

240701056

GE23131-Programming Using C-2024

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Status	Finished
Started	Monday, 23 December 2024, 5:33 PM
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Duration	20 hours 6 mins

Question 1

Correct

Marked out of 3.00

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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

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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 v	{

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```
3 {
4     int T,n,k;
5     scanf("%d", &T);
6     while(T--)
7     {
8         scanf("%d",&n);
9         int a[n];
10        for(int i = 0; i < n; i++)
11        {
12            scanf("%d",&a[i]);
13        }
14        scanf("%d",&k);
15        int flag = 0;
16        for(int i= 0; i <n; i++)
17        {
18            for(int j = i+1; j < n; j++)
19            {
20                if(a[i] - a[j] == k || a[j] - a[i] == k)
21                {
22                    flag = 1;break;
23                }
24            }
25            if(flag){break;}
26        }
27        printf("%d\n",flag);
28    }
29    return 0;
30 }
```

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

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✓	1	0	0	✓
	3 1 3 5			
	99			

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

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

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

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

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

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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 sum,T ;
5     scanf("%d",&T);
6     while(T--)
7     {
8         sum = 0;
9         int n; scanf("%d",&n);
10        for(int i = 0; i <= n; i++)
11        {
12            if(i%2 != 0) sum = sum + i;
13        }printf("%d\n",sum);
14    }
15    return 0;
16 }
```

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

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 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:

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- 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 nums .

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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

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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 $\leq \text{maxes}[0]$.
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 $\leq \text{maxes}[1]$.

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

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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 %)

```
1 #include<stdio.h>
2 int main()
3 {
4     int n,j,i;
5     scanf("%d",&n);
6     int a[n];
7     for(i = 0;i <n;i++)
8     {
```

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```
8 v {
9     scanf("%d",&a[i]);
10 }
11 int m; scanf("%d",&m);
12 int a1[m];
13 for(i = 0; i < m; i++)
14 v {
15     scanf("%d",&a1[i]);
16 }
17 int ans;
18 for(j = 0; j < m; j++)
19 v {
20     ans = 0;
21     for(i = 0; i < n; i++)
22 v     {
23         if(a1[j] >= a[i])
24 v         {
25             ans++;
26         }
27     }printf("%d\n",ans);
28 }
29 return 0;
30 }
```

	Input	Expected	Got	
✓	4	2	2	✓
	1	4	4	
	4			
	2			
	4			
	2			
	3			
	5			

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	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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