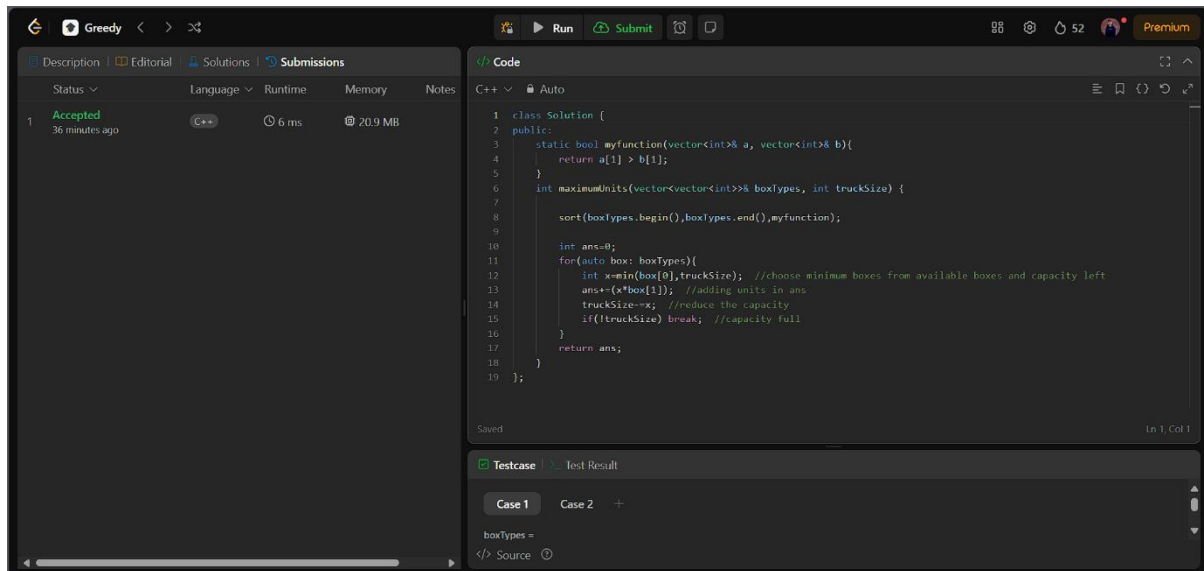


# ADVANCE PROGRAMMING LAB

## ASSIGNMENT 8

### Question 1: Max Units on a Truck

Output :



The screenshot shows a C++ IDE with the following components:

