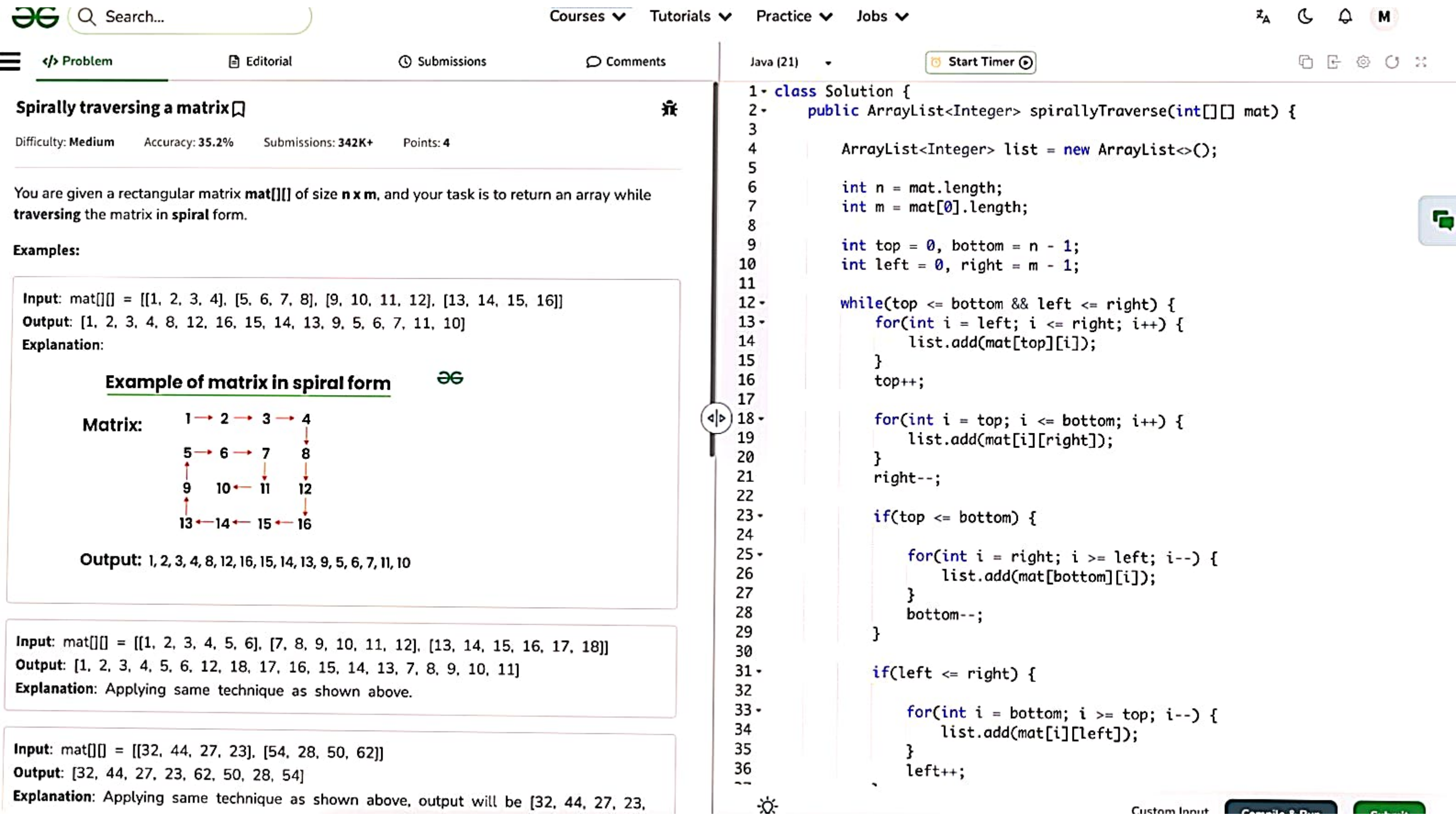


Spirally traversing a matrix

Difficulty: **Medium** Accuracy: **35.2%** Submissions: **342K+** Points: **4**

You are given a rectangular matrix **mat[][]** of size **n x m**, and your task is to return an array while **traversing** the matrix in **spiral** form.

Examples:

Input: mat[][] = [[1, 2, 3, 4], [5, 6, 7, 8], [9, 10, 11, 12], [13, 14, 15, 16]]
Output: [1, 2, 3, 4, 8, 12, 16, 15, 14, 13, 9, 5, 6, 7, 11, 10]
Explanation:

Example of matrix in spiral form

Matrix:

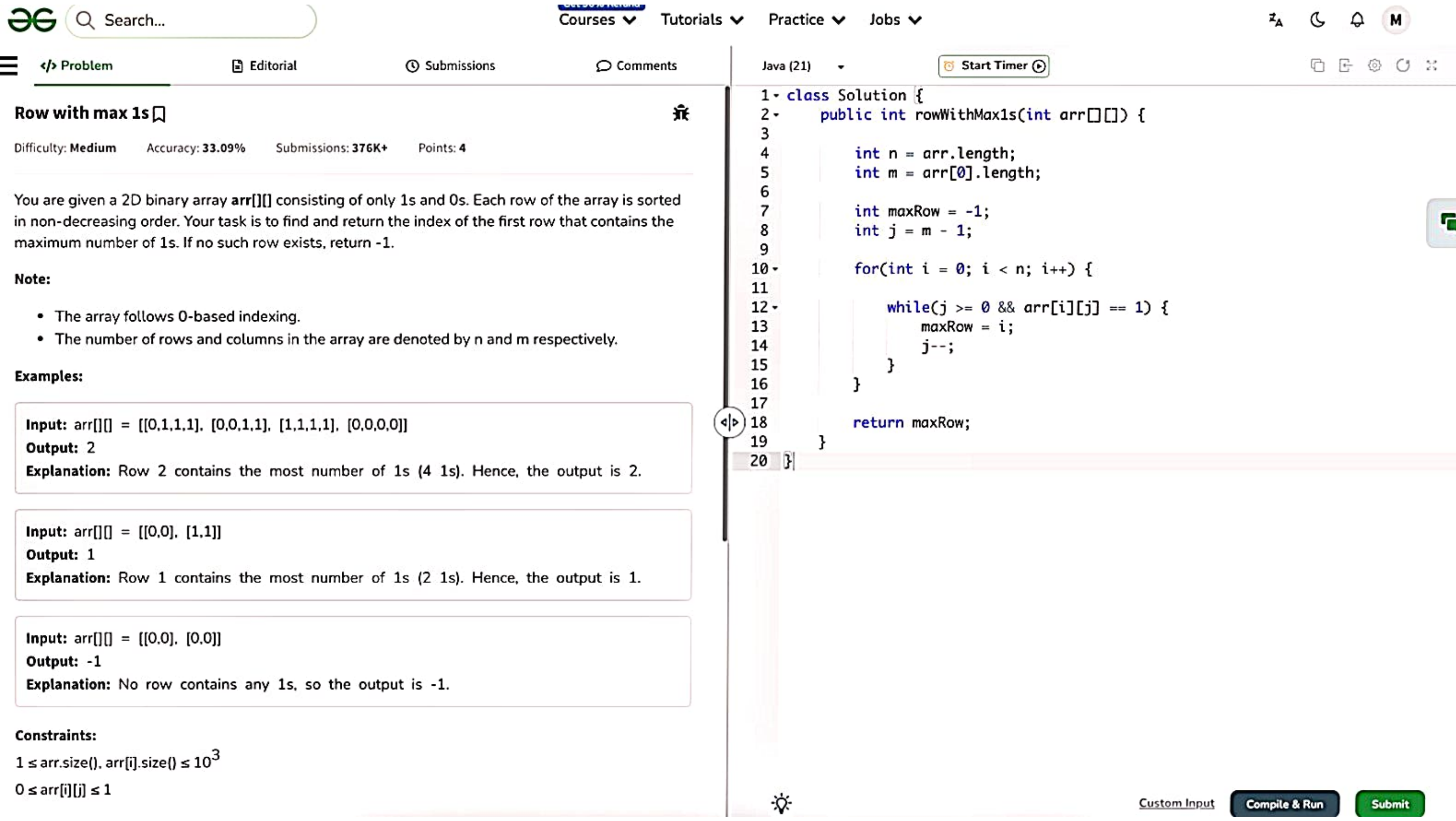
1 → 2 → 3 → 4
5 → 6 → 7 8
9 10 ← 11 12
13 ← 14 ← 15 ← 16

