Programming Using C

week 06practice session coding

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Question 1
Correct
Marked out of 100.00
Flag question

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 != 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 T. 1 if such a pair exists and 0 if it doesn't.

Example

Input:

1
3 7 5 6
4

Output:

1

Input:

1
3 7 5 6
10

Output:

0

Answer: (penalty regime: 0 %)

```
#include<stdio.h>
int main()
{
    int t;
    scanf("%d",&t);
    while(t--)
    {
        int n;
        scanf("%d",&n);
        int a[n];
        for(int i=0;i<n;i++)
        {
            scanf("%d",&a[i]);
        }
        int k;
        scanf("%d",&k);
        int flag=0;
        for (int i=0;i<n;i++){
            for(int j=i+1;j<n;j++){
                if (a[i]-a[j]==k || a[j]-a[i]==k){flag=1;break;}
            }
            if(flag)break;
        }
    printf("%d\n",flag);
    }
    return 0;
}
```

	Input	Expected	Got	
✓	1 3 7 5 6 4	1	1	✓
✓	1 3 7 5 6 10	0	0	✓

Passed all tests! ✓

Question 2
Correct
Marked out of 1.00
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 Ni (where 1 ≤ x ≤ N ≤ 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 ith test case as an integer, Ni (the number of days).

Constraints

1 ≤ T ≤ 2 × 10^5
1 ≤ N ≤ 2 × 10^6
1 ≤ x ≤ N ≤ Y

Output Format

For each test case, Ti in arr, your calculate method should print the total number of chocolates Sam purchased by day Ni 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 %)

```
#include<stdio.h>
int main()
{
    int t;
    scanf("%d",&t);
    while(t--)
    {
        int n,s=0;
        scanf("%d",&n);
        for(int i=0;i<=n;i++)
        {
            if(i%2!=0)
            {
                s+=i;
            }
        }
        printf("%d\n",s);
    }
    return 0;
}
```

	Input	Expected	Got	
✓	3 1 2 3	1 1 4	1 1 4	✓
✓	[illegible]	[illegible]	[illegible]	✓

Passed all tests! ✓

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 , 7 , 9] goals in each match respectively.
- Football team B, has played two matches, and has scored [2 , 4] goals in each match respectively.
- Now, look in to computer, 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 7.
- For 4 goals scored by team B in its second match, team A has 3 matches with scores 1 , 7 , 9 and 9.

Hence, the answer [2 , 3].

Complete the code in the editor below. The program must return an array of m position integers, one for each mean[i] representing the total number of elements num[j] satisfying num[j] < mean[i] where 0 <= j < n and 0 <= i < m, in the given order.

It has the following:
  num[num[0] ...num[n-1]] : first array of position integers
  mean[mean[0] ...mean[m-1]] : second array of position integers.

Constraints

- 1 <= n, m <= 105
- 1 <= num[j] < 109, where 0 <= j < n.
- 1 <= mean[i] < 109, where 0 <= 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 num.
The next n lines each contain an integer describing num[j] where 0 <= j < n.
The next line contains an integer m, the number of elements in means.
The next m lines each contain an integer describing mean[i] where 0 < i < m.

Sample Case 0

Sample Input 0

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

Sample Output 0

```
3
4
```

Explanation 0

We are given n = 4, num = [1, 4, 3, 4], m = 3, and means = [3, 5].

1. For mean[0] = 3, we have 3 elements in num (num[0] = 1 and num[2] = 3, that are < mean[0].
2. For mean[1] = 5, we have 4 elements in num (num[0] = 1, num[1] = 4, num[2] = 3, and num[3] = 4) that are < mean[1].

Thus, the function returns the array [3 , 4] as the answer.

Sample Case 1

Sample Input 1

```
6
1
10
5
4
8
4
3
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 <= maxes[0].
2. For maxes[1] = 1, there are 0 elements in nums that are <= 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 <= 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 <= maxes[3].

Thus, the function returns the array [1, 0, 3, 4] as the answer.

Answer: (penalty regime: 0 %)

```
#include<stdio.h>
int main()
{
    int n1,n2,ans;
    scanf("%d",&n1);
    int a[n1];
    for(int i=0;i<n1;i++)
    scanf("%d",&a[i]);
    scanf("%d",&n2);
    int b[n2];
    for(int i=0;i<n2;i++)
    scanf("%d",&b[i]);
    for(int j=0;j<n2;j++)
    {
        ans=0;
        for(int i=0;i<n1;i++)
        {
            if(b[j]>=a[i])
            ans++;
        }
        printf("%d\n",ans);
    }
    return 0;
}
```

	Input	Expected	Got	
✓	[illegible]	[illegible]	[illegible]	✓
✓	[illegible]	[illegible]	[illegible]	✓

Passed all tests: ✓