

## Week-06-One-Dimensional Arrays

### Week-06-Practice Session-Coding

Question **1**

Correct

Marked out of  
3.00[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  $A[i] - A[j] = k$ ,  $i \neq j$ .

#### 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.

[Source code](#)

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

```
1 #include <stdio.h>
2 int main()
3 {
4     int t,n;
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            scanf("%d",&a[i]);
12        }
13        int k;
14        scanf("%d",&k);
15        int flag=0;
16        for(int i=0;i<n;i++){
17            for(int j=0;j<n;j++){
18                if(a[i]-a[j]==k||(a[j]-a[i]==k)){
19                    flag=1;
20                    break;
21                }
22            }
23            if(flag)
24                break;
25        }
26        printf("%d\n",flag);}
27
28    return 0;
29 }
30
```

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

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).

## Source code

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

```
1 #include <stdio.h>
2 int main()
3 {
4     int n;
5     scanf("%d",&n);
6     int arr[n];
7     for(int i=0;i<n;i++){
8         scanf("%d",&arr[i]);
9         int a=arr[i],sum=0;
10        for(int j=1;j<=a;j++){
11            if(j%2==1){
12                sum+=j;
13            }
14        }
15        printf("%d\n",sum);
16    }
17 }
```

Result

	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! ✓

### 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

[Source code](#)

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

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

Result

	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! ✓