Output: 1, 2, 3, 4, 8, 12, 16, 15, 14, 13, 9, 5, 6, 7, 11, 10

Input: mat[][] = [[1, 2, 3, 4, 5, 6], [7, 8, 9, 10, 11, 12], [13, 14, 15, 16, 17, 18]]
Output: [1, 2, 3, 4, 5, 6, 12, 18, 17, 16, 15, 14, 13, 7, 8, 9, 10, 11]
Explanation: Applying same technique as shown above.

Input: mat[][] = [[32, 44, 27, 23], [54, 28, 50, 62]]
Output: [32, 44, 27, 23, 62, 50, 28, 54]
Explanation: Applying same technique as shown above, output will be [32, 44, 27, 23,

```java
class Solution {
    public ArrayList<Integer> spirallyTraverse(int[][] mat) {

        ArrayList<Integer> list = new ArrayList<>();

        int n = mat.length;
        int m = mat[0].length;

        int top = 0, bottom = n - 1;
        int left = 0, right = m - 1;

        while(top <= bottom && left <= right) {
            for(int i = left; i <= right; i++) {
                list.add(mat[top][i]);
            }
            top++;

            for(int i = top; i <= bottom; i++) {
                list.add(mat[i][right]);
            }
            right--;

            if(top <= bottom) {

                for(int i = right; i >= left; i--) {
                    list.add(mat[bottom][i]);
                }
                bottom--;
            }

            if(left <= right) {

                for(int i = bottom; i >= top; i--) {
                    list.add(mat[i][left]);
                }
                left++;
```



Row with max 1s

Difficulty: **Medium** Accuracy: **33.09%** Submissions: **376K+** Points: **4**

You are given a 2D binary array **arr[][]** consisting of only 1s and 0s. Each row of the array is sorted in non-decreasing order. Your task is to find and return the index of the first row that contains the maximum number of 1s. If no such row exists, return -1.

Note:

- The array follows 0-based indexing.
- The number of rows and columns in the array are denoted by n and m respectively.

Examples:

Input: arr[][] = [[0,1,1,1], [0,0,1,1], [1,1,1,1], [0,0,0,0]]
Output: 2
Explanation: Row 2 contains the most number of 1s (4 1s). Hence, the output is 2.

Input: arr[][] = [[0,0], [1,1]]
Output: 1
Explanation: Row 1 contains the most number of 1s (2 1s). Hence, the output is 1.

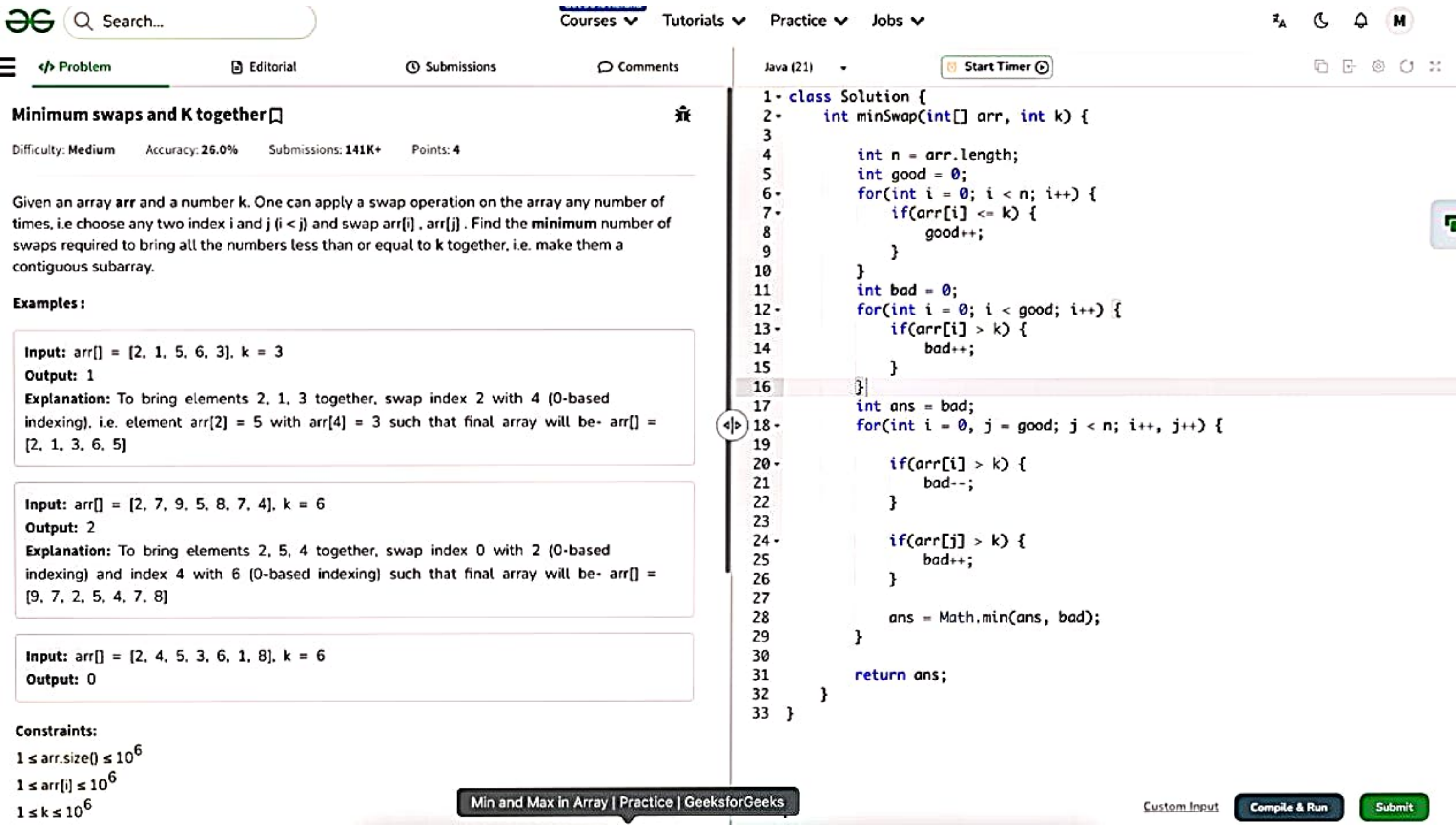
Input: arr[][] = [[0,0], [0,0]]
Output: -1
Explanation: No row contains any 1s, so the output is -1.

