

GE23131-Programming Using C-2024

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Question 1

Correct

Marked out of 3.00

☐ Flag question

Given an array A of sorted integers and another non negative integer k, find if there exists 2 i A[i] = k, i != j.

Input Format

- 1. First line is number of test cases T. Following T lines contain:
- 2. N, followed by N integers of the array
- 3. The non-negative integer k

Output format

Print 1 if such a pair exists and 0 if it doesn't.

Example

Input:

1
3 1 3 5
4

Output:

1

Input:

1
3 1 3 5
99

Output:

0

Answer: (penalty regime: 0 %)

	Input	Expected	Got	
	1 3 1 3 5 4	1	1	
	1 3 1 3 5 99	0	0	

Passed all tests!

Question **2**

Correct

Marked out of 5.00

☐ Flag question

Sam loves chocolates and starts buying them on the 1st day of the year. Each day of the year On days when x is odd, Sam will buy x chocolates; on days when x is even, Sam will not purch

Complete the code in the editor so that for each day Ni (where 1 ≤ x ≤ N ≤ Y) in array arr, the purchased (during days 1 through N) is printed on a new line. This is a function-only challenge you by the locked stub code in the editor.

Input Format

The program takes an array of integers as a parameter.

The locked code in the editor handles reading the following input from stdin, assembling it in and calling calculate(arr).

The first line of input contains an integer, T (the number of test cases). Each line i of the T sub ith test case as an integer, Ni (the number of days).

Constraints

- 1 ≤ T ≤ 2 × 105
- 1 ≤ N ≤ 2 × 106
- 1 ≤ x ≤ N ≤ Y

Output Format

For each test case, Ti in arr, your calculate method should print the total number of chocolate on a new line.

Sample Input 0

3
1
2
3

Sample Output 0

1
4

Explanation

Test Case 0: N = 1
Sam buys 1 chocolate on day 1, giving us a total of 1 chocolate. Thus, we print 1 on a new line.

Test Case 1: N = 2
Sam buys 1 chocolate on day 1 and 0 on day 2. This gives us a total of 1 chocolate. Thus, we print 1 on a new line.

Test Case 2: N = 3
Sam buys 1 chocolate on day 1, 0 on day 2, and 3 on day 3. This gives us a total of 4 chocolates. Thus, we print 4 on a new line.

Answer: (penalty regime: 0 %)

	Input	Expected	Got	
	3	1	1	
	1	1	1	
	2	4	4	
	3			
	10	1296	1296	
	71	2500	2500	
	100	1849	1849	
	86	729	729	
	54	400	400	
	40	25	25	
	9	1521	1521	
	77	25	25	
	9	49	49	
	13	2401	2401	
	98			

Passed all tests!

Question **3**

Correct

Marked out of 7.00

☐ Flag question

The number of goals achieved by two football teams in matches in a league is given in the following table:

- Football team A, has played three matches, and has scored { 1 , 2 , 3 } goals in each match.
- Football team B, has played two matches, and has scored { 2 , 4 } goals in each match respectively.
- Your task is to compute, for each match of team B, the total number of matches of team A in which the number of goals scored by team A is less than or equal to the number of goals scored by team B in that match.
- In the above case:
 - For 2 goals scored by team B in its first match, team A has 2 matches with scores 1 and 2.
 - For 4 goals scored by team B in its second match, team A has 3 matches with scores 1, 2 and 3.

Complete the code in the editor below. The program must return an array of m positive integers representing the total number of elements $\text{nums}[j]$ satisfying $\text{nums}[j] \leq \text{maxes}[i]$ where $0 \leq j < n$ and $0 \leq i < m$, in the given order.

It has the following:

$\text{nums}[\text{nums}[0], \dots, \text{nums}[n-1]]$: first array of positive integers

$\text{maxes}[\text{maxes}[0], \dots, \text{maxes}[m-1]]$: second array of positive integers

Constraints

- $2 \leq n, m \leq 105$
- $1 \leq \text{nums}[j] \leq 109$, where $0 \leq j < n$.
- $1 \leq \text{maxes}[i] \leq 109$, where $0 \leq i < m$.

Input Format For Custom Testing

Input from stdin will be processed as follows and passed to the function.

The first line contains an integer n , the number of elements in nums .

The next n lines each contain an integer describing $\text{nums}[j]$ where $0 \leq j < n$.

The next line contains an integer m , the number of elements in maxes .

The next m lines each contain an integer describing $\text{maxes}[i]$ where $0 \leq i < m$.

Sample Case 0

Sample Input 0

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

Sample Output 0

```
2
4
```

Explanation 0

We are given $n = 4$, $\text{nums} = [1, 4, 2, 4]$, $m = 2$, and $\text{maxes} = [3, 5]$.

1. For $\text{maxes}[0] = 3$, we have 2 elements in nums ($\text{nums}[0] = 1$ and $\text{nums}[2] = 2$) that are ≤ 3 .
2. For $\text{maxes}[1] = 5$, we have 4 elements in nums ($\text{nums}[0] = 1$, $\text{nums}[1] = 4$, $\text{nums}[2] = 2$, and $\text{nums}[3] = 4$) that are ≤ 5 .

Thus, the function returns the array $[2, 4]$ as the answer.

Sample Case 1

Sample Input 1

```
5
```

5
4
8
4
3
1
7
8

Sample Output 1

1
0
3
4

Explanation 1

We are given, $n = 5$, $nums = [2, 10, 5, 4, 8]$, $m = 4$, and $maxes = [3, 1, 7, 8]$.

- For $maxes[0] = 3$, we have 1 element in $nums$ ($nums[0] = 2$) that is $\leq maxes[0]$.
- For $maxes[1] = 1$, there are 0 elements in $nums$ that are $\leq maxes[1]$.
- For $maxes[2] = 7$, we have 3 elements in $nums$ ($nums[0] = 2$, $nums[2] = 5$, and $nums[3] = 4$) that are $\leq maxes[2]$.
- For $maxes[3] = 8$, we have 4 elements in $nums$ ($nums[0] = 2$, $nums[2] = 5$, $nums[3] = 4$, and $nums[4] = 8$) that are $\leq maxes[3]$.

Thus, the function returns the array $[1, 0, 3, 4]$ as the answer.

Answer: (penalty regime: 0 %)

	Input	Expected	Got	
	4	2	2	
	1	4	4	
	4			
	2			
	4			
	2			
	3			
	5			
	5	1	1	
	2	0	0	
	10	3	3	
	5	4	4	
	4			
	8			
	4			
	3			
	1			
	7			
	8			

Save the state of the flags