

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  $N_i$ ) 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

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

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

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

#### 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 %)

```
1 #include<stdio.h>
2 int main() {
3     int t;
4     scanf("%d",&t);
5     while(t-->0) {
6         int n,c=0;
7         scanf("%d",&n);
8         for(int i=0;i<=n;i++) {
9             if(i%2!=0) c+=i;
10        } printf("%d\n",c);
11    }
12 }
```

	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	
	14	400	400	
	40	25	25	
	0	1521	1521	
	77	25	25	
	9	49	49	
	13	2601	2601	
	08			

Passed all tests! ✓

Question 3

Correct

Marked out of 80

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  $\text{maxes}[i]$  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 line contains an integer  $m$ , the number of elements in  $\text{maxes}$ .

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 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,  $n = 5$ ,  $nums = [2, 10, 5, 4, 8]$ ,  $m = 4$ , 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 %)

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

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

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 %)

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

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

Passed all tests! ✓