Constraints:

1 ≤ arr.size(), arr[i].size() ≤ 10^3

0 ≤ arr[i][j] ≤ 1

```java
class Solution {
    public int rowWithMax1s(int arr[][]) {

        int n = arr.length;
        int m = arr[0].length;

        int maxRow = -1;
        int j = m - 1;

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

            while(j >= 0 && arr[i][j] == 1) {
                maxRow = i;
                j--;
            }
        }

        return maxRow;
    }
}
```



Minimum swaps and K together

Difficulty: **Medium** Accuracy: **26.0%** Submissions: **141K+** Points: **4**

Given an array **arr** and a number **k**. One can apply a swap operation on the array any number of times, i.e choose any two index i and j (i < j) and swap arr[i] , arr[j] . Find the **minimum** number of swaps required to bring all the numbers less than or equal to **k** together, i.e. make them a contiguous subarray.

Examples :

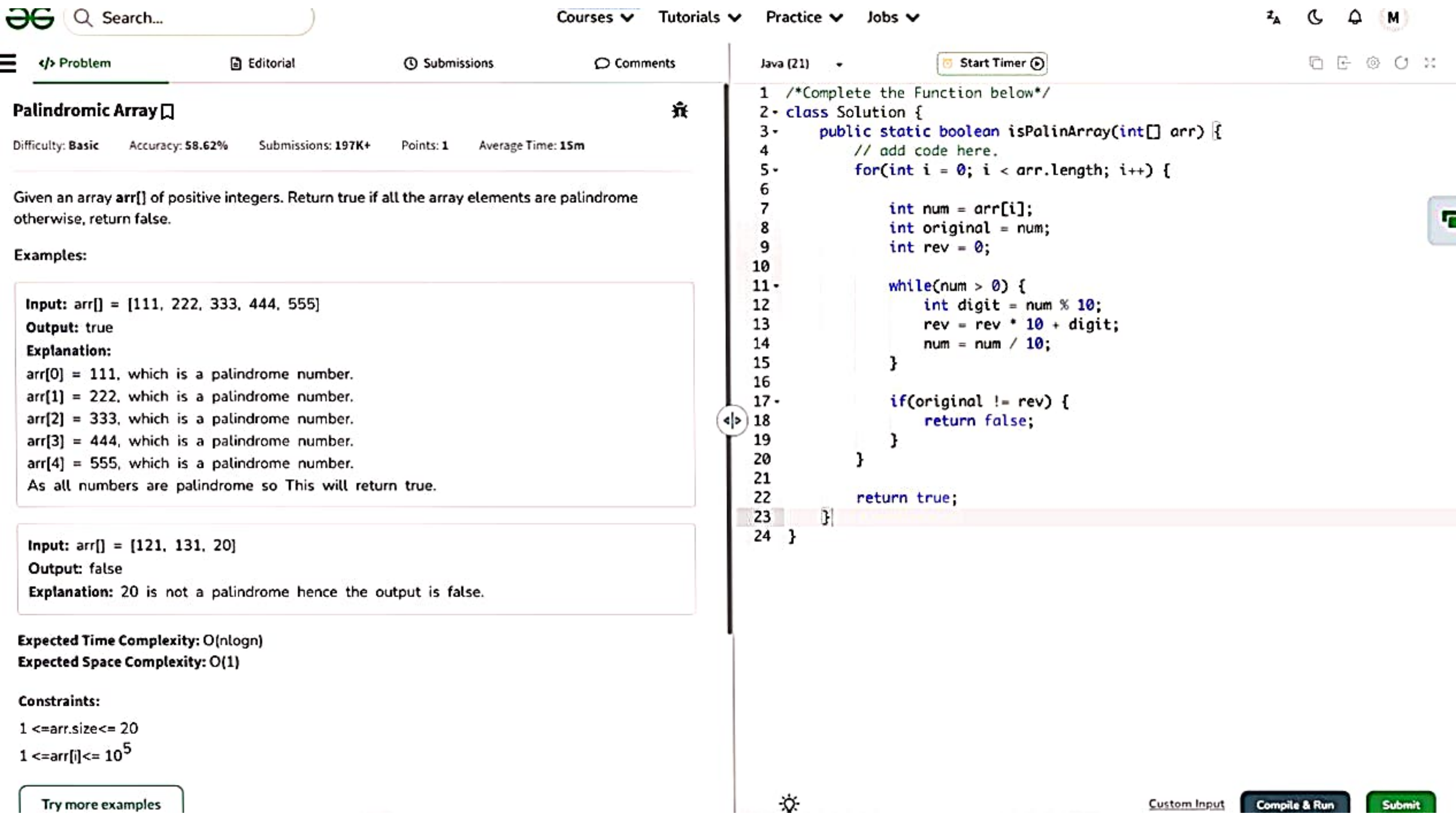
Input: arr[] = [2, 1, 5, 6, 3], k = 3
Output: 1
Explanation: To bring elements 2, 1, 3 together, swap index 2 with 4 (0-based indexing), i.e. element arr[2] = 5 with arr[4] = 3 such that final array will be- arr[] = [2, 1, 3, 6, 5]

Input: arr[] = [2, 7, 9, 5, 8, 7, 4], k = 6
Output: 2
Explanation: To bring elements 2, 5, 4 together, swap index 0 with 2 (0-based indexing) and index 4 with 6 (0-based indexing) such that final array will be- arr[] = [9, 7, 2, 5, 4, 7, 8]

