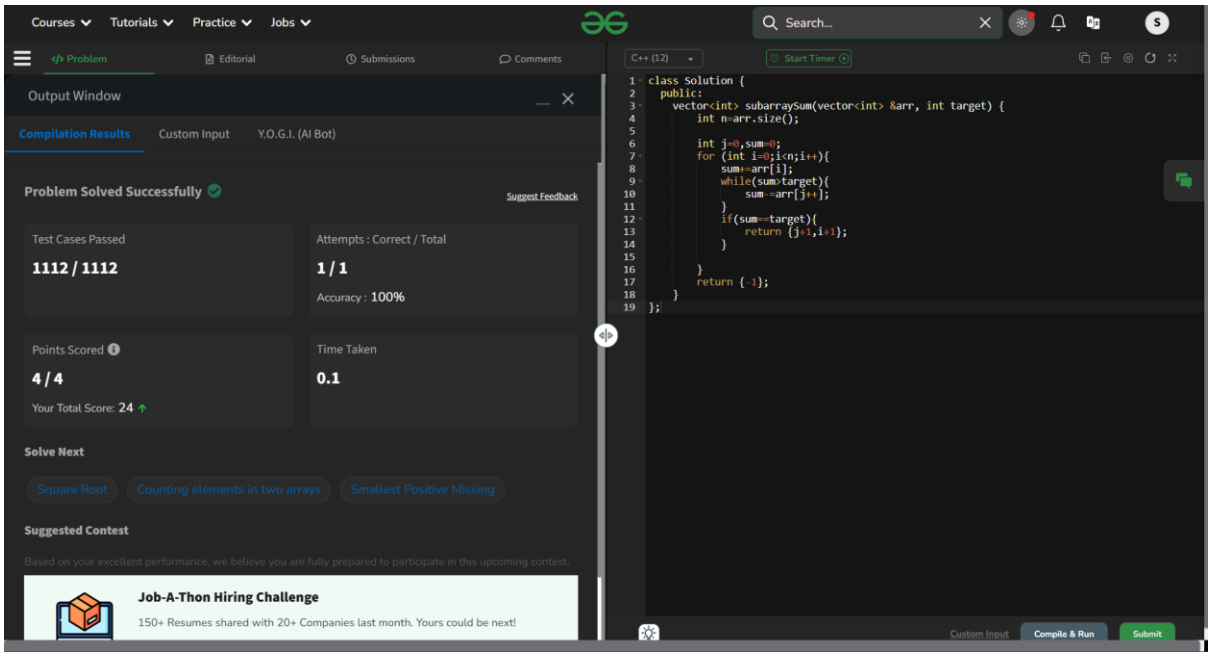
Code:

```
class Solution {
  public:
    vector<int> subarraySum(vector<int> &arr, int target) {
        int n=arr.size();


        int j=0,sum=0;
        for (int i=0;i<n;i++){
            sum+=arr[i];
            while(sum>target){
                sum-=arr[j++];
            }
            if(sum==target){
                return {j+1,i+1};
            }
```

```
        }
        return {-1};
    }
};
```

Output:



Problem-10: Maximum index

Code:

```
class Solution {
  public:
    int maxIndexDiff(vector<int>& arr) {
        int n=arr.size();
        vector<int> LMin(n), RMax(n);

        LMin[0]=arr[0];
        for (int i=1;i<n;i++)
```

```
        LMin[i]=min(arr[i], LMin[i-1]);


    RMax[n-1]=arr[n-1];
    for (int j=n-2;j>=0;j--)
        RMax[j]=max(arr[j],RMax[j+1]);


    int i= 0,j=0,maxDiff=-1;
    while (i<n && j<n) {
        if (LMin[i]<=RMax[j]) {
            maxDiff=max(maxDiff,j-i);
            j++;
        } else {
            i++;
        }
    }


    return maxDiff;
  }
};
```

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