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## Week-06-S01

### Question 1:

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

Input:

```
1
3 1 3 5
4
```

# Source code:

```
1 #include<stdio.h>
2 int main()
3 {
4     int t;
5     scanf("%d",&t);
6     for(int a=0;a<t;a++)
7     {
8         int n;
9         scanf("%d",&n);
10        int A[n];
11        for(int b=0;b<n;b++)
12        {
13            scanf("%d",&A[b]);
14        }
15        int k;
16        scanf("%d",&k);
17        int c=0;
18        int diff=0;
19        for(int i=0;i<n;i++)
20        {
21            for(int j=0;j<k;j++)
22            {
23                if((diff=A[i]-A[j]) && diff==k && i!=j)
24                {
25                    c=1;
26                    break;
27                }
28                else if((diff=A[i]-A[j]) && diff==k && i!=j)
29                {
30                    c=1;
31                    break;
32                }
33            }
34        }
35        if(c)
36        {
37            printf("1\n");
```

```
38        }
39        else
40        {
41            printf("0\n");
42        }
43    }
44    return 0;
45 }
```

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

Passed all tests! ✓

## Question 2:

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

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

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

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

## Source code:

Answer: (penalty regime: 0 %)

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

	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:

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  $\text{nums}[j] \leq \text{maxes}[i]$  where  $0 \leq j < n$  and  $0 \leq i < m$ , in the given order.

It has the following:

nums[nums[0],...,nums[n-1]]: first array of positive integers

maxes[maxes[0],...,maxes[n-1]]: second array of positive integers

Constraints

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

Sample Input 1

5  
2  
10  
5  
4  
8  
4  
3  
1  
7  
8

## Source code:

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

```
1 #include<stdio.h>
2 int main()
3 {
4     int a,b;
5     scanf("%d",&a);
6     int s1[a];
7     for(int i=0;i<a;i++)
8     {
9         scanf("%d",&s1[i]);
10    }
11    scanf("%d",&b);
12    int s2[b];
13    for(int i=0;i<b;i++)
14    {
15        scanf("%d",&s2[i]);
16    }
17    for(int i=0;i<b;i++)
18    {
19        int sum=0;
20        for(int j=0;j<a;j++)
21        {
22            if(s1[j]<=s2[i])
23            {
24                sum++;
25            }
26        }
27        printf("%d\n",sum);
28    }
29    return 0;
30 }
```

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

Passed all tests! ✓