Input: arr[] = [2, 4, 5, 3, 6, 1, 8], k = 6
Output: 0

Constraints:
$1 \le arr.size() \le 10^6$
$1 \le arr[i] \le 10^6$
$1 \le k \le 10^6$

```java
class Solution {
    int minSwap(int[] arr, int k) {

        int n = arr.length;
        int good = 0;
        for(int i = 0; i < n; i++) {
            if(arr[i] <= k) {
                good++;
            }
        }
        int bad = 0;
        for(int i = 0; i < good; i++) {
            if(arr[i] > k) {
                bad++;
            }
        }
        int ans = bad;
        for(int i = 0, j = good; j < n; i++, j++) {

            if(arr[i] > k) {
                bad--;
            }

            if(arr[j] > k) {
                bad++;
            }

            ans = Math.min(ans, bad);
        }

        return ans;
    }
}
```



Palindromic Array

Difficulty: **Basic** Accuracy: **58.62%** Submissions: **197K+** Points: **1** Average Time: **15m**

Given an array **arr[]** of positive integers. Return true if all the array elements are palindrome otherwise, return false.

Examples:

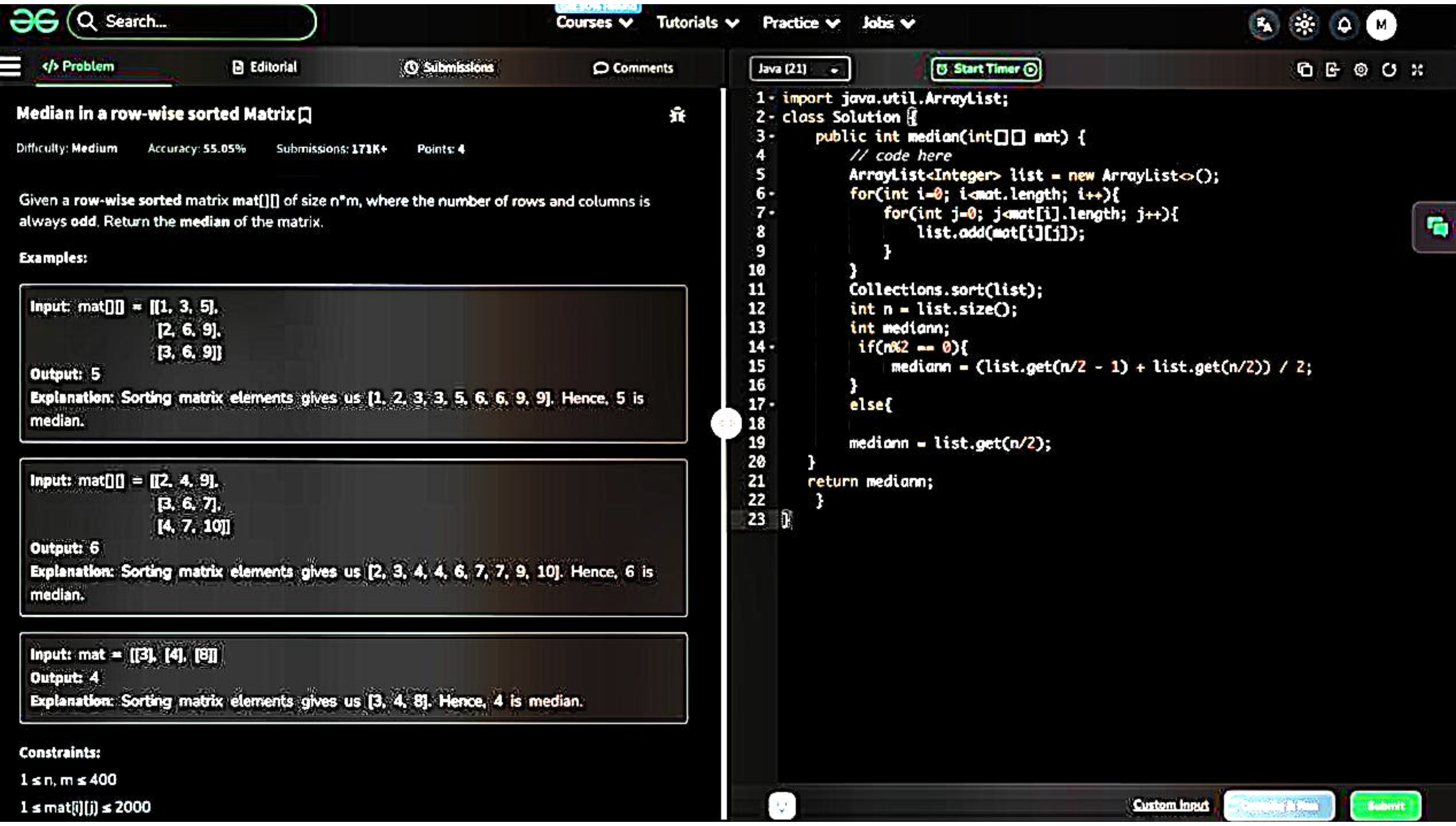
Input: arr[] = [111, 222, 333, 444, 555]
Output: true
Explanation:
arr[0] = 111, which is a palindrome number.
arr[1] = 222, which is a palindrome number.
arr[2] = 333, which is a palindrome number.
arr[3] = 444, which is a palindrome number.
arr[4] = 555, which is a palindrome number.
As all numbers are palindrome so This will return true.

Input: arr[] = [121, 131, 20]
Output: false
Explanation: 20 is not a palindrome hence the output is false.

Expected Time Complexity: O(nlogn)
Expected Space Complexity: O(1)

Constraints:
1 <=arr.size<= 20
1 <=arr[i]<= 10^5

```java
/*Complete the Function below*/
class Solution {
    public static boolean isPalinArray(int[] arr) {
        // add code here.
        for(int i = 0; i < arr.length; i++) {

            int num = arr[i];
            int original = num;
            int rev = 0;

            while(num > 0) {
                int digit = num % 10;
                rev = rev * 10 + digit;
                num = num / 10;
            }

            if(original != rev) {
                return false;
            }
        }

        return true;
    }
}
```



Median in a row-wise sorted Matrix

Difficulty: **Medium** Accuracy: **55.05%** Submissions: **171K+** Points: **4**

Given a **row-wise sorted** matrix **mat[][]** of size n*m, where the number of rows and columns is always **odd**. Return the **median** of the matrix.

Examples:

Input: mat[][] = [[1, 3, 5],
[2, 6, 9],
[3, 6, 9]]
Output: 5
Explanation: Sorting matrix elements gives us [1, 2, 3, 3, 5, 6, 6, 9, 9]. Hence, 5 is median.

Input: mat[][] = [[2, 4, 9],
[3, 6, 7],
[4, 7, 10]]
Output: 6
Explanation: Sorting matrix elements gives us [2, 3, 4, 4, 6, 7, 7, 9, 10]. Hence, 6 is median.

