



GE23131-Programming Using C-2024

Status	Finished
Started	Monday, 23 December 2024, 5:33 PM
Completed	Saturday, 14 December 2024, 1:03 PM
Duration	9 days 4 hours

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

Output:

1

Input:

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--){
7          int n;
8          scanf("%d",&n);
9          int a[n];
10         for(int i=0;i<n;i++)
11         {
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         {
19             for(int j=i+1;j<n
20             {
21                 if(a[i]-a[j]=
22                 flag=1;
23                 break;
24             }
25         }
26         if (flag)
27             break;
28     }
29     printf("%d\n",flag);
30 }
31 return 0;
32 }
```

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

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

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--)
7     {
8         int n,c=0;
9         scanf("%d",&n);
10        for (int i=0;i<=n;i++)
11        {
12            if(i%2!=0)
13                c=c+i;
14        }
```

Sun days 1 chocolate on day 1, 0 on day 2, and 0 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-->0)
7     {
8         int n,c=0;
9         scanf("%d",&n);
10        for (int i=0;i<=n;i++)
11        {
12            if(i%2!=0)
13                c=c+i;
14        }
15        printf("%d\n",c);
16    }
17    return 0;
18

```

	Input	Expected	Got	
✓	3	1	1	✓
	1	1	1	
	2	4	4	
	3			
✓	10	1296	1296	✓
	71	2500	2500	



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:
 - 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: $\{2, 3\}$.

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 .

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

Explanation 0

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

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 $maxes = [3, 1, 7, 8]$.

1. For $maxes[0] = 3$, we have 1 element in $nums$ ($nums[0] = 2$) that is $\leq maxes[0]$.
2. For $maxes[1] = 1$, there are 0 elements in $nums$ that are $\leq maxes[1]$.
3. For $maxes[2] = 7$, we have 3 elements in $nums$ ($nums[0] = 2$, $nums[2] = 5$, and $nums[3] = 4$) that are $\leq maxes[2]$.
4. 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  {
4      int m,n,co=0;
5      scanf("%d\n",&m);
6      int a[m];
7      for (int i=0;i<m;i++)
8      {
9          scanf("%d\n",&a[i]);
10     }
11     scanf("%d",&n);
12     int b[n],c[n];
13     for(int j=0;j<n;j++)
14     {
15         scanf("%d",&b[j]);
16     }
17     for(int k=0;k<n;k++)
18     {
19         for(int y=0;y<m;y++)
20         {
21             if(a[y]<=b[k])
22             {
23                 co=co+1;
24             }
25         }
26         c[k]=co;
27         co=0;
28     }
29     for(int i=0;i<n;i++)
30     {
31         printf("%d\n",c[i]);
32     }
33     return 0;
34 }
```