

Status	Finished
Started	Monday, 23 December 2024, 5:33 PM
Completed	Tuesday, 3 December 2024, 2:42 PM
Duration	20 days 2 hours

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 indices i and j such that $A[i] - A[j] = k$, $i \neq j$.

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 %)

```
#include <stdio.h>
int main() {
    int t;
    scanf("%d", &t);
    for(int i=0; i<t; i++){
        int n;
        scanf("%d", &n);
        int arr[n];
        for(int j=0; j<n; j++){
            scanf("%d", &arr[j]);
        }
        int k;
        scanf("%d", &k);
        int c=0;
        for(int m=0; m<n; m++){
            for(int l=0; l<n; l++){
                if((m!=l) && (arr[m]-arr[l]==k || arr[l]-arr[m]==k)){
                    c=1;
                    break;
                }
            }
            if(c==1){
                break;
            }
        }
        printf("%d\n", c);
    }
    return 0;
}
```

	Input	Expected	Got	
	1 3 1 3 5 4	1	1	

	Input	Expected	Got	
	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, x , is numbered from 1 to Y . On days when x is odd, Sam will buy x chocolates; on days when x is even, Sam will not purchase any chocolates.

Complete the code in the editor so that for each day N_i (where $1 \leq x \leq N \leq Y$) in array `arr`, the number of chocolates Sam purchased (during days 1 through N) is printed on a new line. This is a function-only challenge, so input is handled for 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 into an array of integers (`arr`), and calling `calculate(arr)`.

The first line of input contains an integer, T (the number of test cases). Each line i of the T subsequent lines describes the i th test case as an integer, N_i (the number of days).

Constraints

$$1 \leq T \leq 2 \times 10^5$$

$$1 \leq N \leq 2 \times 10^6$$

$$1 \leq x \leq N \leq Y$$

Output Format

For each test case, T_i in `arr`, your `calculate` method should print the total number of chocolates Sam purchased by day N_i on a new line.

Sample Input 0

```
3
1
2
3
```

Sample Output 0

```
1
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 %)

```
#include <stdio.h>
int main() {
    int t;
    scanf("%d", &t);
    for(int i=0; i<t; i++){
        int num,c=0;
        scanf("%d", &num);
        for(int j=0; j<=num; j++){
            if(j%2==1){
                c+=j;
            }
        }
        printf("%d\n",c);
    }
    return 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 form of two lists. Consider:

- Football team A, has played three matches, and has scored { 1 , 2 , 3 } goals in each match respectively.
- 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, where team A has scored 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.

Hence, the answer: {2, 3}.

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

It has the following:

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

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

Constraints

- $2 \leq n, m \leq 105$
- $1 \leq nums[j] \leq 109$, where $0 \leq j < n$.
- $1 \leq maxes[i] \leq 109$, 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 `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 `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 $n = 4$, `nums` = [1, 4, 2, 4], $m = 2$, and `maxes` = [3, 5].

1. For `maxes[0] = 3`, we have 2 elements in `nums` (`nums[0] = 1` and `nums[2] = 2`) that are \leq `maxes[0]`.
2. For `maxes[1] = 5`, we have 4 elements in `nums` (`nums[0] = 1`, `nums[1] = 4`, `nums[2] = 2`, and `nums[3] = 4`) that are \leq `maxes[1]`.

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

Sample Case 1

Sample Input 1

```
5
2
10
5
4
8
4
3
1
7
8
```

Sample Output 1

```
1
0
3
4
```

Explanation 1

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

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

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

Answer: (penalty regime: 0 %)

```
#include <stdio.h>
int main() {
    int n;
    scanf("%d", &n);
    int nums[n];
    for(int i=0; i<n; i++){
        scanf("%d", &nums[i]);
    }
    int m;
    scanf("%d", &m);
    int maxes[m];
    for(int j=0; j<m; j++){
        scanf("%d", &maxes[j]);
    }

    for(int k=0; k<m; k++){
        int c=0;
        for(int l=0; l<n; l++){
            if(nums[l]<=maxes[k]){
                c=c+1;
            }
        }
        printf("%d\n", c);
    }
    return 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			

Passed all tests!