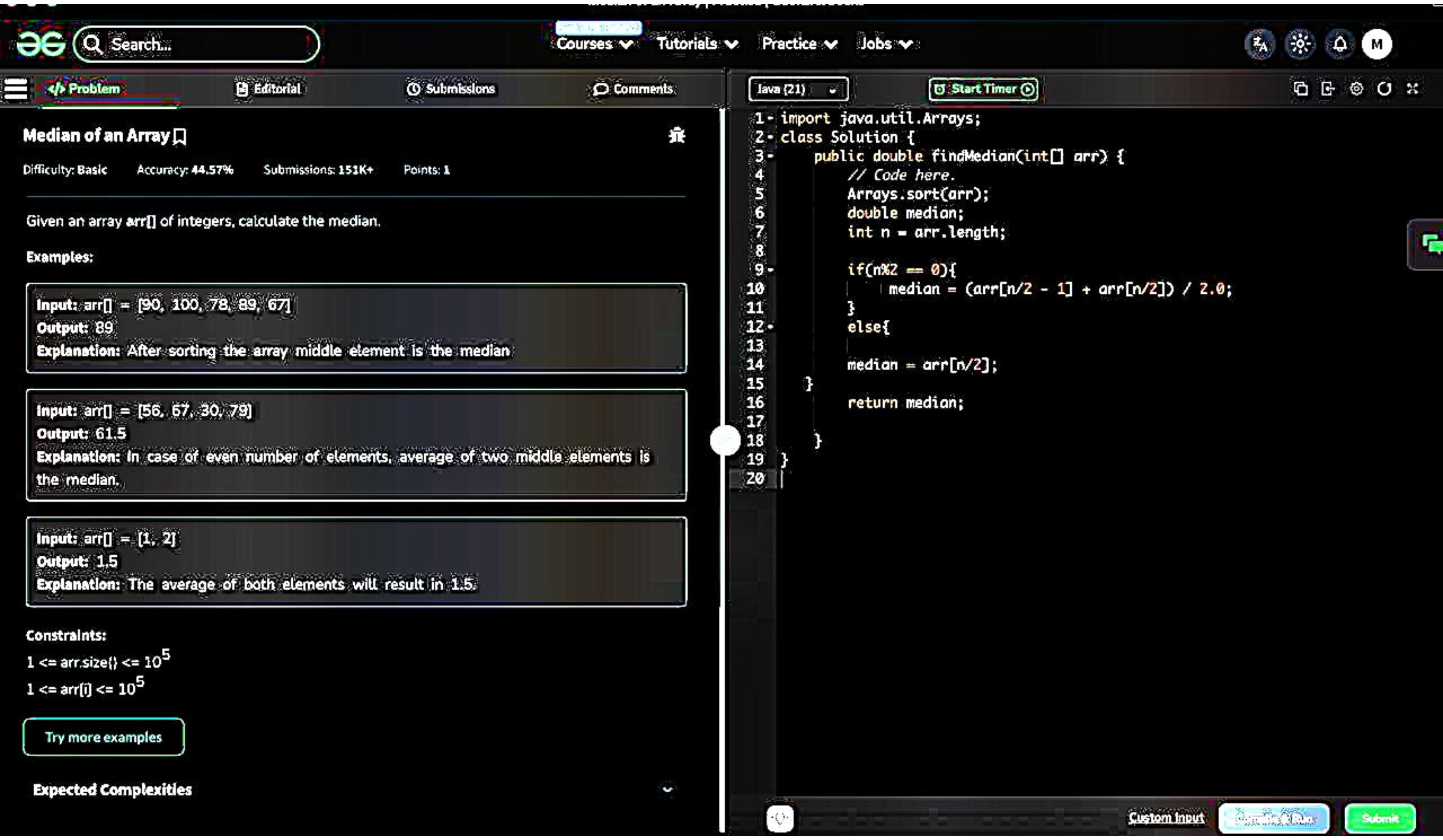
Input: mat = [[3], [4], [8]]
Output: 4
Explanation: Sorting matrix elements gives us [3, 4, 8]. Hence, 4 is median.

Constraints:

1 ≤ n, m ≤ 400

1 ≤ mat[i][j] ≤ 2000

```java
import java.util.ArrayList;
class Solution {
    public int median(int[][] mat) {
        // code here
        ArrayList<Integer> list = new ArrayList<>();
        for(int i=0; i<mat.length; i++){
            for(int j=0; j<mat[i].length; j++){
                list.add(mat[i][j]);
            }
        }
        Collections.sort(list);
        int n = list.size();
        int mediann;
         if(n%2 == 0){
            mediann = (list.get(n/2 - 1) + list.get(n/2)) / 2;
        }
        else{

        mediann = list.get(n/2);
    }
    return mediann;
     }
}
```



Median of an Array

Difficulty: Basic Accuracy: 44.57% Submissions: 151K+ Points: 1

Given an array arr[] of integers, calculate the median.

Examples:

