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ECE-D

Problem Statement 1:

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. Sample Input:

1

3 1 3 5

4

Sample Output: 1

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){
18                     flag=1; break;}
19             }
20         }
21         printf("%d\n",flag);
22     }
```

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

Passed all tests! ✓

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Problem Statement 2:

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

Answer: (penalty regime: 0 %)

```
1 #include <stdio.h>
2 int main(){
3     int t;
4     scanf("%d",&t);
5     while(t--){
6         int n,c=0;
7         scanf("%d",&n);
8         for(int i=0;i<=n;i++){
9             if(i%2!=0){
10                 c+=1;
11             }
12         }
13         printf("%d\n",c);
14     }
15 }
16 }
```

	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! ✓

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Problem Statement 3:

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 $maxes[0], \dots, maxes[n-1]$: 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 Input

4

1

4

2

4

2

3

5

Sample Output

2

4

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     }
9     int tb[s2];
10
11     for(int i=0;i<s2;i++){
12         scanf("%d",&tb[i]);
13     }
14     for(int j=0;j<s2;j++){
15         ans=0;
16         for(int i=0;i<s1;i++){
17             if(tb[j]==ta[i]){
18                 ans++;
19             }
20         }
21         printf("%d\n",ans);
22     }
```

	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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