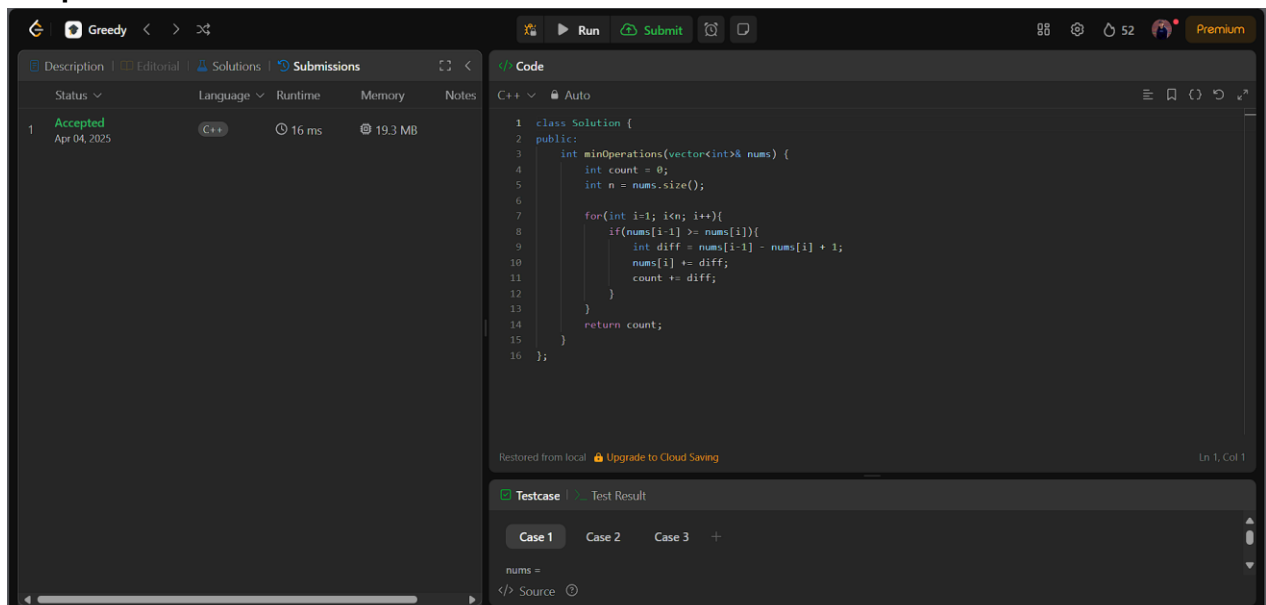
- Submissions Table:**

Status	Language	Runtime	Memory	Notes
Accepted 36 minutes ago	C++	6 ms	20.9 MB	
- Code Editor:**

```
1 class Solution {
2 public:
3     static bool myfunction(vector<int>& a, vector<int>& b){
4         return a[1] > b[1];
5     }
6     int maximumUnits(vector<vector<int>>& boxTypes, int truckSize) {
7         sort(boxTypes.begin(), boxTypes.end(), myfunction);
8
9         int ans=0;
10        for(auto box: boxTypes){
11            int x=min(box[0],truckSize); //choose minimum boxes from available boxes and capacity left
12            ans+=(x*box[1]); //adding units in ans
13            truckSize-=x; //reduce the capacity
14            if(!truckSize) break; //capacity full
15        }
16        return ans;
17    }
18 };
19 
```
- Testcase:** Case 1 is selected. The input is `boxTypes =`.

### Question 2: Min Operations to Make Array Increasing

Output:



The screenshot shows a C++ IDE with the following components:

- Submissions Table:**

Status	Language	Runtime	Memory	Notes
Accepted Apr 04, 2025	C++	16 ms	19.3 MB	
- Code Editor:**

```
1 class Solution {
2 public:
3     int minOperations(vector<int>& nums) {
4         int count = 0;
5         int n = nums.size();
6
7         for(int i=1; i<n; i++){
8             if(nums[i-1] >= nums[i]){
9                 int diff = nums[i-1] - nums[i] + 1;
10                nums[i] += diff;
11                count += diff;
12            }
13        }
14        return count;
15    }
16 };
17 
```
- Testcase:** Case 1 is selected. The input is `nums =`.

### Question 3: Remove Stones to Maximize Total

Output:

The screenshot shows a code editor interface with a dark theme. The top bar includes a 'Greedy' logo, navigation arrows, and icons for 'Run', 'Submit', and 'Premium'. The left sidebar has tabs for 'Description', 'Editorial', 'Solutions', and 'Submissions'. The 'Submissions' tab is active, showing a table with one submission: 'Accepted' 7 minutes ago, C++, 193 ms, 102.8 MB. The main editor area shows a C++ code snippet for a class 'Solution' with a static method 'help' and a method 'minStoneSum'. The 'minStoneSum' method uses a priority queue to process an array of stones. The bottom panel shows a 'Testcase' tab with 'Case 1' selected, displaying the input 'piles ='.

```
1 class Solution {
2 public:
3     bool static help(int x,int y)
4     {
5         return x>y;
6     }
7     int minStoneSum(vector<int>& piles, int k) {
8
9         int n=piles.size();
10        priority_queue<int,vector<int>>pq(piles.begin(),piles.end());
11        int ans=accumulate(piles.begin(),piles.end(),0);
12        int i=0;
13        while(k>0 && !pq.empty())
14        {
15            int temp=pq.top();
16            pq.pop();
17            ans-=(temp/2);
18            pq.push(temp-temp/2);
19            k--;
20        }
21    }
```