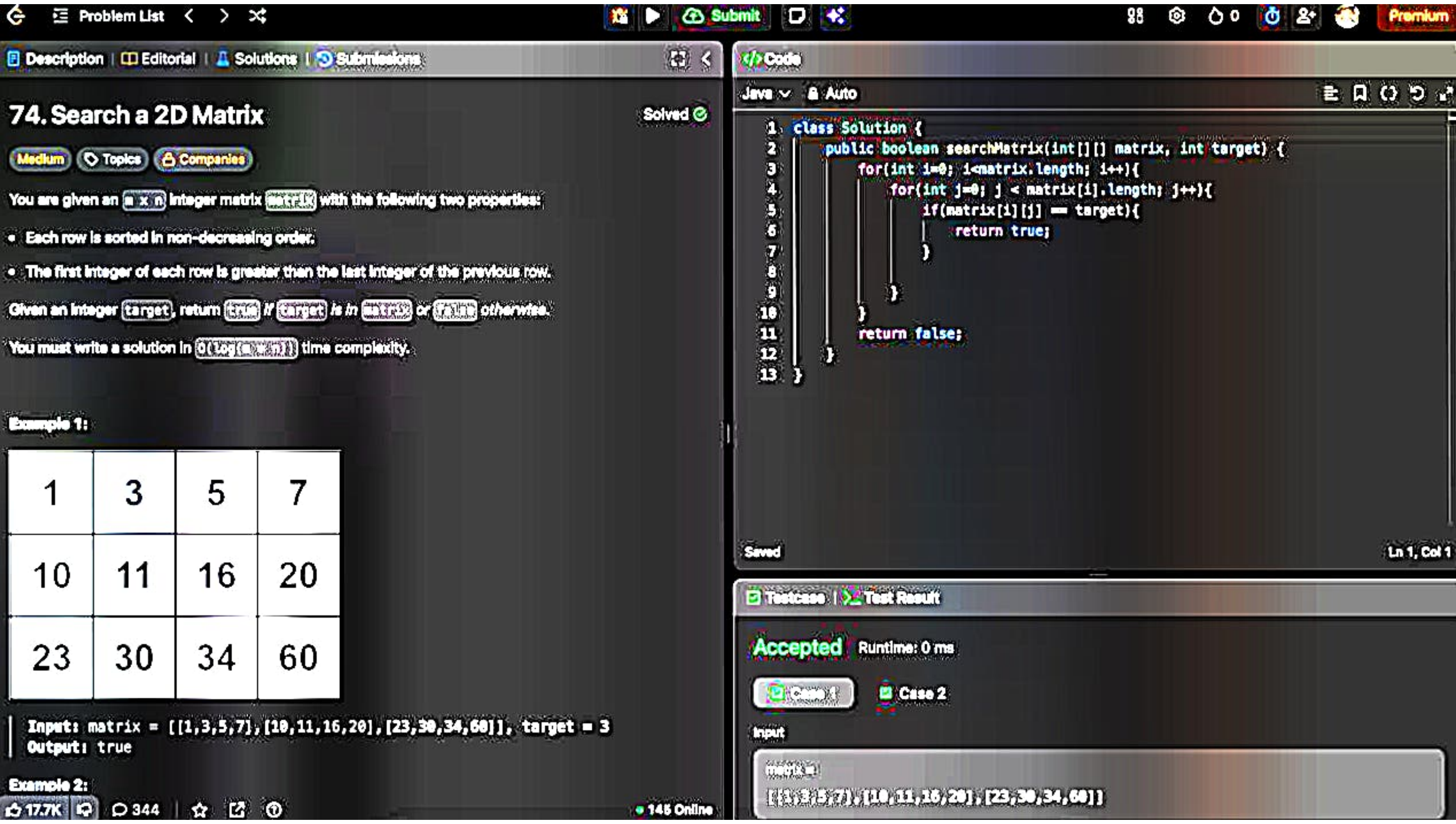
Input: arr[] = [90, 100, 78, 89, 67]
Output: 89
Explanation: After sorting the array middle element is the median

Input: arr[] = [56, 67, 30, 79]
Output: 61.5
Explanation: In case of even number of elements, average of two middle elements is the median.

Input: arr[] = [1, 2]
Output: 1.5
Explanation: The average of both elements will result in 1.5.

Constraints:
1 <= arr.size() <= 10^5
1 <= arr[i] <= 10^5

```java
import java.util.Arrays;
class Solution {
    public double findMedian(int[] arr) {
        // Code here.
        Arrays.sort(arr);
        double median;
        int n = arr.length;

        if(n%2 == 0){
            median = (arr[n/2 - 1] + arr[n/2]) / 2.0;
        }
        else{

        median = arr[n/2];
   }
        return median;

    }
}

```



74. Search a 2D Matrix

You are given an m x n integer matrix matrix with the following two properties:

- Each row is sorted in non-decreasing order.
- The first integer of each row is greater than the last integer of the previous row.

Given an integer target, return true *if* target *is in* matrix *or* false *otherwise.*

You must write a solution in O(log(m * n)) time complexity.

Example 1:

1	3	5	7
10	11	16	20
23	30	34	60

```
Input: matrix = [[1,3,5,7],[10,11,16,20],[23,30,34,60]], target = 3
Output: true
```

Example 2:

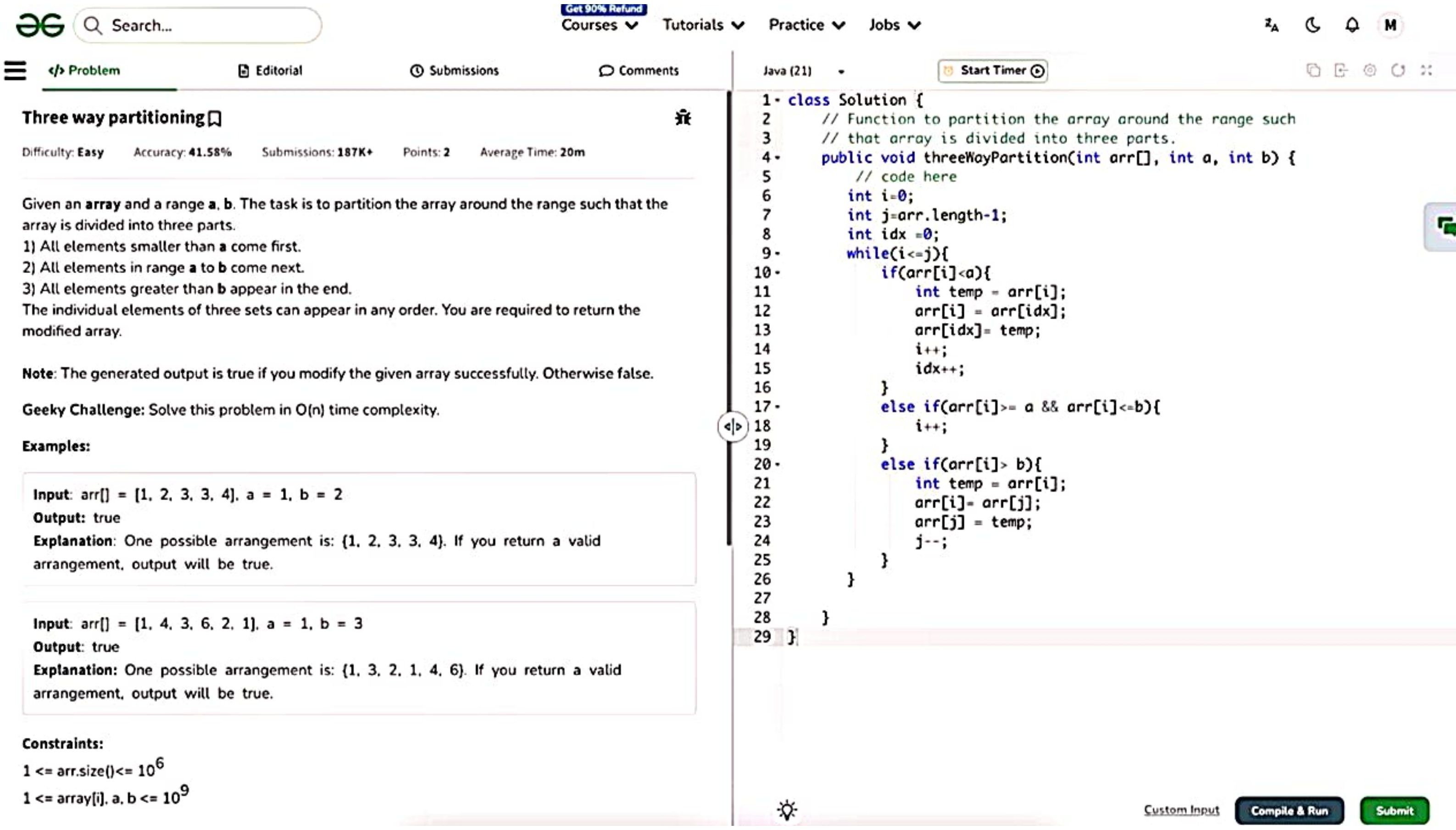
```java
class Solution {
    public boolean searchMatrix(int[][] matrix, int target) {
        for(int i=0; i<matrix.length; i++){
            for(int j=0; j < matrix[i].length; j++){
                if(matrix[i][j] == target){
                    return true;
                }

            }
        }
        return false;
    }
}
```

Accepted Runtime: 0 ms

Input

matrix =

[[1,3,5,7],[10,11,16,20],[23,30,34,60]]



Three way partitioning

Difficulty: **Easy** Accuracy: **41.58%** Submissions: **187K+** Points: **2** Average Time: **20m**

Given an **array** and a range **a**, **b**. The task is to partition the array around the range such that the array is divided into three parts.
1) All elements smaller than **a** come first.
2) All elements in range **a** to **b** come next.
3) All elements greater than **b** appear in the end.
The individual elements of three sets can appear in any order. You are required to return the modified array.

Note: The generated output is true if you modify the given array successfully. Otherwise false.

Geeky Challenge: Solve this problem in O(n) time complexity.

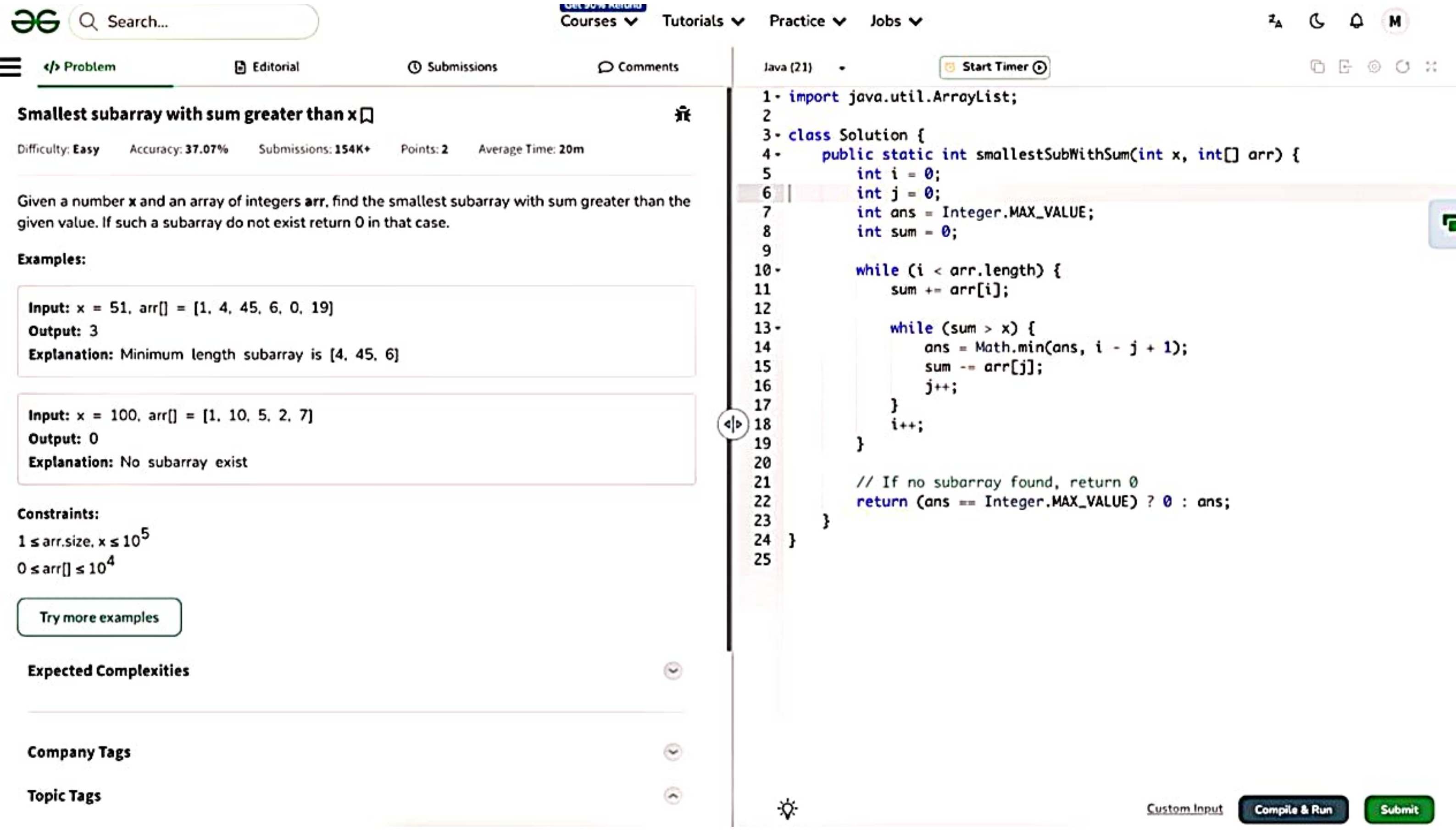
Examples:

Input: arr[] = [1, 2, 3, 3, 4], a = 1, b = 2
Output: true
Explanation: One possible arrangement is: {1, 2, 3, 3, 4}. If you return a valid arrangement, output will be true.

Input: arr[] = [1, 4, 3, 6, 2, 1], a = 1, b = 3
Output: true
Explanation: One possible arrangement is: {1, 3, 2, 1, 4, 6}. If you return a valid arrangement, output will be true.

Constraints:
1 <= arr.size()<= 10^6
1 <= array[i], a, b <= 10^9

```java
class Solution {
    // Function to partition the array around the range such
    // that array is divided into three parts.
    public void threeWayPartition(int arr[], int a, int b) {
        // code here
        int i=0;
        int j=arr.length-1;
        int idx =0;
        while(i<=j){
            if(arr[i]<a){
                int temp = arr[i];
                arr[i] = arr[idx];
                arr[idx]= temp;
                i++;
                idx++;
            }
            else if(arr[i]>= a && arr[i]<=b){
                i++;
            }
            else if(arr[i]> b){
                int temp = arr[i];
                arr[i]= arr[j];
                arr[j] = temp;
                j--;
            }
        }

    }
}
```



Smallest subarray with sum greater than x

Difficulty: **Easy** Accuracy: **37.07%** Submissions: **154K+** Points: **2** Average Time: **20m**

Given a number **x** and an array of integers **arr**, find the smallest subarray with sum greater than the given value. If such a subarray do not exist return 0 in that case.

Examples:

Input: x = 51, arr[] = [1, 4, 45, 6, 0, 19]
Output: 3
Explanation: Minimum length subarray is [4, 45, 6]

Input: x = 100, arr[] = [1, 10, 5, 2, 7]
Output: 0
Explanation: No subarray exist

Constraints:

$1 \le$ arr.size, $x \le 10^5$

$0 \le$ arr[] $\le 10^4$

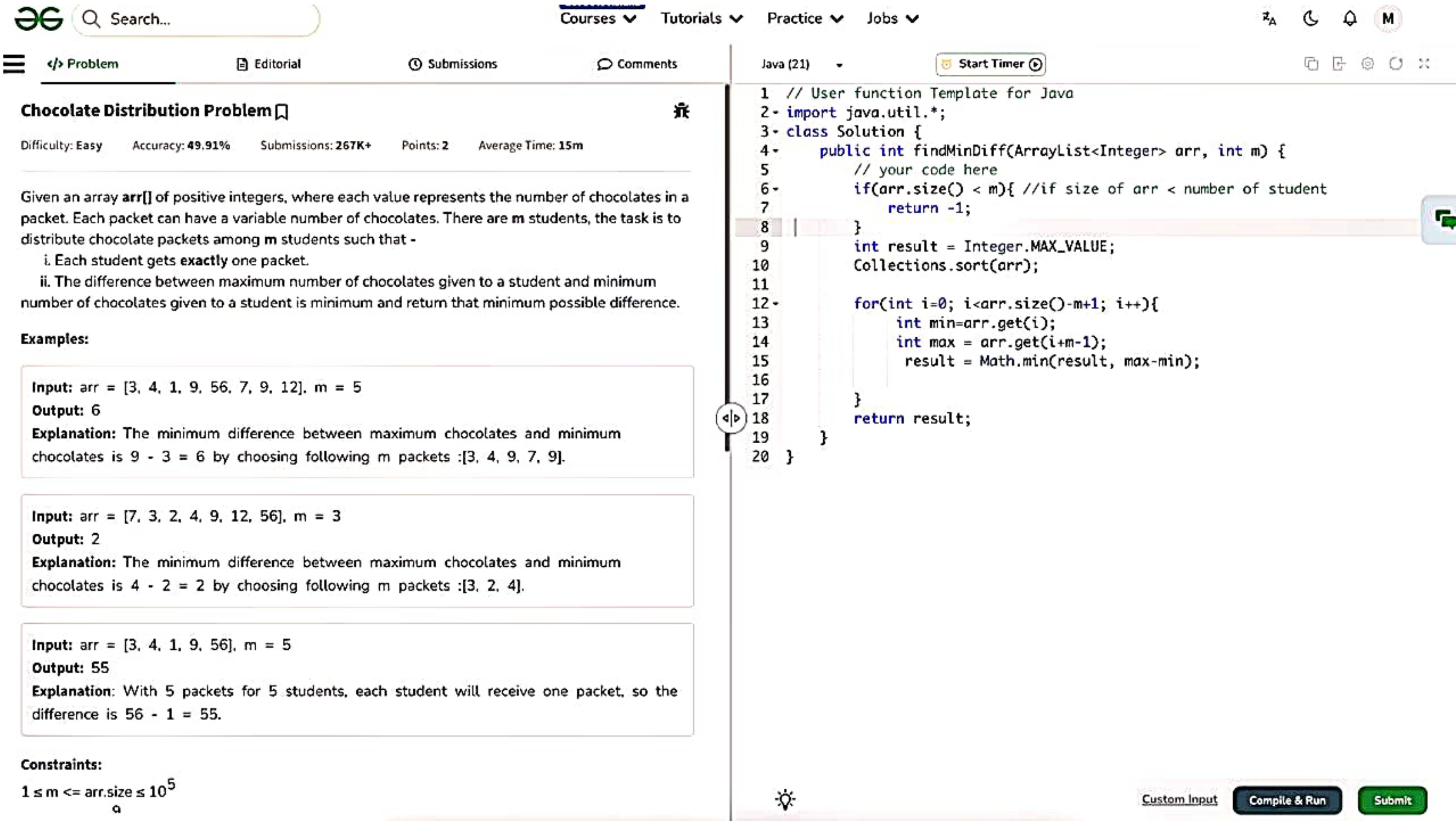
Try more examples

Expected Complexities

Company Tags

Topic Tags

```java
import java.util.ArrayList;

class Solution {
    public static int smallestSubWithSum(int x, int[] arr) {
        int i = 0;
        int j = 0;
        int ans = Integer.MAX_VALUE;
        int sum = 0;

        while (i < arr.length) {
            sum += arr[i];

            while (sum > x) {
                ans = Math.min(ans, i - j + 1);
                sum -= arr[j];
                j++;
            }
            i++;
        }

        // If no subarray found, return 0
        return (ans == Integer.MAX_VALUE) ? 0 : ans;
    }
}

```



Chocolate Distribution Problem

Difficulty: **Easy** Accuracy: **49.91%** Submissions: **267K+** Points: **2** Average Time: **15m**

Given an array **arr[]** of positive integers, where each value represents the number of chocolates in a packet. Each packet can have a variable number of chocolates. There are **m** students, the task is to distribute chocolate packets among **m** students such that -

i. Each student gets **exactly** one packet.

ii. The difference between maximum number of chocolates given to a student and minimum number of chocolates given to a student is minimum and return that minimum possible difference.

Examples:

Input: arr = [3, 4, 1, 9, 56, 7, 9, 12], m = 5
Output: 6
Explanation: The minimum difference between maximum chocolates and minimum chocolates is 9 - 3 = 6 by choosing following m packets :[3, 4, 9, 7, 9].

Input: arr = [7, 3, 2, 4, 9, 12, 56], m = 3
Output: 2
Explanation: The minimum difference between maximum chocolates and minimum chocolates is 4 - 2 = 2 by choosing following m packets :[3, 2, 4].

Input: arr = [3, 4, 1, 9, 56], m = 5
Output: 55
Explanation: With 5 packets for 5 students, each student will receive one packet, so the difference is 56 - 1 = 55.

Constraints:

1 ≤ m <= arr.size ≤ 10^5

```java
// User function Template for Java
import java.util.*;
class Solution {
    public int findMinDiff(ArrayList<Integer> arr, int m) {
        // your code here
        if(arr.size() < m){ //if size of arr < number of student
            return -1;
        }
        int result = Integer.MAX_VALUE;
        Collections.sort(arr);

        for(int i=0; i<arr.size()-m+1; i++){
            int min=arr.get(i);
            int max = arr.get(i+m-1);
             result = Math.min(result, max-min);

        }
        return result;
    }
}
```