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| Started   | Monday, 23 December 2024, 5:33 PM |
| Completed | Monday, 9 December 2024, 1:21 PM  |
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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 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

1  
3 1 3 5  
99

Output:  
  
0

**Answer:** (penalty regime: 0 %)


```
1 #include<stdio.h>
2 int main()
3 {
4     int t;
5     scanf("%d",&t);
6     while(t-->0)
7     {
8         int n;
9         scanf("%d",&n);
10        int a[n];
11        for(int i=0;i<n;i++){
12            scanf("%d",&a[i]);
13        }
14        int k;
15        scanf("%d",&k);
16        int flag=0;
17        for(int i=0;i<n;i++){
18            for(int j=i+1;j<n;j++){
19                if(a[i]-a[j]==k)
20                    flag=1;
21            }
22        }
23        printf("%d\n",flag);
24    }
25 }
26
```

|   | Input              | Expected | Got |   |
|---|--------------------|----------|-----|---|
| ✓ | 1<br>3 1 3 5<br>4  | 1        | 1   | ✓ |
| ✓ | 1<br>3 1 3 5<br>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

## 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 %)

```
1 #include <stdio.h>
2 int main ()
3 {
4     int t;
5     scanf ("%d", &t);
6     while (t--)
```

```
10      for (int i=0; i<=n;
11      {
12          if (i%2!=0)
13              c=c+i;
14      }
15      printf ("%d\n", c);
16  }
17 }
```

|   | 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

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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

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  $\text{maxes}[i]$  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  $\text{nums}$ .

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

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

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

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

```
1 #include<stdio.h>
2 int main()
3 {
4     int s1,s2,ans;
5     scanf("%d",&s1);
6     int ta[s1];
7     for(int i=0; i<s1;i++)
8         scanf("%d", &ta[i]);
9     scanf ("%d", &s2);
10    int tb[s2];
11    for (int i=0; i<s1; i++)
12        scanf ("%d", &tb[i]);
13    for (int j=0; j<s2; j++)
14    {
15        ans =0;
16        for (int i=0; i<s1;
17            if (tb[j]>=ta[i]
18                ans++;
19        }
20        printf ("%d\n", ans)
21    }
22 }
23
```

|   | 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! ✓

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