### Question 4: Max Score from Removing Substrings

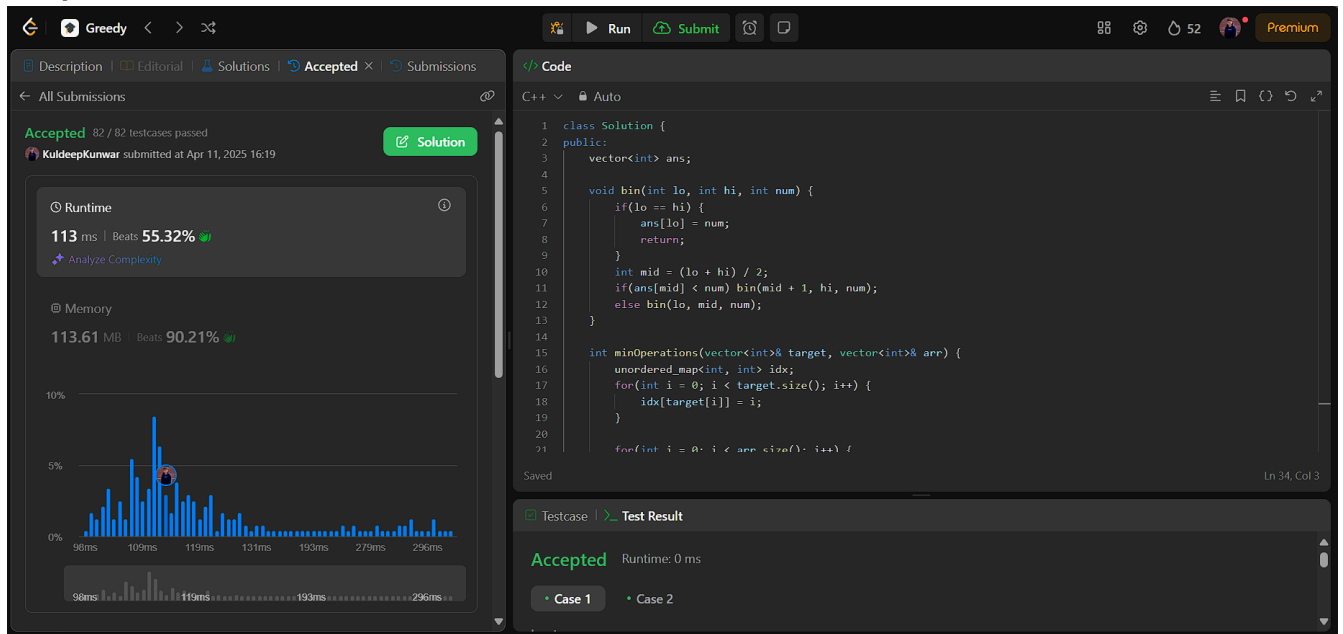
Output:

The screenshot shows a code editor interface with a dark theme. The top bar includes a 'Greedy' logo, navigation arrows, and icons for 'Run', 'Submit', and 'Premium'. The left sidebar has tabs for 'Description', 'Editorial', 'Solutions', and 'Submissions'. The 'Submissions' tab is active, showing a table with one submission: 'Accepted' 7 minutes ago, C++, 27 ms, 28.2 MB. The main editor area shows a C++ code snippet for a class 'Solution' with a static method 'maximumGain'. The 'maximumGain' method uses a greedy approach to remove substrings 'ab' and 'ba' from a string 's' to maximize the score. The bottom panel shows a 'Testcase' tab with 'Case 1' selected, displaying the input 's ='.

```
1 class Solution {
2 public:
3     int maximumGain(string s, int x, int y) {
4         int res = 0;
5         string top, bot;
6         int top_score, bot_score;
7
8         if (y > x) {
9             top = "ba";
10            top_score = y;
11            bot = "ab";
12            bot_score = x;
13        } else {
14            top = "ab";
15            top_score = x;
16            bot = "ba";
17            bot_score = y;
18        }
19
20        // Removing first top substrings cause they give more points
21        // than removing bot substrings
22    }
```

## Question 5: Min Operations to Make a Subsequence

### Output:



## Question 6: Max Number of Tasks You Can Assign

### Output:

